

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | | | | | | |
| Jan | 1 | ### | ### | ### | ### | ### | ### | 170 | 162 | 157 | 153 | 149 | ### | ### | ### | ### | ### | ### | 191 | 199 | 204 | 208 | 211 | | | | | | |
| Jan | 2 | ### | ### | ### | ### | ### | ### | 169 | 161 | 156 | 152 | 149 | ### | ### | ### | ### | ### | ### | 192 | 199 | 204 | 208 | 211 | | | | | | |
| Jan | 3 | ### | ### | ### | ### | ### | ### | 168 | 161 | 156 | 152 | 149 | ### | ### | ### | ### | ### | ### | 193 | 200 | 205 | 208 | 212 | | | | | | |
| Jan | 4 | ### | ### | ### | ### | ### | ### | 167 | 160 | 155 | 152 | 148 | ### | ### | ### | ### | ### | ### | 194 | 200 | 205 | 209 | 212 | | | | | | |
| Jan | 5 | ### | ### | ### | ### | ### | ### | 166 | 160 | 155 | 151 | 148 | ### | ### | ### | ### | ### | ### | 195 | 201 | 206 | 209 | 212 | | | | | | |
| Jan | 6 | ### | ### | ### | ### | ### | ### | 165 | 159 | 154 | 151 | 148 | ### | ### | ### | ### | ### | ### | 183 | 196 | 202 | 206 | 210 | 213 | | | | | |
| Jan | 7 | ### | ### | ### | ### | ### | ### | 177 | 164 | 158 | 154 | 150 | 147 | ### | ### | ### | ### | ### | 186 | 197 | 203 | 207 | 210 | 213 | | | | | |
| Jan | 8 | ### | ### | ### | ### | ### | ### | 174 | 163 | 157 | 153 | 150 | 147 | ### | ### | ### | ### | ### | 189 | 198 | 203 | 207 | 211 | 214 | | | | | |
| Jan | 9 | ### | ### | ### | ### | ### | ### | 171 | 162 | 157 | 153 | 149 | 146 | ### | ### | ### | ### | ### | 191 | 199 | 204 | 208 | 211 | 214 | | | | | |
| Jan | 10 | ### | ### | ### | ### | ### | ### | 169 | 161 | 156 | 152 | 149 | 146 | ### | ### | ### | ### | ### | 192 | 200 | 205 | 209 | 212 | 215 | | | | | |
| Jan | 11 | ### | ### | ### | ### | ### | ### | 168 | 160 | 155 | 151 | 148 | 145 | ### | ### | ### | ### | ### | 194 | 201 | 206 | 209 | 212 | 215 | | | | | |
| Jan | 12 | ### | ### | ### | ### | ### | ### | 166 | 159 | 154 | 151 | 148 | 145 | ### | ### | ### | ### | ### | 195 | 202 | 206 | 210 | 213 | 216 | | | | | |
| Jan | 13 | ### | ### | ### | ### | ### | ### | 165 | 158 | 154 | 150 | 147 | 144 | ### | ### | ### | ### | ### | 185 | 197 | 203 | 207 | 211 | 214 | 216 | | | | |
| Jan | 14 | ### | ### | ### | ### | ### | ### | 175 | 163 | 157 | 153 | 149 | 146 | 144 | ### | ### | ### | ### | 188 | 198 | 204 | 208 | 211 | 214 | 217 | | | | |
| Jan | 15 | ### | ### | ### | ### | ### | ### | 172 | 162 | 156 | 152 | 149 | 146 | 143 | ### | ### | ### | ### | 191 | 199 | 205 | 209 | 212 | 215 | 217 | | | | |
| Jan | 16 | ### | ### | ### | ### | ### | ### | 169 | 161 | 155 | 151 | 148 | 145 | 143 | ### | ### | ### | ### | 193 | 201 | 206 | 210 | 213 | 216 | 218 | | | | |
| Jan | 17 | ### | ### | ### | ### | ### | ### | 167 | 159 | 154 | 150 | 147 | 144 | 142 | ### | ### | ### | ### | 195 | 202 | 207 | 210 | 214 | 216 | 219 | | | | |
| Jan | 18 | ### | ### | ### | ### | ### | ### | 165 | 158 | 153 | 150 | 146 | 144 | 141 | ### | ### | ### | ### | 184 | 197 | 203 | 208 | 211 | 214 | 217 | 219 | | | |
| Jan | 19 | ### | ### | ### | ### | ### | ### | 176 | 163 | 157 | 152 | 149 | 146 | 143 | 141 | ### | ### | ### | 189 | 198 | 204 | 208 | 212 | 215 | 218 | 220 | | | |
| Jan | 20 | ### | ### | ### | ### | ### | ### | 171 | 162 | 156 | 152 | 148 | 145 | 142 | 140 | ### | ### | ### | 192 | 200 | 205 | 209 | 213 | 216 | 218 | 220 | | | |
| Jan | 21 | ### | ### | ### | ### | ### | ### | 168 | 160 | 155 | 151 | 147 | 144 | 142 | 140 | ### | ### | ### | 194 | 201 | 206 | 210 | 214 | 217 | 219 | 221 | | | |
| Jan | 22 | ### | ### | ### | ### | ### | ### | 166 | 159 | 154 | 150 | 146 | 143 | 141 | 139 | ### | ### | ### | 196 | 203 | 208 | 211 | 215 | 217 | 220 | 222 | | | |
| Jan | 23 | ### | ### | ### | ### | ### | ### | 164 | 157 | 152 | 149 | 145 | 143 | 140 | 138 | ### | ### | 187 | 198 | 204 | 209 | 212 | 215 | 218 | 220 | 222 | | | |
| Jan | 24 | ### | ### | ### | ### | ### | ### | 173 | 162 | 156 | 151 | 148 | 145 | 142 | 140 | 138 | ### | ### | 191 | 200 | 206 | 210 | 213 | 216 | 219 | 221 | 223 | | |
| Jan | 25 | ### | ### | ### | ### | ### | ### | 169 | 160 | 154 | 150 | 147 | 144 | 141 | 139 | 137 | ### | ### | 194 | 202 | 207 | 211 | 214 | 217 | 220 | 222 | 224 | | |
| Jan | 26 | ### | ### | ### | ### | ### | ### | 166 | 158 | 153 | 149 | 146 | 143 | 140 | 138 | 136 | ### | ### | 196 | 203 | 208 | 212 | 215 | 218 | 220 | 223 | 225 | | |
| Jan | 27 | ### | ### | ### | ### | ### | ### | 164 | 157 | 152 | 148 | 145 | 142 | 140 | 137 | 135 | ### | ### | 188 | 199 | 205 | 209 | 213 | 216 | 219 | 221 | 223 | 225 | |
| Jan | 28 | ### | ### | ### | ### | ### | ### | 172 | 161 | 155 | 151 | 147 | 144 | 141 | 139 | 137 | 135 | ### | 192 | 201 | 206 | 211 | 214 | 217 | 220 | 222 | 224 | 226 | |
| Jan | 29 | ### | ### | ### | ### | ### | ### | 168 | 159 | 154 | 149 | 146 | 143 | 140 | 138 | 136 | 134 | ### | 195 | 203 | 208 | 212 | 215 | 218 | 221 | 223 | 225 | 227 | |
| Jan | 30 | ### | ### | ### | ### | ### | ### | 165 | 157 | 152 | 148 | 145 | 142 | 139 | 137 | 135 | 133 | ### | 181 | 198 | 204 | 209 | 213 | 216 | 219 | 222 | 224 | 226 | 227 |
| Jan | 31 | 179 | 162 | 156 | 151 | 147 | 144 | 141 | 138 | 136 | 134 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 190 | 200 | 206 | 211 | 214 | 217 | 220 | 222 | 225 | 226 | 228 |
| Feb | 1 | 170 | 160 | 154 | 149 | 146 | 143 | 140 | 138 | 135 | 134 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 194 | 202 | 208 | 212 | 215 | 218 | 221 | 223 | 225 | 227 | 229 |
| Feb | 2 | 166 | 158 | 152 | 148 | 145 | 142 | 139 | 137 | 135 | 133 | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 197 | 204 | 209 | 213 | 217 | 219 | 222 | 224 | 226 | 228 | 230 |
| Feb | 3 | 163 | 156 | 151 | 147 | 143 | 141 | 138 | 136 | 134 | 132 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 199 | 206 | 211 | 215 | 218 | 221 | 223 | 225 | 227 | 229 | 230 |
| Feb | 4 | 161 | 154 | 149 | 145 | 142 | 139 | 137 | 135 | 133 | 131 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 202 | 208 | 212 | 216 | 219 | 222 | 224 | 226 | 228 | 230 | 231 |
| Feb | 5 | 158 | 152 | 148 | 144 | 141 | 138 | 136 | 134 | 132 | 130 | 129 | 129 | 129 | 129 | 129 | 129 | 129 | 204 | 209 | 214 | 217 | 220 | 223 | 225 | 227 | 229 | 230 | 232 |
| Feb | 6 | 156 | 151 | 146 | 143 | 140 | 137 | 135 | 133 | 131 | 130 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 206 | 211 | 215 | 218 | 221 | 224 | 226 | 228 | 230 | 231 | 233 |
| Feb | 7 | 154 | 149 | 145 | 142 | 139 | 136 | 134 | 132 | 130 | 129 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 208 | 213 | 216 | 220 | 222 | 225 | 227 | 229 | 230 | 232 | 233 |
| Feb | 8 | 152 | 147 | 144 | 140 | 138 | 135 | 133 | 131 | 130 | 128 | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 210 | 214 | 218 | 221 | 223 | 226 | 228 | 230 | 231 | 233 | 234 |
| Feb | 9 | 150 | 146 | 142 | 139 | 137 | 134 | 132 | 130 | 129 | 127 | 126 | 126 | 126 | 126 | 126 | 126 | 126 | 212 | 216 | 219 | 222 | 225 | 227 | 229 | 230 | 232 | 234 | 235 |
| Feb | 10 | 148 | 144 | 141 | 138 | 135 | 133 | 131 | 130 | 128 | 126 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 213 | 217 | 220 | 223 | 226 | 228 | 230 | 231 | 233 | 234 | 236 |
| Feb | 11 | 147 | 143 | 140 | 137 | 134 | 132 | 130 | 129 | 127 | 126 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 215 | 219 | 222 | 224 | 227 | 229 | 231 | 232 | 234 | 235 | 236 |
| Feb | 12 | 145 | 141 | 138 | 136 | 133 | 131 | 129 | 128 | 126 | 125 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 217 | 220 | 223 | 226 | 228 | 230 | 232 | 233 | 235 | 236 | 237 |
| Feb | 13 | 143 | 140 | 137 | 134 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 123 | 123 | 123 | 123 | 123 | 123 | 218 | 222 | 224 | 227 | 229 | 231 | 233 | 234 | 235 | 237 | 238 |
| Feb | 14 | 142 | 138 | 136 | 133 | 131 | 129 | 127 | 126 | 125 | 123 | 122 | 122 | 122 | 122 | 122 | 122 | 122 | 220 | 223 | 226 | 228 | 230 | 232 | 233 | 235 | 236 | 238 | 239 |
| Feb | 15 | 140 | 137 | 134 | 132 | 130 | 128 | 127 | 125 | 124 | 122 | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 221 | 224 | 227 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 240 |
| Feb | 16 | 139 | 136 | 133 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 223 | 226 | 228 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 |
| Feb | 17 | 137 | 134 | 132 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 224 | 227 | 229 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 241 |
| Feb | 18 | 136 | 133 | 131 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 226 | 228 | 230 | 232 | 234 | 236 | 237 | 239 | 240 | 241 | 242 |
| Feb | 19 | 134 | 132 | 130 | 128 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 227 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 241 | 242 | 243 |

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when lower limb is
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| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| Jan | 1 | 149 | 147 | 144 | 142 | 140 | 138 | 137 | 135 | 134 | 133 | 131 | 211 | 214 | 216 | 218 | 220 | 222 | 223 | 225 | 226 | 228 | 229 |
| Jan | 2 | 149 | 146 | 144 | 142 | 140 | 138 | 137 | 135 | 134 | 132 | 131 | 211 | 214 | 216 | 218 | 220 | 222 | 224 | 225 | 226 | 228 | 229 |
| Jan | 3 | 149 | 146 | 144 | 142 | 140 | 138 | 136 | 135 | 134 | 132 | 131 | 212 | 214 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 | 229 |
| Jan | 4 | 148 | 146 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 131 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 | 229 |
| Jan | 5 | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 131 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 | 229 |
| Jan | 6 | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 131 | 213 | 215 | 218 | 220 | 222 | 223 | 225 | 226 | 227 | 229 | 230 |
| Jan | 7 | 147 | 145 | 142 | 140 | 138 | 137 | 135 | 134 | 133 | 131 | 130 | 213 | 216 | 218 | 220 | 222 | 223 | 225 | 226 | 228 | 229 | 230 |
| Jan | 8 | 147 | 144 | 142 | 140 | 138 | 137 | 135 | 134 | 132 | 131 | 130 | 214 | 216 | 218 | 220 | 222 | 224 | 225 | 227 | 228 | 229 | 230 |
| Jan | 9 | 146 | 144 | 142 | 140 | 138 | 136 | 135 | 133 | 132 | 131 | 130 | 214 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 | 229 | 230 |
| Jan | 10 | 146 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 131 | 130 | 215 | 217 | 219 | 221 | 223 | 225 | 226 | 227 | 229 | 230 | 231 |
| Jan | 11 | 145 | 143 | 141 | 139 | 137 | 135 | 134 | 133 | 131 | 130 | 129 | 215 | 218 | 220 | 222 | 223 | 225 | 226 | 228 | 229 | 230 | 231 |
| Jan | 12 | 145 | 142 | 140 | 138 | 137 | 135 | 134 | 132 | 131 | 130 | 129 | 216 | 218 | 220 | 222 | 224 | 225 | 227 | 228 | 229 | 230 | 231 |
| Jan | 13 | 144 | 142 | 140 | 138 | 136 | 135 | 133 | 132 | 131 | 130 | 129 | 216 | 219 | 221 | 222 | 224 | 226 | 227 | 228 | 230 | 231 | 232 |
| Jan | 14 | 144 | 141 | 139 | 138 | 136 | 134 | 133 | 132 | 130 | 129 | 128 | 217 | 219 | 221 | 223 | 225 | 226 | 227 | 229 | 230 | 231 | 232 |
| Jan | 15 | 143 | 141 | 139 | 137 | 135 | 134 | 133 | 131 | 130 | 129 | 128 | 217 | 220 | 222 | 223 | 225 | 226 | 228 | 229 | 230 | 231 | 232 |
| Jan | 16 | 143 | 140 | 138 | 137 | 135 | 134 | 132 | 131 | 130 | 129 | 128 | 218 | 220 | 222 | 224 | 225 | 227 | 228 | 229 | 231 | 232 | 233 |
| Jan | 17 | 142 | 140 | 138 | 136 | 135 | 133 | 132 | 131 | 129 | 128 | 127 | 219 | 221 | 223 | 224 | 226 | 227 | 229 | 230 | 231 | 232 | 233 |
| Jan | 18 | 141 | 139 | 137 | 136 | 134 | 133 | 131 | 130 | 129 | 128 | 127 | 219 | 221 | 223 | 225 | 226 | 228 | 229 | 230 | 231 | 232 | 233 |
| Jan | 19 | 141 | 139 | 137 | 135 | 134 | 132 | 131 | 130 | 129 | 128 | 127 | 220 | 222 | 224 | 225 | 227 | 228 | 230 | 231 | 232 | 233 | 234 |
| Jan | 20 | 140 | 138 | 136 | 135 | 133 | 132 | 130 | 129 | 128 | 127 | 126 | 220 | 222 | 224 | 226 | 227 | 229 | 230 | 231 | 232 | 233 | 234 |
| Jan | 21 | 140 | 138 | 136 | 134 | 133 | 131 | 130 | 129 | 128 | 127 | 126 | 221 | 223 | 225 | 226 | 228 | 229 | 230 | 232 | 233 | 234 | 235 |
| Jan | 22 | 139 | 137 | 135 | 134 | 132 | 131 | 130 | 128 | 127 | 126 | 125 | 222 | 224 | 225 | 227 | 228 | 230 | 231 | 232 | 233 | 234 | 235 |
| Jan | 23 | 138 | 136 | 135 | 133 | 132 | 130 | 129 | 128 | 127 | 126 | 125 | 222 | 224 | 226 | 228 | 229 | 230 | 231 | 233 | 234 | 235 | 235 |
| Jan | 24 | 138 | 136 | 134 | 132 | 131 | 130 | 129 | 127 | 126 | 125 | 125 | 223 | 225 | 227 | 228 | 230 | 231 | 232 | 233 | 234 | 235 | 236 |
| Jan | 25 | 137 | 135 | 133 | 132 | 130 | 129 | 128 | 127 | 126 | 125 | 124 | 224 | 226 | 227 | 229 | 230 | 231 | 232 | 234 | 235 | 235 | 236 |
| Jan | 26 | 136 | 134 | 133 | 131 | 130 | 129 | 128 | 126 | 125 | 125 | 124 | 225 | 226 | 228 | 229 | 231 | 232 | 233 | 234 | 235 | 236 | 237 |
| Jan | 27 | 135 | 134 | 132 | 131 | 129 | 128 | 127 | 126 | 125 | 124 | 123 | 225 | 227 | 228 | 230 | 231 | 232 | 234 | 235 | 236 | 236 | 237 |
| Jan | 28 | 135 | 133 | 132 | 130 | 129 | 128 | 126 | 125 | 124 | 124 | 123 | 226 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 |
| Jan | 29 | 134 | 132 | 131 | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 227 | 228 | 230 | 231 | 232 | 234 | 235 | 236 | 237 | 237 | 238 |
| Jan | 30 | 133 | 132 | 130 | 129 | 128 | 126 | 125 | 124 | 123 | 123 | 122 | 227 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| Jan | 31 | 133 | 131 | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 228 | 230 | 231 | 232 | 234 | 235 | 236 | 237 | 238 | 238 | 239 |
| Feb | 1 | 132 | 130 | 129 | 128 | 126 | 125 | 124 | 123 | 122 | 122 | 121 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 |
| Feb | 2 | 131 | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 230 | 231 | 232 | 234 | 235 | 236 | 237 | 238 | 239 | 239 | 240 |
| Feb | 3 | 130 | 129 | 128 | 126 | 125 | 124 | 123 | 122 | 121 | 121 | 120 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Feb | 4 | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 231 | 232 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 240 | 241 |
| Feb | 5 | 129 | 128 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 120 | 119 | 232 | 233 | 234 | 236 | 237 | 238 | 239 | 239 | 240 | 241 | 242 |
| Feb | 6 | 128 | 127 | 126 | 124 | 123 | 122 | 121 | 121 | 120 | 119 | 118 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 242 |
| Feb | 7 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 241 | 242 | 243 |
| Feb | 8 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 119 | 118 | 117 | 234 | 235 | 237 | 238 | 239 | 239 | 240 | 241 | 242 | 243 | 243 |
| Feb | 9 | 126 | 125 | 123 | 122 | 121 | 121 | 120 | 119 | 118 | 117 | 117 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 242 | 243 | 244 |
| Feb | 10 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 117 | 116 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 242 | 243 | 244 | 244 |
| Feb | 11 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 117 | 116 | 116 | 236 | 238 | 239 | 240 | 241 | 241 | 242 | 243 | 244 | 244 | 245 |
| Feb | 12 | 124 | 122 | 121 | 120 | 119 | 119 | 118 | 117 | 116 | 116 | 115 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 244 | 245 | 246 |
| Feb | 13 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 116 | 115 | 114 | 238 | 239 | 240 | 241 | 242 | 243 | 243 | 244 | 245 | 245 | 246 |
| Feb | 14 | 122 | 121 | 120 | 119 | 118 | 117 | 117 | 116 | 115 | 115 | 114 | 239 | 240 | 241 | 242 | 243 | 243 | 244 | 245 | 245 | 246 | 247 |
| Feb | 15 | 121 | 120 | 119 | 118 | 117 | 117 | 116 | 115 | 115 | 114 | 113 | 240 | 241 | 242 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 |
| Feb | 16 | 120 | 119 | 118 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 240 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 | 248 |
| Feb | 17 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 112 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 | 248 | 248 |
| Feb | 18 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 112 | 112 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 | 248 | 248 | 249 |
| Feb | 19 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 112 | 112 | 111 | 243 | 244 | 244 | 245 | 246 | 247 | 247 | 248 | 248 | 249 | 250 |

