

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 0 to 4 °E									
Correction to Latitude										Correction to Longitude									
0°	0°	1°	1°	2°	2°	3°	3°	4°	Longitude	0°	0°	1°	1°	2°	2°	3°	3°	4°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	0	0	0	0	0	0	0.1	0.1	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	0	0	0	0	0	0	0.1	0.1	
-0.1	0	0	0	0	0	0	0	0	49° 30'	-0.1	0	0	0	0	0	0	0.1	0.1	
-0.1	-0.1	0	0	0	0	0	0	0	49° 15'	-0.1	-0.1	-0.1	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	48° 30'	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0.1	0	
0	0	0	0	0	-0.1	-0.1	0	0	48° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0	0	
0	0	0	0	0	-0.1	-0.1	0	0	48° 0'	-0.1	-0.1	-0.1	0	0	0	0	0	0	
0	0	0	0	0	-0.1	-0.1	0	-0.1	47° 45'	-0.1	-0.1	-0.1	0	0	0	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 30'	-0.1	0	-0.1	0	0	0	0	0	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 15'	0	0	0	0	0	0	0	0	0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	47° 0'	0	0	0	0	0	0	0	0	0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	46° 45'	0	0	0	0	0	0	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 30'	0	0	0	0	0	0	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 15'	0	0	0.1	0.1	0	0	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 0'	0	0	0.1	0.1	0.1	0	0	0	0	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	45° 45'	0	0.1	0.1	0.1	0.1	0	0	0	0	
0	0	0	0	0	0	-0.1	-0.1	-0.1	45° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	-0.1	-0.1	45° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	-0.1	
0	0	0	0	0	0	0	0	0	45° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	-0.1	
0	0	0	0	0	0	0	0	0	44° 45'	0	0.1	0.1	0.1	0.1	0.1	0.1	0	-0.1	
-0.1	0	0	0	0	0	0	0.1	0.1	44° 30'	0	0.1	0.1	0.1	0.1	0.1	0.1	0	-0.1	
-0.1	-0.1	0	0	0	0	0	0.1	0.1	44° 15'	0	0	0.1	0.1	0.1	0.1	0.1	0	-0.1	
0	0	0	0	0	0	0.1	0.1	0.1	44° 0'	0	0	0.1	0.1	0.1	0.1	0	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0	43° 45'	0	0	0	0.1	0.1	0.1	0	-0.1	-0.1	
-0.1	-0.1	-0.1	0	0	0.1	0.1	0.1	0	43° 30'	0	0	0	0	0.1	0.1	0	0	0	
-0.2	-0.2	-0.2	-0.1	-0.1	0	0	0	0	43° 15'	0	0	-0.1	0	0	0	0	0	0	
-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0	0	0.1	43° 0'	0	0	-0.1	-0.1	-0.1	0	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0.1	42° 45'	0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0	0	0	0	0	0.1	42° 30'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0.2	0.2	0.2	0.1	0.1	0	0	0	0.1	42° 15'	0	0	0	0.1	0	-0.1	-0.1	-0.2	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 0'	0	0	0.1	