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| | | Latitude North | | | | Sunrise | | | | | | Latitude North | | | | Sunset | | | | | | | |
|--------|----|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| Jan 1 | 1 | 131 | 129 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 119 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Jan 2 | 2 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Jan 3 | 3 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Jan 4 | 4 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Jan 5 | 5 | 131 | 129 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 235 | 236 | 237 | 239 | 240 | 240 | 241 | 242 |
| Jan 6 | 6 | 131 | 129 | 127 | 125 | 124 | 123 | 121 | 120 | 120 | 119 | 118 | 230 | 232 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 241 | 242 |
| Jan 7 | 7 | 130 | 128 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 119 | 118 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 242 |
| Jan 8 | 8 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 |
| Jan 9 | 9 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 230 | 232 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 |
| Jan 10 | 10 | 130 | 128 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 231 | 233 | 234 | 236 | 237 | 238 | 240 | 240 | 241 | 242 | 243 |
| Jan 11 | 11 | 129 | 127 | 126 | 124 | 123 | 122 | 120 | 120 | 119 | 118 | 117 | 231 | 233 | 235 | 236 | 237 | 239 | 240 | 241 | 242 | 242 | 243 |
| Jan 12 | 12 | 129 | 127 | 125 | 124 | 123 | 121 | 120 | 119 | 118 | 118 | 117 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 243 |
| Jan 13 | 13 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 117 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 243 |
| Jan 14 | 14 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 117 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 |
| Jan 15 | 15 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 232 | 234 | 236 | 237 | 239 | 240 | 241 | 242 | 242 | 243 | 244 |
| Jan 16 | 16 | 128 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 118 | 117 | 116 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 243 | 244 |
| Jan 17 | 17 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 117 | 116 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 244 |
| Jan 18 | 18 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 116 | 233 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 |
| Jan 19 | 19 | 127 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 234 | 236 | 237 | 238 | 240 | 241 | 242 | 243 | 243 | 244 | 245 |
| Jan 20 | 20 | 126 | 124 | 123 | 122 | 120 | 119 | 118 | 117 | 117 | 116 | 115 | 234 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 |
| Jan 21 | 21 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 |
| Jan 22 | 22 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 235 | 237 | 238 | 240 | 241 | 242 | 243 | 244 | 244 | 245 | 246 |
| Jan 23 | 23 | 125 | 123 | 122 | 120 | 119 | 118 | 117 | 116 | 116 | 115 | 114 | 235 | 237 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 | 246 |
| Jan 24 | 24 | 125 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 246 |
| Jan 25 | 25 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 114 | 236 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 |
| Jan 26 | 26 | 124 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 237 | 238 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 246 | 247 |
| Jan 27 | 27 | 123 | 122 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 114 | 113 | 237 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 247 |
| Jan 28 | 28 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 246 | 246 | 247 | 248 |
| Jan 29 | 29 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 114 | 113 | 112 | 238 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 247 | 248 |
| Jan 30 | 30 | 122 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 239 | 240 | 241 | 243 | 244 | 245 | 245 | 246 | 247 | 248 | 248 |
| Jan 31 | 31 | 121 | 120 | 119 | 117 | 116 | 115 | 115 | 114 | 113 | 112 | 112 | 239 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 248 |
| Feb 1 | 1 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 112 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 248 | 249 |
| Feb 2 | 2 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 112 | 111 | 240 | 242 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 |
| Feb 3 | 3 | 120 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 248 | 249 | 250 |
| Feb 4 | 4 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 241 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 |
| Feb 5 | 5 | 119 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 248 | 249 | 250 | 250 |
| Feb 6 | 6 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 110 | 242 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 250 | 250 | 251 |
| Feb 7 | 7 | 118 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 110 | 110 | 109 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 249 | 250 | 250 | 251 |
| Feb 8 | 8 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 243 | 245 | 246 | 247 | 248 | 248 | 249 | 250 | 250 | 251 | 251 |
| Feb 9 | 9 | 117 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 110 | 109 | 109 | 244 | 245 | 246 | 247 | 248 | 249 | 249 | 250 | 251 | 251 | 252 |
| Feb 10 | 10 | 116 | 115 | 114 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 244 | 246 | 247 | 248 | 248 | 249 | 250 | 251 | 251 | 252 | 252 |
| Feb 11 | 11 | 116 | 114 | 113 | 112 | 112 | 111 | 110 | 109 | 109 | 108 | 108 | 245 | 246 | 247 | 248 | 249 | 250 | 250 | 251 | 252 | 252 | 253 |
| Feb 12 | 12 | 115 | 114 | 113 | 112 | 111 | 110 | 110 | 109 | 108 | 108 | 107 | 246 | 247 | 248 | 249 | 249 | 250 | 251 | 251 | 252 | 252 | 253 |
| Feb 13 | 13 | 114 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 108 | 107 | 246 | 247 | 248 | 249 | 250 | 251 | 251 | 252 | 252 | 253 | 253 |
| Feb 14 | 14 | 114 | 113 | 112 | 111 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 247 | 248 | 249 | 250 | 250 | 251 | 252 | 252 | 253 | 253 | 254 |
| Feb 15 | 15 | 113 | 112 | 111 | 110 | 110 | 109 | 108 | 108 | 107 | 107 | 106 | 247 | 248 | 249 | 250 | 251 | 251 | 252 | 253 | 253 | 254 | 254 |
| Feb 16 | 16 | 113 | 112 | 111 | 110 | 109 | 109 | 108 | 107 | 107 | 106 | 106 | 248 | 249 | 250 | 251 | 251 | 252 | 253 | 253 | 254 | 254 | 255 |
| Feb 17 | 17 | 112 | 111 | 110 | 109 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 248 | 249 | 250 | 251 | 252 | 252 | 253 | 254 | 254 | 255 | 255 |
| Feb 18 | 18 | 112 | 111 | 110 | 109 | 108 | 108 | 107 | 106 | 106 | 105 | 105 | 249 | 250 | 251 | 252 | 252 | 253 | 253 | 254 | 254 | 255 | 255 |
| Feb 19 | 19 | 111 | 110 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 250 | 250 | 251 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 256 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | Latitude North | Sunrise | | | | | | | | | | Latitude North | Sunset | | | | | | | | | |
|--------|----------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | | 10 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 |
| Jan 1 | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 |
| Jan 2 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 242 | 242 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 | 246 |
| Jan 3 | 118 | 118 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 114 | 242 | 242 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 | 246 |
| Jan 4 | 118 | 118 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 114 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 246 |
| Jan 5 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 114 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 |
| Jan 6 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 242 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 | 246 | 247 |
| Jan 7 | 118 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 114 | 113 | 242 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 |
| Jan 8 | 118 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 114 | 113 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 |
| Jan 9 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 114 | 113 | 243 | 243 | 244 | 245 | 245 | 245 | 246 | 246 | 247 | 247 | 247 |
| Jan 10 | 117 | 117 | 116 | 115 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 | 247 |
| Jan 11 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 114 | 113 | 113 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 247 |
| Jan 12 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 113 | 243 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 | 247 | 248 |
| Jan 13 | 117 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 113 | 113 | 112 | 243 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 |
| Jan 14 | 117 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 244 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 |
| Jan 15 | 116 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 | 248 |
| Jan 16 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 112 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 248 |
| Jan 17 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 112 | 244 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 | 248 | 249 |
| Jan 18 | 116 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 112 | 111 | 245 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 |
| Jan 19 | 115 | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 | 248 | 249 | 249 |
| Jan 20 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 |
| Jan 21 | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 245 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 | 249 |
| Jan 22 | 115 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 111 | 246 | 246 | 247 | 247 | 248 | 248 | 249 | 249 | 249 | 249 | 250 |
| Jan 23 | 114 | 114 | 113 | 113 | 112 | 112 | 111 | 111 | 111 | 111 | 110 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 | 250 | 250 |
| Jan 24 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 246 | 247 | 247 | 248 | 248 | 249 | 249 | 249 | 250 | 250 | 250 |
| Jan 25 | 114 | 113 | 113 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 110 | 247 | 247 | 248 | 248 | 249 | 249 | 249 | 250 | 250 | 250 | 250 |
| Jan 26 | 113 | 113 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 110 | 110 | 247 | 247 | 248 | 248 | 249 | 249 | 250 | 250 | 250 | 250 | 251 |
| Jan 27 | 113 | 113 | 112 | 112 | 111 | 111 | 110 | 110 | 110 | 110 | 109 | 247 | 248 | 248 | 249 | 249 | 250 | 250 | 250 | 250 | 251 | 251 |
| Jan 28 | 113 | 112 | 112 | 111 | 111 | 110 | 110 | 110 | 110 | 109 | 109 | 248 | 248 | 249 | 249 | 249 | 250 | 250 | 250 | 251 | 251 | 251 |
| Jan 29 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 248 | 248 | 249 | 249 | 250 | 250 | 250 | 251 | 251 | 251 | 252 |
| Jan 30 | 112 | 112 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 108 | 248 | 249 | 249 | 250 | 250 | 250 | 251 | 251 | 251 | 252 | 252 |
| Jan 31 | 112 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 248 | 249 | 250 | 250 | 250 | 251 | 251 | 251 | 252 | 252 | 252 |
| Feb 1 | 112 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 249 | 249 | 250 | 250 | 251 | 251 | 251 | 252 | 252 | 252 | 252 |
| Feb 2 | 111 | 111 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 108 | 249 | 250 | 250 | 251 | 251 | 251 | 252 | 252 | 252 | 252 | 253 |
| Feb 3 | 111 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 108 | 107 | 250 | 250 | 250 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 |
| Feb 4 | 110 | 110 | 110 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 250 | 250 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 | 253 |
| Feb 5 | 110 | 110 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 107 | 250 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 | 253 | 254 |
| Feb 6 | 110 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 107 | 106 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 | 253 | 254 | 254 |
| Feb 7 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 107 | 106 | 106 | 251 | 251 | 252 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 254 |
| Feb 8 | 109 | 109 | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 106 | 251 | 252 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 254 | 255 |
| Feb 9 | 109 | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 106 | 105 | 252 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 254 | 255 | 255 |
| Feb 10 | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 106 | 105 | 105 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 255 |
| Feb 11 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 105 | 253 | 253 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 255 | 256 |
| Feb 12 | 107 | 107 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 105 | 104 | 253 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 256 | 256 | 256 |
| Feb 13 | 107 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 104 | 104 | 104 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 256 | 256 | 256 | 256 |
| Feb 14 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 104 | 104 | 104 | 104 | 254 | 254 | 255 | 255 | 255 | 255 | 256 | 256 | 256 | 256 | 257 |
| Feb 15 | 106 | 106 | 105 | 105 | 105 | 105 | 104 | 104 | 104 | 104 | 103 | 254 | 255 | 255 | 255 | 256 | 256 | 256 | 256 | 257 | 257 | 257 |
| Feb 16 | 106 | 105 | 105 | 105 | 104 | 104 | 104 | 104 | 103 | 103 | 103 | 255 | 255 | 255 | 256 | 256 | 256 | 256 | 257 | 257 | 257 | 257 |
| Feb 17 | 105 | 105 | 105 | 104 | 104 | 104 | 104 | 103 | 103 | 103 | 103 | 255 | 255 | 256 | 256 | 256 | 257 | 257 | 257 | 257 | 257 | 258 |
| Feb 18 | 105 | 105 | 104 | 104 | 104 | 103 | 103 | 103 | 103 | 103 | 102 | 255 | 256 | 256 | 256 | 257 | 257 | 257 | 257 | 258 | 258 | 258 |
| Feb 19 | 105 | 104 | 104 | 104 | 103 | 103 | 103 | 103 | 102 | 102 | 102 | 256 | 256 | 256 | 257 | 257 | 257 | 258 | 258 | 258 | 258 | 258 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
| | | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| Jan | 1 | 115 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 124 | 245 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 236 |
| Jan | 2 | 115 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 124 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 |
| Jan | 3 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 | 238 | 237 |
| Jan | 4 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 241 | 239 | 238 | 237 |
| Jan | 5 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 119 | 121 | 122 | 123 | 245 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 238 | 237 |
| Jan | 6 | 115 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 122 | 123 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 237 |
| Jan | 7 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 123 | 246 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 | 238 |
| Jan | 8 | 114 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 246 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 | 238 |
| Jan | 9 | 114 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 242 | 240 | 239 | 238 |
| Jan | 10 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 118 | 120 | 121 | 122 | 246 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 238 |
| Jan | 11 | 114 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 122 | 246 | 246 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 |
| Jan | 12 | 114 | 114 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 247 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 241 | 240 | 239 |
| Jan | 13 | 113 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 247 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 241 | 240 | 239 |
| Jan | 14 | 113 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 | 239 |
| Jan | 15 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 121 | 247 | 247 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 241 | 240 |
| Jan | 16 | 113 | 113 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 120 | 247 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 242 | 241 | 240 |
| Jan | 17 | 113 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 120 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 240 |
| Jan | 18 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 120 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 242 | 241 |
| Jan | 19 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 248 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 243 | 242 | 241 |
| Jan | 20 | 112 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 117 | 118 | 119 | 248 | 248 | 248 | 247 | 247 | 246 | 245 | 244 | 244 | 243 | 242 |
| Jan | 21 | 112 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 116 | 117 | 118 | 249 | 248 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 243 | 242 |
| Jan | 22 | 111 | 112 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 117 | 118 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 242 |
| Jan | 23 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 |
| Jan | 24 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 244 | 243 |
| Jan | 25 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 250 | 249 | 249 | 249 | 248 | 248 | 247 | 246 | 245 | 244 | 243 |
| Jan | 26 | 110 | 111 | 111 | 111 | 112 | 112 | 113 | 114 | 115 | 116 | 117 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 244 |
| Jan | 27 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 250 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 246 | 245 | 244 |
| Jan | 28 | 110 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 114 | 115 | 116 | 251 | 250 | 250 | 250 | 249 | 249 | 248 | 247 | 247 | 246 | 245 |
| Jan | 29 | 109 | 110 | 110 | 110 | 111 | 111 | 112 | 113 | 113 | 114 | 115 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 246 | 245 |
| Jan | 30 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 114 | 115 | 251 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 | 247 | 246 |
| Jan | 31 | 109 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 113 | 114 | 252 | 251 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 | 246 |
| Feb | 1 | 108 | 109 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 114 | 252 | 252 | 251 | 251 | 251 | 250 | 250 | 249 | 248 | 247 | 247 |
| Feb | 2 | 108 | 108 | 109 | 109 | 109 | 110 | 110 | 111 | 112 | 113 | 113 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 |
| Feb | 3 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 248 | 248 |
| Feb | 4 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 112 | 112 | 253 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 248 |
| Feb | 5 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 112 | 253 | 253 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 249 | 249 |
| Feb | 6 | 107 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 111 | 111 | 254 | 253 | 253 | 253 | 252 | 252 | 252 | 251 | 250 | 250 | 249 |
| Feb | 7 | 106 | 107 | 107 | 107 | 108 | 108 | 108 | 109 | 110 | 110 | 111 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 252 | 251 | 250 | 250 |
| Feb | 8 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 108 | 109 | 110 | 110 | 254 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 | 251 | 250 |
| Feb | 9 | 106 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 109 | 110 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 | 251 |
| Feb | 10 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 109 | 255 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 |
| Feb | 11 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 256 | 255 | 255 | 255 | 255 | 254 | 254 | 253 | 253 | 252 | 252 |
| Feb | 12 | 104 | 105 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 108 | 108 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 253 | 253 | 252 |
| Feb | 13 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 108 | 256 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 253 | 253 |
| Feb | 14 | 104 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 257 | 257 | 256 | 256 | 256 | 256 | 255 | 255 | 254 | 254 | 253 |
| Feb | 15 | 103 | 103 | 104 | 104 | 104 | 104 | 105 | 105 | 106 | 106 | 107 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 254 | 254 |
| Feb | 16 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 106 | 106 | 258 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 254 |
| Feb | 17 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 106 | 258 | 258 | 258 | 257 | 257 | 257 | 257 | 256 | 256 | 255 | 255 |
| Feb | 18 | 102 | 102 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 105 | 105 | 258 | 258 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 | 255 |
| Feb | 19 | 102 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 104 | 105 | 259 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 | 256 | 256 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Jan 1 | 1 | 124 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 133 | 135 | 236 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 | 227 | 225 |
| Jan 2 | 2 | 124 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 133 | 135 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 |
| Jan 3 | 3 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 |
| Jan 4 | 4 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 237 | 236 | 235 | 235 | 234 | 233 | 232 | 230 | 229 | 228 | 226 |
| Jan 5 | 5 | 123 | 124 | 125 | 125 | 126 | 127 | 128 | 130 | 131 | 132 | 134 | 237 | 236 | 236 | 235 | 234 | 233 | 232 | 231 | 229 | 228 | 227 |
| Jan 6 | 6 | 123 | 124 | 124 | 125 | 126 | 127 | 128 | 129 | 131 | 132 | 133 | 237 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 | 227 |
| Jan 7 | 7 | 123 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 133 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 |
| Jan 8 | 8 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 238 | 237 | 236 | 235 | 235 | 234 | 233 | 231 | 230 | 229 | 227 |
| Jan 9 | 9 | 122 | 123 | 124 | 125 | 125 | 126 | 127 | 129 | 130 | 131 | 133 | 238 | 237 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 229 | 228 |
| Jan 10 | 10 | 122 | 123 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 131 | 132 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 |
| Jan 11 | 11 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 239 | 238 | 237 | 236 | 235 | 235 | 234 | 232 | 231 | 230 | 229 |
| Jan 12 | 12 | 121 | 122 | 123 | 124 | 125 | 125 | 126 | 128 | 129 | 130 | 131 | 239 | 238 | 237 | 237 | 236 | 235 | 234 | 233 | 232 | 230 | 229 |
| Jan 13 | 13 | 121 | 122 | 123 | 123 | 124 | 125 | 126 | 127 | 128 | 130 | 131 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 229 |
| Jan 14 | 14 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 131 | 239 | 239 | 238 | 237 | 236 | 236 | 235 | 234 | 232 | 231 | 230 |
| Jan 15 | 15 | 121 | 121 | 122 | 123 | 124 | 124 | 125 | 126 | 128 | 129 | 130 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 230 |
| Jan 16 | 16 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 130 | 240 | 239 | 239 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 |
| Jan 17 | 17 | 120 | 121 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 240 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 231 |
| Jan 18 | 18 | 120 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 129 | 241 | 240 | 239 | 239 | 238 | 237 | 236 | 235 | 234 | 233 | 232 |
| Jan 19 | 19 | 119 | 120 | 121 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 241 | 241 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 232 |
| Jan 20 | 20 | 119 | 119 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 128 | 242 | 241 | 240 | 240 | 239 | 238 | 237 | 236 | 235 | 234 | 233 |
| Jan 21 | 21 | 118 | 119 | 120 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 242 | 241 | 241 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 233 |
| Jan 22 | 22 | 118 | 119 | 119 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 127 | 242 | 242 | 241 | 240 | 240 | 239 | 238 | 237 | 236 | 235 | 234 |
| Jan 23 | 23 | 118 | 118 | 119 | 120 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 243 | 242 | 241 | 241 | 240 | 239 | 238 | 238 | 237 | 236 | 234 |
| Jan 24 | 24 | 117 | 118 | 119 | 119 | 120 | 121 | 122 | 122 | 123 | 124 | 126 | 243 | 242 | 242 | 241 | 241 | 240 | 239 | 238 | 237 | 236 | 235 |
| Jan 25 | 25 | 117 | 118 | 118 | 119 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 243 | 243 | 242 | 242 | 241 | 240 | 239 | 239 | 238 | 237 | 236 |
| Jan 26 | 26 | 117 | 117 | 118 | 118 | 119 | 120 | 121 | 121 | 122 | 123 | 124 | 244 | 243 | 243 | 242 | 241 | 241 | 240 | 239 | 238 | 237 | 236 |
| Jan 27 | 27 | 116 | 117 | 117 | 118 | 119 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 240 | 239 | 238 | 237 |
| Jan 28 | 28 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 120 | 121 | 122 | 123 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 | 237 |
| Jan 29 | 29 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 123 | 245 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 |
| Jan 30 | 30 | 115 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 240 | 239 |
| Jan 31 | 31 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 120 | 121 | 246 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 239 |
| Feb 1 | 1 | 114 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 |
| Feb 2 | 2 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 | 241 |
| Feb 3 | 3 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 119 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 244 | 243 | 242 | 241 |
| Feb 4 | 4 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 243 | 242 |
| Feb 5 | 5 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 242 |
| Feb 6 | 6 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 118 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 |
| Feb 7 | 7 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 |
| Feb 8 | 8 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 |
| Feb 9 | 9 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 251 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 |
| Feb 10 | 10 | 109 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 |
| Feb 11 | 11 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 252 | 251 | 251 | 250 | 250 | 250 | 249 | 248 | 248 | 247 | 247 |
| Feb 12 | 12 | 108 | 109 | 109 | 110 | 110 | 110 | 111 | 112 | 112 | 113 | 113 | 252 | 252 | 251 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 |
| Feb 13 | 13 | 108 | 108 | 109 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 249 | 248 |
| Feb 14 | 14 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 253 | 253 | 253 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 249 |
| Feb 15 | 15 | 107 | 107 | 107 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 111 | 254 | 253 | 253 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 249 |
| Feb 16 | 16 | 106 | 107 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 111 | 254 | 254 | 254 | 253 | 253 | 253 | 252 | 252 | 251 | 251 | 250 |
| Feb 17 | 17 | 106 | 106 | 106 | 107 | 107 | 107 | 108 | 108 | 109 | 109 | 110 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 | 251 |
| Feb 18 | 18 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 109 | 255 | 255 | 255 | 255 | 254 | 254 | 253 | 253 | 253 | 252 | 252 |
| Feb 19 | 19 | 105 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 107 | 108 | 108 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
| | | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Jan | 1 | 135 | 137 | 138 | 141 | 143 | 146 | 149 | 154 | 159 | 167 | ### | 225 | 224 | 222 | 220 | 217 | 214 | 211 | 207 | 202 | 194 | ### |
| Jan | 2 | 135 | 136 | 138 | 140 | 143 | 146 | 149 | 153 | 158 | 166 | ### | 226 | 224 | 222 | 220 | 217 | 215 | 211 | 207 | 202 | 195 | ### |
| Jan | 3 | 134 | 136 | 138 | 140 | 143 | 145 | 149 | 153 | 158 | 165 | ### | 226 | 224 | 222 | 220 | 218 | 215 | 212 | 208 | 203 | 196 | ### |
| Jan | 4 | 134 | 136 | 138 | 140 | 142 | 145 | 148 | 152 | 157 | 164 | ### | 226 | 225 | 223 | 221 | 218 | 215 | 212 | 208 | 204 | 197 | ### |
| Jan | 5 | 134 | 135 | 137 | 139 | 142 | 145 | 148 | 152 | 156 | 163 | ### | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 209 | 204 | 198 | 185 |
| Jan | 6 | 133 | 135 | 137 | 139 | 141 | 144 | 147 | 151 | 156 | 162 | 175 | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 210 | 205 | 199 | 188 |
| Jan | 7 | 133 | 135 | 137 | 139 | 141 | 144 | 147 | 150 | 155 | 161 | 172 | 227 | 226 | 224 | 222 | 219 | 217 | 214 | 210 | 206 | 200 | 190 |
| Jan | 8 | 133 | 134 | 136 | 138 | 141 | 143 | 146 | 150 | 154 | 160 | 170 | 227 | 226 | 224 | 222 | 220 | 217 | 214 | 211 | 207 | 201 | 192 |
| Jan | 9 | 133 | 134 | 136 | 138 | 140 | 143 | 146 | 149 | 153 | 159 | 168 | 228 | 226 | 225 | 223 | 220 | 218 | 215 | 212 | 207 | 202 | 194 |
| Jan | 10 | 132 | 134 | 135 | 137 | 140 | 142 | 145 | 148 | 153 | 158 | 166 | 228 | 227 | 225 | 223 | 221 | 218 | 216 | 212 | 208 | 203 | 195 |
| Jan | 11 | 132 | 133 | 135 | 137 | 139 | 142 | 144 | 148 | 152 | 157 | 165 | 229 | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 209 | 204 | 197 |
| Jan | 12 | 131 | 133 | 135 | 137 | 139 | 141 | 144 | 147 | 151 | 156 | 163 | 229 | 228 | 226 | 224 | 222 | 220 | 217 | 214 | 210 | 205 | 198 |
| Jan | 13 | 131 | 132 | 134 | 136 | 138 | 140 | 143 | 146 | 150 | 155 | 162 | 229 | 228 | 226 | 224 | 222 | 220 | 217 | 214 | 211 | 206 | 200 |
| Jan | 14 | 131 | 132 | 134 | 136 | 138 | 140 | 143 | 146 | 149 | 154 | 160 | 230 | 228 | 227 | 225 | 223 | 221 | 218 | 215 | 212 | 207 | 201 |
| Jan | 15 | 130 | 132 | 133 | 135 | 137 | 139 | 142 | 145 | 148 | 153 | 159 | 230 | 229 | 227 | 226 | 224 | 221 | 219 | 216 | 212 | 208 | 203 |
| Jan | 16 | 130 | 131 | 133 | 134 | 136 | 139 | 141 | 144 | 148 | 152 | 157 | 231 | 229 | 228 | 226 | 224 | 222 | 220 | 217 | 213 | 209 | 204 |
| Jan | 17 | 129 | 131 | 132 | 134 | 136 | 138 | 140 | 143 | 147 | 151 | 156 | 231 | 230 | 228 | 227 | 225 | 223 | 220 | 217 | 214 | 210 | 205 |
| Jan | 18 | 129 | 130 | 132 | 133 | 135 | 137 | 140 | 143 | 146 | 150 | 155 | 232 | 230 | 229 | 227 | 225 | 223 | 221 | 218 | 215 | 211 | 207 |
| Jan | 19 | 128 | 130 | 131 | 133 | 135 | 137 | 139 | 142 | 145 | 149 | 153 | 232 | 231 | 229 | 228 | 226 | 224 | 222 | 219 | 216 | 212 | 208 |
| Jan | 20 | 128 | 129 | 131 | 132 | 134 | 136 | 138 | 141 | 144 | 148 | 152 | 233 | 232 | 230 | 228 | 227 | 225 | 222 | 220 | 217 | 213 | 209 |
| Jan | 21 | 127 | 128 | 130 | 132 | 133 | 135 | 138 | 140 | 143 | 147 | 151 | 233 | 232 | 231 | 229 | 227 | 225 | 223 | 221 | 218 | 214 | 210 |
| Jan | 22 | 127 | 128 | 129 | 131 | 133 | 135 | 137 | 139 | 142 | 146 | 150 | 234 | 233 | 231 | 230 | 228 | 226 | 224 | 222 | 219 | 216 | 212 |
| Jan | 23 | 126 | 127 | 129 | 130 | 132 | 134 | 136 | 138 | 141 | 144 | 148 | 234 | 233 | 232 | 230 | 229 | 227 | 225 | 222 | 220 | 217 | 213 |
| Jan | 24 | 126 | 127 | 128 | 130 | 131 | 133 | 135 | 138 | 140 | 143 | 147 | 235 | 234 | 232 | 231 | 229 | 228 | 226 | 223 | 221 | 218 | 214 |
| Jan | 25 | 125 | 126 | 128 | 129 | 131 | 132 | 134 | 137 | 139 | 142 | 146 | 236 | 234 | 233 | 232 | 230 | 228 | 226 | 224 | 222 | 219 | 215 |
| Jan | 26 | 124 | 126 | 127 | 128 | 130 | 132 | 134 | 136 | 138 | 141 | 145 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 225 | 223 | 220 | 216 |
| Jan | 27 | 124 | 125 | 126 | 128 | 129 | 131 | 133 | 135 | 137 | 140 | 144 | 237 | 236 | 234 | 233 | 232 | 230 | 228 | 226 | 224 | 221 | 218 |
| Jan | 28 | 123 | 124 | 126 | 127 | 128 | 130 | 132 | 134 | 136 | 139 | 142 | 237 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 225 | 222 | 219 |
| Jan | 29 | 123 | 124 | 125 | 126 | 128 | 129 | 131 | 133 | 135 | 138 | 141 | 238 | 237 | 236 | 234 | 233 | 231 | 230 | 228 | 226 | 223 | 220 |
| Jan | 30 | 122 | 123 | 124 | 126 | 127 | 129 | 130 | 132 | 134 | 137 | 140 | 239 | 238 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 224 | 221 |
| Jan | 31 | 121 | 122 | 124 | 125 | 126 | 128 | 129 | 131 | 133 | 136 | 139 | 239 | 238 | 237 | 236 | 235 | 233 | 231 | 230 | 228 | 225 | 222 |
| Feb | 1 | 121 | 122 | 123 | 124 | 125 | 127 | 129 | 130 | 132 | 135 | 138 | 240 | 239 | 238 | 237 | 235 | 234 | 232 | 230 | 228 | 226 | 224 |
| Feb | 2 | 120 | 121 | 122 | 123 | 125 | 126 | 128 | 130 | 132 | 134 | 136 | 241 | 240 | 238 | 237 | 236 | 235 | 233 | 231 | 229 | 227 | 225 |
| Feb | 3 | 119 | 120 | 122 | 123 | 124 | 125 | 127 | 129 | 131 | 133 | 135 | 241 | 240 | 239 | 238 | 237 | 235 | 234 | 232 | 230 | 228 | 226 |
| Feb | 4 | 119 | 120 | 121 | 122 | 123 | 125 | 126 | 128 | 130 | 132 | 134 | 242 | 241 | 240 | 239 | 238 | 236 | 235 | 233 | 231 | 229 | 227 |
| Feb | 5 | 118 | 119 | 120 | 121 | 122 | 124 | 125 | 127 | 129 | 131 | 133 | 242 | 242 | 241 | 240 | 238 | 237 | 236 | 234 | 232 | 230 | 228 |
| Feb | 6 | 118 | 118 | 119 | 120 | 122 | 123 | 124 | 126 | 128 | 130 | 132 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 235 | 233 | 232 | 229 |
| Feb | 7 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 125 | 127 | 128 | 131 | 244 | 243 | 242 | 241 | 240 | 239 | 238 | 236 | 234 | 233 | 231 |
| Feb | 8 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 124 | 126 | 127 | 129 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 237 | 235 | 234 | 232 |
| Feb | 9 | 115 | 116 | 117 | 118 | 119 | 120 | 122 | 123 | 125 | 126 | 128 | 245 | 244 | 244 | 243 | 242 | 241 | 239 | 238 | 236 | 235 | 233 |
| Feb | 10 | 115 | 116 | 116 | 117 | 118 | 119 | 121 | 122 | 124 | 125 | 127 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 239 | 237 | 236 | 234 |
| Feb | 11 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 123 | 124 | 126 | 247 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 237 | 235 |
| Feb | 12 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 122 | 123 | 125 | 247 | 247 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 236 |
| Feb | 13 | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 122 | 124 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 242 | 241 | 239 | 238 |
| Feb | 14 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 121 | 122 | 249 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 242 | 240 | 239 |
| Feb | 15 | 111 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 120 | 121 | 249 | 249 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 241 | 240 |
| Feb | 16 | 111 | 111 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 119 | 120 | 250 | 250 | 249 | 248 | 247 | 247 | 246 | 245 | 244 | 242 | 241 |
| Feb | 17 | 110 | 110 | 111 | 112 | 113 | 113 | 114 | 115 | 116 | 118 | 119 | 251 | 250 | 250 | 249 | 248 | 248 | 247 | 246 | 245 | 243 | 242 |
| Feb | 18 | 109 | 110 | 110 | 111 | 112 | 112 | 113 | 114 | 115 | 117 | 118 | 252 | 251 | 251 | 250 | 249 | 248 | 248 | 247 | 246 | 244 | 243 |
| Feb | 19 | 108 | 109 | 109 | 110 | 111 | 112 | 112 | 113 | 114 | 116 | 117 | 252 | 252 | 251 | 251 | 250 | 249 | 248 | 248 | 247 | 246 | 244 |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 |
| Feb 20 | 20 | 133 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 119 | 118 | 117 | 229 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 242 | 243 | 243 |
| Feb 21 | 21 | 131 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 118 | 117 | 117 | 230 | 232 | 234 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 244 |
| Feb 22 | 22 | 130 | 128 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 231 | 233 | 235 | 237 | 238 | 240 | 241 | 242 | 243 | 244 | 245 |
| Feb 23 | 23 | 129 | 127 | 125 | 123 | 122 | 120 | 119 | 118 | 117 | 116 | 115 | 233 | 235 | 236 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 246 |
| Feb 24 | 24 | 127 | 125 | 124 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 234 | 236 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 246 | 247 |
| Feb 25 | 25 | 126 | 124 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 235 | 237 | 239 | 240 | 242 | 243 | 244 | 245 | 246 | 247 | 247 |
| Feb 26 | 26 | 125 | 123 | 121 | 120 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 237 | 238 | 240 | 241 | 243 | 244 | 245 | 246 | 247 | 248 | 248 |
| Feb 27 | 27 | 123 | 122 | 120 | 119 | 117 | 116 | 115 | 114 | 113 | 112 | 112 | 238 | 240 | 241 | 242 | 244 | 245 | 246 | 247 | 248 | 248 | 249 |
| Feb 28 | 28 | 122 | 120 | 119 | 118 | 116 | 115 | 114 | 113 | 112 | 112 | 111 | 239 | 241 | 242 | 243 | 245 | 246 | 247 | 248 | 248 | 249 | 250 |
| Mar 1 | 1 | 121 | 119 | 118 | 117 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 240 | 242 | 243 | 245 | 246 | 247 | 248 | 248 | 249 | 250 | 251 |
| Mar 2 | 2 | 120 | 118 | 117 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 109 | 242 | 243 | 244 | 246 | 247 | 248 | 249 | 249 | 250 | 251 | 251 |
| Mar 3 | 3 | 118 | 117 | 116 | 114 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 243 | 244 | 246 | 247 | 248 | 249 | 249 | 250 | 251 | 252 | 252 |
| Mar 4 | 4 | 117 | 116 | 114 | 113 | 112 | 111 | 111 | 110 | 109 | 108 | 108 | 244 | 246 | 247 | 248 | 249 | 250 | 250 | 251 | 252 | 252 | 253 |
| Mar 5 | 5 | 116 | 114 | 113 | 112 | 111 | 110 | 110 | 109 | 108 | 108 | 107 | 245 | 247 | 248 | 249 | 250 | 251 | 251 | 252 | 253 | 253 | 254 |
| Mar 6 | 6 | 115 | 113 | 112 | 111 | 110 | 109 | 109 | 108 | 107 | 107 | 106 | 247 | 248 | 249 | 250 | 251 | 252 | 252 | 253 | 254 | 254 | 255 |
| Mar 7 | 7 | 113 | 112 | 111 | 110 | 109 | 108 | 108 | 107 | 106 | 106 | 105 | 248 | 249 | 250 | 251 | 252 | 253 | 253 | 254 | 254 | 255 | 256 |
| Mar 8 | 8 | 112 | 111 | 110 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 104 | 249 | 250 | 251 | 252 | 253 | 253 | 254 | 255 | 255 | 256 | 256 |
| Mar 9 | 9 | 111 | 110 | 109 | 108 | 107 | 107 | 106 | 105 | 105 | 104 | 104 | 250 | 251 | 252 | 253 | 254 | 254 | 255 | 256 | 256 | 257 | 257 |
| Mar 10 | 10 | 110 | 109 | 108 | 107 | 106 | 106 | 105 | 104 | 104 | 103 | 103 | 252 | 253 | 253 | 254 | 255 | 255 | 256 | 257 | 257 | 257 | 258 |
| Mar 11 | 11 | 108 | 107 | 107 | 106 | 105 | 105 | 104 | 103 | 103 | 103 | 102 | 253 | 254 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 259 |
| Mar 12 | 12 | 107 | 106 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 101 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 260 |
| Mar 13 | 13 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 255 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 |
| Mar 14 | 14 | 105 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 256 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 | 261 | 261 |
| Mar 15 | 15 | 104 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 258 | 258 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 262 | 262 |
| Mar 16 | 16 | 102 | 102 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 262 | 262 | 262 | 263 |
| Mar 17 | 17 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 98 | 97 | 260 | 260 | 261 | 261 | 262 | 262 | 262 | 263 | 263 | 263 | 264 |
| Mar 18 | 18 | 100 | 100 | 99 | 99 | 98 | 98 | 98 | 97 | 97 | 97 | 96 | 261 | 262 | 262 | 262 | 263 | 263 | 263 | 264 | 264 | 264 | 264 |
| Mar 19 | 19 | 99 | 98 | 98 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 262 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 |
| Mar 20 | 20 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 263 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 266 | 266 | 266 |
| Mar 21 | 21 | 97 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 267 | 267 |
| Mar 22 | 22 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Mar 23 | 23 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Mar 24 | 24 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Mar 25 | 25 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Mar 26 | 26 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 | 271 | 271 | 271 |
| Mar 27 | 27 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 272 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Mar 28 | 28 | 88 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 273 | 273 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Mar 29 | 29 | 87 | 87 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 274 | 274 | 274 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Mar 30 | 30 | 86 | 86 | 86 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 275 | 275 | 275 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Mar 31 | 31 | 85 | 85 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 276 | 276 | 276 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Apr 1 | 1 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 277 | 277 | 277 | 276 | 276 | 276 | 276 | 276 | 276 | 275 | 275 |
| Apr 2 | 2 | 83 | 83 | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 278 | 278 | 278 | 277 | 277 | 277 | 277 | 277 | 277 | 276 | 276 |
| Apr 3 | 3 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 277 | 277 | 277 | 277 |
| Apr 4 | 4 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 281 | 280 | 280 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 278 |
| Apr 5 | 5 | 79 | 80 | 80 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 82 | 282 | 281 | 281 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 278 |
| Apr 6 | 6 | 78 | 79 | 79 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 82 | 283 | 282 | 282 | 281 | 281 | 281 | 280 | 280 | 280 | 279 | 279 |
| Apr 7 | 7 | 77 | 78 | 78 | 79 | 79 | 79 | 80 | 80 | 80 | 81 | 81 | 284 | 283 | 283 | 282 | 282 | 281 | 281 | 281 | 280 | 280 | 280 |
| Apr 8 | 8 | 76 | 77 | 77 | 78 | 78 | 79 | 79 | 79 | 80 | 80 | 80 | 285 | 284 | 284 | 283 | 283 | 282 | 282 | 282 | 281 | 281 | 281 |
| Apr 9 | 9 | 75 | 76 | 76 | 77 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 286 | 285 | 285 | 284 | 284 | 283 | 283 | 282 | 282 | 282 | 281 |
| Apr 10 | 10 | 74 | 75 | 75 | 76 | 76 | 77 | 77 | 78 | 78 | 78 | 79 | 287 | 287 | 286 | 285 | 285 | 284 | 284 | 283 | 283 | 282 | 282 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| Feb 20 | 20 | 117 | 116 | 116 | 115 | 114 | 113 | 113 | 112 | 112 | 111 | 110 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 |
| Feb 21 | 21 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 |
| Feb 22 | 22 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 | 251 |
| Feb 23 | 23 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 109 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 | 251 | 252 |
| Feb 24 | 24 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 109 | 108 | 247 | 247 | 248 | 249 | 249 | 250 | 251 | 251 | 252 | 252 | 252 |
| Feb 25 | 25 | 113 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 108 | 108 | 247 | 248 | 249 | 250 | 250 | 251 | 251 | 252 | 252 | 253 | 253 |
| Feb 26 | 26 | 113 | 112 | 111 | 110 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 248 | 249 | 250 | 250 | 251 | 251 | 252 | 252 | 253 | 253 | 254 |
| Feb 27 | 27 | 112 | 111 | 110 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 106 | 249 | 250 | 250 | 251 | 252 | 252 | 253 | 253 | 253 | 254 | 254 |
| Feb 28 | 28 | 111 | 110 | 110 | 109 | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 250 | 251 | 251 | 252 | 252 | 253 | 253 | 254 | 254 | 255 | 255 |
| Mar 1 | 1 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 251 | 251 | 252 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 256 |
| Mar 2 | 2 | 109 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 251 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 255 | 256 | 256 |
| Mar 3 | 3 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 105 | 104 | 104 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 256 | 257 |
| Mar 4 | 4 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 104 | 103 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 256 | 257 | 257 | 257 |
| Mar 5 | 5 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 104 | 103 | 103 | 103 | 254 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 257 | 258 | 258 |
| Mar 6 | 6 | 106 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 103 | 102 | 102 | 255 | 255 | 256 | 256 | 257 | 257 | 257 | 258 | 258 | 258 | 259 |
| Mar 7 | 7 | 105 | 105 | 104 | 104 | 103 | 103 | 103 | 102 | 102 | 102 | 101 | 256 | 256 | 256 | 257 | 257 | 258 | 258 | 258 | 259 | 259 | 259 |
| Mar 8 | 8 | 104 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 101 | 101 | 101 | 256 | 257 | 257 | 258 | 258 | 258 | 259 | 259 | 259 | 260 | 260 |
| Mar 9 | 9 | 104 | 103 | 103 | 102 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 257 | 258 | 258 | 258 | 259 | 259 | 259 | 260 | 260 | 260 | 260 |
| Mar 10 | 10 | 103 | 102 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 100 | 100 | 258 | 258 | 259 | 259 | 259 | 260 | 260 | 260 | 261 | 261 | 261 |
| Mar 11 | 11 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 99 | 259 | 259 | 259 | 260 | 260 | 260 | 261 | 261 | 261 | 261 | 262 |
| Mar 12 | 12 | 101 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 99 | 99 | 98 | 260 | 260 | 260 | 261 | 261 | 261 | 261 | 262 | 262 | 262 | 262 |
| Mar 13 | 13 | 100 | 100 | 100 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 260 | 261 | 261 | 261 | 262 | 262 | 262 | 262 | 262 | 262 | 263 |
| Mar 14 | 14 | 100 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 98 | 97 | 97 | 261 | 261 | 262 | 262 | 262 | 262 | 263 | 263 | 263 | 263 | 264 |
| Mar 15 | 15 | 99 | 99 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 262 | 262 | 262 | 263 | 263 | 263 | 263 | 264 | 264 | 264 | 264 |
| Mar 16 | 16 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 263 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 264 | 265 | 265 |
| Mar 17 | 17 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 264 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 265 | 265 |
| Mar 18 | 18 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 95 | 95 | 264 | 265 | 265 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 |
| Mar 19 | 19 | 96 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 267 |
| Mar 20 | 20 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 93 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Mar 21 | 21 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 |
| Mar 22 | 22 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Mar 23 | 23 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Mar 24 | 24 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 |
| Mar 25 | 25 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Mar 26 | 26 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Mar 27 | 27 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Mar 28 | 28 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Mar 29 | 29 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Mar 30 | 30 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 274 | 274 | 274 | 274 | 274 | 273 | 273 | 273 | 273 | 273 | 273 |
| Mar 31 | 31 | 86 | 86 | 86 | 86 | 86 | 87 | 87 | 87 | 87 | 87 | 87 | 275 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Apr 1 | 1 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Apr 2 | 2 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 276 | 276 | 276 | 276 | 276 | 275 | 275 | 275 | 275 | 275 | 275 |
| Apr 3 | 3 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 277 | 277 | 277 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 276 |
| Apr 4 | 4 | 83 | 83 | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 278 | 277 | 277 | 277 | 277 | 277 | 277 | 277 | 276 | 276 | 276 |
| Apr 5 | 5 | 82 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 278 | 278 | 278 | 278 | 278 | 277 | 277 | 277 | 277 | 277 | 277 |
| Apr 6 | 6 | 82 | 82 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 83 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 278 | 278 | 278 | 277 |
| Apr 7 | 7 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 83 | 280 | 280 | 279 | 279 | 279 | 279 | 279 | 278 | 278 | 278 | 278 |
| Apr 8 | 8 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 281 | 280 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 279 | 279 |
| Apr 9 | 9 | 79 | 80 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 81 | 281 | 281 | 281 | 281 | 280 | 280 | 280 | 280 | 280 | 279 | 279 |
| Apr 10 | 10 | 79 | 79 | 79 | 79 | 80 | 80 | 80 | 80 | 80 | 81 | 81 | 282 | 282 | 282 | 281 | 281 | 281 | 281 | 280 | 280 | 280 | 280 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | Sunrise | | | | | | Latitude North | | | | Sunset | | | | | | | |
|-----|----|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| Feb | 20 | 110 | 110 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 250 | 251 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 256 | 256 |
| Feb | 21 | 110 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 251 | 252 | 252 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 257 |
| Feb | 22 | 109 | 108 | 108 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 103 | 251 | 252 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 257 | 257 |
| Feb | 23 | 109 | 108 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 252 | 253 | 253 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 257 |
| Feb | 24 | 108 | 107 | 107 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 103 | 252 | 253 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 258 | 258 |
| Feb | 25 | 108 | 107 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 253 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 258 |
| Feb | 26 | 107 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 254 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 258 | 259 |
| Feb | 27 | 106 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 101 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 259 |
| Feb | 28 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 101 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 259 | 260 |
| Mar | 1 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 101 | 100 | 256 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 259 | 260 | 260 |
| Mar | 2 | 104 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 | 261 |
| Mar | 3 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 257 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 | 261 | 261 |
| Mar | 4 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 261 |
| Mar | 5 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 99 | 258 | 259 | 259 | 260 | 260 | 260 | 261 | 261 | 261 | 262 | 262 |
| Mar | 6 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 259 | 259 | 260 | 260 | 260 | 261 | 261 | 262 | 262 | 262 | 262 |
| Mar | 7 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 98 | 98 | 98 | 98 | 259 | 260 | 260 | 261 | 261 | 261 | 262 | 262 | 262 | 263 | 263 |
| Mar | 8 | 101 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 98 | 97 | 97 | 260 | 260 | 261 | 261 | 262 | 262 | 262 | 262 | 262 | 263 | 263 |
| Mar | 9 | 100 | 100 | 99 | 99 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 260 | 261 | 261 | 262 | 262 | 262 | 263 | 263 | 263 | 263 | 264 |
| Mar | 10 | 100 | 99 | 99 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 261 | 261 | 262 | 262 | 263 | 263 | 263 | 263 | 264 | 264 | 264 |
| Mar | 11 | 99 | 99 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 262 | 262 | 262 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 265 |
| Mar | 12 | 98 | 98 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 262 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 |
| Mar | 13 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 266 |
| Mar | 14 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 266 | 266 | 266 |
| Mar | 15 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 264 | 264 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 |
| Mar | 16 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 |
| Mar | 17 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 265 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 |
| Mar | 18 | 95 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | 268 |
| Mar | 19 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 |
| Mar | 20 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 269 | 269 |
| Mar | 21 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 268 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 |
| Mar | 22 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 |
| Mar | 23 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Mar | 24 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 |
| Mar | 25 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 270 | 270 | 270 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Mar | 26 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Mar | 27 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Mar | 28 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Mar | 29 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Mar | 30 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Mar | 31 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Apr | 1 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 275 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Apr | 2 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Apr | 3 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 276 | 276 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Apr | 4 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 275 | 275 |
| Apr | 5 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 277 | 277 | 277 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 276 |
| Apr | 6 | 83 | 83 | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 277 | 277 | 277 | 277 | 277 | 277 | 277 | 277 | 276 | 276 | 276 |
| Apr | 7 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 278 | 278 | 278 | 277 | 277 | 277 | 277 | 277 | 277 | 277 | 277 |
| Apr | 8 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 279 | 278 | 278 | 278 | 278 | 278 | 278 | 277 | 277 | 277 | 277 |
| Apr | 9 | 81 | 82 | 82 | 82 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 278 | 278 | 278 | 278 |
| Apr | 10 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 280 | 280 | 279 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 278 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 |
| Feb 20 | 20 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 101 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | |
| Feb 21 | 21 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | |
| Feb 22 | 22 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | |
| Feb 23 | 23 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | |
| Feb 24 | 24 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | |
| Feb 25 | 25 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 | |
| Feb 26 | 26 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | |
| Feb 27 | 27 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | |
| Feb 28 | 28 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | |
| Mar 1 | 1 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | |
| Mar 2 | 2 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 263 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | |
| Mar 3 | 3 | 97 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | |
| Mar 4 | 4 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | |
| Mar 5 | 5 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | |
| Mar 6 | 6 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | |
| Mar 7 | 7 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 265 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | |
| Mar 8 | 8 | 95 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | |
| Mar 9 | 9 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | |
| Mar 10 | 10 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | |
| Mar 11 | 11 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | |
| Mar 12 | 12 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | |
| Mar 13 | 13 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 269 | |
| Mar 14 | 14 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | |
| Mar 15 | 15 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | |
| Mar 16 | 16 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | |
| Mar 17 | 17 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | |
| Mar 18 | 18 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 | 271 | |
| Mar 19 | 19 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 270 | 270 | 270 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | |
| Mar 20 | 20 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | |
| Mar 21 | 21 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | |
| Mar 22 | 22 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | |
| Mar 23 | 23 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 | |
| Mar 24 | 24 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 274 | |
| Mar 25 | 25 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | |
| Mar 26 | 26 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | |
| Mar 27 | 27 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 86 | 273 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | |
| Mar 28 | 28 | 87 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 274 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 275 | |
| Mar 29 | 29 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | |
| Mar 30 | 30 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | |
| Mar 31 | 31 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | 276 | 276 | 277 | |
| Apr 1 | 1 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 83 | 275 | 276 | 276 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | |
| Apr 2 | 2 | 85 | 84 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 276 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | 277 | 278 | |
| Apr 3 | 3 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 82 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | |
| Apr 4 | 4 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 277 | 277 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 278 | 278 | |
| Apr 5 | 5 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 278 | 278 | 279 | 279 | |
| Apr 6 | 6 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 82 | 81 | 277 | 277 | 278 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | |
| Apr 7 | 7 | 83 | 83 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 278 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | 280 | 280 | |
| Apr 8 | 8 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | |
| Apr 9 | 9 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 278 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 280 | 280 | 281 | |
| Apr 10 | 10 | 82 | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 79 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | Latitude South | | | | | Latitude South | | | | | Latitude South | | | | | | |
| | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| Feb 20 | 101 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 104 | 104 | 259 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 257 | 257 | 257 |
| Feb 21 | 101 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 103 | 103 | 103 | 260 | 260 | 259 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 257 |
| Feb 22 | 100 | 100 | 101 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 103 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 258 | 258 | 258 |
| Feb 23 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 261 | 260 | 260 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | 258 |
| Feb 24 | 99 | 100 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 102 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 260 | 260 | 259 | 259 |
| Feb 25 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 259 |
| Feb 26 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 101 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 261 | 261 | 260 | 260 |
| Feb 27 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 261 |
| Feb 28 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 263 | 263 | 263 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 |
| Mar 1 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 262 | 262 | 262 | 262 |
| Mar 2 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 264 | 264 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 262 |
| Mar 3 | 96 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 98 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 263 | 263 | 263 | 263 |
| Mar 4 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 |
| Mar 5 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 264 | 264 | 264 |
| Mar 6 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 96 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 |
| Mar 7 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 265 | 265 |
| Mar 8 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 95 | 95 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| Mar 9 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Mar 10 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Mar 11 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Mar 12 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Mar 13 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Mar 14 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 | 270 |
| Mar 15 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Mar 16 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 | 271 | 271 |
| Mar 17 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 270 | 270 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 272 |
| Mar 18 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 |
| Mar 19 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 |
| Mar 20 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 |
| Mar 21 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 |
| Mar 22 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 273 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 275 |
| Mar 23 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 85 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 |
| Mar 24 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 274 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 276 | 276 |
| Mar 25 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 84 | 84 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 276 |
| Mar 26 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 274 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | 277 | 277 |
| Mar 27 | 86 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 278 |
| Mar 28 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 275 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | 278 | 278 |
| Mar 29 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 82 | 82 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 278 | 278 | 278 | 279 |
| Mar 30 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 276 | 276 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 280 |
| Mar 31 | 84 | 84 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 80 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 280 | 280 |
| Apr 1 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 80 | 80 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 281 |
| Apr 2 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 79 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 281 | 281 |
| Apr 3 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 79 | 79 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 282 |
| Apr 4 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 78 | 278 | 279 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 282 | 283 |
| Apr 5 | 82 | 81 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 78 | 77 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 281 | 282 | 283 | 283 |
| Apr 6 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 79 | 78 | 77 | 77 | 279 | 280 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 |
| Apr 7 | 81 | 80 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 280 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 |
| Apr 8 | 80 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 280 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 |
| Apr 9 | 80 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 286 |
| Apr 10 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 74 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
| | | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Feb 20 | 20 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 257 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 254 | 253 |
| Feb 21 | 21 | 103 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 |
| Feb 22 | 22 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 258 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 255 |
| Feb 23 | 23 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 104 | 105 | 105 | 258 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 | 256 | 255 |
| Feb 24 | 24 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 |
| Feb 25 | 25 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 104 | 259 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 |
| Feb 26 | 26 | 101 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 259 | 258 | 258 | 258 |
| Feb 27 | 27 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 261 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 259 | 258 |
| Feb 28 | 28 | 99 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 102 | 261 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 260 | 259 | 259 |
| Mar 1 | 1 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 100 | 101 | 101 | 262 | 262 | 262 | 261 | 261 | 261 | 261 | 261 | 260 | 260 | 260 |
| Mar 2 | 2 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 261 |
| Mar 3 | 3 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 263 | 263 | 263 | 263 | 263 | 262 | 262 | 262 | 262 | 262 | 261 |
| Mar 4 | 4 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 98 | 99 | 264 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 262 | 262 |
| Mar 5 | 5 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 263 | 263 | 263 | 263 |
| Mar 6 | 6 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 265 | 265 | 265 | 265 | 264 | 264 | 264 | 264 | 264 | 264 | 264 |
| Mar 7 | 7 | 95 | 95 | 95 | 95 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 |
| Mar 8 | 8 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 265 |
| Mar 9 | 9 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 95 | 95 | 267 | 267 | 267 | 267 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| Mar 10 | 10 | 93 | 93 | 93 | 93 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Mar 11 | 11 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Mar 12 | 12 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 268 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 |
| Mar 13 | 13 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Mar 14 | 14 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Mar 15 | 15 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Mar 16 | 16 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 |
| Mar 17 | 17 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Mar 18 | 18 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 272 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Mar 19 | 19 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 |
| Mar 20 | 20 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 275 | 275 |
| Mar 21 | 21 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 275 | 275 | 276 |
| Mar 22 | 22 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 275 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | 276 |
| Mar 23 | 23 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 275 | 275 | 276 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 277 |
| Mar 24 | 24 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | 277 | 278 | 278 |
| Mar 25 | 25 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 276 | 277 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 |
| Mar 26 | 26 | 84 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 277 | 277 | 277 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 280 |
| Mar 27 | 27 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 80 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | 280 | 280 | 280 |
| Mar 28 | 28 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 278 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 280 | 281 | 281 |
| Mar 29 | 29 | 82 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 80 | 79 | 79 | 279 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 281 | 282 | 282 |
| Mar 30 | 30 | 81 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 79 | 78 | 78 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | 282 | 282 | 282 | 283 |
| Mar 31 | 31 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 280 | 280 | 281 | 281 | 281 | 282 | 282 | 282 | 283 | 283 | 284 |
| Apr 1 | 1 | 80 | 80 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 77 | 76 | 281 | 281 | 281 | 282 | 282 | 282 | 283 | 283 | 283 | 284 | 284 |
| Apr 2 | 2 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 281 | 282 | 282 | 282 | 283 | 283 | 283 | 284 | 284 | 285 | 285 |
| Apr 3 | 3 | 79 | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 75 | 75 | 282 | 282 | 283 | 283 | 283 | 284 | 284 | 284 | 285 | 285 | 286 |
| Apr 4 | 4 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 74 | 283 | 283 | 283 | 284 | 284 | 284 | 285 | 285 | 286 | 286 | 287 |
| Apr 5 | 5 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 283 | 283 | 284 | 284 | 285 | 285 | 285 | 286 | 286 | 287 | 288 |
| Apr 6 | 6 | 77 | 77 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 73 | 72 | 284 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 288 |
| Apr 7 | 7 | 76 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 72 | 284 | 285 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 289 | 289 |
| Apr 8 | 8 | 76 | 75 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 71 | 71 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 289 | 290 |
| Apr 9 | 9 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 71 | 70 | 286 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 289 | 290 | 291 |
| Apr 10 | 10 | 74 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 71 | 70 | 69 | 286 | 287 | 287 | 287 | 288 | 288 | 289 | 290 | 290 | 291 | 291 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Feb 20 | 108 | 108 | 109 | 109 | 110 | 111 | 112 | 112 | 113 | 114 | 116 | 253 | 253 | 252 | 252 | 251 | 250 | 249 | 249 | 248 | 247 | 246 |
| Feb 21 | 107 | 107 | 108 | 108 | 109 | 110 | 111 | 111 | 112 | 113 | 114 | 254 | 253 | 253 | 252 | 252 | 251 | 250 | 250 | 249 | 248 | 247 |
| Feb 22 | 106 | 107 | 107 | 108 | 108 | 109 | 110 | 110 | 111 | 112 | 113 | 255 | 254 | 254 | 253 | 253 | 252 | 251 | 251 | 250 | 249 | 248 |
| Feb 23 | 105 | 106 | 106 | 107 | 107 | 108 | 109 | 109 | 110 | 111 | 112 | 255 | 255 | 255 | 254 | 253 | 253 | 252 | 252 | 251 | 250 | 249 |
| Feb 24 | 105 | 105 | 105 | 106 | 107 | 107 | 108 | 108 | 109 | 110 | 111 | 256 | 256 | 255 | 255 | 254 | 254 | 253 | 253 | 252 | 251 | 250 |
| Feb 25 | 104 | 104 | 105 | 105 | 106 | 106 | 107 | 107 | 108 | 109 | 110 | 257 | 257 | 256 | 256 | 255 | 255 | 254 | 254 | 253 | 252 | 251 |
| Feb 26 | 103 | 103 | 104 | 104 | 105 | 105 | 106 | 106 | 107 | 108 | 109 | 258 | 257 | 257 | 257 | 256 | 256 | 255 | 254 | 254 | 253 | 252 |
| Feb 27 | 102 | 103 | 103 | 103 | 104 | 104 | 105 | 106 | 106 | 107 | 108 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 255 | 255 | 254 | 254 |
| Feb 28 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 105 | 105 | 106 | 106 | 259 | 259 | 259 | 258 | 258 | 257 | 257 | 256 | 256 | 255 | 255 |
| Mar 1 | 101 | 101 | 101 | 102 | 102 | 103 | 103 | 104 | 104 | 105 | 105 | 260 | 260 | 259 | 259 | 259 | 258 | 258 | 257 | 257 | 256 | 256 |
| Mar 2 | 100 | 100 | 101 | 101 | 101 | 102 | 102 | 103 | 103 | 104 | 104 | 261 | 260 | 260 | 260 | 260 | 259 | 259 | 258 | 258 | 257 | 257 |
| Mar 3 | 99 | 100 | 100 | 100 | 100 | 101 | 101 | 102 | 102 | 103 | 103 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 259 | 259 | 259 | 258 |
| Mar 4 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 101 | 101 | 101 | 102 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 260 | 260 | 260 | 259 |
| Mar 5 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 100 | 100 | 100 | 101 | 263 | 263 | 263 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 260 |
| Mar 6 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 100 | 264 | 264 | 264 | 263 | 263 | 263 | 263 | 262 | 262 | 262 | 262 |
| Mar 7 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 265 | 264 | 264 | 264 | 264 | 264 | 264 | 263 | 263 | 263 | 263 |
| Mar 8 | 95 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 264 | 264 | 264 | 264 |
| Mar 9 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 96 | 96 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 265 | 265 | 265 | 265 |
| Mar 10 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 95 | 95 | 95 | 95 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 266 | 266 | 266 | 266 |
| Mar 11 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 94 | 94 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 267 | 267 | 267 | 267 |
| Mar 12 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 93 | 93 | 269 | 269 | 269 | 269 | 269 | 269 | 268 | 268 | 268 | 268 | 268 |
| Mar 13 | 91 | 91 | 91 | 91 | 91 | 91 | 92 | 92 | 92 | 92 | 92 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 | 270 |
| Mar 14 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 | 271 |
| Mar 15 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 | 272 |
| Mar 16 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 | 273 |
| Mar 17 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 272 | 273 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 |
| Mar 18 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 |
| Mar 19 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 277 |
| Mar 20 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 83 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 277 | 277 | 277 | 278 |
| Mar 21 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 278 | 278 | 278 | 279 |
| Mar 22 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 276 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 280 | 280 |
| Mar 23 | 84 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 80 | 80 | 277 | 278 | 278 | 278 | 278 | 279 | 279 | 280 | 280 | 281 | 281 |
| Mar 24 | 83 | 82 | 82 | 82 | 82 | 81 | 81 | 80 | 80 | 79 | 79 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 281 | 281 | 282 | 282 |
| Mar 25 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 79 | 79 | 78 | 78 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 284 |
| Mar 26 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 76 | 280 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 285 |
| Mar 27 | 80 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 75 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 286 |
| Mar 28 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 74 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 287 |
| Mar 29 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 282 | 282 | 283 | 283 | 284 | 285 | 285 | 286 | 287 | 287 | 288 |
| Mar 30 | 78 | 78 | 77 | 77 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 287 | 288 | 289 | 289 |
| Mar 31 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 72 | 71 | 71 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 289 | 290 | 291 |
| Apr 1 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 71 | 70 | 69 | 284 | 285 | 285 | 286 | 287 | 287 | 288 | 289 | 290 | 291 | 292 |
| Apr 2 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 71 | 70 | 69 | 68 | 285 | 286 | 286 | 287 | 288 | 288 | 289 | 290 | 291 | 292 | 293 |
| Apr 3 | 75 | 74 | 74 | 73 | 72 | 72 | 71 | 70 | 69 | 68 | 67 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 291 | 292 | 293 | 294 |
| Apr 4 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 69 | 68 | 67 | 66 | 287 | 287 | 288 | 289 | 289 | 290 | 291 | 292 | 293 | 294 | 296 |
| Apr 5 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 68 | 67 | 66 | 64 | 288 | 288 | 289 | 290 | 290 | 291 | 292 | 293 | 294 | 295 | 297 |
| Apr 6 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 67 | 66 | 65 | 63 | 288 | 289 | 290 | 290 | 291 | 292 | 293 | 294 | 295 | 297 | 298 |
| Apr 7 | 72 | 71 | 70 | 70 | 69 | 68 | 67 | 66 | 65 | 63 | 62 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 298 | 299 |
| Apr 8 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 62 | 61 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 298 | 299 | 301 |
| Apr 9 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 62 | 61 | 59 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 299 | 300 | 302 |
| Apr 10 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 61 | 60 | 58 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 300 | 301 | 303 |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | | Latitude North | | | | | Sunset | | | | | |
|-----|----|----------------|----|----|----|----|---------|----|----|----|----|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 |
| Apr | 11 | 73 | 73 | 74 | 75 | 75 | 76 | 76 | 77 | 77 | 78 | 78 | 288 | 288 | 287 | 286 | 286 | 285 | 285 | 284 | 284 | 283 | 283 |
| Apr | 12 | 72 | 72 | 73 | 74 | 74 | 75 | 75 | 76 | 76 | 77 | 77 | 290 | 289 | 288 | 287 | 286 | 286 | 285 | 285 | 284 | 284 | 284 |
| Apr | 13 | 70 | 71 | 72 | 73 | 74 | 74 | 75 | 75 | 76 | 76 | 76 | 291 | 290 | 289 | 288 | 287 | 287 | 286 | 286 | 285 | 285 | 284 |
| Apr | 14 | 69 | 70 | 71 | 72 | 73 | 73 | 74 | 74 | 75 | 75 | 76 | 292 | 291 | 290 | 289 | 288 | 288 | 287 | 286 | 286 | 286 | 285 |
| Apr | 15 | 68 | 69 | 70 | 71 | 72 | 72 | 73 | 74 | 74 | 74 | 75 | 293 | 292 | 291 | 290 | 289 | 289 | 288 | 287 | 287 | 286 | 286 |
| Apr | 16 | 67 | 68 | 69 | 70 | 71 | 71 | 72 | 73 | 73 | 74 | 74 | 294 | 293 | 292 | 291 | 290 | 289 | 289 | 288 | 288 | 287 | 287 |
| Apr | 17 | 66 | 67 | 68 | 69 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 295 | 294 | 293 | 292 | 291 | 290 | 290 | 289 | 288 | 288 | 287 |
| Apr | 18 | 65 | 66 | 67 | 68 | 69 | 70 | 70 | 71 | 72 | 72 | 73 | 296 | 295 | 294 | 293 | 292 | 291 | 290 | 290 | 289 | 289 | 288 |
| Apr | 19 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 70 | 71 | 71 | 72 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 | 290 | 289 | 289 |
| Apr | 20 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 71 | 71 | 298 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 | 290 | 289 |
| Apr | 21 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 71 | 300 | 298 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 | 290 |
| Apr | 22 | 60 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 301 | 299 | 298 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 |
| Apr | 23 | 59 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 302 | 300 | 299 | 298 | 296 | 295 | 294 | 294 | 293 | 292 | 291 |
| Apr | 24 | 58 | 60 | 61 | 62 | 64 | 65 | 66 | 66 | 67 | 68 | 69 | 303 | 301 | 300 | 298 | 297 | 296 | 295 | 294 | 294 | 293 | 292 |
| Apr | 25 | 57 | 59 | 60 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 68 | 304 | 302 | 301 | 299 | 298 | 297 | 296 | 295 | 294 | 294 | 293 |
| Apr | 26 | 56 | 58 | 59 | 61 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 305 | 303 | 302 | 300 | 299 | 298 | 297 | 296 | 295 | 294 | 294 |
| Apr | 27 | 55 | 57 | 58 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 66 | 306 | 304 | 303 | 301 | 300 | 299 | 298 | 297 | 296 | 295 | 294 |
| Apr | 28 | 54 | 56 | 57 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 307 | 305 | 304 | 302 | 301 | 300 | 298 | 297 | 297 | 296 | 295 |
| Apr | 29 | 53 | 55 | 56 | 58 | 59 | 60 | 62 | 63 | 63 | 64 | 65 | 308 | 306 | 305 | 303 | 302 | 300 | 299 | 298 | 297 | 296 | 296 |
| Apr | 30 | 52 | 54 | 55 | 57 | 58 | 60 | 61 | 62 | 63 | 64 | 64 | 309 | 307 | 306 | 304 | 303 | 301 | 300 | 299 | 298 | 297 | 296 |
| May | 1 | 51 | 53 | 54 | 56 | 57 | 59 | 60 | 61 | 62 | 63 | 64 | 311 | 308 | 307 | 305 | 303 | 302 | 301 | 300 | 299 | 298 | 297 |
| May | 2 | 49 | 52 | 53 | 55 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 312 | 309 | 307 | 306 | 304 | 303 | 302 | 300 | 299 | 298 | 297 |
| May | 3 | 48 | 51 | 53 | 54 | 56 | 57 | 58 | 60 | 61 | 62 | 63 | 313 | 310 | 308 | 307 | 305 | 304 | 302 | 301 | 300 | 299 | 298 |
| May | 4 | 47 | 50 | 52 | 53 | 55 | 56 | 58 | 59 | 60 | 61 | 62 | 314 | 312 | 309 | 308 | 306 | 304 | 303 | 302 | 301 | 300 | 299 |
| May | 5 | 46 | 48 | 51 | 52 | 54 | 56 | 57 | 58 | 59 | 60 | 61 | 315 | 313 | 310 | 308 | 307 | 305 | 304 | 303 | 301 | 300 | 299 |
| May | 6 | 45 | 47 | 50 | 52 | 53 | 55 | 56 | 57 | 59 | 60 | 61 | 316 | 314 | 311 | 309 | 308 | 306 | 305 | 303 | 302 | 301 | 300 |
| May | 7 | 44 | 46 | 49 | 51 | 52 | 54 | 55 | 57 | 58 | 59 | 60 | 317 | 315 | 312 | 310 | 308 | 307 | 305 | 304 | 303 | 302 | 301 |
| May | 8 | 43 | 45 | 48 | 50 | 52 | 53 | 55 | 56 | 57 | 58 | 59 | 318 | 316 | 313 | 311 | 309 | 307 | 306 | 305 | 303 | 302 | 301 |
| May | 9 | 42 | 44 | 47 | 49 | 51 | 53 | 54 | 55 | 57 | 58 | 59 | 320 | 317 | 314 | 312 | 310 | 308 | 307 | 305 | 304 | 303 | 302 |
| May | 10 | 40 | 43 | 46 | 48 | 50 | 52 | 53 | 55 | 56 | 57 | 58 | 321 | 318 | 315 | 313 | 311 | 309 | 307 | 306 | 305 | 303 | 302 |
| May | 11 | 39 | 42 | 45 | 47 | 49 | 51 | 53 | 54 | 55 | 57 | 58 | 322 | 319 | 316 | 314 | 312 | 310 | 308 | 307 | 305 | 304 | 303 |
| May | 12 | 38 | 41 | 44 | 46 | 48 | 50 | 52 | 53 | 55 | 56 | 57 | 323 | 320 | 317 | 314 | 312 | 310 | 309 | 307 | 306 | 305 | 304 |
| May | 13 | 37 | 40 | 43 | 46 | 48 | 50 | 51 | 53 | 54 | 55 | 56 | 324 | 321 | 318 | 315 | 313 | 311 | 309 | 308 | 307 | 305 | 304 |
| May | 14 | 36 | 39 | 42 | 45 | 47 | 49 | 51 | 52 | 53 | 55 | 56 | 325 | 322 | 319 | 316 | 314 | 312 | 310 | 309 | 307 | 306 | 305 |
| May | 15 | 35 | 38 | 41 | 44 | 46 | 48 | 50 | 51 | 53 | 54 | 55 | 326 | 323 | 320 | 317 | 315 | 313 | 311 | 309 | 308 | 306 | 305 |
| May | 16 | 34 | 37 | 40 | 43 | 45 | 47 | 49 | 51 | 52 | 54 | 55 | 328 | 324 | 321 | 318 | 315 | 313 | 311 | 310 | 308 | 307 | 306 |
| May | 17 | 32 | 36 | 39 | 42 | 45 | 47 | 49 | 50 | 52 | 53 | 54 | 329 | 325 | 321 | 319 | 316 | 314 | 312 | 310 | 309 | 307 | 306 |
| May | 18 | 31 | 35 | 39 | 41 | 44 | 46 | 48 | 50 | 51 | 53 | 54 | 330 | 326 | 322 | 319 | 317 | 315 | 313 | 311 | 309 | 308 | 307 |
| May | 19 | 30 | 34 | 38 | 41 | 43 | 45 | 47 | 49 | 51 | 52 | 53 | 331 | 327 | 323 | 320 | 318 | 315 | 313 | 312 | 310 | 309 | 307 |
| May | 20 | 29 | 33 | 37 | 40 | 42 | 45 | 47 | 48 | 50 | 51 | 53 | 332 | 328 | 324 | 321 | 318 | 316 | 314 | 312 | 311 | 309 | 308 |
| May | 21 | 28 | 32 | 36 | 39 | 42 | 44 | 46 | 48 | 49 | 51 | 52 | 333 | 329 | 325 | 322 | 319 | 317 | 315 | 313 | 311 | 310 | 308 |
| May | 22 | 27 | 31 | 35 | 38 | 41 | 43 | 45 | 47 | 49 | 50 | 52 | 335 | 330 | 326 | 322 | 320 | 317 | 315 | 313 | 312 | 310 | 309 |
| May | 23 | 25 | 30 | 34 | 38 | 40 | 43 | 45 | 47 | 48 | 50 | 51 | 336 | 331 | 327 | 323 | 320 | 318 | 316 | 314 | 312 | 311 | 309 |
| May | 24 | 24 | 29 | 33 | 37 | 40 | 42 | 44 | 46 | 48 | 49 | 51 | 337 | 332 | 327 | 324 | 321 | 319 | 316 | 314 | 313 | 311 | 310 |
| May | 25 | 23 | 28 | 33 | 36 | 39 | 41 | 44 | 46 | 47 | 49 | 50 | 338 | 333 | 328 | 325 | 322 | 319 | 317 | 315 | 313 | 311 | 310 |
| May | 26 | 22 | 27 | 32 | 35 | 38 | 41 | 43 | 45 | 47 | 49 | 50 | 340 | 334 | 329 | 325 | 322 | 320 | 317 | 315 | 314 | 312 | 310 |
| May | 27 | 20 | 26 | 31 | 35 | 38 | 40 | 43 | 45 | 46 | 48 | 50 | 341 | 335 | 330 | 326 | 323 | 320 | 318 | 316 | 314 | 312 | 311 |
| May | 28 | 19 | 25 | 30 | 34 | 37 | 40 | 42 | 44 | 46 | 48 | 49 | 342 | 336 | 331 | 327 | 324 | 321 | 318 | 316 | 314 | 313 | 311 |
| May | 29 | 18 | 24 | 29 | 33 | 36 | 39 | 42 | 44 | 46 | 47 | 49 | 344 | 337 | 331 | 327 | 324 | 321 | 319 | 317 | 315 | 313 | 312 |
| May | 30 | 16 | 23 | 29 | 33 | 36 | 39 | 41 | 43 | 45 | 47 | 48 | 345 | 338 | 332 | 328 | 325 | 322 | 319 | 317 | 315 | 314 | 312 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|----|----|----|---------|----|----|----|----|----|----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| Apr 11 | 80 | 80 | 81 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 82 | 280 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 279 | 279 | 278 |
| Apr 12 | 80 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 81 | 82 | 281 | 281 | 280 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 279 |
| Apr 13 | 79 | 79 | 80 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 282 | 281 | 281 | 281 | 280 | 280 | 280 | 280 | 280 | 279 | 279 |
| Apr 14 | 78 | 79 | 79 | 79 | 80 | 80 | 80 | 80 | 80 | 81 | 81 | 282 | 282 | 281 | 281 | 281 | 281 | 280 | 280 | 280 | 280 | 280 |
| Apr 15 | 78 | 78 | 79 | 79 | 79 | 79 | 80 | 80 | 80 | 80 | 80 | 283 | 282 | 282 | 282 | 281 | 281 | 281 | 281 | 280 | 280 | 280 |
| Apr 16 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 79 | 80 | 80 | 80 | 283 | 283 | 282 | 282 | 282 | 281 | 281 | 281 | 281 | 281 | 281 |
| Apr 17 | 77 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 79 | 79 | 79 | 284 | 283 | 283 | 283 | 282 | 282 | 282 | 281 | 281 | 281 | 281 |
| Apr 18 | 76 | 77 | 77 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 79 | 284 | 284 | 283 | 283 | 283 | 282 | 282 | 282 | 282 | 282 | 281 |
| Apr 19 | 76 | 76 | 77 | 77 | 77 | 78 | 78 | 78 | 78 | 78 | 79 | 285 | 284 | 284 | 283 | 283 | 283 | 283 | 282 | 282 | 282 | 282 |
| Apr 20 | 75 | 76 | 76 | 77 | 77 | 77 | 77 | 78 | 78 | 78 | 78 | 285 | 285 | 284 | 284 | 284 | 283 | 283 | 283 | 283 | 283 | 282 |
| Apr 21 | 75 | 75 | 76 | 76 | 76 | 77 | 77 | 77 | 77 | 78 | 78 | 286 | 285 | 285 | 284 | 284 | 284 | 283 | 283 | 283 | 283 | 283 |
| Apr 22 | 74 | 75 | 75 | 76 | 76 | 76 | 77 | 77 | 77 | 77 | 77 | 286 | 286 | 285 | 285 | 285 | 284 | 284 | 284 | 283 | 283 | 283 |
| Apr 23 | 74 | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 77 | 77 | 77 | 287 | 286 | 286 | 285 | 285 | 285 | 284 | 284 | 284 | 284 | 283 |
| Apr 24 | 73 | 74 | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 76 | 77 | 287 | 287 | 286 | 286 | 285 | 285 | 285 | 284 | 284 | 284 | 284 |
| Apr 25 | 73 | 73 | 74 | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 76 | 288 | 287 | 287 | 286 | 286 | 285 | 285 | 285 | 285 | 284 | 284 |
| Apr 26 | 72 | 73 | 73 | 74 | 74 | 75 | 75 | 75 | 75 | 76 | 76 | 289 | 288 | 287 | 287 | 286 | 286 | 286 | 285 | 285 | 285 | 284 |
| Apr 27 | 71 | 72 | 73 | 73 | 74 | 74 | 74 | 75 | 75 | 75 | 76 | 289 | 288 | 288 | 287 | 287 | 286 | 286 | 286 | 285 | 285 | 285 |
| Apr 28 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 74 | 75 | 75 | 75 | 290 | 289 | 288 | 288 | 287 | 287 | 286 | 286 | 286 | 285 | 285 |
| Apr 29 | 70 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 74 | 75 | 75 | 290 | 289 | 289 | 288 | 288 | 287 | 287 | 286 | 286 | 286 | 286 |
| Apr 30 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 74 | 74 | 291 | 290 | 289 | 289 | 288 | 288 | 287 | 287 | 286 | 286 | 286 |
| May 1 | 69 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 74 | 291 | 290 | 290 | 289 | 288 | 288 | 288 | 287 | 287 | 287 | 286 |
| May 2 | 69 | 70 | 70 | 71 | 72 | 72 | 72 | 73 | 73 | 73 | 74 | 291 | 291 | 290 | 289 | 289 | 288 | 288 | 288 | 287 | 287 | 287 |
| May 3 | 69 | 69 | 70 | 71 | 71 | 72 | 72 | 72 | 73 | 73 | 73 | 292 | 291 | 290 | 290 | 289 | 289 | 288 | 288 | 288 | 287 | 287 |
| May 4 | 68 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 72 | 73 | 73 | 292 | 292 | 291 | 290 | 290 | 289 | 289 | 288 | 288 | 288 | 287 |
| May 5 | 68 | 68 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 72 | 73 | 293 | 292 | 291 | 291 | 290 | 289 | 289 | 289 | 288 | 288 | 288 |
| May 6 | 67 | 68 | 69 | 69 | 70 | 71 | 71 | 71 | 72 | 72 | 72 | 293 | 292 | 292 | 291 | 290 | 290 | 289 | 289 | 289 | 288 | 288 |
| May 7 | 67 | 68 | 68 | 69 | 70 | 70 | 71 | 71 | 71 | 72 | 72 | 294 | 293 | 292 | 291 | 291 | 290 | 290 | 289 | 289 | 289 | 288 |
| May 8 | 66 | 67 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 71 | 72 | 294 | 293 | 292 | 292 | 291 | 291 | 290 | 290 | 289 | 289 | 289 |
| May 9 | 66 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 71 | 295 | 294 | 293 | 292 | 291 | 291 | 290 | 290 | 290 | 289 | 289 |
| May 10 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 70 | 70 | 71 | 71 | 295 | 294 | 293 | 293 | 292 | 291 | 291 | 290 | 290 | 289 | 289 |
| May 11 | 65 | 66 | 67 | 67 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 295 | 295 | 294 | 293 | 292 | 292 | 291 | 291 | 290 | 290 | 289 |
| May 12 | 65 | 65 | 66 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 296 | 295 | 294 | 293 | 293 | 292 | 291 | 291 | 290 | 290 | 290 |
| May 13 | 64 | 65 | 66 | 67 | 67 | 68 | 69 | 69 | 70 | 70 | 70 | 296 | 295 | 294 | 294 | 293 | 292 | 292 | 291 | 291 | 290 | 290 |
| May 14 | 64 | 65 | 66 | 66 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 297 | 296 | 295 | 294 | 293 | 293 | 292 | 292 | 291 | 291 | 290 |
| May 15 | 63 | 64 | 65 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 297 | 296 | 295 | 294 | 294 | 293 | 292 | 292 | 291 | 291 | 291 |
| May 16 | 63 | 64 | 65 | 66 | 66 | 67 | 68 | 68 | 69 | 69 | 69 | 297 | 296 | 295 | 295 | 294 | 293 | 293 | 292 | 292 | 291 | 291 |
| May 17 | 63 | 64 | 65 | 65 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 298 | 297 | 296 | 295 | 294 | 294 | 293 | 292 | 292 | 291 | 291 |
| May 18 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 68 | 68 | 69 | 69 | 298 | 297 | 296 | 295 | 294 | 294 | 293 | 293 | 292 | 292 | 291 |
| May 19 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 67 | 68 | 68 | 69 | 299 | 297 | 296 | 296 | 295 | 294 | 293 | 293 | 292 | 292 | 292 |
| May 20 | 61 | 63 | 64 | 64 | 65 | 66 | 67 | 67 | 68 | 68 | 68 | 299 | 298 | 297 | 296 | 295 | 294 | 294 | 293 | 293 | 292 | 292 |
| May 21 | 61 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 67 | 68 | 68 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 293 | 293 | 292 | 292 |
| May 22 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 67 | 67 | 68 | 68 | 300 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 293 | 293 | 292 |
| May 23 | 60 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 67 | 67 | 68 | 300 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 293 | 293 | 293 |
| May 24 | 60 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 67 | 67 | 67 | 300 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 294 | 293 | 293 |
| May 25 | 60 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 67 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 293 | 293 |
| May 26 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 67 | 67 | 301 | 300 | 298 | 297 | 297 | 296 | 295 | 295 | 294 | 294 | 293 |
| May 27 | 59 | 60 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 301 | 300 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 294 | 293 |
| May 28 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 294 |
| May 29 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 66 | 302 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 294 | 294 |
| May 30 | 58 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 66 | 302 | 301 | 299 | 298 | 298 | 297 | 296 | 295 | 295 | 294 | 294 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | Sunrise | | | | | | Latitude North | | | | Sunset | | | | | | | |
|--------|--|----------------|----|----|----|---------|----|----|----|----|----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 |
| Apr 11 | | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 278 | 278 | 278 | 278 | 278 | 278 | 278 | 278 | 278 | 278 | 278 |
| Apr 12 | | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 |
| Apr 13 | | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 |
| Apr 14 | | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 279 | 279 | 279 | 279 |
| Apr 15 | | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 |
| Apr 16 | | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 281 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 |
| Apr 17 | | 79 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 280 | 280 | 280 | 281 |
| Apr 18 | | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 80 | 80 | 80 | 79 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |
| Apr 19 | | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 282 | 282 | 282 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |
| Apr 20 | | 78 | 78 | 78 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 |
| Apr 21 | | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 283 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 |
| Apr 22 | | 77 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 283 | 283 | 283 | 283 | 282 | 282 | 282 | 282 | 282 | 282 | 282 |
| Apr 23 | | 77 | 77 | 77 | 77 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| Apr 24 | | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 284 | 284 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| Apr 25 | | 76 | 76 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 284 | 284 | 284 | 284 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| Apr 26 | | 76 | 76 | 76 | 76 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 284 | 284 | 284 | 284 | 284 | 284 | 284 | 284 | 284 | 284 | 284 |
| Apr 27 | | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 285 | 285 | 284 | 284 | 284 | 284 | 284 | 284 | 284 | 284 | 284 |
| Apr 28 | | 75 | 75 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 285 | 285 | 285 | 285 | 285 | 284 | 284 | 284 | 284 | 284 | 284 |
| Apr 29 | | 75 | 75 | 75 | 75 | 75 | 76 | 76 | 76 | 76 | 76 | 76 | 286 | 285 | 285 | 285 | 285 | 285 | 285 | 285 | 285 | 285 | 285 |
| Apr 30 | | 74 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 286 | 286 | 285 | 285 | 285 | 285 | 285 | 285 | 285 | 285 | 285 |
| May 1 | | 74 | 74 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 286 | 286 | 286 | 286 | 286 | 285 | 285 | 285 | 285 | 285 | 285 |
| May 2 | | 74 | 74 | 74 | 74 | 74 | 75 | 75 | 75 | 75 | 75 | 75 | 287 | 286 | 286 | 286 | 286 | 286 | 286 | 286 | 285 | 285 | 285 |
| May 3 | | 73 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 75 | 75 | 75 | 287 | 287 | 286 | 286 | 286 | 286 | 286 | 286 | 286 | 286 | 286 |
| May 4 | | 73 | 73 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 287 | 287 | 287 | 287 | 286 | 286 | 286 | 286 | 286 | 286 | 286 |
| May 5 | | 73 | 73 | 73 | 73 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 288 | 287 | 287 | 287 | 287 | 287 | 287 | 286 | 286 | 286 | 286 |
| May 6 | | 72 | 73 | 73 | 73 | 73 | 73 | 73 | 74 | 74 | 74 | 74 | 288 | 288 | 287 | 287 | 287 | 287 | 287 | 287 | 287 | 287 | 287 |
| May 7 | | 72 | 72 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 288 | 288 | 288 | 288 | 287 | 287 | 287 | 287 | 287 | 287 | 287 |
| May 8 | | 72 | 72 | 72 | 72 | 73 | 73 | 73 | 73 | 73 | 73 | 73 | 289 | 288 | 288 | 288 | 288 | 288 | 287 | 287 | 287 | 287 | 287 |
| May 9 | | 71 | 72 | 72 | 72 | 72 | 72 | 73 | 73 | 73 | 73 | 73 | 289 | 289 | 288 | 288 | 288 | 288 | 288 | 288 | 287 | 287 | 287 |
| May 10 | | 71 | 71 | 72 | 72 | 72 | 72 | 72 | 72 | 73 | 73 | 73 | 289 | 289 | 289 | 288 | 288 | 288 | 288 | 288 | 288 | 288 | 288 |
| May 11 | | 71 | 71 | 71 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 289 | 289 | 289 | 289 | 288 | 288 | 288 | 288 | 288 | 288 | 288 |
| May 12 | | 71 | 71 | 71 | 71 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 290 | 289 | 289 | 289 | 289 | 289 | 288 | 288 | 288 | 288 | 288 |
| May 13 | | 70 | 71 | 71 | 71 | 71 | 71 | 72 | 72 | 72 | 72 | 72 | 290 | 290 | 289 | 289 | 289 | 289 | 289 | 289 | 289 | 288 | 288 |
| May 14 | | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 72 | 72 | 290 | 290 | 290 | 289 | 289 | 289 | 289 | 289 | 289 | 289 | 289 |
| May 15 | | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 291 | 290 | 290 | 290 | 290 | 289 | 289 | 289 | 289 | 289 | 289 |
| May 16 | | 69 | 70 | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 71 | 291 | 291 | 290 | 290 | 290 | 289 | 289 | 289 | 289 | 289 | 289 |
| May 17 | | 69 | 69 | 70 | 70 | 70 | 70 | 71 | 71 | 71 | 71 | 71 | 291 | 291 | 291 | 290 | 290 | 290 | 290 | 290 | 289 | 289 | 289 |
| May 18 | | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 71 | 71 | 71 | 291 | 291 | 291 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 |
| May 19 | | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 292 | 291 | 291 | 291 | 291 | 290 | 290 | 290 | 290 | 290 | 290 |
| May 20 | | 68 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 70 | 292 | 292 | 291 | 291 | 291 | 291 | 290 | 290 | 290 | 290 | 290 |
| May 21 | | 68 | 68 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 70 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 290 | 290 | 290 | 290 |
| May 22 | | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 70 | 70 | 70 | 70 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 291 | 290 | 290 |
| May 23 | | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 69 | 70 | 70 | 293 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 291 | 291 |
| May 24 | | 67 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 293 | 292 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 291 |
| May 25 | | 67 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 69 | 293 | 293 | 292 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 |
| May 26 | | 67 | 67 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 291 | 291 | 291 | 291 |
| May 27 | | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 291 | 291 | 291 |
| May 28 | | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 294 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 | 291 |
| May 29 | | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 69 | 294 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 | 292 |
| May 30 | | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 294 | 294 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
| | | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 |
| Apr 11 | 11 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 279 | 279 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | 282 | |
| Apr 12 | 12 | 81 | 81 | 80 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 78 | 280 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | 281 | 282 | |
| Apr 13 | 13 | 80 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 79 | 78 | 78 | 280 | 280 | 280 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | |
| Apr 14 | 14 | 80 | 80 | 80 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 280 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | 282 | 283 | |
| Apr 15 | 15 | 80 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 78 | 77 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | 282 | 283 | 283 | |
| Apr 16 | 16 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 77 | 77 | 281 | 281 | 281 | 282 | 282 | 282 | 282 | 283 | 283 | 284 | |
| Apr 17 | 17 | 79 | 79 | 79 | 78 | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 281 | 282 | 282 | 282 | 282 | 282 | 283 | 283 | 283 | 284 | |
| Apr 18 | 18 | 79 | 78 | 78 | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 282 | 282 | 282 | 282 | 283 | 283 | 283 | 283 | 284 | 284 | |
| Apr 19 | 19 | 78 | 78 | 78 | 78 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 282 | 282 | 283 | 283 | 283 | 283 | 283 | 284 | 284 | 285 | |
| Apr 20 | 20 | 78 | 78 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 282 | 283 | 283 | 283 | 283 | 284 | 284 | 284 | 284 | 285 | |
| Apr 21 | 21 | 78 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 76 | 75 | 75 | 283 | 283 | 283 | 283 | 284 | 284 | 284 | 285 | 285 | 286 | |
| Apr 22 | 22 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 283 | 283 | 284 | 284 | 284 | 285 | 285 | 285 | 285 | 286 | |
| Apr 23 | 23 | 77 | 77 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 284 | 284 | 284 | 284 | 284 | 285 | 285 | 285 | 286 | 286 | |
| Apr 24 | 24 | 76 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 74 | 284 | 284 | 284 | 284 | 285 | 285 | 285 | 286 | 286 | 287 | |
| Apr 25 | 25 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 284 | 284 | 285 | 285 | 285 | 285 | 286 | 286 | 286 | 287 | |
| Apr 26 | 26 | 76 | 76 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 284 | 285 | 285 | 285 | 285 | 286 | 286 | 286 | 287 | 288 | |
| Apr 27 | 27 | 76 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 72 | 285 | 285 | 285 | 285 | 286 | 286 | 286 | 286 | 287 | 288 | |
| Apr 28 | 28 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 285 | 285 | 286 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | |
| Apr 29 | 29 | 75 | 75 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 285 | 286 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | 289 | |
| Apr 30 | 30 | 75 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 286 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | 288 | 289 | |
| May 1 | 1 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 71 | 286 | 286 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | |
| May 2 | 2 | 74 | 74 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 286 | 287 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 290 | |
| May 3 | 3 | 74 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 70 | 287 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | 290 | |
| May 4 | 4 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 70 | 70 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | |
| May 5 | 5 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | 291 | |
| May 6 | 6 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 69 | 288 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | 290 | 291 | |
| May 7 | 7 | 72 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | 290 | 290 | 291 | |
| May 8 | 8 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 288 | 288 | 289 | 289 | 289 | 289 | 290 | 290 | 291 | 292 | |
| May 9 | 9 | 72 | 72 | 71 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 68 | 288 | 289 | 289 | 289 | 289 | 290 | 290 | 291 | 291 | 292 | |
| May 10 | 10 | 72 | 71 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 68 | 68 | 289 | 289 | 289 | 289 | 290 | 290 | 290 | 291 | 291 | 292 | |
| May 11 | 11 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 68 | 68 | 289 | 289 | 289 | 290 | 290 | 290 | 291 | 291 | 292 | 293 | |
| May 12 | 12 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 289 | 289 | 290 | 290 | 290 | 291 | 291 | 291 | 292 | 293 | |
| May 13 | 13 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 67 | 289 | 290 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 293 | |
| May 14 | 14 | 71 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 290 | 290 | 290 | 290 | 291 | 291 | 292 | 292 | 292 | 293 | |
| May 15 | 15 | 70 | 70 | 70 | 70 | 69 | 69 | 68 | 68 | 68 | 67 | 66 | 290 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 293 | 294 | |
| May 16 | 16 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 66 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 294 | |
| May 17 | 17 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 66 | 66 | 290 | 291 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 294 | |
| May 18 | 18 | 70 | 69 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 66 | 66 | 291 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | |
| May 19 | 19 | 69 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 67 | 66 | 65 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | 295 | |
| May 20 | 20 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 293 | 294 | 295 | |
| May 21 | 21 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 65 | 65 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 295 | |
| May 22 | 22 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 65 | 291 | 292 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | |
| May 23 | 23 | 69 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 65 | 64 | 292 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 295 | 296 | |
| May 24 | 24 | 68 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 292 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | 296 | |
| May 25 | 25 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 294 | 295 | 296 | |
| May 26 | 26 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 64 | 64 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 | |
| May 27 | 27 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 64 | 292 | 293 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | |
| May 28 | 28 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 63 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 | 297 | |
| May 29 | 29 | 68 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 293 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 297 | |
| May 30 | 30 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 293 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 297 | |

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Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | Sunset | | | | | Sunrise | | | | | Sunset | | | | | | |
| | | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| Apr 11 | 11 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 282 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 287 |
| Apr 12 | 12 | 78 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 286 | 287 |
| Apr 13 | 13 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 288 |
| Apr 14 | 14 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 283 | 283 | 284 | 284 | 284 | 285 | 286 | 286 | 287 | 288 | 288 |
| Apr 15 | 15 | 77 | 77 | 76 | 76 | 76 | 75 | 74 | 74 | 73 | 72 | 72 | 283 | 284 | 284 | 284 | 285 | 285 | 286 | 287 | 287 | 288 | 289 |
| Apr 16 | 16 | 77 | 76 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 71 | 284 | 284 | 284 | 285 | 285 | 286 | 287 | 287 | 288 | 289 | 290 |
| Apr 17 | 17 | 76 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 71 | 70 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 288 | 289 | 290 |
| Apr 18 | 18 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 72 | 71 | 70 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 288 | 289 | 290 | 291 |
| Apr 19 | 19 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 72 | 71 | 70 | 69 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 289 | 289 | 290 | 291 |
| Apr 20 | 20 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 285 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 291 | 292 |
| Apr 21 | 21 | 75 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 69 | 68 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 291 | 291 | 292 |
| Apr 22 | 22 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 69 | 69 | 68 | 286 | 286 | 287 | 287 | 288 | 289 | 289 | 290 | 291 | 292 | 293 |
| Apr 23 | 23 | 74 | 74 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 68 | 67 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 291 | 292 | 292 | 294 |
| Apr 24 | 24 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 69 | 68 | 68 | 66 | 287 | 287 | 288 | 288 | 289 | 290 | 290 | 291 | 292 | 293 | 294 |
| Apr 25 | 25 | 73 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 67 | 66 | 287 | 288 | 288 | 289 | 289 | 290 | 291 | 292 | 292 | 293 | 295 |
| Apr 26 | 26 | 73 | 72 | 72 | 71 | 71 | 70 | 69 | 68 | 68 | 67 | 65 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 293 | 294 | 295 |
| Apr 27 | 27 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 67 | 66 | 65 | 288 | 288 | 289 | 290 | 290 | 291 | 292 | 293 | 293 | 295 | 296 |
| Apr 28 | 28 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 67 | 67 | 65 | 64 | 288 | 289 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 |
| Apr 29 | 29 | 72 | 71 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 289 | 289 | 290 | 290 | 291 | 292 | 293 | 293 | 294 | 296 | 297 |
| Apr 30 | 30 | 71 | 71 | 70 | 70 | 69 | 68 | 67 | 67 | 66 | 64 | 63 | 289 | 290 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 297 |
| May 1 | 1 | 71 | 70 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 289 | 290 | 290 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 298 |
| May 2 | 2 | 71 | 70 | 70 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 62 | 290 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 |
| May 3 | 3 | 70 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 290 | 291 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 299 |
| May 4 | 4 | 70 | 69 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 61 | 290 | 291 | 292 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 |
| May 5 | 5 | 70 | 69 | 68 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 291 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 300 |
| May 6 | 6 | 69 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 60 | 291 | 292 | 292 | 293 | 294 | 295 | 295 | 296 | 298 | 299 | 300 |
| May 7 | 7 | 69 | 68 | 68 | 67 | 66 | 65 | 65 | 64 | 62 | 61 | 60 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 301 |
| May 8 | 8 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 59 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 300 | 301 |
| May 9 | 9 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 60 | 59 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 |
| May 10 | 10 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 299 | 301 | 302 |
| May 11 | 11 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 61 | 59 | 58 | 293 | 293 | 294 | 295 | 295 | 296 | 297 | 298 | 300 | 301 | 303 |
| May 12 | 12 | 67 | 67 | 66 | 65 | 65 | 64 | 63 | 62 | 60 | 59 | 57 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 303 |
| May 13 | 13 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 293 | 294 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 302 | 303 |
| May 14 | 14 | 67 | 66 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 294 | 294 | 295 | 296 | 296 | 297 | 298 | 300 | 301 | 302 | 304 |
| May 15 | 15 | 66 | 66 | 65 | 64 | 64 | 63 | 62 | 60 | 59 | 58 | 56 | 294 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 303 | 304 |
| May 16 | 16 | 66 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 294 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 302 | 303 | 305 |
| May 17 | 17 | 66 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 55 | 294 | 295 | 296 | 297 | 297 | 298 | 299 | 301 | 302 | 303 | 305 |
| May 18 | 18 | 66 | 65 | 64 | 63 | 63 | 62 | 61 | 59 | 58 | 57 | 55 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 |
| May 19 | 19 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 295 | 296 | 296 | 297 | 298 | 299 | 300 | 301 | 303 | 304 | 306 |
| May 20 | 20 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 295 | 296 | 297 | 297 | 298 | 299 | 300 | 302 | 303 | 304 | 306 |
| May 21 | 21 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 58 | 57 | 56 | 54 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 307 |
| May 22 | 22 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 53 | 296 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 |
| May 23 | 23 | 64 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 |
| May 24 | 24 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 303 | 304 | 306 | 308 |
| May 25 | 25 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 52 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 308 |
| May 26 | 26 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 52 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 |
| May 27 | 27 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 297 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 309 |
| May 28 | 28 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 51 | 297 | 298 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 309 |
| May 29 | 29 | 63 | 62 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 51 | 297 | 298 | 299 | 299 | 300 | 301 | 303 | 304 | 306 | 307 | 309 |
| May 30 | 30 | 63 | 62 | 61 | 61 | 60 | 59 | 57 | 56 | 54 | 53 | 51 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
| | | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Apr 11 | 11 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 69 | 287 | 287 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 |
| Apr 12 | 12 | 73 | 73 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 287 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 | 293 |
| Apr 13 | 13 | 73 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 | 293 | 294 |
| Apr 14 | 14 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 66 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 | 293 | 294 | 295 |
| Apr 15 | 15 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 66 | 65 | 289 | 290 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 295 | 295 |
| Apr 16 | 16 | 71 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 65 | 65 | 290 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 |
| Apr 17 | 17 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 |
| Apr 18 | 18 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 291 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 |
| Apr 19 | 19 | 69 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 298 |
| Apr 20 | 20 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 62 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 296 | 297 | 298 | 299 |
| Apr 21 | 21 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 64 | 63 | 62 | 61 | 292 | 293 | 294 | 294 | 295 | 296 | 296 | 297 | 298 | 299 | 300 |
| Apr 22 | 22 | 68 | 67 | 66 | 66 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 293 | 294 | 294 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 301 |
| Apr 23 | 23 | 67 | 66 | 66 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 294 | 294 | 295 | 295 | 296 | 297 | 298 | 299 | 299 | 300 | 302 |
| Apr 24 | 24 | 66 | 66 | 65 | 65 | 64 | 63 | 62 | 61 | 61 | 60 | 58 | 294 | 295 | 295 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 302 |
| Apr 25 | 25 | 66 | 65 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 295 | 295 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 302 | 303 |
| Apr 26 | 26 | 65 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 295 | 296 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 |
| Apr 27 | 27 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 296 | 296 | 297 | 298 | 299 | 299 | 300 | 301 | 302 | 303 | 304 |
| Apr 28 | 28 | 64 | 64 | 63 | 62 | 61 | 61 | 60 | 59 | 58 | 57 | 56 | 296 | 297 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 |
| Apr 29 | 29 | 64 | 63 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 297 | 297 | 298 | 299 | 300 | 301 | 301 | 302 | 304 | 305 | 306 |
| Apr 30 | 30 | 63 | 63 | 62 | 61 | 60 | 59 | 59 | 58 | 56 | 55 | 54 | 297 | 298 | 299 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 |
| May 1 | 1 | 63 | 62 | 61 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 |
| May 2 | 2 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 298 | 299 | 300 | 301 | 301 | 302 | 303 | 304 | 306 | 307 | 308 |
| May 3 | 3 | 62 | 61 | 60 | 59 | 59 | 58 | 57 | 56 | 54 | 53 | 52 | 299 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 309 |
| May 4 | 4 | 61 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 299 | 300 | 301 | 302 | 303 | 303 | 305 | 306 | 307 | 308 | 310 |
| May 5 | 5 | 61 | 60 | 59 | 58 | 57 | 57 | 55 | 54 | 53 | 52 | 50 | 300 | 301 | 301 | 302 | 303 | 304 | 305 | 306 | 308 | 309 | 310 |
| May 6 | 6 | 60 | 59 | 59 | 58 | 57 | 56 | 55 | 54 | 52 | 51 | 50 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 310 | 311 |
| May 7 | 7 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 50 | 49 | 301 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 309 | 310 | 312 |
| May 8 | 8 | 59 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 50 | 48 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 |
| May 9 | 9 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 302 | 302 | 303 | 304 | 305 | 306 | 307 | 309 | 310 | 311 | 313 |
| May 10 | 10 | 58 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 50 | 49 | 47 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 | 314 |
| May 11 | 11 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 46 | 303 | 303 | 304 | 305 | 306 | 307 | 309 | 310 | 311 | 313 | 314 |
| May 12 | 12 | 57 | 57 | 56 | 55 | 54 | 53 | 51 | 50 | 49 | 47 | 46 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 |
| May 13 | 13 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 303 | 304 | 305 | 306 | 307 | 308 | 310 | 311 | 312 | 314 | 316 |
| May 14 | 14 | 57 | 56 | 55 | 54 | 53 | 52 | 50 | 49 | 48 | 46 | 44 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 | 316 |
| May 15 | 15 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 44 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 | 314 | 315 | 317 |
| May 16 | 16 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 46 | 45 | 43 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 313 | 314 | 316 | 318 |
| May 17 | 17 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 47 | 46 | 44 | 42 | 305 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 | 316 | 318 |
| May 18 | 18 | 55 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 44 | 42 | 305 | 306 | 307 | 308 | 310 | 311 | 312 | 314 | 315 | 317 | 319 |
| May 19 | 19 | 55 | 54 | 53 | 52 | 50 | 49 | 48 | 46 | 45 | 43 | 41 | 306 | 307 | 308 | 309 | 310 | 311 | 313 | 314 | 316 | 318 | 320 |
| May 20 | 20 | 54 | 53 | 52 | 51 | 50 | 49 | 47 | 46 | 44 | 42 | 40 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 | 316 | 318 | 320 |
| May 21 | 21 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 44 | 42 | 40 | 307 | 308 | 309 | 310 | 311 | 312 | 314 | 315 | 317 | 319 | 321 |
| May 22 | 22 | 53 | 52 | 51 | 50 | 49 | 48 | 46 | 45 | 43 | 41 | 39 | 307 | 308 | 309 | 310 | 311 | 313 | 314 | 316 | 317 | 319 | 321 |
| May 23 | 23 | 53 | 52 | 51 | 50 | 49 | 47 | 46 | 44 | 43 | 41 | 39 | 307 | 308 | 309 | 310 | 312 | 313 | 315 | 316 | 318 | 320 | 322 |
| May 24 | 24 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 308 | 309 | 310 | 311 | 312 | 313 | 315 | 317 | 318 | 320 | 322 |
| May 25 | 25 | 52 | 51 | 50 | 49 | 48 | 47 | 45 | 43 | 42 | 40 | 38 | 308 | 309 | 310 | 311 | 312 | 314 | 315 | 317 | 319 | 321 | 323 |
| May 26 | 26 | 52 | 51 | 50 | 49 | 48 | 46 | 45 | 43 | 41 | 39 | 37 | 308 | 309 | 310 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 324 |
| May 27 | 27 | 52 | 51 | 50 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 36 | 309 | 310 | 311 | 312 | 313 | 315 | 316 | 318 | 320 | 322 | 324 |
| May 28 | 28 | 51 | 50 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 36 | 309 | 310 | 311 | 312 | 314 | 315 | 317 | 318 | 320 | 322 | 325 |
| May 29 | 29 | 51 | 50 | 49 | 48 | 46 | 45 | 43 | 42 | 40 | 38 | 35 | 309 | 310 | 311 | 313 | 314 | 315 | 317 | 319 | 321 | 323 | 325 |
| May 30 | 30 | 51 | 50 | 49 | 47 | 46 | 45 | 43 | 41 | 39 | 37 | 35 | 309 | 310 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 326 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude South | | | | | | | | | | | Latitude South | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Apr 11 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 60 | 59 | 57 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 301 | 302 | 304 |
| Apr 12 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 59 | 58 | 56 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 | 304 | 306 |
| Apr 13 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 56 | 54 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 | 303 | 305 | 307 |
| Apr 14 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 55 | 53 | 295 | 295 | 296 | 297 | 299 | 300 | 301 | 303 | 304 | 306 | 308 |
| Apr 15 | 65 | 65 | 64 | 63 | 61 | 60 | 59 | 57 | 56 | 54 | 52 | 295 | 296 | 297 | 298 | 299 | 301 | 302 | 304 | 305 | 307 | 310 |
| Apr 16 | 65 | 64 | 63 | 62 | 61 | 59 | 58 | 56 | 55 | 53 | 50 | 296 | 297 | 298 | 299 | 300 | 302 | 303 | 305 | 307 | 309 | 311 |
| Apr 17 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 55 | 53 | 51 | 49 | 297 | 298 | 299 | 300 | 301 | 303 | 304 | 306 | 308 | 310 | 312 |
| Apr 18 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 52 | 50 | 48 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 309 | 311 | 314 |
| Apr 19 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 51 | 49 | 46 | 298 | 299 | 301 | 302 | 303 | 305 | 306 | 308 | 310 | 312 | 315 |
| Apr 20 | 62 | 61 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 48 | 45 | 299 | 300 | 301 | 303 | 304 | 306 | 307 | 309 | 311 | 314 | 316 |
| Apr 21 | 61 | 60 | 59 | 57 | 56 | 54 | 53 | 51 | 49 | 46 | 44 | 300 | 301 | 302 | 304 | 305 | 307 | 308 | 310 | 312 | 315 | 318 |
| Apr 22 | 60 | 59 | 58 | 56 | 55 | 53 | 52 | 50 | 48 | 45 | 42 | 301 | 302 | 303 | 304 | 306 | 308 | 309 | 311 | 314 | 316 | 319 |
| Apr 23 | 59 | 58 | 57 | 56 | 54 | 52 | 51 | 49 | 46 | 44 | 41 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 | 315 | 318 | 321 |
| Apr 24 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 45 | 42 | 39 | 302 | 303 | 305 | 306 | 308 | 309 | 311 | 314 | 316 | 319 | 322 |
| Apr 25 | 58 | 57 | 55 | 54 | 52 | 51 | 49 | 46 | 44 | 41 | 38 | 303 | 304 | 306 | 307 | 309 | 310 | 312 | 315 | 317 | 320 | 324 |
| Apr 26 | 57 | 56 | 54 | 53 | 51 | 50 | 48 | 45 | 43 | 40 | 36 | 304 | 305 | 306 | 308 | 310 | 311 | 313 | 316 | 318 | 322 | 325 |
| Apr 27 | 56 | 55 | 54 | 52 | 50 | 49 | 47 | 44 | 42 | 38 | 35 | 304 | 306 | 307 | 309 | 310 | 312 | 315 | 317 | 320 | 323 | 327 |
| Apr 28 | 56 | 54 | 53 | 51 | 50 | 48 | 45 | 43 | 40 | 37 | 33 | 305 | 307 | 308 | 310 | 311 | 313 | 316 | 318 | 321 | 324 | 329 |
| Apr 29 | 55 | 53 | 52 | 50 | 49 | 47 | 44 | 42 | 39 | 36 | 31 | 306 | 307 | 309 | 310 | 312 | 314 | 317 | 319 | 322 | 326 | 330 |
| Apr 30 | 54 | 53 | 51 | 50 | 48 | 46 | 43 | 41 | 38 | 34 | 30 | 307 | 308 | 310 | 311 | 313 | 315 | 318 | 320 | 324 | 327 | 332 |
| May 1 | 53 | 52 | 50 | 49 | 47 | 45 | 42 | 40 | 36 | 33 | 28 | 307 | 309 | 310 | 312 | 314 | 316 | 319 | 322 | 325 | 329 | 334 |
| May 2 | 53 | 51 | 50 | 48 | 46 | 44 | 41 | 38 | 35 | 31 | 26 | 308 | 310 | 311 | 313 | 315 | 317 | 320 | 323 | 326 | 331 | 336 |
| May 3 | 52 | 50 | 49 | 47 | 45 | 43 | 40 | 37 | 34 | 29 | 24 | 309 | 310 | 312 | 314 | 316 | 318 | 321 | 324 | 328 | 332 | 338 |
| May 4 | 51 | 50 | 48 | 46 | 44 | 42 | 39 | 36 | 32 | 28 | 22 | 310 | 311 | 313 | 315 | 317 | 319 | 322 | 325 | 329 | 334 | 340 |
| May 5 | 50 | 49 | 47 | 45 | 43 | 41 | 38 | 35 | 31 | 26 | 20 | 310 | 312 | 314 | 316 | 318 | 320 | 323 | 327 | 331 | 336 | 343 |
| May 6 | 50 | 48 | 46 | 44 | 42 | 40 | 37 | 33 | 29 | 24 | 17 | 311 | 313 | 314 | 316 | 319 | 321 | 324 | 328 | 332 | 338 | 346 |
| May 7 | 49 | 47 | 46 | 44 | 41 | 39 | 36 | 32 | 28 | 22 | 14 | 312 | 313 | 315 | 317 | 320 | 322 | 325 | 329 | 334 | 340 | 349 |
| May 8 | 48 | 47 | 45 | 43 | 40 | 38 | 35 | 31 | 26 | 20 | 11 | 312 | 314 | 316 | 318 | 321 | 323 | 327 | 330 | 335 | 342 | 355 |
| May 9 | 48 | 46 | 44 | 42 | 39 | 37 | 33 | 30 | 25 | 18 | 5 | 313 | 315 | 317 | 319 | 322 | 324 | 328 | 332 | 337 | 344 | ### |
| May 10 | 47 | 45 | 43 | 41 | 38 | 36 | 32 | 28 | 23 | 16 | ### | 314 | 316 | 318 | 320 | 322 | 325 | 329 | 333 | 339 | 347 | ### |
| May 11 | 46 | 44 | 42 | 40 | 38 | 35 | 31 | 27 | 21 | 13 | ### | 314 | 316 | 318 | 321 | 323 | 326 | 330 | 334 | 340 | 350 | ### |
| May 12 | 46 | 44 | 42 | 39 | 37 | 34 | 30 | 26 | 20 | 10 | ### | 315 | 317 | 319 | 322 | 324 | 327 | 331 | 336 | 342 | 356 | ### |
| May 13 | 45 | 43 | 41 | 38 | 36 | 33 | 29 | 24 | 18 | 4 | ### | 316 | 318 | 320 | 322 | 325 | 328 | 332 | 337 | 345 | ### | ### |
| May 14 | 44 | 42 | 40 | 38 | 35 | 32 | 28 | 23 | 15 | ### | ### | 316 | 318 | 321 | 323 | 326 | 330 | 334 | 339 | 347 | ### | ### |
| May 15 | 44 | 42 | 39 | 37 | 34 | 30 | 26 | 21 | 13 | ### | ### | 317 | 319 | 321 | 324 | 327 | 331 | 335 | 341 | 350 | ### | ### |
| May 16 | 43 | 41 | 39 | 36 | 33 | 29 | 25 | 19 | 10 | ### | ### | 318 | 320 | 322 | 325 | 328 | 332 | 336 | 342 | 354 | ### | ### |
| May 17 | 42 | 40 | 38 | 35 | 32 | 28 | 24 | 18 | 6 | ### | ### | 318 | 320 | 323 | 326 | 329 | 333 | 338 | 344 | ### | ### | ### |
| May 18 | 42 | 40 | 37 | 34 | 31 | 27 | 22 | 16 | ### | ### | ### | 319 | 321 | 324 | 326 | 330 | 334 | 339 | 346 | ### | ### | ### |
| May 19 | 41 | 39 | 36 | 34 | 30 | 26 | 21 | 14 | ### | ### | ### | 320 | 322 | 324 | 327 | 331 | 335 | 340 | 349 | ### | ### | ### |
| May 20 | 40 | 38 | 36 | 33 | 29 | 25 | 20 | 11 | ### | ### | ### | 320 | 322 | 325 | 328 | 332 | 336 | 342 | 352 | ### | ### | ### |
| May 21 | 40 | 38 | 35 | 32 | 28 | 24 | 18 | 8 | ### | ### | ### | 321 | 323 | 326 | 329 | 333 | 337 | 343 | 356 | ### | ### | ### |
| May 22 | 39 | 37 | 34 | 31 | 27 | 23 | 17 | 4 | ### | ### | ### | 321 | 324 | 326 | 330 | 333 | 338 | 345 | ### | ### | ### | ### |
| May 23 | 39 | 36 | 34 | 30 | 27 | 22 | 15 | ### | ### | ### | ### | 322 | 324 | 327 | 330 | 334 | 339 | 347 | ### | ### | ### | ### |
| May 24 | 38 | 36 | 33 | 30 | 26 | 21 | 13 | ### | ### | ### | ### | 322 | 325 | 328 | 331 | 335 | 341 | 349 | ### | ### | ### | ### |
| May 25 | 38 | 35 | 32 | 29 | 25 | 19 | 11 | ### | ### | ### | ### | 323 | 326 | 329 | 332 | 336 | 342 | 351 | ### | ### | ### | ### |
| May 26 | 37 | 34 | 31 | 28 | 24 | 18 | 9 | ### | ### | ### | ### | 324 | 326 | 329 | 333 | 337 | 343 | 354 | ### | ### | ### | ### |
| May 27 | 36 | 34 | 31 | 27 | 23 | 17 | 6 | ### | ### | ### | ### | 324 | 327 | 330 | 333 | 338 | 344 | ### | ### | ### | ### | ### |
| May 28 | 36 | 33 | 30 | 27 | 22 | 16 | ### | ### | ### | ### | ### | 325 | 327 | 330 | 334 | 339 | 346 | ### | ### | ### | ### | ### |
| May 29 | 35 | 33 | 30 | 26 | 21 | 14 | ### | ### | ### | ### | ### | 325 | 328 | 331 | 335 | 340 | 347 | ### | ### | ### | ### | ### |
| May 30 | 35 | 32 | 29 | 25 | 20 | 13 | ### | ### | ### | ### | ### | 326 | 328 | 332 | 336 | 341 | 349 | ### | ### | ### | ### | ### |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|-----|----|----------------|----|----|----|----|---------|----|----|----|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 |
| May | 31 | 15 | 22 | 28 | 32 | 35 | 38 | 41 | 43 | 45 | 46 | 48 | 347 | 339 | 333 | 329 | 325 | 322 | 320 | 318 | 316 | 314 | 312 |
| Jun | 1 | 13 | 21 | 27 | 31 | 35 | 38 | 40 | 42 | 44 | 46 | 48 | 349 | 339 | 334 | 329 | 326 | 323 | 320 | 318 | 316 | 314 | 313 |
| Jun | 2 | 11 | 21 | 26 | 31 | 34 | 37 | 40 | 42 | 44 | 46 | 47 | 351 | 340 | 334 | 330 | 326 | 323 | 321 | 318 | 316 | 315 | 313 |
| Jun | 3 | 9 | 20 | 26 | 30 | 34 | 37 | 39 | 42 | 44 | 45 | 47 | 353 | 341 | 335 | 331 | 327 | 324 | 321 | 319 | 317 | 315 | 313 |
| Jun | 4 | 7 | 19 | 25 | 29 | 33 | 36 | 39 | 41 | 43 | 45 | 47 | 356 | 342 | 336 | 331 | 327 | 324 | 321 | 319 | 317 | 315 | 314 |
| Jun | 5 | 4 | 18 | 24 | 29 | 33 | 36 | 39 | 41 | 43 | 45 | 46 | ### | 343 | 336 | 332 | 328 | 325 | 322 | 319 | 317 | 316 | 314 |
| Jun | 6 | ### | 17 | 24 | 28 | 32 | 35 | 38 | 41 | 43 | 44 | 46 | ### | 344 | 337 | 332 | 328 | 325 | 322 | 320 | 318 | 316 | 314 |
| Jun | 7 | ### | 16 | 23 | 28 | 32 | 35 | 38 | 40 | 42 | 44 | 46 | ### | 345 | 338 | 333 | 329 | 325 | 323 | 320 | 318 | 316 | 314 |
| Jun | 8 | ### | 15 | 22 | 27 | 31 | 35 | 37 | 40 | 42 | 44 | 46 | ### | 346 | 338 | 333 | 329 | 326 | 323 | 320 | 318 | 316 | 315 |
| Jun | 9 | ### | 14 | 22 | 27 | 31 | 34 | 37 | 40 | 42 | 44 | 45 | ### | 347 | 339 | 333 | 329 | 326 | 323 | 321 | 318 | 317 | 315 |
| Jun | 10 | ### | 13 | 21 | 27 | 31 | 34 | 37 | 39 | 42 | 43 | 45 | ### | 348 | 339 | 334 | 330 | 326 | 323 | 321 | 319 | 317 | 315 |
| Jun | 11 | ### | 12 | 21 | 26 | 30 | 34 | 37 | 39 | 41 | 43 | 45 | ### | 349 | 340 | 334 | 330 | 327 | 324 | 321 | 319 | 317 | 315 |
| Jun | 12 | ### | 11 | 20 | 26 | 30 | 33 | 36 | 39 | 41 | 43 | 45 | ### | 349 | 340 | 335 | 330 | 327 | 324 | 321 | 319 | 317 | 315 |
| Jun | 13 | ### | 11 | 20 | 25 | 30 | 33 | 36 | 39 | 41 | 43 | 45 | ### | 350 | 341 | 335 | 331 | 327 | 324 | 321 | 319 | 317 | 315 |
| Jun | 14 | ### | 10 | 19 | 25 | 29 | 33 | 36 | 39 | 41 | 43 | 45 | ### | 351 | 341 | 335 | 331 | 327 | 324 | 322 | 319 | 317 | 316 |
| Jun | 15 | ### | 9 | 19 | 25 | 29 | 33 | 36 | 38 | 41 | 43 | 44 | ### | 352 | 341 | 335 | 331 | 327 | 324 | 322 | 319 | 317 | 316 |
| Jun | 16 | ### | 8 | 19 | 25 | 29 | 33 | 36 | 38 | 41 | 43 | 44 | ### | 352 | 342 | 336 | 331 | 327 | 324 | 322 | 320 | 318 | 316 |
| Jun | 17 | ### | 8 | 18 | 24 | 29 | 33 | 36 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 18 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 19 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 20 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 354 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 21 | ### | 6 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 22 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 23 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 24 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 353 | 342 | 336 | 331 | 328 | 325 | 322 | 320 | 318 | 316 |
| Jun | 25 | ### | 7 | 18 | 24 | 29 | 32 | 35 | 38 | 40 | 42 | 44 | ### | 352 | 341 | 335 | 331 | 327 | 324 | 322 | 320 | 318 | 316 |
| Jun | 26 | ### | 8 | 19 | 25 | 29 | 33 | 36 | 38 | 40 | 42 | 44 | ### | 351 | 341 | 335 | 331 | 327 | 324 | 322 | 319 | 317 | 316 |
| Jun | 27 | ### | 9 | 19 | 25 | 29 | 33 | 36 | 38 | 41 | 43 | 44 | ### | 351 | 341 | 335 | 331 | 327 | 324 | 322 | 319 | 317 | 316 |
| Jun | 28 | ### | 9 | 19 | 25 | 29 | 33 | 36 | 38 | 41 | 43 | 44 | ### | 350 | 340 | 335 | 330 | 327 | 324 | 321 | 319 | 317 | 315 |
| Jun | 29 | ### | 10 | 20 | 25 | 30 | 33 | 36 | 39 | 41 | 43 | 45 | ### | 349 | 340 | 334 | 330 | 327 | 324 | 321 | 319 | 317 | 315 |
| Jun | 30 | ### | 11 | 20 | 26 | 30 | 33 | 36 | 39 | 41 | 43 | 45 | ### | 348 | 340 | 334 | 330 | 326 | 324 | 321 | 319 | 317 | 315 |
| Jul | 1 | ### | 12 | 20 | 26 | 30 | 34 | 36 | 39 | 41 | 43 | 45 | ### | 347 | 339 | 334 | 330 | 326 | 323 | 321 | 319 | 317 | 315 |
| Jul | 2 | ### | 13 | 21 | 26 | 30 | 34 | 37 | 39 | 41 | 43 | 45 | ### | 347 | 339 | 333 | 329 | 326 | 323 | 321 | 318 | 316 | 315 |
| Jul | 3 | ### | 13 | 21 | 27 | 31 | 34 | 37 | 39 | 42 | 44 | 45 | ### | 346 | 338 | 333 | 329 | 326 | 323 | 320 | 318 | 316 | 314 |
| Jul | 4 | ### | 14 | 22 | 27 | 31 | 34 | 37 | 40 | 42 | 44 | 46 | ### | 345 | 337 | 332 | 328 | 325 | 322 | 320 | 318 | 316 | 314 |
| Jul | 5 | ### | 15 | 23 | 28 | 32 | 35 | 38 | 40 | 42 | 44 | 46 | ### | 344 | 337 | 332 | 328 | 325 | 322 | 320 | 318 | 316 | 314 |
| Jul | 6 | ### | 16 | 23 | 28 | 32 | 35 | 38 | 40 | 42 | 44 | 46 | ### | 343 | 336 | 331 | 328 | 324 | 322 | 319 | 317 | 315 | 314 |
| Jul | 7 | ### | 17 | 24 | 29 | 32 | 36 | 38 | 41 | 43 | 45 | 46 | 355 | 342 | 336 | 331 | 327 | 324 | 321 | 319 | 317 | 315 | 313 |
| Jul | 8 | 5 | 18 | 24 | 29 | 33 | 36 | 39 | 41 | 43 | 45 | 47 | 352 | 341 | 335 | 330 | 327 | 324 | 321 | 319 | 317 | 315 | 313 |
| Jul | 9 | 8 | 19 | 25 | 30 | 33 | 36 | 39 | 41 | 43 | 45 | 47 | 350 | 340 | 334 | 330 | 326 | 323 | 321 | 318 | 316 | 314 | 313 |
| Jul | 10 | 10 | 20 | 26 | 30 | 34 | 37 | 39 | 42 | 44 | 46 | 47 | 348 | 339 | 333 | 329 | 326 | 323 | 320 | 318 | 316 | 314 | 313 |
| Jul | 11 | 12 | 21 | 27 | 31 | 34 | 37 | 40 | 42 | 44 | 46 | 47 | 346 | 338 | 333 | 329 | 325 | 322 | 320 | 317 | 316 | 314 | 312 |
| Jul | 12 | 14 | 22 | 27 | 31 | 35 | 38 | 40 | 43 | 44 | 46 | 48 | 345 | 337 | 332 | 328 | 325 | 322 | 319 | 317 | 315 | 313 | 312 |
| Jul | 13 | 15 | 23 | 28 | 32 | 35 | 38 | 41 | 43 | 45 | 47 | 48 | 343 | 336 | 331 | 327 | 324 | 321 | 319 | 317 | 315 | 313 | 311 |
| Jul | 14 | 17 | 24 | 29 | 33 | 36 | 39 | 41 | 43 | 45 | 47 | 49 | 342 | 335 | 330 | 327 | 323 | 321 | 318 | 316 | 314 | 313 | 311 |
| Jul | 15 | 18 | 25 | 30 | 33 | 37 | 39 | 42 | 44 | 46 | 47 | 49 | 341 | 334 | 330 | 326 | 323 | 320 | 318 | 316 | 314 | 312 | 311 |
| Jul | 16 | 19 | 26 | 30 | 34 | 37 | 40 | 42 | 44 | 46 | 48 | 49 | 339 | 333 | 329 | 325 | 322 | 320 | 317 | 315 | 313 | 312 | 310 |
| Jul | 17 | 21 | 27 | 31 | 35 | 38 | 40 | 43 | 45 | 47 | 48 | 50 | 338 | 332 | 328 | 324 | 321 | 319 | 317 | 315 | 313 | 311 | 310 |
| Jul | 18 | 22 | 28 | 32 | 36 | 39 | 41 | 43 | 45 | 47 | 49 | 50 | 337 | 331 | 327 | 324 | 321 | 318 | 316 | 314 | 312 | 311 | 309 |
| Jul | 19 | 23 | 29 | 33 | 36 | 39 | 42 | 44 | 46 | 48 | 49 | 51 | 335 | 330 | 326 | 323 | 320 | 318 | 316 | 314 | 312 | 310 | 309 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|-----|----|----------------|----|----|----|----|---------|----|----|----|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| May | 31 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 57 | 58 | 312 | 311 | 310 | 308 | 307 | 306 | 305 | 304 | 304 | 303 | 302 |
| Jun | 1 | 48 | 49 | 50 | 52 | 53 | 54 | 55 | 56 | 56 | 57 | 58 | 313 | 311 | 310 | 309 | 307 | 306 | 305 | 305 | 304 | 303 | 302 |
| Jun | 2 | 47 | 49 | 50 | 51 | 53 | 54 | 55 | 55 | 56 | 57 | 58 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 |
| Jun | 3 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 313 | 312 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 303 |
| Jun | 4 | 47 | 48 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 57 | 314 | 312 | 311 | 309 | 308 | 307 | 306 | 305 | 304 | 304 | 303 |
| Jun | 5 | 46 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 56 | 56 | 57 | 314 | 312 | 311 | 310 | 308 | 307 | 306 | 305 | 305 | 304 | 303 |
| Jun | 6 | 46 | 48 | 49 | 50 | 52 | 53 | 54 | 55 | 55 | 56 | 57 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 |
| Jun | 7 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 |
| Jun | 8 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 315 | 313 | 312 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 304 |
| Jun | 9 | 45 | 47 | 48 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 56 | 315 | 313 | 312 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 304 |
| Jun | 10 | 45 | 47 | 48 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 56 | 315 | 313 | 312 | 311 | 309 | 308 | 307 | 306 | 305 | 305 | 304 |
| Jun | 11 | 45 | 47 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 55 | 56 | 315 | 314 | 312 | 311 | 310 | 308 | 307 | 306 | 306 | 305 | 304 |
| Jun | 12 | 45 | 46 | 48 | 49 | 50 | 52 | 53 | 54 | 54 | 55 | 56 | 315 | 314 | 312 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 13 | 45 | 46 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 315 | 314 | 312 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 14 | 45 | 46 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 312 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 15 | 44 | 46 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 16 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 17 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 18 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 19 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 20 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 21 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 22 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 23 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 24 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 25 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 26 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 27 | 44 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 316 | 314 | 312 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 28 | 44 | 46 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 315 | 314 | 312 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 |
| Jun | 29 | 45 | 46 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 315 | 314 | 312 | 311 | 310 | 309 | 307 | 307 | 306 | 305 | 304 |
| Jun | 30 | 45 | 46 | 48 | 49 | 50 | 51 | 53 | 53 | 54 | 55 | 56 | 315 | 313 | 312 | 311 | 309 | 308 | 307 | 306 | 305 | 305 | 304 |
| Jul | 1 | 45 | 47 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 55 | 56 | 315 | 313 | 312 | 311 | 309 | 308 | 307 | 306 | 305 | 305 | 304 |
| Jul | 2 | 45 | 47 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 55 | 56 | 315 | 313 | 312 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 304 |
| Jul | 3 | 45 | 47 | 48 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 56 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 |
| Jul | 4 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 314 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 |
| Jul | 5 | 46 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 314 | 312 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 |
| Jul | 6 | 46 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 314 | 312 | 311 | 310 | 308 | 307 | 306 | 305 | 305 | 304 | 303 |
| Jul | 7 | 46 | 48 | 49 | 50 | 52 | 53 | 54 | 55 | 55 | 56 | 57 | 313 | 312 | 311 | 309 | 308 | 307 | 306 | 305 | 304 | 304 | 303 |
| Jul | 8 | 47 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 56 | 56 | 57 | 313 | 312 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 303 |
| Jul | 9 | 47 | 48 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 57 | 313 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 |
| Jul | 10 | 47 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 313 | 311 | 310 | 309 | 307 | 306 | 305 | 305 | 304 | 303 | 302 |
| Jul | 11 | 47 | 49 | 50 | 51 | 53 | 54 | 55 | 55 | 56 | 57 | 58 | 312 | 311 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 303 | 302 |
| Jul | 12 | 48 | 49 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 57 | 58 | 312 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 | 302 |
| Jul | 13 | 48 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 58 | 311 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 | 301 |
| Jul | 14 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 311 | 310 | 308 | 307 | 306 | 305 | 304 | 303 | 303 | 302 | 301 |
| Jul | 15 | 49 | 50 | 52 | 53 | 54 | 55 | 56 | 57 | 57 | 58 | 59 | 311 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 | 302 | 301 |
| Jul | 16 | 49 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 58 | 59 | 310 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 | 301 | 301 |
| Jul | 17 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 59 | 310 | 309 | 307 | 306 | 305 | 304 | 303 | 303 | 302 | 301 | 300 |
| Jul | 18 | 50 | 51 | 53 | 54 | 55 | 56 | 57 | 57 | 58 | 59 | 60 | 309 | 308 | 307 | 306 | 305 | 304 | 303 | 302 | 301 | 301 | 300 |
| Jul | 19 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 59 | 60 | 309 | 308 | 307 | 305 | 304 | 304 | 303 | 302 | 301 | 300 | 300 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|----|----|----|---------|----|----|----|----|----|----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| May 31 | 58 | 59 | 61 | 62 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 | 294 |
| Jun 1 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 | 294 |
| Jun 2 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 294 |
| Jun 3 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 303 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 295 |
| Jun 4 | 57 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 65 | 303 | 302 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 | 295 |
| Jun 5 | 57 | 58 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 65 | 303 | 302 | 301 | 299 | 299 | 298 | 297 | 296 | 296 | 295 | 295 |
| Jun 6 | 57 | 58 | 59 | 61 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 |
| Jun 7 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 |
| Jun 8 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 304 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 | 295 |
| Jun 9 | 56 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 65 | 304 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 | 295 |
| Jun 10 | 56 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 65 | 304 | 302 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Jun 11 | 56 | 58 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 304 | 303 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Jun 12 | 56 | 57 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 304 | 303 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Jun 13 | 56 | 57 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 304 | 303 | 301 | 300 | 299 | 299 | 298 | 297 | 297 | 296 | 295 |
| Jun 14 | 56 | 57 | 59 | 60 | 61 | 61 | 62 | 63 | 63 | 64 | 65 | 304 | 303 | 302 | 300 | 299 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 15 | 56 | 57 | 58 | 60 | 61 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 16 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 17 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 18 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 19 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 20 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 21 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 22 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 23 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 24 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 25 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 26 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 300 | 300 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 27 | 56 | 57 | 58 | 60 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 302 | 300 | 299 | 299 | 298 | 297 | 297 | 296 | 296 |
| Jun 28 | 56 | 57 | 58 | 60 | 61 | 61 | 62 | 63 | 63 | 64 | 64 | 304 | 303 | 301 | 300 | 299 | 299 | 298 | 297 | 296 | 296 | 295 |
| Jun 29 | 56 | 57 | 59 | 60 | 61 | 61 | 62 | 63 | 64 | 64 | 65 | 304 | 303 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Jun 30 | 56 | 57 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 304 | 302 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Jul 1 | 56 | 58 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 304 | 302 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Jul 2 | 56 | 58 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 304 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 | 295 |
| Jul 3 | 56 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 65 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 | 295 |
| Jul 4 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 65 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 |
| Jul 5 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 303 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 |
| Jul 6 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 303 | 302 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 | 295 |
| Jul 7 | 57 | 58 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 65 | 303 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 | 295 |
| Jul 8 | 57 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 65 | 303 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 294 |
| Jul 9 | 57 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 | 294 |
| Jul 10 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 | 294 |
| Jul 11 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 302 | 301 | 300 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 294 |
| Jul 12 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 302 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 294 | 294 |
| Jul 13 | 58 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 66 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 | 294 | 294 |
| Jul 14 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 66 | 301 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 293 |
| Jul 15 | 59 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 67 | 301 | 300 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 294 | 293 |
| Jul 16 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 301 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 294 | 294 | 293 |
| Jul 17 | 59 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 293 | 293 |
| Jul 18 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 67 | 67 | 300 | 299 | 298 | 297 | 296 | 295 | 295 | 294 | 294 | 293 | 293 |
| Jul 19 | 60 | 61 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 67 | 300 | 299 | 298 | 297 | 296 | 295 | 294 | 294 | 293 | 293 | 292 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|----|----|----|---------|----|----|----|----|----|----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 |
| May 31 | 66 | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 294 | 294 | 293 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 |
| Jun 1 | 66 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 294 | 294 | 293 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 |
| Jun 2 | 66 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 292 | 292 | 292 | 292 |
| Jun 3 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 295 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 292 | 292 | 292 |
| Jun 4 | 65 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 292 | 292 |
| Jun 5 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 68 | 68 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jun 6 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jun 7 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jun 8 | 65 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jun 9 | 65 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 |
| Jun 10 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 |
| Jun 11 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 |
| Jun 12 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 |
| Jun 13 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 |
| Jun 14 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 296 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 293 | 293 | 293 |
| Jun 15 | 64 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 293 | 293 | 293 |
| Jun 16 | 64 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 293 | 293 |
| Jun 17 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 293 | 293 |
| Jun 18 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 |
| Jun 19 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 |
| Jun 20 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 |
| Jun 21 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 66 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 |
| Jun 22 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 66 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 |
| Jun 23 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 66 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 293 | 293 |
| Jun 24 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 296 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 293 | 293 |
| Jun 25 | 64 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 | 293 |
| Jun 26 | 64 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 294 | 294 | 294 | 294 | 294 | 294 | 293 | 293 |
| Jun 27 | 64 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 296 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 |
| Jun 28 | 64 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 |
| Jun 29 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 295 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 |
| Jun 30 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 295 | 295 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 |
| Jul 1 | 65 | 65 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 |
| Jul 2 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 |
| Jul 3 | 65 | 65 | 66 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jul 4 | 65 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jul 5 | 65 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 | 293 |
| Jul 6 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 | 292 |
| Jul 7 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 67 | 68 | 295 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 | 292 |
| Jul 8 | 65 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 68 | 68 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 293 | 293 | 292 | 292 |
| Jul 9 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 294 | 294 | 294 | 293 | 293 | 293 | 293 | 292 | 292 | 292 | 292 |
| Jul 10 | 66 | 66 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 294 | 294 | 293 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 |
| Jul 11 | 66 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 294 | 294 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 |
| Jul 12 | 66 | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 294 | 293 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 |
| Jul 13 | 66 | 67 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 294 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 | 292 |
| Jul 14 | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 | 292 | 291 |
| Jul 15 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 68 | 69 | 69 | 293 | 293 | 293 | 292 | 292 | 292 | 292 | 292 | 292 | 291 | 291 |
| Jul 16 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 293 | 293 | 292 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 |
| Jul 17 | 67 | 67 | 68 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 293 | 293 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 291 |
| Jul 18 | 67 | 67 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 69 | 293 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 291 | 291 |
| Jul 19 | 67 | 68 | 68 | 68 | 69 | 69 | 69 | 69 | 69 | 69 | 69 | 292 | 292 | 292 | 292 | 291 | 291 | 291 | 291 | 291 | 291 | 291 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 |
| May 31 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 63 | 63 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 |