0.1	0	-0.1	-0.1	-0.2	-0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0	41° 45'	0	0	0	0.1	0	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0.1	0.1	0.1	0	0	41° 30'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0	0	41° 15'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0.1	0.1	0.1	0	0	41° 0'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0.1	0.1	0	0	0	40° 45'	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	40° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	40° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	0	40° 0'	-0.1	-0.1	-0.1	-0.1	0	0.1	0	0	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 4 to 8 °E									
Correction to Latitude										Correction to Longitude									
4°	4°	5°	5°	6°	6°	7°	7°	8°	Longitude	4°	4°	5°	5°	6°	6°	7°	7°	8°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.1	0.1	0.1	0.1	0.1	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 30'	0.1	0.1	0.1	0.1	0	0.1	0.1	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 15'	0	0.1	0.1	0	0	0.1	0.1	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 0'	0	0.1	0.1	0	0	0.1	0.1	0	0	0
0	0	0	0	0	0	0	0	0	48° 45'	0	0.1	0.1	0	0.1	0.1	0	0	0	0
0	0	0	0	0	0	0	0	-0.1	48° 30'	0	0.1	0.1	0	0.1	0.1	0	0	0	0.1
0	0	0	0	0	0	0	0	0	48° 15'	0	0.1	0.1	0	0.1	0.1	0	0	0	0.1
0	0	0	0	0	0	0	0	0	48° 0'	0	0.1	0.1	0	0.1	0.1	0	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0.1	47° 45'	0	0.1	0	0	0.1	0.1	0	0	0	-0.1
-0.1	-0.1	0	0	-0.1	0	0	0	0.1	47° 30'	0.1	0	0	0	0.1	0.1	0	-0.1	-0.1	-0.1
-0.1	0	0	-0.1	-0.1	0	0	0	0	47° 15'	0.1	0	0	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1
0	0	0	-0.1	-0.1	0	0	0	-0.1	47° 0'	0.1	0	0	0.1	0.1	0	-0.1	-0.1	0	0
0	0	0	0	0	0	0	-0.1	-0.1	46° 45'	0	0	0	0.1	0.1	-0.1	-0.1	0	0	0
-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1	46° 30'	0	0	0	0.1	0	-0.1	0	0.1	0	0
-0.1	-0.1	0	0	0.1	0	-0.1	-0.2	-0.1	46° 15'	0	0	0	0.1	0	0	0.1	0.1	-0.1	-0.1
-0.1	-0.1	0	0	0	0	-0.1	-0.1	0	46° 0'	0	-0.1	-0.1	0	0.1	0.1	0.2	0.1	-0.2	-0.2
-0.1	-0.1	0	0	0	-0.1	-0.1	0	0.2	45° 45'	0	-0.1	-0.1	0	0.1	0.2	0.2	-0.1	-0.4	-0.4
-0.1	-0.1	0	-0.1	-0.1	-0.1	0	0.2	0.3	45° 30'	0	-0.2	-0.1	0	0.1	0.2	0.1	-0.3	-0.5	-0.5
-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0.2	0.2	45° 15'	-0.1	-0.2	-0.1	0.1	0.2	0.2	-0.1	-0.5	-0.5	-0.5
0	0	0	-0.1	-0.1	-0.1	0	0.1	0	45° 0'	-0.1	-0.2	0	0.1	0.1	0.1	-0.2	-0.6	-0.5	-0.5
0	0	0	0	0	0	0	-0.1	-0.2	44° 45'	-0.1	-0.1	0	0.1	0.1	0.1	-0.2	-0.5	-0.4	-0.4
0.1	0	0	0	0.1	0.1	0	-0.1	-0.2	44° 30'	-0.1	-0.1	0.1	0.1	0.1	0.1	-0.1	-0.4	-0.4	-0.4