| Jun 1 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 298 |
| Jun 2 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 62 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 298 |
| Jun 3 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 62 | 293 | 294 | 294 | 294 | 295 | 295 | 295 | 296 | 297 | 297 | 298 |
| Jun 4 | 67 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 63 | 63 | 62 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 |
| Jun 5 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 294 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 |
| Jun 6 | 66 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 294 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 298 | 298 |
| Jun 7 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 62 | 62 | 294 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 298 | 298 |
| Jun 8 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 62 | 62 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 |
| Jun 9 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jun 10 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jun 11 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jun 12 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jun 13 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 298 | 298 | 299 |
| Jun 14 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 62 | 62 | 61 | 294 | 294 | 295 | 295 | 296 | 296 | 296 | 297 | 298 | 298 | 299 |
| Jun 15 | 66 | 66 | 65 | 65 | 64 | 64 | 64 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 296 | 297 | 298 | 298 | 299 |
| Jun 16 | 66 | 65 | 65 | 65 | 64 | 64 | 64 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 17 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 18 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 19 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 20 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 21 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 22 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 23 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 24 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 25 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 | 299 |
| Jun 26 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 61 | 294 | 295 | 295 | 295 | 296 | 296 | 296 | 297 | 298 | 298 | 299 |
| Jun 27 | 66 | 65 | 65 | 65 | 64 | 64 | 64 | 63 | 62 | 62 | 61 | 294 | 294 | 295 | 295 | 296 | 296 | 296 | 297 | 298 | 298 | 299 |
| Jun 28 | 66 | 66 | 65 | 65 | 64 | 64 | 64 | 63 | 62 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jun 29 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jun 30 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jul 1 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 299 |
| Jul 2 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 61 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 |
| Jul 3 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 | 298 |
| Jul 4 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 62 | 294 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 298 | 298 |
| Jul 5 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 62 | 62 | 294 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 297 | 298 |
| Jul 6 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 |
| Jul 7 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 | 298 |
| Jul 8 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 62 | 293 | 294 | 294 | 294 | 295 | 295 | 295 | 296 | 296 | 297 | 298 |
| Jul 9 | 67 | 66 | 66 | 66 | 65 | 65 | 65 | 64 | 64 | 63 | 62 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 298 |
| Jul 10 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 62 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 | 297 |
| Jul 11 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 63 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 295 | 296 | 297 | 297 |
| Jul 12 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 65 | 64 | 63 | 63 | 293 | 293 | 293 | 294 | 294 | 294 | 295 | 295 | 296 | 296 | 297 |
| Jul 13 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 293 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 | 296 | 297 |
| Jul 14 | 67 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 64 | 63 | 292 | 293 | 293 | 293 | 294 | 294 | 294 | 295 | 296 | 296 | 297 |
| Jul 15 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 64 | 64 | 63 | 292 | 293 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 | 297 |
| Jul 16 | 68 | 67 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 | 296 |
| Jul 17 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 66 | 65 | 65 | 64 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 294 | 295 | 296 | 296 |
| Jul 18 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 66 | 66 | 65 | 64 | 292 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | 295 | 296 |
| Jul 19 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 292 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 295 | 295 | 296 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude South | | | | | | | | | | | Latitude South | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| May 31 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 308 | 310 |
| Jun 1 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 52 | 50 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 |
| Jun 2 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 |
| Jun 3 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 298 | 299 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 308 | 310 |
| Jun 4 | 62 | 61 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 52 | 50 | 298 | 299 | 300 | 300 | 301 | 303 | 304 | 305 | 307 | 309 | 311 |
| Jun 5 | 62 | 61 | 60 | 60 | 59 | 57 | 56 | 55 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 309 | 311 |
| Jun 6 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 | 311 |
| Jun 7 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 | 311 |
| Jun 8 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 | 311 |
| Jun 9 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 49 | 299 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 309 | 311 |
| Jun 10 | 61 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 51 | 49 | 299 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 | 312 |
| Jun 11 | 61 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 48 | 299 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 | 312 |
| Jun 12 | 61 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 300 | 301 | 302 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 13 | 61 | 60 | 60 | 59 | 58 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 300 | 301 | 302 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 14 | 61 | 60 | 60 | 59 | 58 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 301 | 301 | 303 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 15 | 61 | 60 | 59 | 59 | 57 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 16 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 17 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 18 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 19 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 20 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 21 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 22 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 23 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 24 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 25 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 | 310 | 312 |
| Jun 26 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 27 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 301 | 301 | 303 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 28 | 61 | 60 | 59 | 59 | 57 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 300 | 301 | 302 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 29 | 61 | 60 | 60 | 59 | 58 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 300 | 300 | 301 | 302 | 304 | 305 | 306 | 308 | 310 | 312 |
| Jun 30 | 61 | 60 | 60 | 59 | 58 | 56 | 55 | 54 | 52 | 50 | 48 | 299 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 | 312 |
| Jul 1 | 61 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 48 | 299 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 309 | 312 |
| Jul 2 | 61 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 51 | 48 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 308 | 309 | 311 |
| Jul 3 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 52 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 | 311 |
| Jul 4 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 | 311 |
| Jul 5 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 309 | 311 |
| Jul 6 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 51 | 49 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 309 | 311 |
| Jul 7 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 51 | 49 | 298 | 299 | 299 | 300 | 301 | 303 | 304 | 305 | 307 | 308 | 310 |
| Jul 8 | 62 | 61 | 61 | 60 | 59 | 57 | 56 | 55 | 53 | 52 | 50 | 298 | 299 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 308 | 310 |
| Jul 9 | 62 | 61 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 52 | 50 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 |
| Jul 10 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 |
| Jul 11 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 308 | 310 |
| Jul 12 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 52 | 50 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 306 | 307 | 309 |
| Jul 13 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 54 | 53 | 51 | 297 | 298 | 298 | 299 | 300 | 301 | 303 | 304 | 305 | 307 | 309 |
| Jul 14 | 63 | 62 | 62 | 61 | 60 | 59 | 57 | 56 | 55 | 53 | 51 | 297 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 309 |
| Jul 15 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 51 | 297 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 307 | 308 |
| Jul 16 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 53 | 52 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 306 | 308 |
| Jul 17 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 296 | 297 | 298 | 298 | 299 | 300 | 302 | 303 | 304 | 306 | 308 |
| Jul 18 | 64 | 63 | 62 | 62 | 61 | 60 | 58 | 57 | 56 | 54 | 52 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 303 | 304 | 306 | 307 |
| Jul 19 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 53 | 296 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
| | | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| May | 31 | 51 | 50 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 34 | 310 | 311 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 324 | 326 |
| Jun | 1 | 50 | 49 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 36 | 34 | 310 | 311 | 312 | 313 | 315 | 316 | 318 | 320 | 322 | 324 | 326 |
| Jun | 2 | 50 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 36 | 34 | 310 | 311 | 312 | 314 | 315 | 317 | 318 | 320 | 322 | 324 | 327 |
| Jun | 3 | 50 | 49 | 48 | 46 | 45 | 43 | 42 | 40 | 38 | 36 | 33 | 310 | 311 | 313 | 314 | 315 | 317 | 319 | 320 | 322 | 325 | 327 |
| Jun | 4 | 50 | 49 | 47 | 46 | 45 | 43 | 41 | 40 | 38 | 35 | 33 | 311 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 328 |
| Jun | 5 | 49 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 311 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 328 |
| Jun | 6 | 49 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 311 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 326 | 328 |
| Jun | 7 | 49 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 34 | 32 | 311 | 312 | 314 | 315 | 316 | 318 | 320 | 322 | 324 | 326 | 329 |
| Jun | 8 | 49 | 48 | 46 | 45 | 44 | 42 | 40 | 38 | 36 | 34 | 31 | 311 | 312 | 314 | 315 | 317 | 318 | 320 | 322 | 324 | 326 | 329 |
| Jun | 9 | 49 | 48 | 46 | 45 | 43 | 42 | 40 | 38 | 36 | 34 | 31 | 311 | 313 | 314 | 315 | 317 | 318 | 320 | 322 | 324 | 327 | 329 |
| Jun | 10 | 49 | 47 | 46 | 45 | 43 | 42 | 40 | 38 | 36 | 33 | 31 | 312 | 313 | 314 | 315 | 317 | 318 | 320 | 322 | 324 | 327 | 330 |
| Jun | 11 | 48 | 47 | 46 | 45 | 43 | 42 | 40 | 38 | 36 | 33 | 30 | 312 | 313 | 314 | 316 | 317 | 319 | 320 | 322 | 325 | 327 | 330 |
| Jun | 12 | 48 | 47 | 46 | 44 | 43 | 41 | 40 | 38 | 35 | 33 | 30 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 327 | 330 |
| Jun | 13 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 33 | 30 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 327 | 330 |
| Jun | 14 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 33 | 30 | 312 | 313 | 315 | 316 | 317 | 319 | 321 | 323 | 325 | 328 | 330 |
| Jun | 15 | 48 | 47 | 45 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 30 | 312 | 313 | 315 | 316 | 317 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 16 | 48 | 47 | 45 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 17 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 18 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 19 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 20 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 314 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 21 | 48 | 46 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 314 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 22 | 48 | 46 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 23 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 24 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 25 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 26 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 315 | 316 | 317 | 319 | 321 | 323 | 325 | 328 | 331 |
| Jun | 27 | 48 | 47 | 45 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 29 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 328 | 330 |
| Jun | 28 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 30 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 327 | 330 |
| Jun | 29 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 33 | 30 | 312 | 313 | 314 | 316 | 317 | 319 | 320 | 322 | 325 | 327 | 330 |
| Jun | 30 | 48 | 47 | 46 | 44 | 43 | 41 | 40 | 38 | 35 | 33 | 30 | 312 | 313 | 314 | 315 | 317 | 319 | 320 | 322 | 324 | 327 | 330 |
| Jul | 1 | 48 | 47 | 46 | 45 | 43 | 41 | 40 | 38 | 36 | 33 | 30 | 312 | 313 | 314 | 315 | 317 | 318 | 320 | 322 | 324 | 327 | 330 |
| Jul | 2 | 48 | 47 | 46 | 45 | 43 | 42 | 40 | 38 | 36 | 33 | 30 | 311 | 313 | 314 | 315 | 317 | 318 | 320 | 322 | 324 | 326 | 329 |
| Jul | 3 | 49 | 47 | 46 | 45 | 43 | 42 | 40 | 38 | 36 | 34 | 31 | 311 | 312 | 314 | 315 | 316 | 318 | 320 | 322 | 324 | 326 | 329 |
| Jul | 4 | 49 | 48 | 46 | 45 | 44 | 42 | 40 | 38 | 36 | 34 | 31 | 311 | 312 | 313 | 315 | 316 | 318 | 320 | 321 | 324 | 326 | 329 |
| Jul | 5 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 39 | 36 | 34 | 31 | 311 | 312 | 313 | 315 | 316 | 318 | 319 | 321 | 323 | 326 | 328 |
| Jul | 6 | 49 | 48 | 47 | 45 | 44 | 42 | 41 | 39 | 37 | 34 | 32 | 311 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 328 |
| Jul | 7 | 49 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 310 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 | 328 |
| Jul | 8 | 50 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 32 | 310 | 311 | 313 | 314 | 315 | 317 | 318 | 320 | 322 | 325 | 327 |
| Jul | 9 | 50 | 49 | 47 | 46 | 45 | 43 | 42 | 40 | 38 | 35 | 33 | 310 | 311 | 312 | 314 | 315 | 316 | 318 | 320 | 322 | 324 | 327 |
| Jul | 10 | 50 | 49 | 48 | 46 | 45 | 44 | 42 | 40 | 38 | 36 | 33 | 310 | 311 | 312 | 313 | 315 | 316 | 318 | 320 | 322 | 324 | 326 |
| Jul | 11 | 50 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 36 | 34 | 310 | 311 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 326 |
| Jul | 12 | 50 | 49 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 34 | 309 | 310 | 312 | 313 | 314 | 316 | 317 | 319 | 321 | 323 | 325 |
| Jul | 13 | 51 | 50 | 48 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 35 | 309 | 310 | 311 | 312 | 314 | 315 | 317 | 319 | 320 | 323 | 325 |
| Jul | 14 | 51 | 50 | 49 | 48 | 46 | 45 | 43 | 41 | 40 | 37 | 35 | 309 | 310 | 311 | 312 | 313 | 315 | 316 | 318 | 320 | 322 | 324 |
| Jul | 15 | 51 | 50 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 36 | 308 | 309 | 311 | 312 | 313 | 314 | 316 | 318 | 320 | 322 | 324 |
| Jul | 16 | 52 | 51 | 49 | 48 | 47 | 46 | 44 | 42 | 40 | 38 | 36 | 308 | 309 | 310 | 311 | 313 | 314 | 316 | 317 | 319 | 321 | 323 |
| Jul | 17 | 52 | 51 | 50 | 49 | 47 | 46 | 44 | 43 | 41 | 39 | 37 | 308 | 309 | 310 | 311 | 312 | 314 | 315 | 317 | 319 | 321 | 323 |
| Jul | 18 | 52 | 51 | 50 | 49 | 48 | 46 | 45 | 43 | 41 | 39 | 37 | 307 | 308 | 310 | 311 | 312 | 313 | 315 | 316 | 318 | 320 | 322 |
| Jul | 19 | 53 | 52 | 50 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 307 | 308 | 309 | 310 | 312 | 313 | 314 | 316 | 318 | 320 | 322 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| May 31 | 34 | 32 | 28 | 24 | 19 | 11 | ### | ### | ### | ### | ### | 326 | 329 | 332 | 336 | 342 | 350 | ### | ### | ### | ### | ### |
| Jun 1 | 34 | 31 | 28 | 24 | 18 | 10 | ### | ### | ### | ### | ### | 326 | 329 | 333 | 337 | 343 | 352 | ### | ### | ### | ### | ### |
| Jun 2 | 34 | 31 | 27 | 23 | 17 | 8 | ### | ### | ### | ### | ### | 327 | 330 | 333 | 338 | 344 | 355 | ### | ### | ### | ### | ### |
| Jun 3 | 33 | 30 | 27 | 22 | 16 | 5 | ### | ### | ### | ### | ### | 327 | 330 | 334 | 338 | 344 | ### | ### | ### | ### | ### | ### |
| Jun 4 | 33 | 30 | 26 | 22 | 16 | ### | ### | ### | ### | ### | ### | 328 | 331 | 334 | 339 | 345 | ### | ### | ### | ### | ### | ### |
| Jun 5 | 32 | 29 | 26 | 21 | 15 | ### | ### | ### | ### | ### | ### | 328 | 331 | 335 | 340 | 346 | ### | ### | ### | ### | ### | ### |
| Jun 6 | 32 | 29 | 25 | 20 | 14 | ### | ### | ### | ### | ### | ### | 328 | 332 | 335 | 340 | 347 | ### | ### | ### | ### | ### | ### |
| Jun 7 | 32 | 28 | 25 | 20 | 13 | ### | ### | ### | ### | ### | ### | 329 | 332 | 336 | 341 | 348 | ### | ### | ### | ### | ### | ### |
| Jun 8 | 31 | 28 | 24 | 19 | 12 | ### | ### | ### | ### | ### | ### | 329 | 332 | 336 | 341 | 349 | ### | ### | ### | ### | ### | ### |
| Jun 9 | 31 | 28 | 24 | 19 | 11 | ### | ### | ### | ### | ### | ### | 329 | 333 | 337 | 342 | 350 | ### | ### | ### | ### | ### | ### |
| Jun 10 | 31 | 27 | 23 | 18 | 10 | ### | ### | ### | ### | ### | ### | 330 | 333 | 337 | 342 | 351 | ### | ### | ### | ### | ### | ### |
| Jun 11 | 30 | 27 | 23 | 18 | 9 | ### | ### | ### | ### | ### | ### | 330 | 333 | 337 | 343 | 352 | ### | ### | ### | ### | ### | ### |
| Jun 12 | 30 | 27 | 23 | 17 | 8 | ### | ### | ### | ### | ### | ### | 330 | 334 | 338 | 343 | 353 | ### | ### | ### | ### | ### | ### |
| Jun 13 | 30 | 26 | 22 | 17 | 7 | ### | ### | ### | ### | ### | ### | 330 | 334 | 338 | 344 | 354 | ### | ### | ### | ### | ### | ### |
| Jun 14 | 30 | 26 | 22 | 16 | 6 | ### | ### | ### | ### | ### | ### | 330 | 334 | 338 | 344 | 355 | ### | ### | ### | ### | ### | ### |
| Jun 15 | 30 | 26 | 22 | 16 | 5 | ### | ### | ### | ### | ### | ### | 331 | 334 | 338 | 344 | 356 | ### | ### | ### | ### | ### | ### |
| Jun 16 | 29 | 26 | 22 | 16 | 4 | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 344 | 357 | ### | ### | ### | ### | ### | ### |
| Jun 17 | 29 | 26 | 21 | 16 | 3 | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 345 | 358 | ### | ### | ### | ### | ### | ### |
| Jun 18 | 29 | 26 | 21 | 15 | 2 | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 345 | ### | ### | ### | ### | ### | ### | ### |
| Jun 19 | 29 | 26 | 21 | 15 | ### | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 345 | ### | ### | ### | ### | ### | ### | ### |
| Jun 20 | 29 | 26 | 21 | 15 | ### | ### | ### | ### | ### | ### | ### | 331 | 335 | 339 | 345 | ### | ### | ### | ### | ### | ### | ### |
| Jun 21 | 29 | 25 | 21 | 15 | ### | ### | ### | ### | ### | ### | ### | 331 | 335 | 339 | 345 | ### | ### | ### | ### | ### | ### | ### |
| Jun 22 | 29 | 25 | 21 | 15 | ### | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 345 | ### | ### | ### | ### | ### | ### | ### |
| Jun 23 | 29 | 26 | 21 | 15 | ### | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 345 | 359 | ### | ### | ### | ### | ### | ### |
| Jun 24 | 29 | 26 | 21 | 15 | 1 | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 345 | 358 | ### | ### | ### | ### | ### | ### |
| Jun 25 | 29 | 26 | 21 | 15 | 2 | ### | ### | ### | ### | ### | ### | 331 | 334 | 339 | 344 | 356 | ### | ### | ### | ### | ### | ### |
| Jun 26 | 29 | 26 | 21 | 16 | 4 | ### | ### | ### | ### | ### | ### | 331 | 334 | 338 | 344 | 355 | ### | ### | ### | ### | ### | ### |
| Jun 27 | 29 | 26 | 22 | 16 | 5 | ### | ### | ### | ### | ### | ### | 330 | 334 | 338 | 344 | 354 | ### | ### | ### | ### | ### | ### |
| Jun 28 | 30 | 26 | 22 | 16 | 6 | ### | ### | ### | ### | ### | ### | 330 | 334 | 338 | 343 | 353 | ### | ### | ### | ### | ### | ### |
| Jun 29 | 30 | 26 | 22 | 17 | 7 | ### | ### | ### | ### | ### | ### | 330 | 333 | 338 | 343 | 352 | ### | ### | ### | ### | ### | ### |
| Jun 30 | 30 | 27 | 22 | 17 | 8 | ### | ### | ### | ### | ### | ### | 330 | 333 | 337 | 343 | 352 | ### | ### | ### | ### | ### | ### |
| Jul 1 | 30 | 27 | 23 | 17 | 8 | ### | ### | ### | ### | ### | ### | 330 | 333 | 337 | 342 | 351 | ### | ### | ### | ### | ### | ### |
| Jul 2 | 30 | 27 | 23 | 18 | 9 | ### | ### | ### | ### | ### | ### | 329 | 333 | 336 | 342 | 350 | ### | ### | ### | ### | ### | ### |
| Jul 3 | 31 | 27 | 24 | 18 | 10 | ### | ### | ### | ### | ### | ### | 329 | 332 | 336 | 341 | 349 | ### | ### | ### | ### | ### | ### |
| Jul 4 | 31 | 28 | 24 | 19 | 11 | ### | ### | ### | ### | ### | ### | 329 | 332 | 336 | 341 | 348 | ### | ### | ### | ### | ### | ### |
| Jul 5 | 31 | 28 | 24 | 19 | 12 | ### | ### | ### | ### | ### | ### | 328 | 331 | 335 | 340 | 347 | ### | ### | ### | ### | ### | ### |
| Jul 6 | 32 | 29 | 25 | 20 | 13 | ### | ### | ### | ### | ### | ### | 328 | 331 | 335 | 339 | 346 | ### | ### | ### | ### | ### | ### |
| Jul 7 | 32 | 29 | 25 | 21 | 14 | ### | ### | ### | ### | ### | ### | 328 | 331 | 334 | 339 | 345 | ### | ### | ### | ### | ### | ### |
| Jul 8 | 32 | 29 | 26 | 21 | 15 | ### | ### | ### | ### | ### | ### | 327 | 330 | 334 | 338 | 344 | 357 | ### | ### | ### | ### | ### |
| Jul 9 | 33 | 30 | 26 | 22 | 16 | 3 | ### | ### | ### | ### | ### | 327 | 330 | 333 | 337 | 343 | 354 | ### | ### | ### | ### | ### |
| Jul 10 | 33 | 30 | 27 | 23 | 17 | 6 | ### | ### | ### | ### | ### | 326 | 329 | 333 | 337 | 342 | 351 | ### | ### | ### | ### | ### |
| Jul 11 | 34 | 31 | 27 | 23 | 18 | 9 | ### | ### | ### | ### | ### | 326 | 329 | 332 | 336 | 341 | 350 | ### | ### | ### | ### | ### |
| Jul 12 | 34 | 31 | 28 | 24 | 19 | 10 | ### | ### | ### | ### | ### | 325 | 328 | 331 | 335 | 340 | 348 | ### | ### | ### | ### | ### |
| Jul 13 | 35 | 32 | 29 | 25 | 20 | 12 | ### | ### | ### | ### | ### | 325 | 328 | 331 | 335 | 340 | 347 | ### | ### | ### | ### | ### |
| Jul 14 | 35 | 32 | 29 | 25 | 20 | 13 | ### | ### | ### | ### | ### | 324 | 327 | 330 | 334 | 339 | 345 | ### | ### | ### | ### | ### |
| Jul 15 | 36 | 33 | 30 | 26 | 21 | 15 | ### | ### | ### | ### | ### | 324 | 327 | 330 | 333 | 338 | 344 | 357 | ### | ### | ### | ### |
| Jul 16 | 36 | 33 | 30 | 27 | 22 | 16 | 3 | ### | ### | ### | ### | 323 | 326 | 329 | 332 | 337 | 343 | 353 | ### | ### | ### | ### |
| Jul 17 | 37 | 34 | 31 | 28 | 23 | 17 | 7 | ### | ### | ### | ### | 323 | 325 | 328 | 332 | 336 | 341 | 350 | ### | ### | ### | ### |
| Jul 18 | 37 | 35 | 32 | 28 | 24 | 19 | 10 | ### | ### | ### | ### | 322 | 325 | 328 | 331 | 335 | 340 | 348 | ### | ### | ### | ### |
| Jul 19 | 38 | 35 | 32 | 29 | 25 | 20 | 12 | ### | ### | ### | ### | 322 | 324 | 327 | 330 | 334 | 339 | 346 | ### | ### | ### | ### |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|--------|----|----------------|----|----|----|----|---------|----|----|----|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 |
| Jul 20 | 20 | 25 | 30 | 34 | 37 | 40 | 42 | 44 | 46 | 48 | 50 | 51 | 334 | 329 | 325 | 322 | 319 | 317 | 315 | 313 | 311 | 310 | 309 |
| Jul 21 | 21 | 26 | 31 | 35 | 38 | 41 | 43 | 45 | 47 | 49 | 50 | 51 | 333 | 328 | 325 | 321 | 319 | 316 | 314 | 313 | 311 | 309 | 308 |
| Jul 22 | 22 | 27 | 32 | 35 | 39 | 41 | 44 | 46 | 47 | 49 | 51 | 52 | 332 | 327 | 324 | 321 | 318 | 316 | 314 | 312 | 310 | 309 | 308 |
| Jul 23 | 23 | 28 | 33 | 36 | 39 | 42 | 44 | 46 | 48 | 50 | 51 | 52 | 331 | 326 | 323 | 320 | 317 | 315 | 313 | 311 | 310 | 308 | 307 |
| Jul 24 | 24 | 29 | 34 | 37 | 40 | 43 | 45 | 47 | 49 | 50 | 52 | 53 | 330 | 325 | 322 | 319 | 317 | 314 | 313 | 311 | 309 | 308 | 307 |
| Jul 25 | 25 | 30 | 35 | 38 | 41 | 43 | 46 | 47 | 49 | 51 | 52 | 53 | 328 | 324 | 321 | 318 | 316 | 314 | 312 | 310 | 309 | 307 | 306 |
| Jul 26 | 26 | 32 | 36 | 39 | 42 | 44 | 46 | 48 | 50 | 51 | 53 | 54 | 327 | 323 | 320 | 318 | 315 | 313 | 311 | 310 | 308 | 307 | 306 |
| Jul 27 | 27 | 33 | 37 | 40 | 42 | 45 | 47 | 49 | 50 | 52 | 53 | 54 | 326 | 322 | 319 | 317 | 314 | 312 | 311 | 309 | 308 | 306 | 305 |
| Jul 28 | 28 | 34 | 38 | 41 | 43 | 46 | 48 | 49 | 51 | 52 | 54 | 55 | 325 | 321 | 318 | 316 | 314 | 312 | 310 | 308 | 307 | 306 | 304 |
| Jul 29 | 29 | 35 | 39 | 42 | 44 | 46 | 48 | 50 | 52 | 53 | 54 | 56 | 324 | 320 | 318 | 315 | 313 | 311 | 309 | 308 | 306 | 305 | 304 |
| Jul 30 | 30 | 36 | 40 | 42 | 45 | 47 | 49 | 51 | 52 | 54 | 55 | 56 | 323 | 319 | 317 | 314 | 312 | 310 | 309 | 307 | 306 | 305 | 303 |
| Jul 31 | 31 | 37 | 41 | 43 | 46 | 48 | 50 | 51 | 53 | 54 | 55 | 57 | 322 | 318 | 316 | 313 | 311 | 310 | 308 | 306 | 305 | 304 | 303 |
| Aug 1 | 1 | 38 | 42 | 44 | 47 | 49 | 50 | 52 | 54 | 55 | 56 | 57 | 320 | 317 | 315 | 313 | 311 | 309 | 307 | 306 | 305 | 303 | 302 |
| Aug 2 | 2 | 40 | 43 | 45 | 47 | 49 | 51 | 53 | 54 | 55 | 57 | 58 | 319 | 316 | 314 | 312 | 310 | 308 | 307 | 305 | 304 | 303 | 302 |
| Aug 3 | 3 | 41 | 44 | 46 | 48 | 50 | 52 | 53 | 55 | 56 | 57 | 58 | 318 | 315 | 313 | 311 | 309 | 307 | 306 | 304 | 303 | 302 | 301 |
| Aug 4 | 4 | 42 | 45 | 47 | 49 | 51 | 53 | 54 | 56 | 57 | 58 | 59 | 317 | 314 | 312 | 310 | 308 | 307 | 305 | 304 | 303 | 301 | 300 |
| Aug 5 | 5 | 43 | 46 | 48 | 50 | 52 | 53 | 55 | 56 | 57 | 59 | 60 | 316 | 313 | 311 | 309 | 307 | 306 | 304 | 303 | 302 | 301 | 300 |
| Aug 6 | 6 | 44 | 47 | 49 | 51 | 53 | 54 | 56 | 57 | 58 | 59 | 60 | 315 | 312 | 310 | 308 | 307 | 305 | 304 | 302 | 301 | 300 | 299 |
| Aug 7 | 7 | 45 | 48 | 50 | 52 | 53 | 55 | 56 | 58 | 59 | 60 | 61 | 314 | 311 | 309 | 307 | 306 | 304 | 303 | 302 | 301 | 300 | 299 |
| Aug 8 | 8 | 46 | 49 | 51 | 53 | 54 | 56 | 57 | 58 | 59 | 60 | 61 | 313 | 310 | 308 | 307 | 305 | 303 | 302 | 301 | 300 | 299 | 298 |
| Aug 9 | 9 | 47 | 50 | 52 | 53 | 55 | 57 | 58 | 59 | 60 | 61 | 62 | 312 | 309 | 307 | 306 | 304 | 303 | 301 | 300 | 299 | 298 | 297 |
| Aug 10 | 10 | 48 | 51 | 53 | 54 | 56 | 57 | 59 | 60 | 61 | 62 | 63 | 310 | 308 | 306 | 305 | 303 | 302 | 301 | 300 | 299 | 298 | 297 |
| Aug 11 | 11 | 50 | 52 | 54 | 55 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 309 | 307 | 305 | 304 | 302 | 301 | 300 | 299 | 298 | 297 | 296 |
| Aug 12 | 12 | 51 | 53 | 55 | 56 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 308 | 306 | 305 | 303 | 302 | 300 | 299 | 298 | 297 | 296 | 295 |
| Aug 13 | 13 | 52 | 54 | 55 | 57 | 58 | 60 | 61 | 62 | 63 | 64 | 65 | 307 | 305 | 304 | 302 | 301 | 299 | 298 | 297 | 296 | 296 | 295 |
| Aug 14 | 14 | 53 | 55 | 56 | 58 | 59 | 61 | 62 | 63 | 64 | 64 | 65 | 306 | 304 | 303 | 301 | 300 | 299 | 298 | 297 | 296 | 295 | 294 |
| Aug 15 | 15 | 54 | 56 | 57 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 305 | 303 | 302 | 300 | 299 | 298 | 297 | 296 | 295 | 294 | 293 |
| Aug 16 | 16 | 55 | 57 | 58 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 304 | 302 | 301 | 299 | 298 | 297 | 296 | 295 | 294 | 294 | 293 |
| Aug 17 | 17 | 56 | 58 | 59 | 61 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 303 | 301 | 300 | 298 | 297 | 296 | 295 | 294 | 294 | 293 | 292 |
| Aug 18 | 18 | 57 | 59 | 60 | 62 | 63 | 64 | 65 | 66 | 66 | 67 | 68 | 302 | 300 | 299 | 298 | 296 | 295 | 294 | 294 | 293 | 292 | 291 |
| Aug 19 | 19 | 58 | 60 | 61 | 62 | 64 | 65 | 66 | 66 | 67 | 68 | 69 | 301 | 299 | 298 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 |
| Aug 20 | 20 | 59 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 299 | 298 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 | 290 |
| Aug 21 | 21 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 298 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 | 290 | 289 |
| Aug 22 | 22 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 71 | 297 | 296 | 295 | 294 | 293 | 292 | 291 | 291 | 290 | 289 | 289 |
| Aug 23 | 23 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 69 | 70 | 71 | 71 | 296 | 295 | 294 | 293 | 292 | 291 | 290 | 290 | 289 | 289 | 288 |
| Aug 24 | 24 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 70 | 71 | 71 | 72 | 295 | 294 | 293 | 292 | 291 | 290 | 290 | 289 | 288 | 288 | 287 |
| Aug 25 | 25 | 65 | 66 | 67 | 68 | 69 | 70 | 70 | 71 | 72 | 72 | 73 | 294 | 293 | 292 | 291 | 290 | 289 | 289 | 288 | 288 | 287 | 287 |
| Aug 26 | 26 | 66 | 67 | 68 | 69 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 293 | 292 | 291 | 290 | 289 | 289 | 288 | 287 | 287 | 286 | 286 |
| Aug 27 | 27 | 67 | 68 | 69 | 70 | 71 | 71 | 72 | 73 | 73 | 74 | 74 | 292 | 291 | 290 | 289 | 288 | 288 | 287 | 287 | 286 | 286 | 285 |
| Aug 28 | 28 | 68 | 69 | 70 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 75 | 291 | 290 | 289 | 288 | 287 | 287 | 286 | 286 | 285 | 285 | 284 |
| Aug 29 | 29 | 69 | 70 | 71 | 72 | 73 | 73 | 74 | 74 | 75 | 75 | 76 | 290 | 289 | 288 | 287 | 287 | 286 | 285 | 285 | 284 | 284 | 284 |
| Aug 30 | 30 | 70 | 71 | 72 | 73 | 73 | 74 | 75 | 75 | 76 | 76 | 76 | 289 | 288 | 287 | 286 | 286 | 285 | 285 | 284 | 284 | 283 | 283 |
| Aug 31 | 31 | 71 | 72 | 73 | 74 | 74 | 75 | 75 | 76 | 76 | 77 | 77 | 287 | 287 | 286 | 285 | 285 | 284 | 284 | 283 | 283 | 283 | 282 |
| Sep 1 | 1 | 73 | 73 | 74 | 75 | 75 | 76 | 76 | 77 | 77 | 77 | 78 | 286 | 286 | 285 | 284 | 284 | 283 | 283 | 283 | 282 | 282 | 281 |
| Sep 2 | 2 | 74 | 74 | 75 | 76 | 76 | 77 | 77 | 77 | 78 | 78 | 79 | 285 | 285 | 284 | 283 | 283 | 282 | 282 | 282 | 281 | 281 | 281 |
| Sep 3 | 3 | 75 | 75 | 76 | 77 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 284 | 284 | 283 | 282 | 282 | 282 | 281 | 281 | 281 | 280 | 280 |
| Sep 4 | 4 | 76 | 76 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 80 | 80 | 283 | 282 | 282 | 282 | 281 | 281 | 280 | 280 | 280 | 280 | 279 |
| Sep 5 | 5 | 77 | 78 | 78 | 78 | 79 | 79 | 80 | 80 | 80 | 80 | 81 | 282 | 281 | 281 | 281 | 280 | 280 | 280 | 279 | 279 | 279 | 279 |
| Sep 6 | 6 | 78 | 79 | 79 | 79 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 281 | 280 | 280 | 280 | 279 | 279 | 279 | 278 | 278 | 278 | 278 |
| Sep 7 | 7 | 79 | 80 | 80 | 80 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 280 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 277 | 277 | 277 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | | Latitude North | | | | | Sunset | | | | | |
|-----|----|----------------|----|----|----|----|---------|----|----|----|----|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|
| | | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| Jul | 20 | 51 | 52 | 53 | 55 | 56 | 56 | 57 | 58 | 59 | 60 | 60 | 309 | 307 | 306 | 305 | 304 | 303 | 302 | 301 | 301 | 300 | 299 |
| Jul | 21 | 51 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 59 | 60 | 61 | 308 | 307 | 306 | 305 | 304 | 303 | 302 | 301 | 300 | 300 | 299 |
| Jul | 22 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 60 | 61 | 308 | 306 | 305 | 304 | 303 | 302 | 302 | 301 | 300 | 299 | 299 |
| Jul | 23 | 52 | 54 | 55 | 56 | 57 | 58 | 58 | 59 | 60 | 61 | 61 | 307 | 306 | 305 | 304 | 303 | 302 | 301 | 300 | 300 | 299 | 298 |
| Jul | 24 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 60 | 61 | 62 | 307 | 305 | 304 | 303 | 302 | 302 | 301 | 300 | 299 | 299 | 298 |
| Jul | 25 | 53 | 55 | 56 | 57 | 58 | 58 | 59 | 60 | 61 | 61 | 62 | 306 | 305 | 304 | 303 | 302 | 301 | 300 | 300 | 299 | 298 | 298 |
| Jul | 26 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 60 | 61 | 62 | 62 | 306 | 304 | 303 | 302 | 302 | 301 | 300 | 299 | 299 | 298 | 297 |
| Jul | 27 | 54 | 56 | 57 | 58 | 58 | 59 | 60 | 61 | 61 | 62 | 63 | 305 | 304 | 303 | 302 | 301 | 300 | 300 | 299 | 298 | 298 | 297 |
| Jul | 28 | 55 | 56 | 57 | 58 | 59 | 60 | 60 | 61 | 62 | 62 | 63 | 304 | 303 | 302 | 301 | 301 | 300 | 299 | 298 | 298 | 297 | 297 |
| Jul | 29 | 56 | 57 | 58 | 59 | 59 | 60 | 61 | 62 | 62 | 63 | 63 | 304 | 303 | 302 | 301 | 300 | 299 | 299 | 298 | 297 | 297 | 296 |
| Jul | 30 | 56 | 57 | 58 | 59 | 60 | 61 | 61 | 62 | 63 | 63 | 64 | 303 | 302 | 301 | 300 | 300 | 299 | 298 | 298 | 297 | 296 | 296 |
| Jul | 31 | 57 | 58 | 59 | 60 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 303 | 302 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 |
| Aug | 1 | 57 | 58 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 302 | 301 | 300 | 299 | 299 | 298 | 297 | 297 | 296 | 295 | 295 |
| Aug | 2 | 58 | 59 | 60 | 61 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 302 | 301 | 300 | 299 | 298 | 297 | 297 | 296 | 296 | 295 | 295 |
| Aug | 3 | 58 | 59 | 60 | 61 | 62 | 63 | 63 | 64 | 64 | 65 | 65 | 301 | 300 | 299 | 298 | 298 | 297 | 296 | 296 | 295 | 295 | 294 |
| Aug | 4 | 59 | 60 | 61 | 62 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 300 | 300 | 299 | 298 | 297 | 296 | 296 | 295 | 295 | 294 | 294 |
| Aug | 5 | 60 | 60 | 61 | 62 | 63 | 64 | 64 | 65 | 65 | 66 | 66 | 300 | 299 | 298 | 297 | 297 | 296 | 295 | 295 | 294 | 294 | 293 |
| Aug | 6 | 60 | 61 | 62 | 63 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 299 | 298 | 298 | 297 | 296 | 295 | 295 | 294 | 294 | 293 | 293 |
| Aug | 7 | 61 | 62 | 62 | 63 | 64 | 65 | 65 | 66 | 66 | 67 | 67 | 299 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 293 | 293 | 292 |
| Aug | 8 | 61 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 67 | 67 | 68 | 298 | 297 | 296 | 296 | 295 | 294 | 294 | 293 | 293 | 292 | 292 |
| Aug | 9 | 62 | 63 | 64 | 64 | 65 | 66 | 66 | 67 | 67 | 68 | 68 | 297 | 297 | 296 | 295 | 294 | 294 | 293 | 293 | 292 | 292 | 291 |
| Aug | 10 | 63 | 63 | 64 | 65 | 66 | 66 | 67 | 67 | 68 | 68 | 69 | 297 | 296 | 295 | 295 | 294 | 293 | 293 | 292 | 292 | 291 | 291 |
| Aug | 11 | 63 | 64 | 65 | 65 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 296 | 295 | 295 | 294 | 293 | 293 | 292 | 292 | 291 | 291 | 290 |
| Aug | 12 | 64 | 65 | 65 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 295 | 295 | 294 | 293 | 293 | 292 | 292 | 291 | 291 | 290 | 290 |
| Aug | 13 | 65 | 65 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 295 | 294 | 293 | 293 | 292 | 292 | 291 | 291 | 290 | 290 | 289 |
| Aug | 14 | 65 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 294 | 293 | 293 | 292 | 292 | 291 | 291 | 290 | 290 | 289 | 289 |
| Aug | 15 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 293 | 293 | 292 | 292 | 291 | 291 | 290 | 290 | 289 | 289 | 288 |
| Aug | 16 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 293 | 292 | 292 | 291 | 290 | 290 | 290 | 289 | 289 | 288 | 288 |
| Aug | 17 | 67 | 68 | 68 | 69 | 70 | 70 | 70 | 71 | 71 | 72 | 72 | 292 | 292 | 291 | 290 | 290 | 289 | 289 | 289 | 288 | 288 | 287 |
| Aug | 18 | 68 | 68 | 69 | 70 | 70 | 71 | 71 | 71 | 72 | 72 | 73 | 291 | 291 | 290 | 290 | 289 | 289 | 288 | 288 | 288 | 287 | 287 |
| Aug | 19 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 72 | 73 | 73 | 291 | 290 | 290 | 289 | 289 | 288 | 288 | 287 | 287 | 287 | 286 |
| Aug | 20 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 73 | 74 | 290 | 290 | 289 | 289 | 288 | 288 | 287 | 287 | 287 | 286 | 286 |
| Aug | 21 | 70 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 73 | 74 | 74 | 289 | 289 | 288 | 288 | 287 | 287 | 287 | 286 | 286 | 286 | 285 |
| Aug | 22 | 71 | 71 | 72 | 72 | 73 | 73 | 73 | 74 | 74 | 74 | 75 | 289 | 288 | 288 | 287 | 287 | 286 | 286 | 286 | 285 | 285 | 285 |
| Aug | 23 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 74 | 75 | 75 | 75 | 288 | 287 | 287 | 287 | 286 | 286 | 285 | 285 | 285 | 285 | 284 |
| Aug | 24 | 72 | 73 | 73 | 73 | 74 | 74 | 75 | 75 | 75 | 75 | 76 | 287 | 287 | 286 | 286 | 286 | 285 | 285 | 285 | 284 | 284 | 284 |
| Aug | 25 | 73 | 73 | 74 | 74 | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 287 | 286 | 286 | 285 | 285 | 285 | 284 | 284 | 284 | 283 | 283 |
| Aug | 26 | 73 | 74 | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 77 | 77 | 286 | 285 | 285 | 285 | 284 | 284 | 284 | 283 | 283 | 283 | 283 |
| Aug | 27 | 74 | 75 | 75 | 75 | 76 | 76 | 76 | 77 | 77 | 77 | 77 | 285 | 285 | 284 | 284 | 284 | 283 | 283 | 283 | 283 | 282 | 282 |
| Aug | 28 | 75 | 75 | 76 | 76 | 76 | 77 | 77 | 77 | 77 | 78 | 78 | 284 | 284 | 284 | 283 | 283 | 283 | 282 | 282 | 282 | 282 | 282 |
| Aug | 29 | 76 | 76 | 76 | 77 | 77 | 77 | 78 | 78 | 78 | 78 | 78 | 284 | 283 | 283 | 283 | 282 | 282 | 282 | 282 | 281 | 281 | 281 |
| Aug | 30 | 76 | 77 | 77 | 77 | 78 | 78 | 78 | 78 | 79 | 79 | 79 | 283 | 283 | 282 | 282 | 282 | 281 | 281 | 281 | 281 | 281 | 280 |
| Aug | 31 | 77 | 77 | 78 | 78 | 78 | 79 | 79 | 79 | 79 | 79 | 80 | 282 | 282 | 282 | 281 | 281 | 281 | 281 | 280 | 280 | 280 | 280 |
| Sep | 1 | 78 | 78 | 78 | 79 | 79 | 79 | 79 | 80 | 80 | 80 | 80 | 281 | 281 | 281 | 281 | 280 | 280 | 280 | 280 | 280 | 279 | 279 |
| Sep | 2 | 79 | 79 | 79 | 79 | 80 | 80 | 80 | 80 | 80 | 81 | 81 | 281 | 280 | 280 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 279 |
| Sep | 3 | 79 | 80 | 80 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 280 | 280 | 280 | 279 | 279 | 279 | 279 | 279 | 278 | 278 | 278 |
| Sep | 4 | 80 | 80 | 80 | 81 | 81 | 81 | 81 | 81 | 82 | 82 | 82 | 279 | 279 | 279 | 279 | 278 | 278 | 278 | 278 | 278 | 278 | 278 |
| Sep | 5 | 81 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 279 | 278 | 278 | 278 | 278 | 278 | 277 | 277 | 277 | 277 | 277 |
| Sep | 6 | 81 | 82 | 82 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 278 | 278 | 277 | 277 | 277 | 277 | 277 | 277 | 277 | 277 | 276 |
| Sep | 7 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 84 | 277 | 277 | 277 | 277 | 276 | 276 | 276 | 276 | 276 | 276 | 276 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 |
| Jul | 20 | 68 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 65 | 64 | 291 | 292 | 292 | 292 | 293 | 293 | 293 | 294 | 294 | 295 | 296 |
| Jul | 21 | 69 | 68 | 68 | 68 | 67 | 67 | 67 | 66 | 66 | 65 | 64 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 295 | 295 |
| Jul | 22 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 65 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 295 |
| Jul | 23 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | 294 | 295 |
| Jul | 24 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 66 | 65 | 291 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 | 295 |
| Jul | 25 | 69 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 65 | 290 | 291 | 291 | 291 | 291 | 292 | 292 | 293 | 293 | 294 | 294 |
| Jul | 26 | 70 | 69 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 66 | 66 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 292 | 293 | 293 | 294 |
| Jul | 27 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 68 | 67 | 67 | 66 | 290 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 293 | 293 | 294 |
| Jul | 28 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 66 | 290 | 290 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 293 | 293 |
| Jul | 29 | 70 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 67 | 67 | 289 | 290 | 290 | 290 | 290 | 291 | 291 | 292 | 292 | 293 | 293 |
| Jul | 30 | 71 | 70 | 70 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 67 | 289 | 289 | 290 | 290 | 290 | 291 | 291 | 291 | 292 | 292 | 293 |
| Jul | 31 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 69 | 68 | 68 | 67 | 289 | 289 | 289 | 290 | 290 | 290 | 291 | 291 | 292 | 292 | 293 |
| Aug | 1 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 289 | 289 | 289 | 289 | 290 | 290 | 290 | 291 | 291 | 292 | 292 |
| Aug | 2 | 71 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 68 | 68 | 288 | 289 | 289 | 289 | 289 | 290 | 290 | 291 | 291 | 291 | 292 |
| Aug | 3 | 72 | 71 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 69 | 68 | 288 | 288 | 289 | 289 | 289 | 290 | 290 | 291 | 291 | 291 | 292 |
| Aug | 4 | 72 | 72 | 71 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 68 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | 290 | 291 | 291 | 291 |
| Aug | 5 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 70 | 69 | 69 | 287 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | 290 | 291 | 291 |
| Aug | 6 | 73 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 69 | 69 | 287 | 287 | 288 | 288 | 289 | 289 | 289 | 290 | 290 | 290 | 291 |
| Aug | 7 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 69 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | 289 | 290 | 290 |
| Aug | 8 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 71 | 70 | 70 | 287 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | 290 | 290 |
| Aug | 9 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 70 | 70 | 286 | 287 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 | 290 |
| Aug | 10 | 74 | 73 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 70 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | 288 | 288 | 289 | 289 |
| Aug | 11 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 72 | 71 | 71 | 286 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | 288 | 289 | 289 |
| Aug | 12 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 71 | 285 | 286 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | 288 | 289 |
| Aug | 13 | 75 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 285 | 285 | 286 | 286 | 286 | 286 | 287 | 287 | 287 | 288 | 288 |
| Aug | 14 | 75 | 75 | 74 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 72 | 285 | 285 | 285 | 285 | 286 | 286 | 286 | 287 | 287 | 287 | 288 |
| Aug | 15 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 73 | 72 | 284 | 285 | 285 | 285 | 285 | 286 | 286 | 286 | 287 | 287 | 288 |
| Aug | 16 | 76 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 72 | 284 | 284 | 285 | 285 | 285 | 285 | 286 | 286 | 286 | 287 | 287 |
| Aug | 17 | 76 | 76 | 75 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 284 | 284 | 284 | 284 | 285 | 285 | 285 | 286 | 286 | 286 | 287 |
| Aug | 18 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 74 | 73 | 283 | 284 | 284 | 284 | 284 | 285 | 285 | 285 | 286 | 286 | 286 |
| Aug | 19 | 77 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 74 | 283 | 283 | 284 | 284 | 284 | 284 | 285 | 285 | 285 | 286 | 286 |
| Aug | 20 | 77 | 77 | 76 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 283 | 283 | 283 | 283 | 284 | 284 | 284 | 285 | 285 | 285 | 286 |
| Aug | 21 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 75 | 74 | 282 | 283 | 283 | 283 | 283 | 284 | 284 | 284 | 284 | 285 | 285 |
| Aug | 22 | 78 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 76 | 75 | 75 | 282 | 282 | 283 | 283 | 283 | 283 | 283 | 284 | 284 | 284 | 285 |
| Aug | 23 | 78 | 78 | 77 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 282 | 282 | 282 | 282 | 283 | 283 | 283 | 283 | 284 | 284 | 284 |
| Aug | 24 | 78 | 78 | 78 | 78 | 77 | 77 | 77 | 77 | 76 | 76 | 76 | 281 | 282 | 282 | 282 | 282 | 282 | 283 | 283 | 283 | 284 | 284 |
| Aug | 25 | 79 | 78 | 78 | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 281 | 281 | 281 | 282 | 282 | 282 | 282 | 283 | 283 | 283 | 284 |
| Aug | 26 | 79 | 79 | 79 | 78 | 78 | 78 | 78 | 77 | 77 | 77 | 76 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | 282 | 283 | 283 | 283 |
| Aug | 27 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 77 | 77 | 280 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | 282 | 282 | 283 |
| Aug | 28 | 80 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 78 | 77 | 280 | 280 | 280 | 281 | 281 | 281 | 281 | 281 | 282 | 282 | 282 |
| Aug | 29 | 80 | 80 | 80 | 79 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 280 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | 281 | 282 | 282 |
| Aug | 30 | 80 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 79 | 78 | 78 | 279 | 279 | 280 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | 282 |
| Aug | 31 | 81 | 81 | 80 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 78 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 280 | 281 | 281 | 281 |
| Sep | 1 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 279 | 279 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 280 | 281 |
| Sep | 2 | 81 | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 80 | 79 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | 279 | 280 | 280 | 280 |
| Sep | 3 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 278 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | 280 | 280 |
| Sep | 4 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 80 | 277 | 278 | 278 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 279 |
| Sep | 5 | 83 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 277 | 277 | 277 | 278 | 278 | 278 | 278 | 278 | 278 | 279 | 279 |
| Sep | 6 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 82 | 82 | 81 | 81 | 277 | 277 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 278 | 279 |
| Sep | 7 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 81 | 276 | 276 | 277 | 277 | 277 | 277 | 277 | 277 | 278 | 278 | 278 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|-----|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | Sunset | | | | | Sunrise | | | | | Sunset | | | | | | |
| | | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| Jul | 20 | 64 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 296 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 305 | 307 |
| Jul | 21 | 64 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 55 | 53 | 295 | 296 | 297 | 298 | 298 | 299 | 301 | 302 | 303 | 305 | 306 |
| Jul | 22 | 65 | 64 | 63 | 62 | 62 | 61 | 59 | 58 | 57 | 55 | 54 | 295 | 296 | 296 | 297 | 298 | 299 | 300 | 301 | 303 | 304 | 306 |
| Jul | 23 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 306 |
| Jul | 24 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 54 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 304 | 305 |
| Jul | 25 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 294 | 295 | 296 | 296 | 297 | 298 | 299 | 300 | 302 | 303 | 305 |
| Jul | 26 | 66 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 55 | 294 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 303 | 305 |
| Jul | 27 | 66 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 55 | 294 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 303 | 304 |
| Jul | 28 | 66 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 293 | 294 | 295 | 296 | 296 | 297 | 298 | 299 | 301 | 302 | 304 |
| Jul | 29 | 67 | 66 | 65 | 64 | 64 | 63 | 62 | 61 | 59 | 58 | 56 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 | 303 |
| Jul | 30 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 303 |
| Jul | 31 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 57 | 293 | 293 | 294 | 295 | 295 | 296 | 297 | 298 | 300 | 301 | 302 |
| Aug | 1 | 67 | 67 | 66 | 65 | 65 | 64 | 63 | 62 | 60 | 59 | 58 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 |
| Aug | 2 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 |
| Aug | 3 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 300 | 301 |
| Aug | 4 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 60 | 59 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 301 |
| Aug | 5 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 59 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 299 | 300 |
| Aug | 6 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 61 | 60 | 291 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 298 | 300 |
| Aug | 7 | 69 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 62 | 60 | 290 | 291 | 292 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 |
| Aug | 8 | 70 | 69 | 68 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 290 | 291 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 297 | 299 |
| Aug | 9 | 70 | 69 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 63 | 61 | 290 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 |
| Aug | 10 | 70 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 289 | 290 | 290 | 291 | 292 | 293 | 293 | 294 | 295 | 296 | 298 |
| Aug | 11 | 71 | 70 | 70 | 69 | 68 | 67 | 67 | 66 | 65 | 64 | 62 | 289 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 | 297 |
| Aug | 12 | 71 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 289 | 289 | 290 | 290 | 291 | 292 | 292 | 293 | 294 | 295 | 297 |
| Aug | 13 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 66 | 65 | 63 | 288 | 289 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 296 |
| Aug | 14 | 72 | 71 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 64 | 288 | 288 | 289 | 290 | 290 | 291 | 292 | 292 | 293 | 294 | 296 |
| Aug | 15 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 66 | 64 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 293 | 294 | 295 |
| Aug | 16 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 67 | 66 | 65 | 287 | 288 | 288 | 289 | 289 | 290 | 291 | 292 | 292 | 293 | 295 |
| Aug | 17 | 73 | 72 | 72 | 71 | 71 | 70 | 69 | 68 | 68 | 67 | 65 | 287 | 287 | 288 | 288 | 289 | 290 | 290 | 291 | 292 | 293 | 294 |
| Aug | 18 | 73 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 67 | 66 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 291 | 291 | 292 | 294 |
| Aug | 19 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 69 | 69 | 68 | 66 | 286 | 286 | 287 | 287 | 288 | 289 | 289 | 290 | 291 | 292 | 293 |
| Aug | 20 | 74 | 74 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 68 | 67 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 290 | 291 | 292 |
| Aug | 21 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 285 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 290 | 291 | 292 |
| Aug | 22 | 75 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 70 | 69 | 68 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 289 | 289 | 290 | 291 |
| Aug | 23 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 288 | 289 | 290 | 291 |
| Aug | 24 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 72 | 71 | 70 | 69 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 288 | 289 | 290 |
| Aug | 25 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 72 | 71 | 70 | 284 | 284 | 284 | 285 | 285 | 286 | 287 | 287 | 288 | 289 | 290 |
| Aug | 26 | 76 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 71 | 70 | 283 | 284 | 284 | 284 | 285 | 285 | 286 | 287 | 287 | 288 | 289 |
| Aug | 27 | 77 | 76 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 71 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 289 |
| Aug | 28 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 71 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 288 |
| Aug | 29 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 287 | 287 |
| Aug | 30 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 282 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 287 |
| Aug | 31 | 78 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 |
| Sep | 1 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 286 |
| Sep | 2 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 74 | 280 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 |
| Sep | 3 | 80 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 280 | 280 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 |
| Sep | 4 | 80 | 80 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 279 | 280 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 |
| Sep | 5 | 81 | 80 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 |
| Sep | 6 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 279 | 279 | 279 | 279 | 280 | 280 | 281 | 281 | 282 | 282 | 283 |
| Sep | 7 | 81 | 81 | 81 | 81 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 281 | 281 | 282 | 282 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Jul 20 | 20 | 53 | 52 | 51 | 50 | 48 | 47 | 46 | 44 | 42 | 40 | 38 | 307 | 308 | 309 | 310 | 311 | 312 | 314 | 315 | 317 | 319 | 321 |
| Jul 21 | 21 | 53 | 52 | 51 | 50 | 49 | 48 | 46 | 45 | 43 | 41 | 39 | 306 | 307 | 308 | 310 | 311 | 312 | 313 | 315 | 317 | 319 | 321 |
| Jul 22 | 22 | 54 | 53 | 52 | 50 | 49 | 48 | 47 | 45 | 43 | 41 | 39 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 | 316 | 318 | 320 |
| Jul 23 | 23 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 44 | 42 | 40 | 306 | 307 | 308 | 309 | 310 | 311 | 313 | 314 | 316 | 317 | 319 |
| Jul 24 | 24 | 54 | 53 | 52 | 51 | 50 | 49 | 47 | 46 | 44 | 43 | 41 | 305 | 306 | 307 | 308 | 309 | 311 | 312 | 314 | 315 | 317 | 319 |
| Jul 25 | 25 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 46 | 45 | 43 | 41 | 305 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 | 316 | 318 |
| Jul 26 | 26 | 55 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 44 | 42 | 305 | 305 | 306 | 307 | 309 | 310 | 311 | 312 | 314 | 316 | 318 |
| Jul 27 | 27 | 55 | 55 | 54 | 53 | 51 | 50 | 49 | 48 | 46 | 44 | 42 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 | 313 | 315 | 317 |
| Jul 28 | 28 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 47 | 45 | 43 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 313 | 314 | 316 |
| Jul 29 | 29 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 47 | 46 | 44 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 | 314 | 316 |
| Jul 30 | 30 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 46 | 44 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 312 | 313 | 315 |
| Jul 31 | 31 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 48 | 47 | 45 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 310 | 311 | 313 | 314 |
| Aug 1 | 1 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 50 | 49 | 47 | 46 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 | 314 |
| Aug 2 | 2 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 46 | 302 | 302 | 303 | 304 | 305 | 306 | 307 | 309 | 310 | 311 | 313 |
| Aug 3 | 3 | 58 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 50 | 49 | 47 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 311 | 312 |
| Aug 4 | 4 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 48 | 301 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 309 | 310 | 312 |
| Aug 5 | 5 | 59 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 50 | 48 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 311 |
| Aug 6 | 6 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 49 | 300 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 309 | 310 |
| Aug 7 | 7 | 60 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 50 | 299 | 300 | 301 | 302 | 302 | 303 | 304 | 306 | 307 | 308 | 309 |
| Aug 8 | 8 | 61 | 60 | 59 | 58 | 58 | 57 | 56 | 54 | 53 | 52 | 51 | 299 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 309 |
| Aug 9 | 9 | 61 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 51 | 298 | 299 | 300 | 300 | 301 | 302 | 303 | 304 | 305 | 307 | 308 |
| Aug 10 | 10 | 62 | 61 | 60 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 52 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 |
| Aug 11 | 11 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 297 | 298 | 299 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 307 |
| Aug 12 | 12 | 63 | 62 | 61 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 53 | 297 | 297 | 298 | 299 | 300 | 300 | 301 | 302 | 303 | 305 | 306 |
| Aug 13 | 13 | 63 | 63 | 62 | 61 | 60 | 60 | 59 | 58 | 57 | 55 | 54 | 296 | 297 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 |
| Aug 14 | 14 | 64 | 63 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 296 | 296 | 297 | 298 | 298 | 299 | 300 | 301 | 302 | 303 | 304 |
| Aug 15 | 15 | 64 | 64 | 63 | 62 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 295 | 296 | 296 | 297 | 298 | 299 | 300 | 300 | 301 | 303 | 304 |
| Aug 16 | 16 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 60 | 59 | 57 | 56 | 295 | 295 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 302 | 303 |
| Aug 17 | 17 | 65 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 294 | 295 | 295 | 296 | 297 | 297 | 298 | 299 | 300 | 301 | 302 |
| Aug 18 | 18 | 66 | 65 | 65 | 64 | 63 | 63 | 62 | 61 | 60 | 59 | 58 | 294 | 294 | 295 | 295 | 296 | 297 | 298 | 298 | 299 | 300 | 301 |
| Aug 19 | 19 | 66 | 66 | 65 | 65 | 64 | 63 | 62 | 62 | 61 | 60 | 59 | 293 | 294 | 294 | 295 | 295 | 296 | 297 | 298 | 299 | 300 | 301 |
| Aug 20 | 20 | 67 | 66 | 66 | 65 | 65 | 64 | 63 | 62 | 61 | 60 | 59 | 292 | 293 | 294 | 294 | 295 | 296 | 296 | 297 | 298 | 299 | 300 |
| Aug 21 | 21 | 68 | 67 | 66 | 66 | 65 | 64 | 64 | 63 | 62 | 61 | 60 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 296 | 297 | 298 | 299 |
| Aug 22 | 22 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 64 | 63 | 62 | 61 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 | 298 |
| Aug 23 | 23 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 62 | 291 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 | 298 |
| Aug 24 | 24 | 69 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 62 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 294 | 295 | 296 | 297 |
| Aug 25 | 25 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 66 | 65 | 64 | 63 | 290 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 295 | 295 | 296 |
| Aug 26 | 26 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 65 | 65 | 64 | 289 | 290 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 295 | 295 |
| Aug 27 | 27 | 71 | 70 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 65 | 65 | 289 | 289 | 289 | 290 | 291 | 291 | 292 | 292 | 293 | 294 | 295 |
| Aug 28 | 28 | 71 | 71 | 71 | 70 | 69 | 69 | 68 | 68 | 67 | 66 | 65 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 | 293 | 294 |
| Aug 29 | 29 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 66 | 287 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 | 293 |
| Aug 30 | 30 | 73 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 67 | 287 | 287 | 288 | 288 | 289 | 289 | 290 | 290 | 291 | 292 | 292 |
| Aug 31 | 31 | 73 | 73 | 72 | 72 | 71 | 71 | 70 | 70 | 69 | 68 | 68 | 286 | 287 | 287 | 287 | 288 | 288 | 289 | 290 | 290 | 291 | 292 |
| Sep 1 | 1 | 74 | 73 | 73 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 286 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 289 | 290 | 291 |
| Sep 2 | 2 | 74 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 71 | 70 | 69 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 288 | 289 | 289 | 290 |
| Sep 3 | 3 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 72 | 71 | 71 | 70 | 284 | 285 | 285 | 286 | 286 | 286 | 287 | 287 | 288 | 289 | 289 |
| Sep 4 | 4 | 76 | 75 | 75 | 74 | 74 | 74 | 73 | 73 | 72 | 71 | 71 | 284 | 284 | 285 | 285 | 285 | 286 | 286 | 287 | 287 | 288 | 288 |
| Sep 5 | 5 | 76 | 76 | 75 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 72 | 283 | 284 | 284 | 284 | 285 | 285 | 286 | 286 | 287 | 287 | 288 |
| Sep 6 | 6 | 77 | 76 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 283 | 283 | 283 | 284 | 284 | 284 | 285 | 285 | 286 | 286 | 287 |
| Sep 7 | 7 | 77 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 74 | 74 | 73 | 282 | 282 | 283 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 286 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | Sunset | | | | | Sunrise | | | | | Sunset | | | | | | |
| | | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Jul 20 | 20 | 38 | 36 | 33 | 30 | 26 | 21 | 14 | ### | ### | ### | ### | 321 | 324 | 326 | 329 | 333 | 338 | 344 | ### | ### | ### | ### |
| Jul 21 | 21 | 39 | 36 | 34 | 31 | 27 | 22 | 16 | ### | ### | ### | ### | 321 | 323 | 326 | 329 | 332 | 337 | 343 | 354 | ### | ### | ### |
| Jul 22 | 22 | 39 | 37 | 34 | 31 | 28 | 23 | 17 | 6 | ### | ### | ### | 320 | 322 | 325 | 328 | 331 | 336 | 341 | 351 | ### | ### | ### |
| Jul 23 | 23 | 40 | 38 | 35 | 32 | 29 | 24 | 19 | 9 | ### | ### | ### | 319 | 322 | 324 | 327 | 330 | 335 | 340 | 348 | ### | ### | ### |
| Jul 24 | 24 | 41 | 38 | 36 | 33 | 30 | 25 | 20 | 12 | ### | ### | ### | 319 | 321 | 323 | 326 | 329 | 333 | 338 | 346 | ### | ### | ### |
| Jul 25 | 25 | 41 | 39 | 37 | 34 | 31 | 27 | 22 | 14 | ### | ### | ### | 318 | 320 | 323 | 325 | 329 | 332 | 337 | 344 | ### | ### | ### |
| Jul 26 | 26 | 42 | 40 | 37 | 35 | 31 | 28 | 23 | 16 | ### | ### | ### | 318 | 320 | 322 | 325 | 328 | 331 | 336 | 342 | 353 | ### | ### |
| Jul 27 | 27 | 42 | 40 | 38 | 35 | 32 | 29 | 24 | 18 | 7 | ### | ### | 317 | 319 | 321 | 324 | 327 | 330 | 335 | 340 | 349 | ### | ### |
| Jul 28 | 28 | 43 | 41 | 39 | 36 | 33 | 30 | 25 | 20 | 11 | ### | ### | 316 | 318 | 320 | 323 | 326 | 329 | 333 | 339 | 346 | ### | ### |
| Jul 29 | 29 | 44 | 42 | 40 | 37 | 34 | 31 | 27 | 21 | 14 | ### | ### | 316 | 318 | 320 | 322 | 325 | 328 | 332 | 337 | 344 | ### | ### |
| Jul 30 | 30 | 44 | 42 | 40 | 38 | 35 | 32 | 28 | 23 | 16 | ### | ### | 315 | 317 | 319 | 321 | 324 | 327 | 331 | 336 | 342 | 354 | ### |
| Jul 31 | 31 | 45 | 43 | 41 | 39 | 36 | 33 | 29 | 24 | 18 | 6 | ### | 314 | 316 | 318 | 321 | 323 | 326 | 330 | 334 | 340 | 349 | ### |
| Aug 1 | 1 | 46 | 44 | 42 | 39 | 37 | 34 | 30 | 26 | 20 | 11 | ### | 314 | 315 | 317 | 320 | 322 | 325 | 329 | 333 | 338 | 346 | ### |
| Aug 2 | 2 | 46 | 45 | 43 | 40 | 38 | 35 | 31 | 27 | 22 | 14 | ### | 313 | 315 | 317 | 319 | 321 | 324 | 327 | 331 | 336 | 344 | ### |
| Aug 3 | 3 | 47 | 45 | 43 | 41 | 39 | 36 | 33 | 29 | 24 | 16 | ### | 312 | 314 | 316 | 318 | 320 | 323 | 326 | 330 | 335 | 341 | 353 |
| Aug 4 | 4 | 48 | 46 | 44 | 42 | 40 | 37 | 34 | 30 | 25 | 19 | 7 | 312 | 313 | 315 | 317 | 319 | 322 | 325 | 329 | 333 | 339 | 348 |
| Aug 5 | 5 | 48 | 47 | 45 | 43 | 41 | 38 | 35 | 31 | 27 | 21 | 12 | 311 | 313 | 314 | 316 | 319 | 321 | 324 | 328 | 332 | 337 | 345 |
| Aug 6 | 6 | 49 | 47 | 46 | 44 | 41 | 39 | 36 | 32 | 28 | 23 | 15 | 310 | 312 | 314 | 315 | 318 | 320 | 323 | 326 | 330 | 335 | 342 |
| Aug 7 | 7 | 50 | 48 | 46 | 45 | 42 | 40 | 37 | 34 | 30 | 25 | 18 | 309 | 311 | 313 | 315 | 317 | 319 | 322 | 325 | 329 | 334 | 340 |
| Aug 8 | 8 | 51 | 49 | 47 | 45 | 43 | 41 | 38 | 35 | 31 | 26 | 20 | 309 | 310 | 312 | 314 | 316 | 318 | 321 | 324 | 327 | 332 | 338 |
| Aug 9 | 9 | 51 | 50 | 48 | 46 | 44 | 42 | 39 | 36 | 33 | 28 | 22 | 308 | 310 | 311 | 313 | 315 | 317 | 320 | 323 | 326 | 330 | 336 |
| Aug 10 | 10 | 52 | 50 | 49 | 47 | 45 | 43 | 40 | 37 | 34 | 30 | 24 | 307 | 309 | 310 | 312 | 314 | 316 | 319 | 321 | 325 | 329 | 334 |
| Aug 11 | 11 | 53 | 51 | 50 | 48 | 46 | 44 | 41 | 39 | 35 | 31 | 26 | 307 | 308 | 310 | 311 | 313 | 315 | 318 | 320 | 323 | 327 | 332 |
| Aug 12 | 12 | 53 | 52 | 50 | 49 | 47 | 45 | 42 | 40 | 37 | 33 | 28 | 306 | 307 | 309 | 310 | 312 | 314 | 317 | 319 | 322 | 326 | 330 |
| Aug 13 | 13 | 54 | 53 | 51 | 50 | 48 | 46 | 43 | 41 | 38 | 34 | 30 | 305 | 306 | 308 | 310 | 311 | 313 | 316 | 318 | 321 | 324 | 328 |
| Aug 14 | 14 | 55 | 54 | 52 | 50 | 49 | 47 | 44 | 42 | 39 | 36 | 32 | 304 | 306 | 307 | 309 | 310 | 312 | 314 | 317 | 320 | 323 | 327 |
| Aug 15 | 15 | 56 | 54 | 53 | 51 | 50 | 48 | 46 | 43 | 40 | 37 | 33 | 304 | 305 | 306 | 308 | 310 | 311 | 313 | 316 | 318 | 321 | 325 |
| Aug 16 | 16 | 56 | 55 | 54 | 52 | 50 | 49 | 47 | 44 | 42 | 39 | 35 | 303 | 304 | 306 | 307 | 309 | 310 | 312 | 315 | 317 | 320 | 324 |
| Aug 17 | 17 | 57 | 56 | 54 | 53 | 51 | 50 | 48 | 45 | 43 | 40 | 36 | 302 | 303 | 305 | 306 | 308 | 309 | 311 | 314 | 316 | 319 | 322 |
| Aug 18 | 18 | 58 | 57 | 55 | 54 | 52 | 51 | 49 | 46 | 44 | 41 | 38 | 301 | 303 | 304 | 305 | 307 | 308 | 310 | 312 | 315 | 317 | 321 |
| Aug 19 | 19 | 59 | 57 | 56 | 55 | 53 | 52 | 50 | 48 | 45 | 43 | 39 | 301 | 302 | 303 | 304 | 306 | 308 | 309 | 311 | 314 | 316 | 319 |
| Aug 20 | 20 | 59 | 58 | 57 | 56 | 54 | 52 | 51 | 49 | 46 | 44 | 41 | 300 | 301 | 302 | 304 | 305 | 307 | 308 | 310 | 312 | 315 | 318 |
| Aug 21 | 21 | 60 | 59 | 58 | 56 | 55 | 53 | 52 | 50 | 48 | 45 | 42 | 299 | 300 | 301 | 303 | 304 | 306 | 307 | 309 | 311 | 314 | 316 |
| Aug 22 | 22 | 61 | 60 | 59 | 57 | 56 | 54 | 53 | 51 | 49 | 46 | 44 | 298 | 300 | 301 | 302 | 303 | 305 | 306 | 308 | 310 | 312 | 315 |
| Aug 23 | 23 | 62 | 60 | 59 | 58 | 57 | 55 | 54 | 52 | 50 | 48 | 45 | 298 | 299 | 300 | 301 | 302 | 304 | 305 | 307 | 309 | 311 | 314 |
| Aug 24 | 24 | 62 | 61 | 60 | 59 | 58 | 56 | 55 | 53 | 51 | 49 | 46 | 297 | 298 | 299 | 300 | 301 | 303 | 304 | 306 | 308 | 310 | 312 |
| Aug 25 | 25 | 63 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 52 | 50 | 48 | 296 | 297 | 298 | 299 | 300 | 302 | 303 | 305 | 307 | 309 | 311 |
| Aug 26 | 26 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 55 | 53 | 51 | 49 | 295 | 296 | 297 | 298 | 300 | 301 | 302 | 304 | 305 | 307 | 310 |
| Aug 27 | 27 | 65 | 64 | 63 | 62 | 60 | 59 | 58 | 56 | 55 | 53 | 50 | 295 | 296 | 296 | 298 | 299 | 300 | 301 | 303 | 304 | 306 | 308 |
| Aug 28 | 28 | 65 | 64 | 64 | 62 | 61 | 60 | 59 | 57 | 56 | 54 | 52 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 302 | 303 | 305 | 307 |
| Aug 29 | 29 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 58 | 57 | 55 | 53 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 301 | 302 | 304 | 306 |
| Aug 30 | 30 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 59 | 58 | 56 | 54 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 300 | 301 | 303 | 304 |
| Aug 31 | 31 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 60 | 59 | 57 | 56 | 292 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 300 | 301 | 303 |
| Sep 1 | 1 | 68 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 60 | 59 | 57 | 291 | 292 | 292 | 293 | 294 | 295 | 296 | 297 | 299 | 300 | 302 |
| Sep 2 | 2 | 69 | 68 | 68 | 67 | 66 | 65 | 64 | 63 | 61 | 60 | 58 | 290 | 291 | 292 | 292 | 293 | 294 | 295 | 296 | 298 | 299 | 301 |
| Sep 3 | 3 | 70 | 69 | 68 | 68 | 67 | 66 | 65 | 64 | 62 | 61 | 59 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 295 | 297 | 298 | 299 |
| Sep 4 | 4 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 65 | 63 | 62 | 61 | 288 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 296 | 297 | 298 |
| Sep 5 | 5 | 72 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 64 | 63 | 62 | 288 | 288 | 289 | 290 | 291 | 291 | 292 | 293 | 294 | 296 | 297 |
| Sep 6 | 6 | 72 | 72 | 71 | 70 | 69 | 69 | 68 | 67 | 66 | 64 | 63 | 287 | 288 | 288 | 289 | 290 | 290 | 291 | 292 | 293 | 295 | 296 |
| Sep 7 | 7 | 73 | 72 | 72 | 71 | 70 | 70 | 69 | 68 | 67 | 65 | 64 | 286 | 287 | 287 | 288 | 289 | 289 | 290 | 291 | 292 | 293 | 295 |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | | Latitude North | | | | | Sunset | | | | | |
|--------|-----|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 |
| Sep 8 | 80 | 81 | 81 | 81 | 82 | 82 | 82 | 82 | 83 | 83 | 83 | 279 | 278 | 278 | 278 | 277 | 277 | 277 | 277 | 277 | 276 | 276 | |
| Sep 9 | 81 | 82 | 82 | 82 | 83 | 83 | 83 | 83 | 83 | 84 | 84 | 277 | 277 | 277 | 277 | 276 | 276 | 276 | 276 | 276 | 276 | 275 | |
| Sep 10 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 85 | 276 | 276 | 276 | 276 | 276 | 275 | 275 | 275 | 275 | 275 | 275 | |
| Sep 11 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 275 | 275 | 275 | 275 | 275 | 274 | 274 | 274 | 274 | 274 | 274 | |
| Sep 12 | 85 | 85 | 85 | 85 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 274 | 274 | 274 | 274 | 274 | 274 | 273 | 273 | 273 | 273 | 273 | |
| Sep 13 | 86 | 86 | 86 | 86 | 86 | 86 | 87 | 87 | 87 | 87 | 87 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 272 | 272 | |
| Sep 14 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 88 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | |
| Sep 15 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | |
| Sep 16 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | |
| Sep 17 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | |
| Sep 18 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 269 | |
| Sep 19 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | |
| Sep 20 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | |
| Sep 21 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 264 | 264 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | |
| Sep 22 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 265 | |
| Sep 23 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 95 | 262 | 262 | 262 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | |
| Sep 24 | 98 | 98 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 260 | 261 | 261 | 262 | 262 | 263 | 263 | 263 | 263 | 263 | 264 | |
| Sep 25 | 100 | 99 | 99 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 96 | 259 | 260 | 260 | 261 | 261 | 262 | 262 | 262 | 263 | 263 | 263 | |
| Sep 26 | 101 | 100 | 100 | 99 | 99 | 98 | 98 | 98 | 97 | 97 | 97 | 258 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 262 | 262 | 262 | |
| Sep 27 | 102 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 98 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 262 | |
| Sep 28 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 98 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 | 261 | |
| Sep 29 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 255 | 255 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | |
| Sep 30 | 105 | 105 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 253 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | |
| Oct 1 | 107 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 252 | 253 | 254 | 255 | 255 | 256 | 257 | 257 | 258 | 258 | 258 | |
| Oct 2 | 108 | 107 | 106 | 105 | 105 | 104 | 103 | 103 | 102 | 102 | 102 | 251 | 252 | 253 | 254 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | |
| Oct 3 | 109 | 108 | 107 | 106 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 250 | 251 | 252 | 253 | 253 | 254 | 255 | 255 | 256 | 256 | 257 | |
| Oct 4 | 110 | 109 | 108 | 107 | 107 | 106 | 105 | 105 | 104 | 104 | 103 | 249 | 250 | 251 | 252 | 252 | 253 | 254 | 254 | 255 | 256 | 256 | |
| Oct 5 | 111 | 110 | 109 | 108 | 108 | 107 | 106 | 106 | 105 | 104 | 104 | 247 | 249 | 250 | 251 | 251 | 252 | 253 | 254 | 254 | 255 | 255 | |
| Oct 6 | 113 | 111 | 110 | 109 | 109 | 108 | 107 | 106 | 106 | 105 | 105 | 246 | 247 | 249 | 250 | 250 | 251 | 252 | 253 | 253 | 254 | 254 | |
| Oct 7 | 114 | 113 | 111 | 110 | 110 | 109 | 108 | 107 | 107 | 106 | 106 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 252 | 253 | 254 | |
| Oct 8 | 115 | 114 | 113 | 112 | 111 | 110 | 109 | 108 | 108 | 107 | 106 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 252 | 253 | |
| Oct 9 | 116 | 115 | 114 | 113 | 112 | 111 | 110 | 109 | 108 | 108 | 107 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 251 | 252 | |
| Oct 10 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 110 | 109 | 109 | 108 | 241 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 251 | |
| Oct 11 | 119 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 110 | 109 | 109 | 240 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 250 | |
| Oct 12 | 120 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 110 | 110 | 239 | 240 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | |
| Oct 13 | 121 | 120 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 110 | 238 | 239 | 241 | 242 | 243 | 244 | 246 | 246 | 247 | 248 | 249 | |
| Oct 14 | 122 | 121 | 119 | 118 | 117 | 116 | 114 | 114 | 113 | 112 | 111 | 236 | 238 | 240 | 241 | 242 | 244 | 245 | 246 | 246 | 247 | 248 | |
| Oct 15 | 124 | 122 | 120 | 119 | 118 | 116 | 115 | 114 | 114 | 113 | 112 | 235 | 237 | 239 | 240 | 241 | 243 | 244 | 245 | 246 | 247 | 247 | |
| Oct 16 | 125 | 123 | 121 | 120 | 119 | 117 | 116 | 115 | 114 | 113 | 113 | 234 | 236 | 237 | 239 | 240 | 242 | 243 | 244 | 245 | 246 | 247 | |
| Oct 17 | 126 | 124 | 123 | 121 | 120 | 118 | 117 | 116 | 115 | 114 | 113 | 232 | 234 | 236 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 246 | |
| Oct 18 | 128 | 126 | 124 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 231 | 233 | 235 | 237 | 238 | 240 | 241 | 242 | 243 | 244 | 245 | |
| Oct 19 | 129 | 127 | 125 | 123 | 122 | 120 | 119 | 118 | 117 | 116 | 115 | 230 | 232 | 234 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 244 | |
| Oct 20 | 130 | 128 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 228 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | |
| Oct 21 | 132 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 227 | 229 | 232 | 233 | 235 | 237 | 238 | 239 | 241 | 242 | 243 | |
| Oct 22 | 133 | 131 | 128 | 127 | 125 | 123 | 122 | 121 | 119 | 118 | 117 | 226 | 228 | 230 | 232 | 234 | 236 | 237 | 238 | 240 | 241 | 242 | |
| Oct 23 | 134 | 132 | 130 | 128 | 126 | 124 | 123 | 122 | 120 | 119 | 118 | 224 | 227 | 229 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | |
| Oct 24 | 136 | 133 | 131 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 223 | 225 | 228 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | |
| Oct 25 | 137 | 135 | 132 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 221 | 224 | 227 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 239 | |
| Oct 26 | 139 | 136 | 133 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 121 | 220 | 223 | 225 | 228 | 230 | 232 | 233 | 235 | 236 | 238 | 239 | |
| Oct 27 | 140 | 137 | 135 | 132 | 130 | 128 | 127 | 125 | 124 | 122 | 121 | 218 | 221 | 224 | 227 | 229 | 231 | 232 | 234 | 235 | 237 | 238 | |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| Sep 8 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 276 | 276 | 276 | 276 | 276 | 276 | 276 | 275 | 275 | 275 | 275 |
| Sep 9 | 84 | 84 | 84 | 84 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Sep 10 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 275 | 275 | 275 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Sep 11 | 85 | 85 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 273 |
| Sep 12 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 87 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Sep 13 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 14 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 15 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 16 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 |
| Sep 17 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 18 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 19 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 269 | 269 | 269 |
| Sep 20 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Sep 21 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Sep 22 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 265 | 266 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 |
| Sep 23 | 95 | 94 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 265 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 266 |
| Sep 24 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 94 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 265 | 265 | 266 | 266 |
| Sep 25 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 265 |
| Sep 26 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 262 | 263 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 264 | 264 |
| Sep 27 | 98 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 96 | 262 | 262 | 262 | 262 | 263 | 263 | 263 | 263 | 263 | 264 | 264 |
| Sep 28 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 261 | 261 | 261 | 262 | 262 | 262 | 262 | 263 | 263 | 263 | 263 |
| Sep 29 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 260 | 260 | 261 | 261 | 261 | 262 | 262 | 262 | 262 | 262 | 263 |
| Sep 30 | 100 | 100 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 97 | 259 | 260 | 260 | 260 | 261 | 261 | 261 | 261 | 262 | 262 | 262 |
| Oct 1 | 101 | 100 | 100 | 100 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 258 | 259 | 259 | 259 | 260 | 260 | 260 | 261 | 261 | 261 | 261 |
| Oct 2 | 102 | 101 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 99 | 99 | 258 | 258 | 258 | 259 | 259 | 259 | 260 | 260 | 260 | 261 | 261 |
| Oct 3 | 102 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 257 | 257 | 258 | 258 | 258 | 259 | 259 | 259 | 260 | 260 | 260 |
| Oct 4 | 103 | 103 | 102 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 100 | 256 | 256 | 257 | 257 | 258 | 258 | 258 | 259 | 259 | 259 | 260 |
| Oct 5 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 101 | 101 | 101 | 100 | 255 | 256 | 256 | 257 | 257 | 257 | 258 | 258 | 258 | 259 | 259 |
| Oct 6 | 105 | 104 | 104 | 103 | 103 | 103 | 102 | 102 | 102 | 101 | 101 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 257 | 258 | 258 | 258 |
| Oct 7 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 103 | 102 | 102 | 102 | 254 | 254 | 255 | 255 | 256 | 256 | 256 | 257 | 257 | 257 | 258 |
| Oct 8 | 106 | 106 | 105 | 105 | 104 | 104 | 104 | 103 | 103 | 103 | 102 | 253 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 256 | 257 | 257 |
| Oct 9 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 104 | 103 | 103 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 255 | 256 | 256 | 257 |
| Oct 10 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 105 | 104 | 104 | 103 | 251 | 252 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 256 | 256 |
| Oct 11 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 250 | 251 | 252 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 255 |
| Oct 12 | 110 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 105 | 250 | 250 | 251 | 252 | 252 | 253 | 253 | 254 | 254 | 254 | 255 |
| Oct 13 | 110 | 110 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 106 | 105 | 249 | 250 | 250 | 251 | 251 | 252 | 252 | 253 | 253 | 254 | 254 |
| Oct 14 | 111 | 110 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 106 | 106 | 248 | 249 | 249 | 250 | 251 | 251 | 252 | 252 | 253 | 253 | 254 |
| Oct 15 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 106 | 247 | 248 | 249 | 249 | 250 | 251 | 251 | 252 | 252 | 253 | 253 |
| Oct 16 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 | 251 | 252 | 252 |
| Oct 17 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 109 | 108 | 108 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 | 251 | 252 |
| Oct 18 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 109 | 108 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 | 251 |
| Oct 19 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 109 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 | 250 | 251 |
| Oct 20 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 248 | 249 | 250 | 250 |
| Oct 21 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 112 | 111 | 110 | 110 | 243 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 248 | 249 | 249 |
| Oct 22 | 117 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 112 | 111 | 111 | 242 | 243 | 244 | 244 | 245 | 246 | 247 | 247 | 248 | 248 | 249 |
| Oct 23 | 118 | 117 | 116 | 116 | 115 | 114 | 113 | 113 | 112 | 112 | 111 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 | 248 | 248 |
| Oct 24 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 112 | 112 | 240 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 | 248 |
| Oct 25 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 112 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 | 247 |
| Oct 26 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 113 | 239 | 240 | 241 | 242 | 243 | 243 | 244 | 245 | 245 | 246 | 247 |
| Oct 27 | 121 | 120 | 119 | 118 | 117 | 117 | 116 | 115 | 115 | 114 | 113 | 238 | 239 | 240 | 241 | 242 | 243 | 243 | 244 | 245 | 245 | 246 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| Sep 8 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Sep 9 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 275 | 275 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Sep 10 | 85 | 85 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Sep 11 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Sep 12 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Sep 13 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 273 |
| Sep 14 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 15 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 272 | 272 |
| Sep 16 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 17 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 | 271 |
| Sep 18 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 19 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 |
| Sep 20 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 21 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 |
| Sep 22 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Sep 23 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 |
| Sep 24 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 268 |
| Sep 25 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 |
| Sep 26 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 264 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 267 | 267 |
| Sep 27 | 96 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 |
| Sep 28 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 266 | 266 |
| Sep 29 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 94 | 94 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 |
| Sep 30 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 262 | 262 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 265 | 265 |
| Oct 1 | 98 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 95 | 95 | 261 | 262 | 262 | 263 | 263 | 263 | 263 | 264 | 264 | 264 | 264 |
| Oct 2 | 99 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 261 | 261 | 262 | 262 | 262 | 263 | 263 | 263 | 264 | 264 | 264 |
| Oct 3 | 99 | 99 | 98 | 98 | 98 | 97 | 97 | 97 | 96 | 96 | 96 | 260 | 261 | 261 | 261 | 262 | 262 | 263 | 263 | 263 | 263 | 264 |
| Oct 4 | 100 | 99 | 99 | 99 | 98 | 98 | 97 | 97 | 97 | 97 | 96 | 260 | 260 | 261 | 261 | 261 | 262 | 262 | 262 | 263 | 263 | 263 |
| Oct 5 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 98 | 97 | 97 | 97 | 259 | 259 | 260 | 260 | 261 | 261 | 262 | 262 | 262 | 262 | 263 |
| Oct 6 | 101 | 101 | 100 | 100 | 99 | 99 | 98 | 98 | 98 | 98 | 97 | 258 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 262 | 262 | 262 |
| Oct 7 | 102 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 98 | 98 | 98 | 258 | 258 | 259 | 259 | 260 | 260 | 261 | 261 | 261 | 261 | 262 |
| Oct 8 | 102 | 102 | 101 | 101 | 100 | 100 | 99 | 99 | 99 | 99 | 98 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 | 261 | 261 | 261 |
| Oct 9 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 99 | 257 | 257 | 258 | 258 | 259 | 259 | 260 | 260 | 260 | 261 | 261 |
| Oct 10 | 103 | 103 | 102 | 102 | 101 | 101 | 100 | 100 | 100 | 99 | 99 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 259 | 260 | 260 | 260 |
| Oct 11 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 100 | 255 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 259 | 260 | 260 |
| Oct 12 | 105 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 101 | 100 | 100 | 255 | 255 | 256 | 257 | 257 | 258 | 258 | 259 | 259 | 259 | 260 |
| Oct 13 | 105 | 105 | 104 | 103 | 103 | 102 | 102 | 101 | 101 | 101 | 100 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 258 | 259 | 259 |
| Oct 14 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 101 | 101 | 254 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 258 | 259 |
| Oct 15 | 106 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 101 | 253 | 254 | 254 | 255 | 256 | 256 | 257 | 257 | 258 | 258 | 258 |
| Oct 16 | 107 | 106 | 106 | 105 | 104 | 104 | 103 | 103 | 102 | 102 | 102 | 252 | 253 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 257 | 258 |
| Oct 17 | 108 | 107 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 103 | 102 | 252 | 253 | 253 | 254 | 255 | 255 | 256 | 256 | 257 | 257 | 257 |
| Oct 18 | 108 | 107 | 107 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 103 | 251 | 252 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 257 | 257 |
| Oct 19 | 109 | 108 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 103 | 103 | 251 | 251 | 252 | 253 | 254 | 254 | 255 | 255 | 256 | 256 | 257 |
| Oct 20 | 109 | 109 | 108 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 103 | 250 | 251 | 252 | 252 | 253 | 254 | 254 | 255 | 255 | 256 | 256 |
| Oct 21 | 110 | 109 | 108 | 108 | 107 | 106 | 106 | 105 | 105 | 104 | 104 | 249 | 250 | 251 | 252 | 253 | 253 | 254 | 254 | 255 | 255 | 256 |
| Oct 22 | 111 | 110 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 104 | 249 | 250 | 251 | 251 | 252 | 253 | 253 | 254 | 254 | 255 | 255 |
| Oct 23 | 111 | 110 | 109 | 109 | 108 | 107 | 107 | 106 | 106 | 105 | 105 | 248 | 249 | 250 | 251 | 252 | 252 | 253 | 254 | 254 | 254 | 255 |
| Oct 24 | 112 | 111 | 110 | 109 | 108 | 108 | 107 | 106 | 106 | 106 | 105 | 248 | 249 | 250 | 250 | 251 | 252 | 253 | 253 | 254 | 254 | 254 |
| Oct 25 | 112 | 111 | 110 | 110 | 109 | 108 | 107 | 107 | 106 | 106 | 106 | 247 | 248 | 249 | 250 | 251 | 251 | 252 | 253 | 253 | 254 | 254 |
| Oct 26 | 113 | 112 | 111 | 110 | 109 | 109 | 108 | 107 | 107 | 106 | 106 | 247 | 248 | 249 | 249 | 250 | 251 | 252 | 252 | 253 | 253 | 254 |
| Oct 27 | 113 | 112 | 111 | 111 | 110 | 109 | 108 | 108 | 107 | 107 | 106 | 246 | 247 | 248 | 249 | 250 | 251 | 251 | 252 | 252 | 253 | 253 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | | |
|--------|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | |
| Sep 8 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | |
| Sep 9 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 275 | 275 |
| Sep 10 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Sep 11 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Sep 12 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Sep 13 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| Sep 14 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 |
| Sep 15 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 16 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 17 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 18 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 19 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 | 271 |
| Sep 20 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 21 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 22 | 91 | 91 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 270 |
| Sep 23 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 24 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 269 | 269 | 269 |
| Sep 25 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Sep 26 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 |
| Sep 27 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 268 |
| Sep 28 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 92 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Sep 29 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 93 | 93 | 93 | 265 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 267 | 267 | 267 |
| Sep 30 | 95 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 93 | 93 | 93 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| Oct 1 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 264 | 265 | 265 | 265 | 265 | 265 | 265 | 266 | 266 | 266 | 266 | 266 |
| Oct 2 | 96 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 94 | 94 | 94 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 266 |
| Oct 3 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 94 | 264 | 264 | 264 | 264 | 264 | 264 | 265 | 265 | 265 | 265 | 265 | 265 |
| Oct 4 | 96 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 95 | 95 | 263 | 263 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 265 | 265 | 265 |
| Oct 5 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 96 | 95 | 95 | 95 | 263 | 263 | 263 | 263 | 263 | 264 | 264 | 264 | 264 | 264 | 264 | 264 |
| Oct 6 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 96 | 96 | 262 | 262 | 263 | 263 | 263 | 263 | 263 | 263 | 264 | 264 | 264 | 264 |
| Oct 7 | 98 | 98 | 97 | 97 | 97 | 97 | 97 | 96 | 96 | 96 | 96 | 262 | 262 | 262 | 262 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 264 |
| Oct 8 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 97 | 97 | 96 | 261 | 262 | 262 | 262 | 262 | 262 | 263 | 263 | 263 | 263 | 263 | 263 |
| Oct 9 | 99 | 98 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 97 | 97 | 261 | 261 | 261 | 262 | 262 | 262 | 262 | 262 | 262 | 263 | 263 | 263 |
| Oct 10 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 98 | 97 | 97 | 97 | 260 | 261 | 261 | 261 | 261 | 262 | 262 | 262 | 262 | 262 | 262 | 262 |
| Oct 11 | 100 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 98 | 98 | 260 | 260 | 261 | 261 | 261 | 261 | 261 | 262 | 262 | 262 | 262 | 262 |
| Oct 12 | 100 | 100 | 99 | 99 | 99 | 99 | 99 | 98 | 98 | 98 | 98 | 260 | 260 | 260 | 260 | 261 | 261 | 261 | 261 | 261 | 261 | 262 | 262 |