0.1	0	0	0.1	0.1	0.1	0.1	0	-0.1	44° 15'	-0.1	-0.1	0.1	0	0.1	0.1	-0.1	-0.3	-0.3	-0.3
0.1	0	0	0.1	0.1	0.1	0.2	0.2	0.1	44° 0'	-0.1	0	0	0	0.1	0	-0.1	-0.2	-0.2	-0.2
0	0	0	0	0	0.1	0.2	0.2	0.1	43° 45'	-0.1	0	0	0	0	-0.1	-0.1	-0.1	-0.2	-0.2
0	0	0	0.1	0.1	0.2	0.2	0.2	0.1	43° 30'	0	0	0	0	0	-0.2	-0.2	-0.1	-0.1	-0.1
0	0	0.1	0.1	0.1	0.2	0.1	0.1	0	43° 15'	0	0	-0.1	0	-0.1	-0.2	-0.1	0	-0.1	-0.1
0.1	0.1	0.1	0.1	0.2	0.2	0.1	0	0	43° 0'	0	0	-0.1	0	-0.1	-0.2	0	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	42° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0.1	0.1	0.1	0.1	0.1	0	0	0	0	42° 30'	-0.1	0	-0.1	-0.1	-0.1	0	0.1	0	0.1	0.1
0.1	0.1	0.1	0	0	0	0	0	0	42° 15'	-0.1	0	-0.1	-0.1	-0.1	0	0.1	0	0.1	0.1
0.1	0.1	0.1	0	0	0	0	0	0	42° 0'	-0.1	0	0	-0.1	-0.1	0	0.1	0	0.1	0.1
0	0	0.1	0.1	0	0	0	0	0	41° 45'	-0.1	0	0	0	0	0	0	0	0	0.1
0	0	0	0	0	0	0	0	0	41° 30'	-0.1	0	0	0	0	0	0	0	0	0.1
0	0	0	0	0	0	0	0	0	41° 15'	-0.1	0	0	0	0	0	0	0	0.1	0.1
0	0	0	0	0	0	0	0	0	41° 0'	-0.1	0	0	-0.1	0	0	0	0	0.1	0.1
0	0	0	0	0	0	0	0	0	40° 45'	-0.1	0	0	-0.1	0	0	0	0	0.1	0.2
-0.1	0	0	0	0	0	0	0	0	40° 30'	-0.1	-0.1	0	0	0	0	-0.1	0.1	0.2	0.2
-0.1	-0.1	0	0	0	0	0	0	0	40° 15'	-0.1	-0.1	0	0	0	0	-0.1	0.1	0.2	0.2
0	0	0	0	0	0	0	0	0	40° 0'	-0.1	-0.2	-0.1	0	0	0	-0.1	0.1	0.2	0.2

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 8 to 12 °E									
Correction to Latitude										Correction to Longitude									
8°	8°	9°	9°	10°	10°	11°	11°	12°	Longitude	8°	8°	9°	9°	10°	10°	11°	11°	12°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	0	0	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	0	0.1	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	0	0.1	0	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	49° 15'	-0.1	0	0.1	0	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	49° 0'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	
0	-0.1	0	0	0.1	0	0	0	0	48° 45'	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	0	0	0.1	0.1	0	0	0	48° 30'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0.1	0.1	0	0	0	0	48° 15'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0.1	0.1	0.1	0	0	0	0	0	48° 0'	0	-0.1	-0.2	-0.1	0	0	-0.1	0	0	
0.1	0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1	47° 45'	-0.1	-0.1	-0.1	0	0	0	-0.1	0	0	
0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.2	47° 30'	-0.1	-0.1	-0.1	0	0.1	0	-0.1	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	47° 15'	-0.1	-0.1	-0.1	0.1	0.2	0.1	-0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 0'	0	0	-0.1	0.1	0.2	0.1	-0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	46° 45'	0	-0.1	-0.1	0.1	0.1	0	-0.1	0	0	