| Oct 13 | 100 | 100 | 100 | 100 | 99 | 99 | 99 | 99 | 99 | 98 | 98 | 259 | 259 | 260 | 260 | 260 | 260 | 261 | 261 | 261 | 261 | 261 | 261 |
| Oct 14 | 101 | 101 | 100 | 100 | 100 | 100 | 99 | 99 | 99 | 99 | 99 | 259 | 259 | 259 | 260 | 260 | 260 | 260 | 260 | 260 | 261 | 261 | 261 |
| Oct 15 | 101 | 101 | 101 | 100 | 100 | 100 | 100 | 100 | 99 | 99 | 99 | 258 | 259 | 259 | 259 | 259 | 260 | 260 | 260 | 260 | 260 | 260 | 261 |
| Oct 16 | 102 | 101 | 101 | 101 | 101 | 100 | 100 | 100 | 100 | 100 | 99 | 258 | 258 | 258 | 259 | 259 | 259 | 259 | 260 | 260 | 260 | 260 | 260 |
| Oct 17 | 102 | 102 | 102 | 101 | 101 | 101 | 101 | 100 | 100 | 100 | 100 | 257 | 258 | 258 | 258 | 259 | 259 | 259 | 259 | 259 | 259 | 260 | 260 |
| Oct 18 | 103 | 102 | 102 | 102 | 101 | 101 | 101 | 101 | 101 | 100 | 100 | 257 | 257 | 258 | 258 | 258 | 258 | 259 | 259 | 259 | 259 | 259 | 259 |
| Oct 19 | 103 | 103 | 102 | 102 | 102 | 102 | 101 | 101 | 101 | 101 | 101 | 257 | 257 | 257 | 258 | 258 | 258 | 258 | 259 | 259 | 259 | 259 | 259 |
| Oct 20 | 103 | 103 | 103 | 102 | 102 | 102 | 102 | 101 | 101 | 101 | 101 | 256 | 256 | 257 | 257 | 257 | 258 | 258 | 258 | 258 | 258 | 259 | 259 |
| Oct 21 | 104 | 104 | 103 | 103 | 103 | 102 | 102 | 102 | 102 | 101 | 101 | 256 | 256 | 256 | 257 | 257 | 257 | 258 | 258 | 258 | 258 | 258 | 258 |
| Oct 22 | 104 | 104 | 104 | 103 | 103 | 103 | 102 | 102 | 102 | 102 | 102 | 255 | 256 | 256 | 256 | 257 | 257 | 257 | 257 | 257 | 258 | 258 | 258 |
| Oct 23 | 105 | 104 | 104 | 104 | 103 | 103 | 103 | 103 | 102 | 102 | 102 | 255 | 255 | 256 | 256 | 256 | 257 | 257 | 257 | 257 | 257 | 257 | 258 |
| Oct 24 | 105 | 105 | 104 | 104 | 104 | 103 | 103 | 103 | 103 | 103 | 102 | 254 | 255 | 255 | 256 | 256 | 256 | 256 | 256 | 257 | 257 | 257 | 257 |
| Oct 25 | 106 | 105 | 105 | 104 | 104 | 104 | 104 | 103 | 103 | 103 | 103 | 254 | 254 | 255 | 255 | 256 | 256 | 256 | 256 | 256 | 257 | 257 | 257 |
| Oct 26 | 106 | 106 | 105 | 105 | 104 | 104 | 104 | 104 | 103 | 103 | 103 | 254 | 254 | 254 | 255 | 255 | 255 | 256 | 256 | 256 | 256 | 256 | 257 |
| Oct 27 | 106 | 106 | 106 | 105 | 105 | 105 | 104 | 104 | 104 | 104 | 103 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 255 | 256 | 256 | 256 | 256 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | Latitude South | | | | | | | | | | | Latitude South | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| | Sunrise | | | | | | | | | | | Sunset | | | | | | | | | | |
| Sep 8 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 79 | 79 | 78 | 78 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 281 | 281 | |
| Sep 9 | 82 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 277 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 | 281 |
| Sep 10 | 83 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 80 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 |
| Sep 11 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 276 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 280 |
| Sep 12 | 84 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 81 | 81 | 276 | 276 | 276 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 |
| Sep 13 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 275 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 278 | 278 | 278 |
| Sep 14 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 82 | 82 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 278 |
| Sep 15 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 277 | 277 | 277 |
| Sep 16 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 274 | 274 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 277 |
| Sep 17 | 86 | 86 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 83 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 276 | 276 |
| Sep 18 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 84 | 84 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 |
| Sep 19 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 275 | 275 |
| Sep 20 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 85 | 85 | 272 | 273 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 |
| Sep 21 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 | 274 |
| Sep 22 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 86 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 |
| Sep 23 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 24 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 272 | 272 | 272 |
| Sep 25 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 270 | 270 | 270 | 270 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 26 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 | 271 |
| Sep 27 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 89 | 269 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 28 | 91 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 29 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 30 | 92 | 92 | 92 | 92 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Oct 1 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 267 | 267 | 267 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Oct 2 | 93 | 93 | 93 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Oct 3 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 266 | 266 | 266 |
| Oct 4 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 94 | 94 | 94 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| Oct 5 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 265 | 265 | 265 | 265 |
| Oct 6 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 95 | 95 | 95 | 95 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 |
| Oct 7 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 265 | 265 | 265 | 265 | 265 | 265 | 264 | 264 | 264 | 264 | 264 |
| Oct 8 | 95 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 96 | 96 | 96 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 263 |
| Oct 9 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 264 | 264 | 264 | 264 | 264 | 263 | 263 | 263 | 263 | 263 | 263 |
| Oct 10 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 97 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 262 | 262 |
| Oct 11 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 263 | 263 | 263 | 263 | 263 | 262 | 262 | 262 | 262 | 262 | 262 |
| Oct 12 | 97 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 98 | 263 | 263 | 262 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 |
| Oct 13 | 97 | 97 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 262 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 261 | 261 | 260 |
| Oct 14 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 100 | 262 | 262 | 262 | 261 | 261 | 261 | 261 | 261 | 260 | 260 | 260 |
| Oct 15 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 261 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 260 | 260 | 259 |
| Oct 16 | 99 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 100 | 101 | 261 | 261 | 261 | 260 | 260 | 260 | 260 | 260 | 259 | 259 | 259 |
| Oct 17 | 99 | 99 | 99 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 260 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 259 | 258 |
| Oct 18 | 100 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 102 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 258 | 258 | 258 |
| Oct 19 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 260 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 |
| Oct 20 | 100 | 101 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 103 | 103 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 | 256 |
| Oct 21 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 104 | 259 | 259 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 | 256 |
| Oct 22 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 104 | 258 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 | 256 | 255 |
| Oct 23 | 102 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 104 | 105 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 | 255 | 255 | 255 |
| Oct 24 | 102 | 102 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 105 | 105 | 258 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 255 | 254 |
| Oct 25 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 106 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 254 | 254 |
| Oct 26 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 106 | 106 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 254 | 254 | 254 | 253 |
| Oct 27 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 106 | 106 | 106 | 107 | 256 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 253 | 253 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude South | | | | | | | | | | | Latitude South | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Sep 8 | 78 | 78 | 77 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 74 | 281 | 282 | 282 | 282 | 283 | 283 | 284 | 284 | 284 | 285 | 285 |
| Sep 9 | 79 | 78 | 78 | 78 | 77 | 77 | 76 | 76 | 76 | 75 | 75 | 281 | 281 | 281 | 282 | 282 | 282 | 283 | 283 | 284 | 284 | 285 |
| Sep 10 | 79 | 79 | 79 | 78 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 280 | 281 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 283 | 284 |
| Sep 11 | 80 | 79 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 77 | 76 | 280 | 280 | 280 | 281 | 281 | 281 | 281 | 282 | 282 | 283 | 283 |
| Sep 12 | 80 | 80 | 80 | 79 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 279 | 279 | 280 | 280 | 280 | 280 | 281 | 281 | 281 | 282 | 282 |
| Sep 13 | 81 | 81 | 80 | 80 | 80 | 80 | 79 | 79 | 79 | 78 | 78 | 278 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 281 | 281 | 281 |
| Sep 14 | 82 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 80 | 79 | 79 | 278 | 278 | 278 | 279 | 279 | 279 | 279 | 280 | 280 | 280 | 281 |
| Sep 15 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 80 | 80 | 79 | 277 | 277 | 278 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 |
| Sep 16 | 83 | 83 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 80 | 277 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 279 |
| Sep 17 | 83 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 81 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | 278 | 278 | 278 | 278 |
| Sep 18 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 82 | 82 | 82 | 82 | 275 | 276 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 277 | 278 |
| Sep 19 | 85 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 83 | 82 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 276 | 276 | 277 | 277 |
| Sep 20 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 274 | 274 | 275 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | 276 |
| Sep 21 | 86 | 86 | 85 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 274 | 274 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 |
| Sep 22 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 274 | 274 |
| Sep 23 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 272 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 274 |
| Sep 24 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 273 | 273 | 273 |
| Sep 25 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 271 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 26 | 89 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 27 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 271 |
| Sep 28 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 269 | 269 | 269 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 29 | 91 | 91 | 91 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 30 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Oct 1 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 267 | 267 | 267 |
| Oct 2 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 93 | 93 | 93 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Oct 3 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| Oct 4 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 266 | 266 | 266 | 266 | 266 | 266 | 265 | 265 | 265 | 265 | 265 |
| Oct 5 | 94 | 94 | 94 | 94 | 94 | 94 | 95 | 95 | 95 | 95 | 95 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 265 | 264 | 264 |
| Oct 6 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 265 | 265 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 | 264 |
| Oct 7 | 95 | 95 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 264 | 264 | 264 | 264 | 264 | 264 | 263 | 263 | 263 | 263 | 263 |
| Oct 8 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 97 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 262 | 262 | 262 |
| Oct 9 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 98 | 263 | 263 | 263 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 |
| Oct 10 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 262 | 262 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 261 | 261 |
| Oct 11 | 98 | 98 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 99 | 99 | 262 | 261 | 261 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 260 |
| Oct 12 | 98 | 99 | 99 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 100 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 260 | 260 | 259 | 259 |
| Oct 13 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 260 | 260 | 260 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 258 |
| Oct 14 | 100 | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 101 | 260 | 260 | 260 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 257 |
| Oct 15 | 100 | 100 | 100 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 103 | 259 | 259 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 | 257 |
| Oct 16 | 101 | 101 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 259 | 259 | 258 | 258 | 258 | 258 | 257 | 257 | 257 | 256 | 256 |
| Oct 17 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 | 103 | 104 | 104 | 258 | 258 | 258 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 255 |
| Oct 18 | 102 | 102 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 258 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 254 |
| Oct 19 | 102 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 106 | 257 | 257 | 257 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 |
| Oct 20 | 103 | 103 | 103 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 256 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 253 | 253 |
| Oct 21 | 104 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 |
| Oct 22 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 255 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 253 | 252 | 252 |
| Oct 23 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 107 | 108 | 108 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 | 251 |
| Oct 24 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 109 | 254 | 254 | 254 | 253 | 253 | 253 | 252 | 252 | 251 | 251 | 250 |
| Oct 25 | 106 | 106 | 106 | 107 | 107 | 107 | 108 | 108 | 109 | 109 | 110 | 254 | 253 | 253 | 253 | 252 | 252 | 251 | 251 | 251 | 250 | 249 |
| Oct 26 | 106 | 107 | 107 | 107 | 108 | 108 | 109 | 109 | 109 | 110 | 111 | 253 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 249 |
| Oct 27 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 111 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 249 | 248 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Sep 8 | 74 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 68 | 67 | 65 | 285 | 286 | 287 | 287 | 288 | 289 | 289 | 290 | 291 | 292 | 293 |
| Sep 9 | 75 | 74 | 73 | 73 | 72 | 71 | 71 | 70 | 69 | 68 | 67 | 285 | 285 | 286 | 286 | 287 | 288 | 288 | 289 | 290 | 291 | 292 |
| Sep 10 | 75 | 75 | 74 | 74 | 73 | 72 | 72 | 71 | 70 | 69 | 68 | 284 | 284 | 285 | 285 | 286 | 287 | 287 | 288 | 289 | 290 | 291 |
| Sep 11 | 76 | 76 | 75 | 75 | 74 | 73 | 73 | 72 | 71 | 70 | 69 | 283 | 283 | 284 | 285 | 285 | 286 | 286 | 287 | 288 | 289 | 290 |
| Sep 12 | 77 | 77 | 76 | 75 | 75 | 74 | 74 | 73 | 72 | 71 | 70 | 282 | 283 | 283 | 284 | 284 | 285 | 285 | 286 | 287 | 288 | 289 |
| Sep 13 | 78 | 77 | 77 | 76 | 76 | 75 | 75 | 74 | 73 | 72 | 71 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 | 286 | 287 | 287 |
| Sep 14 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 74 | 73 | 73 | 281 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 285 | 286 | 286 |
| Sep 15 | 79 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 75 | 74 | 74 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 | 284 | 285 |
| Sep 16 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 76 | 75 | 279 | 279 | 280 | 280 | 281 | 281 | 282 | 282 | 283 | 283 | 284 |
| Sep 17 | 81 | 81 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 77 | 76 | 278 | 279 | 279 | 279 | 280 | 280 | 281 | 281 | 282 | 282 | 283 |
| Sep 18 | 82 | 81 | 81 | 81 | 80 | 80 | 79 | 79 | 78 | 78 | 77 | 278 | 278 | 278 | 278 | 279 | 279 | 280 | 280 | 281 | 281 | 282 |
| Sep 19 | 82 | 82 | 82 | 82 | 81 | 81 | 80 | 80 | 79 | 79 | 78 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 | 279 | 280 | 280 |
| Sep 20 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 81 | 80 | 80 | 276 | 276 | 276 | 277 | 277 | 277 | 278 | 278 | 278 | 279 | 279 |
| Sep 21 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 82 | 82 | 81 | 81 | 275 | 275 | 276 | 276 | 276 | 276 | 277 | 277 | 277 | 278 | 278 |
| Sep 22 | 85 | 85 | 84 | 84 | 84 | 84 | 83 | 83 | 83 | 82 | 82 | 274 | 275 | 275 | 275 | 275 | 275 | 276 | 276 | 276 | 277 | 277 |
| Sep 23 | 86 | 85 | 85 | 85 | 85 | 85 | 84 | 84 | 84 | 83 | 83 | 274 | 274 | 274 | 274 | 274 | 275 | 275 | 275 | 275 | 276 | 276 |
| Sep 24 | 86 | 86 | 86 | 86 | 86 | 85 | 85 | 85 | 85 | 84 | 84 | 273 | 273 | 273 | 273 | 273 | 274 | 274 | 274 | 274 | 274 | 275 |
| Sep 25 | 87 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 | 85 | 272 | 272 | 272 | 272 | 273 | 273 | 273 | 273 | 273 | 273 | 274 |
| Sep 26 | 88 | 88 | 88 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 86 | 271 | 271 | 271 | 272 | 272 | 272 | 272 | 272 | 272 | 272 | 272 |
| Sep 27 | 89 | 89 | 89 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 |
| Sep 28 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
| Sep 29 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 | 269 |
| Sep 30 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 | 268 |
| Oct 1 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| Oct 2 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 267 | 267 | 267 | 266 | 266 | 266 | 266 | 266 | 266 | 266 | 266 |
| Oct 3 | 93 | 93 | 93 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 266 | 266 | 266 | 266 | 265 | 265 | 265 | 265 | 265 | 265 | 265 |
| Oct 4 | 94 | 94 | 94 | 94 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 265 | 265 | 265 | 265 | 265 | 264 | 264 | 264 | 264 | 264 | 263 |
| Oct 5 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 96 | 96 | 96 | 97 | 264 | 264 | 264 | 264 | 264 | 264 | 263 | 263 | 263 | 263 | 262 |
| Oct 6 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 97 | 97 | 98 | 264 | 263 | 263 | 263 | 263 | 263 | 262 | 262 | 262 | 261 | 261 |
| Oct 7 | 96 | 97 | 97 | 97 | 97 | 97 | 98 | 98 | 98 | 99 | 99 | 263 | 263 | 262 | 262 | 262 | 262 | 261 | 261 | 261 | 260 | 260 |
| Oct 8 | 97 | 97 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 100 | 100 | 262 | 262 | 262 | 261 | 261 | 261 | 260 | 260 | 260 | 259 | 259 |
| Oct 9 | 98 | 98 | 98 | 99 | 99 | 99 | 100 | 100 | 100 | 101 | 101 | 261 | 261 | 261 | 261 | 260 | 260 | 260 | 259 | 259 | 258 | 258 |
| Oct 10 | 99 | 99 | 99 | 99 | 100 | 100 | 100 | 101 | 101 | 102 | 102 | 261 | 260 | 260 | 260 | 259 | 259 | 259 | 258 | 258 | 257 | 257 |
| Oct 11 | 99 | 100 | 100 | 100 | 101 | 101 | 101 | 102 | 102 | 103 | 103 | 260 | 259 | 259 | 259 | 258 | 258 | 258 | 257 | 257 | 256 | 255 |
| Oct 12 | 100 | 101 | 101 | 101 | 102 | 102 | 102 | 103 | 103 | 104 | 105 | 259 | 259 | 258 | 258 | 258 | 257 | 257 | 256 | 256 | 255 | 254 |
| Oct 13 | 101 | 101 | 102 | 102 | 102 | 103 | 103 | 104 | 104 | 105 | 106 | 258 | 258 | 258 | 257 | 257 | 256 | 256 | 255 | 255 | 254 | 253 |
| Oct 14 | 102 | 102 | 102 | 103 | 103 | 104 | 104 | 105 | 105 | 106 | 107 | 257 | 257 | 257 | 256 | 256 | 255 | 255 | 254 | 254 | 253 | 252 |
| Oct 15 | 103 | 103 | 103 | 104 | 104 | 105 | 105 | 106 | 106 | 107 | 108 | 257 | 256 | 256 | 256 | 255 | 254 | 254 | 253 | 253 | 252 | 251 |
| Oct 16 | 103 | 104 | 104 | 104 | 105 | 106 | 106 | 107 | 107 | 108 | 109 | 256 | 256 | 255 | 255 | 254 | 254 | 253 | 252 | 252 | 251 | 250 |
| Oct 17 | 104 | 104 | 105 | 105 | 106 | 106 | 107 | 108 | 108 | 109 | 110 | 255 | 255 | 254 | 254 | 253 | 253 | 252 | 251 | 251 | 250 | 249 |
| Oct 18 | 105 | 105 | 106 | 106 | 107 | 107 | 108 | 109 | 109 | 110 | 111 | 254 | 254 | 254 | 253 | 252 | 252 | 251 | 250 | 250 | 249 | 248 |
| Oct 19 | 106 | 106 | 106 | 107 | 108 | 108 | 109 | 110 | 110 | 111 | 112 | 254 | 253 | 253 | 252 | 252 | 251 | 250 | 249 | 249 | 248 | 246 |
| Oct 20 | 106 | 107 | 107 | 108 | 108 | 109 | 110 | 111 | 111 | 112 | 114 | 253 | 253 | 252 | 251 | 251 | 250 | 249 | 248 | 248 | 246 | 245 |
| Oct 21 | 107 | 107 | 108 | 109 | 109 | 110 | 111 | 112 | 112 | 114 | 115 | 252 | 252 | 251 | 251 | 250 | 249 | 248 | 247 | 247 | 245 | 244 |
| Oct 22 | 108 | 108 | 109 | 109 | 110 | 111 | 112 | 113 | 113 | 115 | 116 | 252 | 251 | 250 | 250 | 249 | 248 | 247 | 247 | 246 | 244 | 243 |
| Oct 23 | 108 | 109 | 110 | 110 | 111 | 112 | 113 | 113 | 114 | 116 | 117 | 251 | 250 | 250 | 249 | 248 | 247 | 247 | 246 | 244 | 243 | 242 |
| Oct 24 | 109 | 110 | 110 | 111 | 112 | 113 | 113 | 114 | 116 | 117 | 118 | 250 | 250 | 249 | 248 | 247 | 247 | 246 | 245 | 243 | 242 | 241 |
| Oct 25 | 110 | 110 | 111 | 112 | 113 | 113 | 114 | 115 | 117 | 118 | 119 | 249 | 249 | 248 | 247 | 247 | 246 | 245 | 244 | 242 | 241 | 240 |
| Oct 26 | 111 | 111 | 112 | 113 | 113 | 114 | 115 | 116 | 118 | 119 | 120 | 249 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 241 | 240 | 239 |
| Oct 27 | 111 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 119 | 120 | 121 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 242 | 240 | 239 | 237 |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | | Latitude North | | | | | Sunset | | | | | |
|--------|----|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|
| | | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 |
| Oct 28 | 28 | 142 | 139 | 136 | 133 | 131 | 129 | 128 | 126 | 125 | 123 | 122 | 217 | 220 | 223 | 226 | 228 | 230 | 232 | 233 | 235 | 236 | 237 |
| Oct 29 | 29 | 143 | 140 | 137 | 134 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 215 | 219 | 222 | 224 | 227 | 229 | 231 | 232 | 234 | 235 | 236 |
| Oct 30 | 30 | 145 | 141 | 138 | 136 | 133 | 131 | 129 | 128 | 126 | 125 | 124 | 213 | 217 | 220 | 223 | 226 | 228 | 230 | 231 | 233 | 234 | 236 |
| Oct 31 | 31 | 147 | 143 | 140 | 137 | 134 | 132 | 130 | 129 | 127 | 126 | 124 | 212 | 216 | 219 | 222 | 225 | 227 | 229 | 230 | 232 | 234 | 235 |
| Nov 1 | 1 | 148 | 144 | 141 | 138 | 135 | 133 | 131 | 130 | 128 | 126 | 125 | 210 | 214 | 218 | 221 | 223 | 226 | 228 | 230 | 231 | 233 | 234 |
| Nov 2 | 2 | 150 | 146 | 142 | 139 | 137 | 134 | 132 | 130 | 129 | 127 | 126 | 208 | 213 | 216 | 220 | 222 | 225 | 227 | 229 | 230 | 232 | 233 |
| Nov 3 | 3 | 152 | 147 | 144 | 140 | 138 | 135 | 133 | 131 | 130 | 128 | 127 | 206 | 211 | 215 | 218 | 221 | 224 | 226 | 228 | 230 | 231 | 233 |
| Nov 4 | 4 | 154 | 149 | 145 | 142 | 139 | 136 | 134 | 132 | 130 | 129 | 127 | 204 | 209 | 214 | 217 | 220 | 223 | 225 | 227 | 229 | 230 | 232 |
| Nov 5 | 5 | 156 | 151 | 146 | 143 | 140 | 137 | 135 | 133 | 131 | 130 | 128 | 202 | 208 | 212 | 216 | 219 | 222 | 224 | 226 | 228 | 230 | 231 |
| Nov 6 | 6 | 158 | 152 | 148 | 144 | 141 | 138 | 136 | 134 | 132 | 130 | 129 | 200 | 206 | 211 | 215 | 218 | 221 | 223 | 225 | 227 | 229 | 230 |
| Nov 7 | 7 | 160 | 154 | 149 | 145 | 142 | 139 | 137 | 135 | 133 | 131 | 130 | 197 | 204 | 209 | 213 | 217 | 220 | 222 | 224 | 226 | 228 | 230 |
| Nov 8 | 8 | 163 | 156 | 151 | 147 | 143 | 140 | 138 | 136 | 134 | 132 | 130 | 194 | 202 | 208 | 212 | 216 | 219 | 221 | 223 | 225 | 227 | 229 |
| Nov 9 | 9 | 166 | 158 | 152 | 148 | 144 | 141 | 139 | 137 | 135 | 133 | 131 | 190 | 200 | 206 | 211 | 214 | 217 | 220 | 223 | 225 | 226 | 228 |
| Nov 10 | 10 | 170 | 160 | 154 | 149 | 146 | 143 | 140 | 137 | 135 | 134 | 132 | 183 | 198 | 204 | 209 | 213 | 216 | 219 | 222 | 224 | 226 | 227 |
| Nov 11 | 11 | 177 | 162 | 156 | 151 | 147 | 144 | 141 | 138 | 136 | 134 | 133 | ### | 195 | 203 | 208 | 212 | 215 | 218 | 221 | 223 | 225 | 227 |
| Nov 12 | 12 | ### | 165 | 157 | 152 | 148 | 145 | 142 | 139 | 137 | 135 | 133 | ### | 192 | 201 | 206 | 211 | 214 | 217 | 220 | 222 | 224 | 226 |
| Nov 13 | 13 | ### | 168 | 159 | 154 | 149 | 146 | 143 | 140 | 138 | 136 | 134 | ### | 188 | 199 | 205 | 210 | 213 | 216 | 219 | 221 | 223 | 225 |
| Nov 14 | 14 | ### | 172 | 161 | 155 | 150 | 147 | 144 | 141 | 139 | 137 | 135 | ### | ### | 197 | 203 | 208 | 212 | 215 | 218 | 221 | 223 | 225 |
| Nov 15 | 15 | ### | ### | 163 | 157 | 152 | 148 | 145 | 142 | 139 | 137 | 135 | ### | ### | 194 | 202 | 207 | 211 | 214 | 217 | 220 | 222 | 224 |
| Nov 16 | 16 | ### | ### | 166 | 158 | 153 | 149 | 146 | 143 | 140 | 138 | 136 | ### | ### | 192 | 200 | 206 | 210 | 213 | 216 | 219 | 221 | 223 |
| Nov 17 | 17 | ### | ### | 168 | 160 | 154 | 150 | 147 | 144 | 141 | 139 | 137 | ### | ### | 188 | 198 | 204 | 209 | 213 | 216 | 218 | 221 | 223 |
| Nov 18 | 18 | ### | ### | 172 | 162 | 156 | 151 | 147 | 144 | 142 | 139 | 137 | ### | ### | ### | 197 | 203 | 208 | 212 | 215 | 217 | 220 | 222 |
| Nov 19 | 19 | ### | ### | ### | 163 | 157 | 152 | 148 | 145 | 143 | 140 | 138 | ### | ### | ### | 194 | 202 | 207 | 211 | 214 | 217 | 219 | 221 |
| Nov 20 | 20 | ### | ### | ### | 166 | 158 | 153 | 149 | 146 | 143 | 141 | 139 | ### | ### | ### | 192 | 200 | 206 | 210 | 213 | 216 | 218 | 221 |
| Nov 21 | 21 | ### | ### | ### | 168 | 160 | 154 | 150 | 147 | 144 | 142 | 139 | ### | ### | ### | 189 | 199 | 204 | 209 | 212 | 215 | 218 | 220 |
| Nov 22 | 22 | ### | ### | ### | 171 | 161 | 156 | 151 | 148 | 145 | 142 | 140 | ### | ### | ### | 185 | 197 | 203 | 208 | 211 | 214 | 217 | 219 |
| Nov 23 | 23 | ### | ### | ### | 175 | 163 | 157 | 152 | 149 | 146 | 143 | 141 | ### | ### | ### | ### | 195 | 202 | 207 | 211 | 214 | 216 | 219 |
| Nov 24 | 24 | ### | ### | ### | ### | 165 | 158 | 153 | 149 | 146 | 144 | 141 | ### | ### | ### | ### | 194 | 201 | 206 | 210 | 213 | 216 | 218 |
| Nov 25 | 25 | ### | ### | ### | ### | 166 | 159 | 154 | 150 | 147 | 144 | 142 | ### | ### | ### | ### | 191 | 200 | 205 | 209 | 212 | 215 | 218 |
| Nov 26 | 26 | ### | ### | ### | ### | 169 | 160 | 155 | 151 | 148 | 145 | 142 | ### | ### | ### | ### | 189 | 198 | 204 | 208 | 212 | 214 | 217 |
| Nov 27 | 27 | ### | ### | ### | ### | 171 | 162 | 156 | 152 | 148 | 146 | 143 | ### | ### | ### | ### | 186 | 197 | 203 | 207 | 211 | 214 | 216 |
| Nov 28 | 28 | ### | ### | ### | ### | 174 | 163 | 157 | 153 | 149 | 146 | 144 | ### | ### | ### | ### | ### | 196 | 202 | 206 | 210 | 213 | 216 |
| Nov 29 | 29 | ### | ### | ### | ### | ### | 164 | 158 | 154 | 150 | 147 | 144 | ### | ### | ### | ### | ### | 194 | 201 | 206 | 209 | 213 | 215 |
| Nov 30 | 30 | ### | ### | ### | ### | ### | 166 | 159 | 154 | 151 | 147 | 145 | ### | ### | ### | ### | ### | 193 | 200 | 205 | 209 | 212 | 215 |
| Dec 1 | 1 | ### | ### | ### | ### | ### | 167 | 160 | 155 | 151 | 148 | 145 | ### | ### | ### | ### | ### | 191 | 199 | 204 | 208 | 211 | 214 |
| Dec 2 | 2 | ### | ### | ### | ### | ### | 169 | 161 | 156 | 152 | 149 | 146 | ### | ### | ### | ### | ### | 189 | 198 | 203 | 208 | 211 | 214 |
| Dec 3 | 3 | ### | ### | ### | ### | ### | 171 | 162 | 157 | 152 | 149 | 146 | ### | ### | ### | ### | ### | 187 | 197 | 203 | 207 | 210 | 213 |
| Dec 4 | 4 | ### | ### | ### | ### | ### | 173 | 163 | 157 | 153 | 150 | 147 | ### | ### | ### | ### | ### | 184 | 196 | 202 | 206 | 210 | 213 |
| Dec 5 | 5 | ### | ### | ### | ### | ### | 176 | 164 | 158 | 154 | 150 | 147 | ### | ### | ### | ### | ### | ### | 195 | 201 | 206 | 209 | 212 |
| Dec 6 | 6 | ### | ### | ### | ### | ### | ### | 165 | 159 | 154 | 151 | 148 | ### | ### | ### | ### | ### | ### | 194 | 201 | 205 | 209 | 212 |
| Dec 7 | 7 | ### | ### | ### | ### | ### | ### | 166 | 159 | 155 | 151 | 148 | ### | ### | ### | ### | ### | ### | 193 | 200 | 205 | 209 | 212 |
| Dec 8 | 8 | ### | ### | ### | ### | ### | ### | 167 | 160 | 155 | 151 | 148 | ### | ### | ### | ### | ### | ### | 192 | 199 | 204 | 208 | 211 |
| Dec 9 | 9 | ### | ### | ### | ### | ### | ### | 168 | 161 | 156 | 152 | 149 | ### | ### | ### | ### | ### | ### | 191 | 199 | 204 | 208 | 211 |
| Dec 10 | 10 | ### | ### | ### | ### | ### | ### | 169 | 161 | 156 | 152 | 149 | ### | ### | ### | ### | ### | ### | 190 | 198 | 203 | 207 | 211 |
| Dec 11 | 11 | ### | ### | ### | ### | ### | ### | 170 | 162 | 157 | 153 | 149 | ### | ### | ### | ### | ### | ### | 189 | 198 | 203 | 207 | 210 |
| Dec 12 | 12 | ### | ### | ### | ### | ### | ### | 171 | 162 | 157 | 153 | 150 | ### | ### | ### | ### | ### | ### | 188 | 197 | 203 | 207 | 210 |
| Dec 13 | 13 | ### | ### | ### | ### | ### | ### | 172 | 163 | 157 | 153 | 150 | ### | ### | ### | ### | ### | ### | 187 | 197 | 202 | 206 | 210 |
| Dec 14 | 14 | ### | ### | ### | ### | ### | ### | 173 | 163 | 158 | 154 | 150 | ### | ### | ### | ### | ### | ### | 186 | 196 | 202 | 206 | 210 |
| Dec 15 | 15 | ### | ### | ### | ### | ### | ### | 174 | 164 | 158 | 154 | 150 | ### | ### | ### | ### | ### | ### | 185 | 196 | 202 | 206 | 209 |
| Dec 16 | 16 | ### | ### | ### | ### | ### | ### | 175 | 164 | 158 | 154 | 151 | ### | ### | ### | ### | ### | ### | 184 | 196 | 202 | 206 | 209 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | |
|--------|--|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| Oct 28 | | 122 | 121 | 120 | 119 | 118 | 117 | 117 | 116 | 115 | 115 | 114 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 244 | 245 | 245 |
| Oct 29 | | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 116 | 115 | 115 | 236 | 238 | 239 | 240 | 241 | 241 | 242 | 243 | 244 | 244 | 245 |
| Oct 30 | | 124 | 122 | 121 | 120 | 119 | 119 | 118 | 117 | 116 | 116 | 115 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 242 | 243 | 244 | 244 |
| Oct 31 | | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 117 | 116 | 116 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 242 | 243 | 244 |
| Nov 1 | | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 117 | 116 | 234 | 235 | 237 | 238 | 239 | 239 | 240 | 241 | 242 | 243 | 243 |
| Nov 2 | | 126 | 125 | 123 | 122 | 121 | 121 | 120 | 119 | 118 | 117 | 117 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 241 | 242 | 243 |
| Nov 3 | | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 119 | 118 | 117 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 242 |
| Nov 4 | | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 232 | 233 | 234 | 236 | 237 | 238 | 239 | 239 | 240 | 241 | 242 |
| Nov 5 | | 128 | 127 | 126 | 124 | 123 | 122 | 121 | 121 | 120 | 119 | 118 | 231 | 232 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 240 | 241 |
| Nov 6 | | 129 | 128 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 120 | 119 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Nov 7 | | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 230 | 231 | 232 | 234 | 235 | 236 | 237 | 238 | 239 | 239 | 240 |
| Nov 8 | | 130 | 129 | 128 | 126 | 125 | 124 | 123 | 122 | 121 | 121 | 120 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 |
| Nov 9 | | 131 | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 228 | 230 | 231 | 232 | 234 | 235 | 236 | 237 | 238 | 238 | 239 |
| Nov 10 | | 132 | 130 | 129 | 128 | 126 | 125 | 124 | 123 | 122 | 122 | 121 | 227 | 229 | 230 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| Nov 11 | | 133 | 131 | 130 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 121 | 227 | 228 | 230 | 231 | 232 | 234 | 235 | 236 | 237 | 237 | 238 |
| Nov 12 | | 133 | 132 | 130 | 129 | 128 | 126 | 125 | 124 | 123 | 123 | 122 | 226 | 228 | 229 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 |
| Nov 13 | | 134 | 132 | 131 | 129 | 128 | 127 | 126 | 125 | 124 | 123 | 122 | 225 | 227 | 229 | 230 | 231 | 232 | 234 | 235 | 236 | 236 | 237 |
| Nov 14 | | 135 | 133 | 131 | 130 | 129 | 128 | 126 | 125 | 124 | 124 | 123 | 225 | 226 | 228 | 229 | 231 | 232 | 233 | 234 | 235 | 236 | 237 |
| Nov 15 | | 135 | 134 | 132 | 131 | 129 | 128 | 127 | 126 | 125 | 124 | 123 | 224 | 226 | 227 | 229 | 230 | 231 | 233 | 234 | 235 | 236 | 236 |
| Nov 16 | | 136 | 134 | 133 | 131 | 130 | 129 | 127 | 126 | 125 | 124 | 124 | 223 | 225 | 227 | 228 | 230 | 231 | 232 | 233 | 234 | 235 | 236 |
| Nov 17 | | 137 | 135 | 133 | 132 | 130 | 129 | 128 | 127 | 126 | 125 | 124 | 223 | 224 | 226 | 228 | 229 | 230 | 232 | 233 | 234 | 235 | 236 |
| Nov 18 | | 137 | 136 | 134 | 132 | 131 | 130 | 128 | 127 | 126 | 125 | 124 | 222 | 224 | 226 | 227 | 229 | 230 | 231 | 232 | 233 | 234 | 235 |
| Nov 19 | | 138 | 136 | 134 | 133 | 131 | 130 | 129 | 128 | 127 | 126 | 125 | 221 | 223 | 225 | 227 | 228 | 229 | 231 | 232 | 233 | 234 | 235 |
| Nov 20 | | 139 | 137 | 135 | 133 | 132 | 131 | 129 | 128 | 127 | 126 | 125 | 221 | 223 | 224 | 226 | 227 | 229 | 230 | 231 | 232 | 233 | 234 |
| Nov 21 | | 139 | 137 | 136 | 134 | 133 | 131 | 130 | 129 | 128 | 127 | 126 | 220 | 222 | 224 | 225 | 227 | 228 | 230 | 231 | 232 | 233 | 234 |
| Nov 22 | | 140 | 138 | 136 | 135 | 133 | 132 | 130 | 129 | 128 | 127 | 126 | 219 | 221 | 223 | 225 | 226 | 228 | 229 | 230 | 232 | 233 | 234 |
| Nov 23 | | 141 | 139 | 137 | 135 | 134 | 132 | 131 | 130 | 128 | 127 | 126 | 219 | 221 | 223 | 224 | 226 | 227 | 229 | 230 | 231 | 232 | 233 |
| Nov 24 | | 141 | 139 | 137 | 136 | 134 | 133 | 131 | 130 | 129 | 128 | 127 | 218 | 220 | 222 | 224 | 226 | 227 | 228 | 230 | 231 | 232 | 233 |
| Nov 25 | | 142 | 140 | 138 | 136 | 134 | 133 | 132 | 130 | 129 | 128 | 127 | 218 | 220 | 222 | 223 | 225 | 227 | 228 | 229 | 230 | 231 | 232 |
| Nov 26 | | 142 | 140 | 138 | 137 | 135 | 133 | 132 | 131 | 130 | 129 | 128 | 217 | 219 | 221 | 223 | 225 | 226 | 228 | 229 | 230 | 231 | 232 |
| Nov 27 | | 143 | 141 | 139 | 137 | 135 | 134 | 132 | 131 | 130 | 129 | 128 | 216 | 219 | 221 | 223 | 224 | 226 | 227 | 228 | 230 | 231 | 232 |
| Nov 28 | | 144 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 130 | 129 | 128 | 216 | 218 | 220 | 222 | 224 | 225 | 227 | 228 | 229 | 230 | 231 |
| Nov 29 | | 144 | 142 | 140 | 138 | 136 | 135 | 133 | 132 | 131 | 130 | 129 | 215 | 218 | 220 | 222 | 223 | 225 | 226 | 228 | 229 | 230 | 231 |
| Nov 30 | | 145 | 142 | 140 | 138 | 137 | 135 | 134 | 132 | 131 | 130 | 129 | 215 | 217 | 219 | 221 | 223 | 225 | 226 | 227 | 229 | 230 | 231 |
| Dec 1 | | 145 | 143 | 141 | 139 | 137 | 135 | 134 | 133 | 131 | 130 | 129 | 214 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 | 229 | 231 |
| Dec 2 | | 146 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 131 | 129 | 214 | 216 | 219 | 220 | 222 | 224 | 225 | 227 | 228 | 229 | 230 |
| Dec 3 | | 146 | 144 | 141 | 140 | 138 | 136 | 135 | 133 | 132 | 131 | 130 | 213 | 216 | 218 | 220 | 222 | 224 | 225 | 226 | 228 | 229 | 230 |
| Dec 4 | | 147 | 144 | 142 | 140 | 138 | 136 | 135 | 134 | 132 | 131 | 130 | 213 | 215 | 218 | 220 | 222 | 223 | 225 | 226 | 227 | 229 | 230 |
| Dec 5 | | 147 | 145 | 142 | 140 | 138 | 137 | 135 | 134 | 133 | 131 | 130 | 212 | 215 | 217 | 219 | 221 | 223 | 225 | 226 | 227 | 228 | 230 |
| Dec 6 | | 148 | 145 | 143 | 141 | 139 | 137 | 135 | 134 | 133 | 132 | 130 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 | 229 |
| Dec 7 | | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 131 | 212 | 214 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 | 229 |
| Dec 8 | | 148 | 146 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 131 | 211 | 214 | 216 | 219 | 220 | 222 | 224 | 225 | 227 | 228 | 229 |
| Dec 9 | | 149 | 146 | 144 | 141 | 140 | 138 | 136 | 135 | 133 | 132 | 131 | 211 | 214 | 216 | 218 | 220 | 222 | 224 | 225 | 226 | 228 | 229 |
| Dec 10 | | 149 | 146 | 144 | 142 | 140 | 138 | 136 | 135 | 134 | 132 | 131 | 211 | 213 | 216 | 218 | 220 | 222 | 223 | 225 | 226 | 227 | 229 |
| Dec 11 | | 149 | 147 | 144 | 142 | 140 | 138 | 137 | 135 | 134 | 133 | 131 | 210 | 213 | 216 | 218 | 220 | 222 | 223 | 225 | 226 | 227 | 228 |
| Dec 12 | | 150 | 147 | 144 | 142 | 140 | 138 | 137 | 135 | 134 | 133 | 132 | 210 | 213 | 215 | 218 | 220 | 221 | 223 | 224 | 226 | 227 | 228 |
| Dec 13 | | 150 | 147 | 145 | 142 | 140 | 139 | 137 | 136 | 134 | 133 | 132 | 210 | 213 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 |
| Dec 14 | | 150 | 147 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 210 | 213 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 |
| Dec 15 | | 150 | 147 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 225 | 227 | 228 |
| Dec 16 | | 151 | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 225 | 227 | 228 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | Sunrise | | | | | | Latitude North | | | | Sunset | | | | | | | |
|--------|----|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| Oct 28 | 28 | 114 | 113 | 112 | 111 | 110 | 109 | 109 | 108 | 108 | 107 | 107 | 245 | 247 | 248 | 249 | 249 | 250 | 251 | 251 | 252 | 252 | 253 |
| Oct 29 | 29 | 115 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 108 | 107 | 245 | 246 | 247 | 248 | 249 | 250 | 250 | 251 | 252 | 252 | 253 |
| Oct 30 | 30 | 115 | 114 | 113 | 112 | 111 | 110 | 110 | 109 | 108 | 108 | 107 | 244 | 246 | 247 | 248 | 248 | 249 | 250 | 251 | 251 | 252 | 252 |
| Oct 31 | 31 | 116 | 114 | 113 | 112 | 112 | 111 | 110 | 109 | 109 | 108 | 108 | 244 | 245 | 246 | 247 | 248 | 249 | 249 | 250 | 251 | 251 | 252 |
| Nov 1 | 1 | 116 | 115 | 114 | 113 | 112 | 111 | 111 | 110 | 109 | 109 | 108 | 243 | 245 | 246 | 247 | 248 | 248 | 249 | 250 | 250 | 251 | 251 |
| Nov 2 | 2 | 117 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 110 | 109 | 109 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 249 | 250 | 250 | 251 |
| Nov 3 | 3 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 111 | 110 | 110 | 109 | 242 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 250 | 250 | 251 |
| Nov 4 | 4 | 118 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 110 | 110 | 109 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 249 | 250 | 250 |
| Nov 5 | 5 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 111 | 111 | 110 | 110 | 241 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 | 250 |
| Nov 6 | 6 | 119 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 110 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 248 | 249 | 250 |
| Nov 7 | 7 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 112 | 112 | 111 | 110 | 240 | 242 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 249 | 249 |
| Nov 8 | 8 | 120 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 111 | 240 | 241 | 242 | 243 | 245 | 245 | 246 | 247 | 248 | 248 | 249 |
| Nov 9 | 9 | 120 | 119 | 118 | 117 | 115 | 115 | 114 | 113 | 112 | 112 | 111 | 239 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 247 | 248 | 249 |
| Nov 10 | 10 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 111 | 239 | 240 | 241 | 243 | 244 | 245 | 245 | 246 | 247 | 248 | 248 |
| Nov 11 | 11 | 121 | 120 | 119 | 117 | 116 | 115 | 115 | 114 | 113 | 112 | 112 | 238 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 247 | 248 |
| Nov 12 | 12 | 122 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 113 | 113 | 112 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 246 | 246 | 247 | 248 |
| Nov 13 | 13 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 114 | 114 | 113 | 112 | 237 | 239 | 240 | 241 | 243 | 244 | 244 | 245 | 246 | 247 | 247 |
| Nov 14 | 14 | 123 | 121 | 120 | 119 | 117 | 116 | 116 | 115 | 114 | 113 | 113 | 237 | 238 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 246 | 247 |
| Nov 15 | 15 | 123 | 122 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 114 | 113 | 236 | 238 | 239 | 241 | 242 | 243 | 244 | 245 | 245 | 246 | 247 |
| Nov 16 | 16 | 124 | 122 | 121 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 113 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 246 |
| Nov 17 | 17 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 114 | 114 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 | 246 |
| Nov 18 | 18 | 124 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 114 | 235 | 237 | 238 | 240 | 241 | 242 | 243 | 244 | 244 | 245 | 246 |
| Nov 19 | 19 | 125 | 123 | 122 | 120 | 119 | 118 | 117 | 116 | 116 | 115 | 114 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 |
| Nov 20 | 20 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 234 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 245 |
| Nov 21 | 21 | 126 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 115 | 115 | 234 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 244 | 244 | 245 |
| Nov 22 | 22 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 117 | 116 | 116 | 115 | 234 | 235 | 237 | 238 | 239 | 241 | 242 | 242 | 243 | 244 | 245 |
| Nov 23 | 23 | 126 | 125 | 123 | 122 | 121 | 119 | 118 | 118 | 117 | 116 | 115 | 233 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 244 |
| Nov 24 | 24 | 127 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 116 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 244 |
| Nov 25 | 25 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 116 | 232 | 234 | 236 | 237 | 239 | 240 | 241 | 242 | 243 | 243 | 244 |
| Nov 26 | 26 | 128 | 126 | 124 | 123 | 121 | 120 | 119 | 118 | 117 | 117 | 116 | 232 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 |
| Nov 27 | 27 | 128 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 |
| Nov 28 | 28 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 116 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 243 | 243 |
| Nov 29 | 29 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 117 | 117 | 231 | 233 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 242 | 243 |
| Nov 30 | 30 | 129 | 127 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 118 | 117 | 231 | 233 | 234 | 236 | 237 | 238 | 240 | 241 | 241 | 242 | 243 |
| Dec 1 | 1 | 129 | 127 | 126 | 124 | 123 | 122 | 120 | 119 | 119 | 118 | 117 | 231 | 232 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 |
| Dec 2 | 2 | 129 | 128 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 243 |
| Dec 3 | 3 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 117 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 242 | 242 |
| Dec 4 | 4 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 118 | 118 | 230 | 232 | 234 | 235 | 236 | 238 | 239 | 240 | 241 | 242 | 242 |
| Dec 5 | 5 | 130 | 128 | 126 | 125 | 124 | 122 | 121 | 120 | 119 | 118 | 118 | 230 | 232 | 233 | 235 | 236 | 237 | 239 | 240 | 241 | 241 | 242 |
| Dec 6 | 6 | 130 | 128 | 127 | 125 | 124 | 123 | 121 | 120 | 119 | 119 | 118 | 229 | 231 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Dec 7 | 7 | 131 | 129 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Dec 8 | 8 | 131 | 129 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Dec 9 | 9 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 233 | 234 | 236 | 237 | 238 | 239 | 240 | 241 | 242 |
| Dec 10 | 10 | 131 | 129 | 127 | 126 | 124 | 123 | 122 | 121 | 120 | 119 | 118 | 229 | 231 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 241 |
| Dec 11 | 11 | 131 | 129 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 119 | 228 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 241 |
| Dec 12 | 12 | 132 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 119 | 228 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 241 |
| Dec 13 | 13 | 132 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 238 | 239 | 240 | 240 | 241 |
| Dec 14 | 14 | 132 | 130 | 128 | 126 | 125 | 124 | 122 | 121 | 120 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 238 | 239 | 240 | 240 | 241 |
| Dec 15 | 15 | 132 | 130 | 128 | 126 | 125 | 124 | 122 | 121 | 120 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 237 | 239 | 239 | 240 | 241 |
| Dec 16 | 16 | 132 | 130 | 128 | 126 | 125 | 124 | 123 | 121 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude North | | | | Sunrise | | | | | | Latitude North | | | | Sunset | | | | | | | |
|--------|--|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|
| | | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 |
| Oct 28 | | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 104 | 104 | 104 | 104 | 253 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 255 | 256 | 256 |
| Oct 29 | | 107 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 105 | 104 | 104 | 253 | 253 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 255 | 256 |
| Oct 30 | | 107 | 107 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 105 | 104 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 255 | 255 | 255 | 255 |
| Oct 31 | | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 105 | 105 | 105 | 105 | 252 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 254 | 255 | 255 |
| Nov 1 | | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 106 | 105 | 105 | 251 | 252 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 254 | 255 |
| Nov 2 | | 109 | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 106 | 105 | 251 | 251 | 252 | 252 | 253 | 253 | 253 | 254 | 254 | 254 | 254 |
| Nov 3 | | 109 | 109 | 108 | 108 | 107 | 107 | 107 | 106 | 106 | 106 | 106 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 | 253 | 254 | 254 |
| Nov 4 | | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 107 | 106 | 106 | 250 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 | 253 | 254 |
| Nov 5 | | 110 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 107 | 106 | 250 | 250 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 | 253 |
| Nov 6 | | 110 | 110 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 107 | 250 | 250 | 251 | 251 | 251 | 252 | 252 | 252 | 253 | 253 | 253 |
| Nov 7 | | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 107 | 107 | 107 | 249 | 250 | 250 | 251 | 251 | 251 | 252 | 252 | 252 | 252 | 253 |
| Nov 8 | | 111 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 108 | 107 | 249 | 249 | 250 | 250 | 251 | 251 | 251 | 252 | 252 | 252 | 252 |
| Nov 9 | | 111 | 111 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 108 | 249 | 249 | 250 | 250 | 251 | 251 | 251 | 251 | 252 | 252 | 252 |
| Nov 10 | | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 108 | 248 | 249 | 249 | 250 | 250 | 250 | 251 | 251 | 251 | 252 | 252 |
| Nov 11 | | 112 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 108 | 108 | 248 | 248 | 249 | 249 | 250 | 250 | 250 | 251 | 251 | 251 | 252 |
| Nov 12 | | 112 | 112 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 108 | 248 | 248 | 249 | 249 | 249 | 250 | 250 | 251 | 251 | 251 | 251 |
| Nov 13 | | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 109 | 109 | 109 | 109 | 247 | 248 | 248 | 249 | 249 | 250 | 250 | 250 | 251 | 251 | 251 |
| Nov 14 | | 113 | 112 | 112 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 109 | 247 | 247 | 248 | 248 | 249 | 250 | 250 | 250 | 250 | 251 | 251 |
| Nov 15 | | 113 | 113 | 112 | 112 | 111 | 111 | 110 | 110 | 110 | 109 | 109 | 247 | 247 | 248 | 248 | 249 | 249 | 249 | 250 | 250 | 250 | 250 |
| Nov 16 | | 113 | 113 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 110 | 110 | 246 | 247 | 247 | 248 | 248 | 249 | 249 | 249 | 250 | 250 | 250 |
| Nov 17 | | 114 | 113 | 113 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 110 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 | 250 | 250 |
| Nov 18 | | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 246 | 246 | 247 | 247 | 248 | 248 | 249 | 249 | 249 | 250 | 250 |
| Nov 19 | | 114 | 114 | 113 | 113 | 112 | 112 | 111 | 111 | 111 | 110 | 110 | 245 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 | 250 |
| Nov 20 | | 115 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 110 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 |
| Nov 21 | | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 | 249 |
| Nov 22 | | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 111 | 245 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 249 | 249 |
| Nov 23 | | 115 | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 111 | 111 | 244 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 | 248 | 249 |
| Nov 24 | | 116 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 112 | 111 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 248 | 248 | 248 | 248 |
| Nov 25 | | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 112 | 112 | 112 | 112 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 | 248 |
| Nov 26 | | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 112 | 244 | 244 | 245 | 246 | 246 | 246 | 247 | 247 | 247 | 248 | 248 |
| Nov 27 | | 116 | 116 | 115 | 114 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 244 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 248 | 248 |
| Nov 28 | | 116 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 112 | 243 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 | 247 | 248 |
| Nov 29 | | 117 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 113 | 113 | 112 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 247 | 247 | 247 | 248 |
| Nov 30 | | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 113 | 113 | 113 | 112 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 | 247 |
| Dec 1 | | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 113 | 113 | 243 | 243 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 | 247 |
| Dec 2 | | 117 | 117 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 113 | 113 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 |
| Dec 3 | | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 113 | 242 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 | 247 |
| Dec 4 | | 118 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 113 | 242 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 | 246 | 247 |
| Dec 5 | | 118 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 114 | 113 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 |
| Dec 6 | | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 | 247 |
| Dec 7 | | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 113 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 | 246 |
| Dec 8 | | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 114 | 242 | 242 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 | 246 |
| Dec 9 | | 118 | 118 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 114 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 |
| Dec 10 | | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 246 | 246 | 246 |
| Dec 11 | | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 114 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 12 | | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 13 | | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 14 | | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 242 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 15 | | 119 | 118 | 118 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 242 | 243 | 244 | 244 | 244 | 245 | 245 | 246 | 246 |
| Dec 16 | | 119 | 118 | 118 | 117 | 116 | 116 | 116 | 115 | 115 | 114 | 114 | 241 | 242 | 242 | 243 | 244 | 244 | 244 | 245 | 245 | 245 | 246 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 |
| Oct 28 | 28 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 104 | 257 | 257 | 257 | 257 | 257 | 257 | 257 | 256 | 256 | 256 | 256 | |
| Oct 29 | 29 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 104 | 104 | 104 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | |
| Oct 30 | 30 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 255 | 255 | |
| Oct 31 | 31 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 105 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 255 | 255 | 255 | 255 | |
| Nov 1 | 1 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 105 | 105 | 105 | 256 | 256 | 255 | 255 | 255 | 255 | 255 | 255 | 255 | 255 | 254 | |
| Nov 2 | 2 | 104 | 104 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 255 | 255 | 255 | 255 | 255 | 255 | 255 | 255 | 255 | 254 | 254 | |
| Nov 3 | 3 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 106 | 255 | 255 | 255 | 255 | 255 | 254 | 254 | 254 | 254 | 254 | 254 | |
| Nov 4 | 4 | 105 | 105 | 105 | 105 | 105 | 105 | 106 | 106 | 106 | 106 | 255 | 255 | 255 | 254 | 254 | 254 | 254 | 254 | 254 | 254 | 253 | |
| Nov 5 | 5 | 105 | 105 | 105 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 254 | 254 | 254 | 254 | 254 | 254 | 254 | 254 | 254 | 253 | 253 | |
| Nov 6 | 6 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 107 | 254 | 254 | 254 | 254 | 254 | 254 | 254 | 253 | 253 | 253 | 253 | |
| Nov 7 | 7 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 107 | 107 | 107 | 254 | 254 | 254 | 254 | 253 | 253 | 253 | 253 | 253 | 253 | 252 | |
| Nov 8 | 8 | 106 | 106 | 106 | 106 | 107 | 107 | 107 | 107 | 107 | 107 | 253 | 253 | 253 | 253 | 253 | 253 | 253 | 253 | 253 | 252 | 252 | |
| Nov 9 | 9 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 108 | 253 | 253 | 253 | 253 | 253 | 253 | 253 | 252 | 252 | 252 | 252 | |
| Nov 10 | 10 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 108 | 108 | 108 | 253 | 253 | 253 | 253 | 253 | 252 | 252 | 252 | 252 | 252 | 251 | |
| Nov 11 | 11 | 107 | 107 | 107 | 107 | 107 | 108 | 108 | 108 | 108 | 108 | 253 | 252 | 252 | 252 | 252 | 252 | 252 | 252 | 252 | 251 | 251 | |
| Nov 12 | 12 | 107 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 109 | 252 | 252 | 252 | 252 | 252 | 252 | 252 | 252 | 251 | 251 | 251 | |
| Nov 13 | 13 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 109 | 109 | 252 | 252 | 252 | 252 | 252 | 252 | 251 | 251 | 251 | 251 | 250 | |
| Nov 14 | 14 | 108 | 108 | 108 | 108 | 108 | 108 | 109 | 109 | 109 | 109 | 252 | 252 | 252 | 252 | 251 | 251 | 251 | 251 | 251 | 250 | 250 | |
| Nov 15 | 15 | 108 | 108 | 108 | 108 | 109 | 109 | 109 | 109 | 109 | 110 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 250 | 250 | 250 | |
| Nov 16 | 16 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 110 | 110 | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 250 | 250 | 250 | 250 | |
| Nov 17 | 17 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 110 | 110 | 110 | 251 | 251 | 251 | 251 | 251 | 250 | 250 | 250 | 250 | 250 | 249 | |
| Nov 18 | 18 | 109 | 109 | 109 | 109 | 109 | 110 | 110 | 110 | 110 | 110 | 251 | 251 | 251 | 251 | 250 | 250 | 250 | 250 | 250 | 249 | 249 | |
| Nov 19 | 19 | 109 | 109 | 109 | 109 | 110 | 110 | 110 | 110 | 110 | 111 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 249 | 249 | 249 | |
| Nov 20 | 20 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 111 | 111 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 249 | 249 | 249 | 248 | |
| Nov 21 | 21 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 111 | 111 | 111 | 250 | 250 | 250 | 250 | 250 | 250 | 249 | 249 | 249 | 249 | 248 | |
| Nov 22 | 22 | 110 | 110 | 110 | 110 | 110 | 110 | 111 | 111 | 111 | 111 | 250 | 250 | 250 | 250 | 249 | 249 | 249 | 249 | 249 | 248 | 248 | |
| Nov 23 | 23 | 110 | 110 | 110 | 110 | 111 | 111 | 111 | 111 | 111 | 112 | 250 | 250 | 249 | 249 | 249 | 249 | 249 | 249 | 248 | 248 | 248 | |
| Nov 24 | 24 | 110 | 110 | 111 | 111 | 111 | 111 | 111 | 111 | 112 | 112 | 249 | 249 | 249 | 249 | 249 | 249 | 249 | 248 | 248 | 248 | 247 | |
| Nov 25 | 25 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 112 | 112 | 112 | 249 | 249 | 249 | 249 | 249 | 249 | 248 | 248 | 248 | 248 | 247 | |
| Nov 26 | 26 | 111 | 111 | 111 | 111 | 111 | 111 | 112 | 112 | 112 | 112 | 249 | 249 | 249 | 249 | 249 | 248 | 248 | 248 | 248 | 247 | 247 | |
| Nov 27 | 27 | 111 | 111 | 111 | 111 | 111 | 112 | 112 | 112 | 112 | 113 | 249 | 249 | 249 | 249 | 248 | 248 | 248 | 248 | 248 | 247 | 247 | |
| Nov 28 | 28 | 111 | 111 | 111 | 111 | 112 | 112 | 112 | 112 | 112 | 113 | 249 | 249 | 249 | 248 | 248 | 248 | 248 | 248 | 247 | 247 | 247 | |
| Nov 29 | 29 | 111 | 111 | 111 | 112 | 112 | 112 | 112 | 112 | 113 | 113 | 248 | 248 | 248 | 248 | 248 | 248 | 248 | 247 | 247 | 247 | 246 | |
| Nov 30 | 30 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 113 | 113 | 113 | 248 | 248 | 248 | 248 | 248 | 248 | 248 | 247 | 247 | 247 | 246 | |
| Dec 1 | 1 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 113 | 113 | 113 | 248 | 248 | 248 | 248 | 248 | 248 | 247 | 247 | 247 | 246 | 246 | |
| Dec 2 | 2 | 112 | 112 | 112 | 112 | 112 | 112 | 113 | 113 | 113 | 114 | 248 | 248 | 248 | 248 | 248 | 247 | 247 | 247 | 247 | 246 | 246 | |
| Dec 3 | 3 | 112 | 112 | 112 | 112 | 112 | 113 | 113 | 113 | 113 | 114 | 248 | 248 | 248 | 248 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | |
| Dec 4 | 4 | 112 | 112 | 112 | 112 | 113 | 113 | 113 | 113 | 114 | 114 | 248 | 248 | 248 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | |
| Dec 5 | 5 | 112 | 112 | 112 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 248 | 248 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 245 | |
| Dec 6 | 6 | 112 | 112 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 248 | 247 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 245 | |
| Dec 7 | 7 | 112 | 113 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 247 | 247 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 245 | |
| Dec 8 | 8 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 247 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 245 | 245 | |
| Dec 9 | 9 | 113 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 245 | 245 | |
| Dec 10 | 10 | 113 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | |
| Dec 11 | 11 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | |
| Dec 12 | 12 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | |
| Dec 13 | 13 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | |
| Dec 14 | 14 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | |
| Dec 15 | 15 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 244 | |
| Dec 16 | 16 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 114 | 115 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 244 | |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| Oct 28 | 28 | 104 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 256 | 256 | 256 | 255 | 255 | 255 | 254 | 254 | 253 | 253 | 252 |
| Oct 29 | 29 | 104 | 104 | 104 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 108 | 256 | 255 | 255 | 255 | 255 | 254 | 254 | 253 | 253 | 252 | 252 |
| Oct 30 | 30 | 104 | 105 | 105 | 105 | 105 | 106 | 106 | 107 | 107 | 108 | 108 | 255 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 |
| Oct 31 | 31 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 255 | 255 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 | 251 |
| Nov 1 | 1 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 109 | 254 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 251 | 251 | 250 |
| Nov 2 | 2 | 106 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 109 | 109 | 110 | 254 | 254 | 254 | 253 | 253 | 252 | 252 | 252 | 251 | 250 | 250 |
| Nov 3 | 3 | 106 | 106 | 106 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 254 | 254 | 253 | 253 | 252 | 252 | 252 | 251 | 250 | 250 | 249 |
| Nov 4 | 4 | 106 | 106 | 107 | 107 | 108 | 108 | 108 | 109 | 110 | 110 | 111 | 253 | 253 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 249 | 249 |
| Nov 5 | 5 | 107 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 111 | 111 | 253 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 248 |
| Nov 6 | 6 | 107 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 112 | 253 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 248 | 248 |
| Nov 7 | 7 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 112 | 112 | 252 | 252 | 252 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 |
| Nov 8 | 8 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 252 | 252 | 251 | 251 | 251 | 250 | 250 | 249 | 248 | 247 | 247 |
| Nov 9 | 9 | 108 | 108 | 109 | 109 | 109 | 110 | 110 | 111 | 112 | 113 | 113 | 252 | 251 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 | 246 |
| Nov 10 | 10 | 108 | 109 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 114 | 251 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 | 247 | 246 |
| Nov 11 | 11 | 109 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 113 | 114 | 251 | 251 | 250 | 250 | 250 | 249 | 248 | 248 | 247 | 246 | 245 |
| Nov 12 | 12 | 109 | 109 | 110 | 110 | 110 | 111 | 112 | 112 | 113 | 114 | 115 | 251 | 250 | 250 | 250 | 249 | 249 | 248 | 247 | 247 | 246 | 245 |
| Nov 13 | 13 | 109 | 110 | 110 | 110 | 111 | 111 | 112 | 113 | 113 | 114 | 115 | 250 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 246 | 245 | 244 |
| Nov 14 | 14 | 110 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 114 | 115 | 116 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 244 |
| Nov 15 | 15 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 250 | 249 | 249 | 249 | 248 | 248 | 247 | 246 | 245 | 245 | 244 |
| Nov 16 | 16 | 110 | 111 | 111 | 111 | 112 | 112 | 113 | 114 | 115 | 115 | 116 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 244 | 243 |
| Nov 17 | 17 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 249 | 249 | 248 | 248 | 248 | 247 | 246 | 246 | 245 | 244 | 243 |
| Nov 18 | 18 | 111 | 111 | 112 | 112 | 112 | 113 | 114 | 114 | 115 | 116 | 117 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 244 | 243 | 242 |
| Nov 19 | 19 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 249 | 248 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 243 | 242 |
| Nov 20 | 20 | 111 | 112 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 117 | 118 | 248 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 242 |
| Nov 21 | 21 | 112 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 118 | 248 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 243 | 242 | 241 |
| Nov 22 | 22 | 112 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 117 | 118 | 119 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 242 | 241 |
| Nov 23 | 23 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 |
| Nov 24 | 24 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 247 | 247 | 247 | 246 | 246 | 245 | 244 | 243 | 242 | 241 | 240 |
| Nov 25 | 25 | 113 | 113 | 113 | 114 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 247 | 247 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 241 | 240 |
| Nov 26 | 26 | 113 | 113 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 120 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 | 240 |
| Nov 27 | 27 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 247 | 246 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 240 | 239 |
| Nov 28 | 28 | 113 | 114 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 120 | 121 | 247 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 241 | 240 | 239 |
| Nov 29 | 29 | 113 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 246 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 |
| Nov 30 | 30 | 114 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 246 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 238 |
| Dec 1 | 1 | 114 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 122 | 246 | 246 | 245 | 245 | 244 | 243 | 242 | 242 | 241 | 239 | 238 |
| Dec 2 | 2 | 114 | 114 | 115 | 115 | 116 | 117 | 118 | 118 | 119 | 121 | 122 | 246 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 | 238 |
| Dec 3 | 3 | 114 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 246 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 | 238 |
| Dec 4 | 4 | 114 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 237 |
| Dec 5 | 5 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 123 | 245 | 245 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 237 |
| Dec 6 | 6 | 115 | 115 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 123 | 245 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 238 | 237 |
| Dec 7 | 7 | 115 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 122 | 123 | 245 | 245 | 244 | 244 | 243 | 242 | 241 | 240 | 239 | 238 | 237 |
| Dec 8 | 8 | 115 | 115 | 116 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 |
| Dec 9 | 9 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 245 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 236 |
| Dec 10 | 10 | 115 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 124 | 245 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 236 |
| Dec 11 | 11 | 115 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 124 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 | 236 |
| Dec 12 | 12 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 124 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 237 | 236 |
| Dec 13 | 13 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 123 | 124 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 237 | 236 |
| Dec 14 | 14 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 123 | 124 | 245 | 244 | 243 | 243 | 242 | 241 | 241 | 240 | 239 | 237 | 236 |
| Dec 15 | 15 | 115 | 116 | 117 | 117 | 118 | 119 | 119 | 120 | 121 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 241 | 240 | 238 | 237 | 236 |
| Dec 16 | 16 | 116 | 116 | 117 | 117 | 118 | 119 | 119 | 120 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Oct 28 | 28 | 107 | 108 | 108 | 108 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 252 | 252 | 251 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 247 |
| Oct 29 | 29 | 108 | 108 | 109 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 113 | 252 | 251 | 251 | 250 | 250 | 250 | 249 | 248 | 248 | 247 | 247 |
| Oct 30 | 30 | 108 | 109 | 109 | 110 | 110 | 110 | 111 | 112 | 112 | 113 | 113 | 251 | 251 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 |
| Oct 31 | 31 | 109 | 109 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 251 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 |
| Nov 1 | 1 | 109 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 250 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 |
| Nov 2 | 2 | 110 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 250 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 |
| Nov 3 | 3 | 110 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 249 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 |
| Nov 4 | 4 | 111 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 249 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 243 |
| Nov 5 | 5 | 111 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 117 | 248 | 248 | 247 | 247 | 246 | 245 | 245 | 244 | 243 | 243 | 242 |
| Nov 6 | 6 | 112 | 112 | 113 | 113 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 248 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 |
| Nov 7 | 7 | 112 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 247 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 241 | 241 |
| Nov 8 | 8 | 113 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 119 | 119 | 247 | 246 | 246 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 |
| Nov 9 | 9 | 113 | 114 | 114 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 246 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 240 | 239 |
| Nov 10 | 10 | 114 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 246 | 245 | 245 | 244 | 243 | 243 | 242 | 241 | 241 | 240 | 239 |
| Nov 11 | 11 | 114 | 115 | 115 | 116 | 117 | 117 | 118 | 119 | 119 | 120 | 121 | 245 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 |
| Nov 12 | 12 | 115 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 | 237 |
| Nov 13 | 13 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 123 | 244 | 244 | 243 | 243 | 242 | 241 | 241 | 240 | 239 | 238 | 237 |
| Nov 14 | 14 | 116 | 116 | 117 | 117 | 118 | 119 | 119 | 120 | 121 | 122 | 123 | 244 | 243 | 243 | 242 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Nov 15 | 15 | 116 | 117 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 243 | 242 | 242 | 241 | 240 | 240 | 239 | 238 | 237 | 236 |
| Nov 16 | 16 | 116 | 117 | 118 | 118 | 119 | 120 | 120 | 121 | 122 | 123 | 124 | 243 | 243 | 242 | 241 | 241 | 240 | 239 | 238 | 237 | 236 | 235 |
| Nov 17 | 17 | 117 | 117 | 118 | 119 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 243 | 242 | 242 | 241 | 240 | 239 | 239 | 238 | 237 | 236 | 235 |
| Nov 18 | 18 | 117 | 118 | 118 | 119 | 120 | 121 | 121 | 122 | 123 | 124 | 125 | 242 | 242 | 241 | 240 | 240 | 239 | 238 | 237 | 236 | 235 | 234 |
| Nov 19 | 19 | 118 | 118 | 119 | 120 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 242 | 241 | 241 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 233 |
| Nov 20 | 20 | 118 | 119 | 119 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 127 | 242 | 241 | 240 | 240 | 239 | 238 | 237 | 236 | 235 | 234 | 233 |
| Nov 21 | 21 | 118 | 119 | 120 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 241 | 241 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 232 |
| Nov 22 | 22 | 119 | 119 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 128 | 241 | 240 | 240 | 239 | 238 | 237 | 236 | 235 | 234 | 233 | 232 |
| Nov 23 | 23 | 119 | 120 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 241 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 231 |
| Nov 24 | 24 | 119 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 129 | 240 | 240 | 239 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 |
| Nov 25 | 25 | 120 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 240 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 230 |
| Nov 26 | 26 | 120 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 130 | 240 | 239 | 238 | 237 | 237 | 236 | 235 | 234 | 233 | 231 | 230 |
| Nov 27 | 27 | 120 | 121 | 122 | 123 | 123 | 124 | 125 | 126 | 127 | 129 | 130 | 239 | 239 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 |
| Nov 28 | 28 | 121 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 239 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 229 |
| Nov 29 | 29 | 121 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 131 | 239 | 238 | 237 | 236 | 236 | 235 | 234 | 233 | 231 | 230 | 229 |
| Nov 30 | 30 | 121 | 122 | 123 | 124 | 124 | 125 | 126 | 127 | 129 | 130 | 131 | 238 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 |
| Dec 1 | 1 | 122 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 238 | 237 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 229 | 228 |
| Dec 2 | 2 | 122 | 123 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 131 | 132 | 238 | 237 | 236 | 236 | 235 | 234 | 233 | 232 | 230 | 229 | 228 |
| Dec 3 | 3 | 122 | 123 | 124 | 124 | 125 | 126 | 127 | 128 | 130 | 131 | 132 | 238 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 |
| Dec 4 | 4 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 237 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 | 227 |
| Dec 5 | 5 | 123 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 133 | 237 | 236 | 236 | 235 | 234 | 233 | 232 | 231 | 229 | 228 | 227 |
| Dec 6 | 6 | 123 | 124 | 124 | 125 | 126 | 127 | 128 | 129 | 131 | 132 | 133 | 237 | 236 | 235 | 235 | 234 | 233 | 232 | 230 | 229 | 228 | 226 |
| Dec 7 | 7 | 123 | 124 | 125 | 125 | 126 | 127 | 128 | 130 | 131 | 132 | 134 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 228 | 226 |
| Dec 8 | 8 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 134 | 237 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 |
| Dec 9 | 9 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 236 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 | 227 | 225 |
| Dec 10 | 10 | 124 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 133 | 135 | 236 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 228 | 227 | 225 |
| Dec 11 | 11 | 124 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 132 | 133 | 135 | 236 | 235 | 235 | 234 | 233 | 232 | 231 | 229 | 228 | 227 | 225 |
| Dec 12 | 12 | 124 | 125 | 125 | 126 | 127 | 128 | 129 | 131 | 132 | 133 | 135 | 236 | 235 | 234 | 234 | 233 | 232 | 230 | 229 | 228 | 226 | 225 |
| Dec 13 | 13 | 124 | 125 | 126 | 126 | 127 | 128 | 130 | 131 | 132 | 134 | 135 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 228 | 226 | 225 |
| Dec 14 | 14 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 134 | 135 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 228 | 226 | 225 |
| Dec 15 | 15 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 134 | 135 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 228 | 226 | 224 |
| Dec 16 | 16 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | | | | | | | | | | | | |
|--------|--|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Sunrise | | | | | Sunset | | | | | Sunrise | | | | | Sunset | | | | | | | | | | | | | | | | | |
| | | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Oct 28 | | 112 | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 120 | 121 | 123 | 247 | 247 | 246 | 245 | 244 | 243 | 242 | 241 | 239 | 238 | 236 | 247 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 237 | 235 |
| Oct 29 | | 113 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 121 | 122 | 124 | 247 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 237 | 235 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 239 | 237 | 236 | 234 |
| Oct 30 | | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 122 | 123 | 125 | 246 | 245 | 244 | 243 | 242 | 241 | 240 | 239 | 237 | 236 | 234 | 245 | 244 | 244 | 243 | 242 | 241 | 239 | 238 | 236 | 235 | 233 |
| Oct 31 | | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 123 | 124 | 126 | 245 | 244 | 244 | 243 | 242 | 241 | 239 | 238 | 236 | 235 | 233 | 245 | 244 | 243 | 242 | 241 | 239 | 238 | 236 | 235 | 233 | |
| Nov 1 | | 115 | 116 | 116 | 117 | 118 | 119 | 121 | 122 | 124 | 125 | 127 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 237 | 235 | 234 | 232 | 245 | 244 | 243 | 242 | 241 | 240 | 238 | 237 | 235 | 234 | 232 |
| Nov 2 | | 115 | 116 | 117 | 118 | 119 | 120 | 122 | 123 | 125 | 126 | 128 | 244 | 243 | 242 | 241 | 240 | 239 | 238 | 236 | 234 | 233 | 231 | 244 | 243 | 242 | 241 | 240 | 239 | 238 | 236 | 234 | 233 | 231 |
| Nov 3 | | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 124 | 126 | 127 | 129 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 235 | 233 | 232 | 229 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 235 | 233 | 232 | 229 |
| Nov 4 | | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 125 | 127 | 128 | 131 | 243 | 242 | 241 | 240 | 238 | 237 | 236 | 234 | 232 | 231 | 228 | 243 | 242 | 241 | 240 | 238 | 237 | 236 | 234 | 232 | 231 | 228 |
| Nov 5 | | 117 | 118 | 119 | 120 | 122 | 123 | 124 | 126 | 128 | 129 | 132 | 242 | 241 | 240 | 239 | 238 | 236 | 235 | 233 | 232 | 229 | 227 | 242 | 241 | 240 | 239 | 238 | 236 | 235 | 233 | 232 | 229 | 227 |
| Nov 6 | | 118 | 119 | 120 | 121 | 122 | 124 | 125 | 127 | 128 | 131 | 133 | 241 | 240 | 239 | 238 | 237 | 236 | 234 | 232 | 231 | 228 | 226 | 241 | 240 | 239 | 238 | 237 | 236 | 234 | 232 | 231 | 228 | 226 |
| Nov 7 | | 119 | 120 | 121 | 122 | 123 | 124 | 126 | 128 | 129 | 132 | 134 | 241 | 240 | 239 | 237 | 236 | 235 | 233 | 231 | 230 | 227 | 225 | 241 | 240 | 239 | 237 | 236 | 235 | 233 | 231 | 230 | 227 | 225 |
| Nov 8 | | 119 | 120 | 121 | 123 | 124 | 125 | 127 | 129 | 130 | 133 | 135 | 240 | 239 | 238 | 237 | 235 | 234 | 232 | 231 | 229 | 226 | 224 | 240 | 239 | 238 | 237 | 235 | 234 | 232 | 231 | 229 | 226 | 224 |
| Nov 9 | | 120 | 121 | 122 | 123 | 125 | 126 | 128 | 129 | 131 | 134 | 136 | 239 | 238 | 237 | 236 | 235 | 233 | 231 | 230 | 228 | 225 | 223 | 239 | 238 | 237 | 236 | 235 | 233 | 231 | 230 | 228 | 225 | 223 |
| Nov 10 | | 121 | 122 | 123 | 124 | 125 | 127 | 129 | 130 | 132 | 135 | 137 | 239 | 238 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 224 | 222 | 239 | 238 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 224 | 222 |
| Nov 11 | | 121 | 122 | 124 | 125 | 126 | 128 | 129 | 131 | 133 | 136 | 139 | 238 | 237 | 236 | 235 | 233 | 232 | 230 | 228 | 226 | 223 | 221 | 238 | 237 | 236 | 235 | 233 | 232 | 230 | 228 | 226 | 223 | 221 |
| Nov 12 | | 122 | 123 | 124 | 125 | 127 | 128 | 130 | 132 | 134 | 137 | 140 | 237 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 225 | 222 | 220 | 237 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 225 | 222 | 220 |
| Nov 13 | | 123 | 124 | 125 | 126 | 128 | 129 | 131 | 133 | 135 | 138 | 141 | 237 | 236 | 234 | 233 | 232 | 230 | 228 | 226 | 224 | 221 | 219 | 237 | 236 | 234 | 233 | 232 | 230 | 228 | 226 | 224 | 221 | 219 |
| Nov 14 | | 123 | 124 | 126 | 127 | 128 | 130 | 132 | 134 | 136 | 139 | 142 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 225 | 223 | 220 | 218 | 236 | 235 | 234 | 232 | 231 | 229 | 227 | 225 | 223 | 220 | 218 |
| Nov 15 | | 124 | 125 | 126 | 128 | 129 | 131 | 133 | 135 | 137 | 140 | 143 | 236 | 234 | 233 | 232 | 230 | 228 | 227 | 224 | 222 | 219 | 217 | 236 | 234 | 233 | 232 | 230 | 228 | 227 | 224 | 222 | 219 | 215 |
| Nov 16 | | 124 | 126 | 127 | 128 | 130 | 132 | 133 | 136 | 138 | 141 | 145 | 235 | 234 | 233 | 231 | 230 | 228 | 226 | 223 | 221 | 218 | 214 | 235 | 234 | 233 | 231 | 230 | 228 | 226 | 223 | 221 | 218 | 214 |
| Nov 17 | | 125 | 126 | 127 | 129 | 130 | 132 | 134 | 137 | 139 | 142 | 146 | 235 | 233 | 232 | 230 | 229 | 227 | 225 | 223 | 220 | 217 | 213 | 235 | 233 | 232 | 230 | 229 | 227 | 225 | 223 | 220 | 217 | 213 |
| Nov 18 | | 125 | 127 | 128 | 130 | 131 | 133 | 135 | 137 | 140 | 143 | 147 | 234 | 233 | 231 | 230 | 228 | 226 | 224 | 222 | 219 | 216 | 212 | 234 | 233 | 231 | 230 | 228 | 226 | 224 | 222 | 219 | 216 | 212 |
| Nov 19 | | 126 | 127 | 129 | 130 | 132 | 134 | 136 | 138 | 141 | 144 | 148 | 233 | 232 | 231 | 229 | 227 | 226 | 223 | 221 | 218 | 215 | 211 | 233 | 232 | 231 | 229 | 227 | 226 | 223 | 221 | 218 | 215 | 211 |
| Nov 20 | | 127 | 128 | 129 | 131 | 133 | 134 | 137 | 139 | 142 | 145 | 149 | 233 | 232 | 230 | 229 | 227 | 225 | 223 | 220 | 217 | 214 | 209 | 233 | 232 | 230 | 229 | 227 | 225 | 223 | 220 | 217 | 214 | 209 |
| Nov 21 | | 127 | 128 | 130 | 131 | 133 | 135 | 137 | 140 | 143 | 146 | 151 | 232 | 231 | 230 | 228 | 226 | 224 | 222 | 219 | 216 | 213 | 208 | 232 | 231 | 230 | 228 | 226 | 224 | 222 | 219 | 216 | 213 | 208 |
| Nov 22 | | 128 | 129 | 130 | 132 | 134 | 136 | 138 | 141 | 144 | 147 | 152 | 232 | 231 | 229 | 227 | 226 | 223 | 221 | 218 | 215 | 212 | 207 | 232 | 231 | 229 | 227 | 226 | 223 | 221 | 218 | 215 | 212 | 207 |
| Nov 23 | | 128 | 129 | 131 | 133 | 134 | 137 | 139 | 142 | 145 | 148 | 153 | 231 | 230 | 228 | 227 | 225 | 223 | 220 | 218 | 214 | 210 | 206 | 231 | 230 | 228 | 227 | 225 | 223 | 220 | 218 | 214 | 210 | 206 |
| Nov 24 | | 129 | 130 | 132 | 133 | 135 | 137 | 140 | 142 | 146 | 150 | 154 | 231 | 230 | 228 | 226 | 224 | 222 | 220 | 217 | 214 | 209 | 204 | 231 | 230 | 228 | 226 | 224 | 222 | 220 | 217 | 214 | 209 | 204 |
| Nov 25 | | 129 | 130 | 132 | 134 | 136 | 138 | 140 | 143 | 146 | 151 | 156 | 230 | 229 | 227 | 226 | 224 | 222 | 219 | 216 | 213 | 208 | 203 | 230 | 229 | 227 | 226 | 224 | 222 | 219 | 216 | 213 | 208 | 203 |
| Nov 26 | | 130 | 131 | 133 | 134 | 136 | 138 | 141 | 144 | 147 | 152 | 157 | 230 | 229 | 227 | 225 | 223 | 221 | 218 | 215 | 212 | 207 | 202 | 230 | 229 | 227 | 225 | 223 | 221 | 218 | 215 | 212 | 207 | 202 |
| Nov 27 | | 130 | 131 | 133 | 135 | 137 | 139 | 142 | 145 | 148 | 153 | 158 | 230 | 228 | 226 | 225 | 223 | 220 | 218 | 215 | 211 | 206 | 200 | 230 | 228 | 226 | 225 | 223 | 220 | 218 | 215 | 211 | 206 | 200 |
| Nov 28 | | 130 | 132 | 134 | 135 | 137 | 140 | 142 | 145 | 149 | 154 | 160 | 229 | 228 | 226 | 224 | 222 | 220 | 217 | 214 | 210 | 205 | 199 | 229 | 228 | 226 | 224 | 222 | 220 | 217 | 214 | 210 | 205 | 199 |
| Nov 29 | | 131 | 132 | 134 | 136 | 138 | 140 | 143 | 146 | 150 | 155 | 161 | 229 | 227 | 226 | 224 | 221 | 219 | 216 | 213 | 209 | 204 | 197 | 229 | 227 | 226 | 224 | 221 | 219 | 216 | 213 | 209 | 204 | 197 |
| Nov 30 | | 131 | 133 | 134 | 136 | 139 | 141 | 144 | 147 | 151 | 156 | 163 | 228 | 227 | 225 | 223 | 221 | 219 | 216 | 212 | 208 | 203 | 196 | 228 | 227 | 225 | 223 | 221 | 219 | 216 | 212 | 208 | 203 | 196 |
| Dec 1 | | 132 | 133 | 135 | 137 | 139 | 141 | 144 | 148 | 152 | 157 | 164 | 228 | 226 | 225 | 223 | 220 | 218 | 215 | 212 | 208 | 202 | 194 | 228 | 226 | 225 | 223 | 220 | 218 | 215 | 212 | 208 | 202 | 194 |
| Dec 2 | | 132 | 134 | 135 | 137 | 140 | 142 | 145 | 148 | 152 | 158 | 166 | 228 | 226 | 224 | 222 | 220 | 217 | 215 | 211 | 207 | 201 | 192 | 228 | 226 | 224 | 222 | 220 | 217 | 215 | 211 | 207 | 201 | 192 |
| Dec 3 | | 132 | 134 | 136 | 138 | 140 | 143 | 145 | 149 | 153 | 159 | 168 | 227 | 226 | 224 | 222 | 220 | 217 | 214 | 210 | 206 | 200 | 191 | 227 | 226 | 224 | 222 | 220 | 217 | 214 | 210 | 206 | 200 | 191 |
| Dec 4 | | 133 | 134 | 136 | 138 | 140 | 143 | 146 | 150 | 154 | 160 | 169 | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 210 | 205 | 199 | 188 | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 210 | 205 | 199 | 188 |
| Dec 5 | | 133 | 135 | 137 | 139 | 141 | 144 | 147 | 150 | 155 | 161 | 172 | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 209 | 205 | 198 | 186 | 227 | 225 | 223 | 221 | 219 | 216 | 213 | 209 | 205 | 198 | 186 |
| Dec 6 | | 133 | 135 | 137 | 139 | 141 | 144 | 147 | 151 | 155 | 162 | 174 | 226 | 225 | 223 | 221 | 218 | 216 | 212 | 209 | 204 | 197 | 186 | 226 | 225 | 223 | 221 | 218 | 216 | 212 | 209 | 204 | 197 | ### |
| Dec 7 | | 134 | 135 | 137 | 139 | 142 | 144 | 148 | 151 | 156 | 163 | ### | 226 | 224 | 222 | 220 | 218 | 215 | 212 | 208 | 203 | 196 | 186 | 226 | 224 | 222 | 220 | 218 | 215 | 212 | 208 | 203 | 196 | ### |
| Dec 8 | | 134 | 136 | 138 | 140 | 142 | 145 | 148 | 152 | 157 | 164 | ### | 226 | 224 | 222 | 220 | 218 | 215 | 212 | 208 | 202 | 195 | 186 | 226 | 224 | 222 | 220 | 218 | 215 | 212 | 208 | 202 | 195 | ### |
| Dec 9 | | 134 | 136 | 138 | 140 | 142 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | | Sunrise | | | | | Latitude North | | | | | Sunset | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|
| | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | 70 | 69 | 68 | 67 | 66 | 65 | 64 | 63 | 62 | 61 | 60 | | |
| Dec 17 | ### | ### | ### | ### | ### | ### | ### | 176 | 164 | 158 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | 183 | 195 | 201 | 206 | 209 |
| Dec 18 | ### | ### | ### | ### | ### | ### | ### | 177 | 165 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | 181 | 195 | 201 | 206 | 209 |
| Dec 19 | ### | ### | ### | ### | ### | ### | ### | 179 | 165 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | ### | 195 | 201 | 206 | 209 |
| Dec 20 | ### | ### | ### | ### | ### | ### | ### | ### | 165 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | ### | 195 | 201 | 205 | 209 |
| Dec 21 | ### | ### | ### | ### | ### | ### | ### | ### | 165 | 159 | 155 | 151 | ### | ### | ### | ### | ### | ### | ### | ### | 195 | 201 | 205 | 209 |
| Dec 22 | ### | ### | ### | ### | ### | ### | ### | ### | 165 | 159 | 155 | 151 | ### | ### | ### | ### | ### | ### | ### | ### | 195 | 201 | 206 | 209 |
| Dec 23 | ### | ### | ### | ### | ### | ### | ### | ### | 165 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | ### | 195 | 201 | 206 | 209 |
| Dec 24 | ### | ### | ### | ### | ### | ### | ### | ### | 165 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | 182 | 195 | 201 | 206 | 209 |
| Dec 25 | ### | ### | ### | ### | ### | ### | ### | 178 | 165 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | 183 | 196 | 201 | 206 | 209 |
| Dec 26 | ### | ### | ### | ### | ### | ### | ### | 177 | 164 | 159 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | 184 | 196 | 202 | 206 | 209 |
| Dec 27 | ### | ### | ### | ### | ### | ### | ### | 176 | 164 | 158 | 154 | 151 | ### | ### | ### | ### | ### | ### | ### | 186 | 196 | 202 | 206 | 210 |
| Dec 28 | ### | ### | ### | ### | ### | ### | ### | 174 | 164 | 158 | 154 | 150 | ### | ### | ### | ### | ### | ### | ### | 187 | 197 | 202 | 206 | 210 |
| Dec 29 | ### | ### | ### | ### | ### | ### | ### | 173 | 163 | 158 | 154 | 150 | ### | ### | ### | ### | ### | ### | ### | 188 | 197 | 202 | 207 | 210 |
| Dec 30 | ### | ### | ### | ### | ### | ### | ### | 172 | 163 | 158 | 153 | 150 | ### | ### | ### | ### | ### | ### | ### | 189 | 197 | 203 | 207 | 210 |
| Dec 31 | ### | ### | ### | ### | ### | ### | ### | 171 | 163 | 157 | 153 | 150 | ### | ### | ### | ### | ### | ### | ### | 190 | 198 | 203 | 207 | 211 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 |
| Dec 17 | 151 | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 18 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 19 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 20 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 226 | 228 |
| Dec 21 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 134 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 226 | 228 |
| Dec 22 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 134 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 23 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 24 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 25 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 222 | 224 | 225 | 227 | 228 |
| Dec 26 | 151 | 148 | 145 | 143 | 141 | 139 | 138 | 136 | 135 | 133 | 132 | 209 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 225 | 227 | 228 |
| Dec 27 | 151 | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 135 | 133 | 132 | 210 | 212 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 |
| Dec 28 | 150 | 148 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 210 | 213 | 215 | 217 | 219 | 221 | 223 | 224 | 226 | 227 | 228 |
| Dec 29 | 150 | 147 | 145 | 143 | 141 | 139 | 137 | 136 | 134 | 133 | 132 | 210 | 213 | 215 | 218 | 220 | 221 | 223 | 224 | 226 | 227 | 228 |
| Dec 30 | 150 | 147 | 145 | 142 | 140 | 139 | 137 | 136 | 134 | 133 | 132 | 210 | 213 | 216 | 218 | 220 | 221 | 223 | 225 | 226 | 227 | 228 |
| Dec 31 | 150 | 147 | 144 | 142 | 140 | 139 | 137 | 135 | 134 | 133 | 132 | 211 | 213 | 216 | 218 | 220 | 222 | 223 | 225 | 226 | 227 | 228 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 50 | 48 | 46 | 44 | 42 | 40 | 38 | 36 | 34 | 32 | 30 |
| Dec 17 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 18 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 19 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 20 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 21 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 22 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 23 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 24 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 25 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 233 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 26 | 132 | 130 | 128 | 127 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 |
| Dec 27 | 132 | 130 | 128 | 126 | 125 | 124 | 123 | 122 | 121 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 237 | 239 | 239 | 240 | 241 |
| Dec 28 | 132 | 130 | 128 | 126 | 125 | 124 | 123 | 121 | 121 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 238 | 239 | 240 | 240 | 241 |
| Dec 29 | 132 | 130 | 128 | 126 | 125 | 124 | 122 | 121 | 120 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 236 | 238 | 239 | 240 | 240 | 241 |
| Dec 30 | 132 | 130 | 128 | 126 | 125 | 124 | 122 | 121 | 120 | 120 | 119 | 228 | 230 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 241 |
| Dec 31 | 132 | 130 | 128 | 126 | 125 | 123 | 122 | 121 | 120 | 119 | 119 | 228 | 231 | 232 | 234 | 235 | 237 | 238 | 239 | 240 | 241 | 241 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude North | | | | Sunrise | | | | | | | Latitude North | | | | Sunset | | | | | | |
|--------|----------------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 |
| Dec 17 | 119 | 118 | 118 | 117 | 116 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 18 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 19 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 20 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 21 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 22 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 23 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 24 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 25 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 26 | 119 | 118 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 244 | 244 | 244 | 245 | 245 | 245 | 246 |
| Dec 27 | 119 | 118 | 118 | 117 | 116 | 116 | 116 | 115 | 115 | 115 | 114 | 241 | 242 | 242 | 243 | 244 | 244 | 244 | 245 | 245 | 246 | 246 |
| Dec 28 | 119 | 118 | 118 | 117 | 116 | 116 | 116 | 115 | 115 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 29 | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 30 | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |
| Dec 31 | 119 | 118 | 117 | 117 | 116 | 116 | 115 | 115 | 115 | 114 | 114 | 241 | 242 | 243 | 243 | 244 | 244 | 245 | 245 | 245 | 246 | 246 |