-0.1	-0.1	0	0	0	0	0	0	0.1	46° 30'	0	-0.1	-0.1	0.1	0.1	0	-0.1	0.1	0	
-0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	0.2	46° 15'	-0.1	-0.2	-0.1	0.1	0.1	0	-0.1	0	-0.1	
0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	46° 0'	-0.2	-0.3	-0.1	0.1	0.1	0	-0.1	-0.1	-0.2	
0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	45° 45'	-0.4	-0.4	-0.1	0.1	0.2	0.1	0	-0.2	-0.2	
0.3	0.3	0.2	0.3	0.4	0.4	0.3	0.2	0.1	45° 30'	-0.5	-0.4	-0.1	0	0.1	0.2	0.1	-0.1	-0.2	
0.2	0.2	0.1	0.1	0.3	0.4	0.3	0.2	0.1	45° 15'	-0.5	-0.3	-0.1	-0.1	0	0.2	0.2	0	-0.1	
0	0	-0.1	-0.1	0	0.1	0.2	0.2	0.2	45° 0'	-0.5	-0.2	-0.1	-0.2	-0.1	0.1	0.2	0.1	0	
-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	0	0.1	0.2	44° 45'	-0.4	-0.1	0	-0.2	-0.2	0	0.1	0.1	0	
-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.2	0	0.1	44° 30'	-0.4	-0.2	0	-0.1	-0.2	-0.2	0	0	0	
-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.2	-0.1	44° 15'	-0.3	-0.2	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	
0.1	0	0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	44° 0'	-0.2	-0.2	0	0.1	0	-0.1	-0.1	-0.1	-0.2	
0.1	0.1	0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	43° 45'	-0.2	-0.1	0.1	0.1	0	0	-0.1	-0.1	-0.2	
0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	43° 30'	-0.1	0	0.1	0.1	0	0	0	-0.1	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 15'	-0.1	0	0.2	0.1	0	0	0	0	-0.1	
0	-0.1	-0.1	-0.1	0	0	0	0	-0.1	43° 0'	0	0.1	0.2	0	0	0	0	0	0	
0	-0.1	-0.2	-0.1	0	0	0	0	0	42° 45'	0	0.2	0.2	-0.1	0	0.1	0	0	0	
0	-0.1	-0.1	0	0.1	0.1	0	0	0	42° 30'	0.1	0.3	0.1	-0.2	-0.1	0.1	0	0	0	
0	0	0	0	0	0.1	0.1	0	0	42° 15'	0.1	0.4	0.1	-0.3	-0.1	0.1	0	0	0	
0	0	0.1	0.1	0	0	0.1	0.1	0.1	42° 0'	0.1	0.3	0.1	-0.3	-0.1	0.1	0	0	0	
0	0.1	0.1	0.1	0	0	0.1	0.1	0.1	41° 45'	0.1	0.3	0.1	-0.2	-0.1	0	0	0	0	
0	0	0.1	0	0	0	0.1	0.1	0.1	41° 30'	0.1	0.2	0.1	-0.1	-0.1	0	0	0	0.1	
0	0	0	0	0	0	0	0.1	0.1	41° 15'	0.1	0.1	0.1	-0.1	-0.1	0	0	0	0.1	
0	-0.1	0	0	0	0	0.1	0.1	0.1	41° 0'	0.1	0.1	0.1	-0.1	-0.1	0	0	0	0	
0	-0.1	0	0	0	0.1	0.1	0.1	0.1	40° 45'	0.2	0.1	0	-0.1	-0.1	-0.1	0	0	0	
0	0	0	0	0	0.1	0.1	0.1	0	40° 30'	0.2	0.1	0	-0.1	-0.2	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	40° 15'	0.2	0.1	0	-0.2	-0.2	-0.1	0	0	0	
0	0.1	0.1	0	0	0	0	0	0	40° 0'	0.2	0.1	0	-0.1	-0.2	-0.1	0	0	0	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 12 to 16 °E									
Correction to Latitude										Correction to Longitude									