2005

Sun's Azimuth

when lower limb is 3 degrees above horizon

| | Sunrise | | | | | | | | | | Sunset | | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | | | | | | Latitude South | | | | | | | | | | | |
| | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 | -10 | -12 | -14 | -16 | -18 | -20 | -22 | -24 | -26 | -28 | -30 |
| Dec 17 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 116 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 18 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 19 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 20 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 21 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 22 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 23 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 24 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 | 244 |
| Dec 25 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 116 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 244 |
| Dec 26 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 116 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 244 |
| Dec 27 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 116 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 246 | 245 | 245 | 244 |
| Dec 28 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 114 | 115 | 115 | 116 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 |
| Dec 29 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 | 245 |
| Dec 30 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 115 | 115 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 245 | 245 | 245 |
| Dec 31 | 113 | 113 | 113 | 113 | 113 | 114 | 114 | 114 | 114 | 115 | 115 | 247 | 247 | 247 | 247 | 247 | 246 | 246 | 246 | 246 | 245 | 245 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Sunrise | | | | | | | | | | | Sunset | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Latitude South | | | | | | | | | | | Latitude South | | | | | | | | | | |
| | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 | -30 | -32 | -34 | -36 | -38 | -40 | -42 | -44 | -46 | -48 | -50 |
| Dec 17 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 18 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 19 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 20 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 21 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 22 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 23 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 24 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 25 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 26 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 240 | 239 | 238 | 237 | 236 |
| Dec 27 | 116 | 116 | 117 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 244 | 244 | 243 | 243 | 242 | 241 | 241 | 240 | 238 | 237 | 236 |
| Dec 28 | 116 | 116 | 117 | 117 | 118 | 119 | 119 | 120 | 122 | 123 | 124 | 245 | 244 | 244 | 243 | 242 | 241 | 241 | 240 | 239 | 237 | 236 |
| Dec 29 | 115 | 116 | 116 | 117 | 118 | 119 | 119 | 120 | 121 | 123 | 124 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 237 | 236 |
| Dec 30 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 123 | 124 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 | 236 |
| Dec 31 | 115 | 116 | 116 | 117 | 118 | 118 | 119 | 120 | 121 | 122 | 124 | 245 | 244 | 244 | 243 | 242 | 242 | 241 | 240 | 239 | 238 | 236 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude South | | | | | | | | | | | Latitude South | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 | -50 | -51 | -52 | -53 | -54 | -55 | -56 | -57 | -58 | -59 | -60 |
| Dec 17 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 18 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 19 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 20 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 21 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 22 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 23 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 24 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 25 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 26 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 227 | 226 | 224 |
| Dec 27 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 133 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 228 | 226 | 224 |
| Dec 28 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 134 | 136 | 236 | 235 | 234 | 233 | 232 | 231 | 230 | 229 | 228 | 226 | 225 |
| Dec 29 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 134 | 135 | 236 | 235 | 234 | 234 | 233 | 232 | 230 | 229 | 228 | 226 | 225 |
| Dec 30 | 124 | 125 | 126 | 126 | 127 | 128 | 130 | 131 | 132 | 134 | 135 | 236 | 235 | 235 | 234 | 233 | 232 | 231 | 229 | 228 | 227 | 225 |
| Dec 31 | 124 | 125 | 125 | 126 | 127 | 128 | 129 | 131 | 132 | 133 | 135 | 236 | 235 | 235 | 234 | 233 | 232 | 231 | 229 | 228 | 227 | 225 |

2005

Sun's Azimuth

when lower limb is
3 degrees above horizon

| | Latitude South | | | | | | | | | | |
|--------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| Dec 17 | 136 | 137 | 139 | 142 | 144 | 147 | 151 | 155 | 161 | 172 | ### |
| Dec 18 | 136 | 138 | 140 | 142 | 144 | 147 | 151 | 156 | 162 | 172 | ### |
| Dec 19 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 173 | ### |
| Dec 20 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 173 | ### |
| Dec 21 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 173 | ### |
| Dec 22 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 174 | ### |
| Dec 23 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 173 | ### |
| Dec 24 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 173 | ### |
| Dec 25 | 136 | 138 | 140 | 142 | 145 | 148 | 151 | 156 | 162 | 173 | ### |
| Dec 26 | 136 | 138 | 140 | 142 | 144 | 147 | 151 | 156 | 162 | 172 | ### |
| Dec 27 | 136 | 137 | 139 | 142 | 144 | 147 | 151 | 155 | 161 | 171 | ### |
| Dec 28 | 136 | 137 | 139 | 142 | 144 | 147 | 151 | 155 | 161 | 171 | ### |
| Dec 29 | 135 | 137 | 139 | 141 | 144 | 147 | 150 | 155 | 160 | 170 | ### |
| Dec 30 | 135 | 137 | 139 | 141 | 144 | 147 | 150 | 154 | 160 | 169 | ### |
| Dec 31 | 135 | 137 | 139 | 141 | 143 | 146 | 150 | 154 | 160 | 168 | ### |

| | Latitude South | | | | | | | | | | |
|--|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | -60 | -61 | -62 | -63 | -64 | -65 | -66 | -67 | -68 | -69 | -70 |
| | 224 | 222 | 220 | 218 | 216 | 213 | 209 | 204 | 198 | 188 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 187 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 187 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 187 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 186 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 187 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 187 | ### |
| | 224 | 222 | 220 | 218 | 215 | 212 | 209 | 204 | 198 | 187 | ### |
| | 224 | 222 | 220 | 218 | 216 | 213 | 209 | 204 | 198 | 188 | ### |
| | 224 | 223 | 221 | 218 | 216 | 213 | 209 | 205 | 199 | 189 | ### |
| | 224 | 223 | 221 | 218 | 216 | 213 | 209 | 205 | 199 | 189 | ### |
| | 225 | 223 | 221 | 219 | 216 | 213 | 210 | 205 | 200 | 190 | ### |
| | 225 | 223 | 221 | 219 | 216 | 213 | 210 | 206 | 200 | 191 | ### |
| | 225 | 223 | 221 | 219 | 217 | 214 | 210 | 206 | 200 | 192 | ### |
| | 225 | 223 | 221 | 219 | 217 | 214 | 211 | 206 | 201 | 193 | ### |

2005

Sun's Azimuth

**when lower limb is
3 degrees above horizon**