12°	12°	13°	13°	14°	14°	15°	15°	16°	Longitude	12°	12°	13°	13°	14°	14°	15°	15°	16°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	50° 0'	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	-0.1	-0.1	-0.1	49° 45'	0	0	0	-0.1	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	-0.1	-0.1	49° 30'	0	0.1	0	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0	0	0	0	0	0	0	49° 15'	0	0.1	0	0	-0.1	0	0.1	0	-0.1	
0	0.1	0.1	0	0	0	0	0	0	49° 0'	0	0	0.1	0	-0.1	0	0	0	-0.2	
0	0.1	0.1	0.1	0.1	0	0	0	0	48° 45'	-0.1	0	0.1	0.1	0	0	0	-0.1	-0.2	
0	0.1	0.1	0.1	0.1	0.1	0	0	0	48° 30'	-0.1	0	0.1	0.1	0	0	0	-0.1	-0.2	
0	0	0	0	0.1	0	0	0	-0.1	48° 15'	-0.1	0	0	0	0	0.1	0.1	0	-0.2	
0	0	0	0	-0.1	0	0	0	-0.1	48° 0'	0	0	0	0	0	0.1	0.1	0	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	47° 45'	0	0	0	0.1	0	0	0.1	0	-0.1	
-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	47° 30'	0	0	0	0.1	0	0	0	0	-0.1	
-0.2	-0.2	-0.1	-0.1	-0.1	0	0	0	0	47° 15'	0	-0.1	0	0.1	0	-0.1	0	-0.1	-0.1	
-0.1	-0.1	-0.1	0	0	0	0	0	0	47° 0'	0	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0.1	0	0	0	0	0	46° 45'	0	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	46° 30'	0	-0.2	-0.1	0	0	0	0	-0.1	-0.1	
0.2	0.2	0.2	0.1	0.1	0	0	0	0	46° 15'	-0.1	-0.2	-0.1	0.1	0.1	0	0	-0.1	-0.1	
0.2	0.2	0.2	0.1	0.1	0	0	0	0	46° 0'	-0.2	-0.2	0	0.2	0.1	0	0	-0.1	0	
0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	45° 45'	-0.2	-0.2	0.1	0.2	0.1	0	0	-0.1	0	
0.1	0.1	0	0	0.1	0.1	0	0	0	45° 30'	-0.2	-0.1	0.1	0.1	0.1	0.1	0	0	0	
0.1	0.1	0	0	0.1	0.1	0.1	0	0	45° 15'	-0.1	0	0.1	0.1	0.1	0.1	0	0	0	
0.2	0.1	0.1	0.1	0.1	0.1	0.1	0	0	45° 0'	0	0	0.1	0.1	0	0.1	0.1	0.1	0	
0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	44° 45'	0	0	0.1	0.1	0	0.1	0.1	0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 30'	0	0	0.2	0.2	0.1	0.1	0.1	0.1	0	
-0.1	-0.1	0	0	0.1	0	0.1	0.1	0.1	44° 15'	-0.1	0	0.1	0.1	0.1	0	0.1	0.1	0.1	
-0.3	-0.2	-0.1	0	0	0	0	0.1	0.1	44° 0'	-0.2	-0.1	0	0.1	0.1	0	0.1	0.1	0.1	
-0.3	-0.3	-0.2	-0.1	0	0	0	0	0	43° 45'	-0.2	-0.2	-0.1	0	0.1	0	0	0.1	0.1	
-0.2	-0.2	-0.2	-0.1	0	0	0	0	0	43° 30'	-0.1	-0.2	-0.2	-0.1	0	0	0	0.1	0.1	
-0.1	-0.2	-0.2	-0.2	0	0	0	0	0	43° 15'	-0.1	-0.1	-0.2	-0.2	0	0	0	0	0.1	
-0.1	-0.1	-0.2	-0.2	-0.1	0	0	0	0	43° 0'	0	-0.1	-0.2	-0.3	-0.1	0	0	0	0.1	
0	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	42° 45'	0	0	-0.1	-0.3	-0.2	0	0	0	0.1	
0	0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	42° 30'	0	0	-0.1	-0.3	-0.2	0	0	0	0	
0	0	0	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	42° 15'	0	0	0	-0.2	-0.2	-0.1	0	0	0	
0.1	0	0	0	-0.1	-0.2	-0.1	-0.1	-0.2	42° 0'	0	0	0.1	0	-0.2	-0.1	0	0.1	0	
0.1	0	0	0	0	-0.1	-0.1	-0.1	-0.1	41° 45'	0	0	0.1	0	-0.1	-0.1	0	0.1	0	
0.1	0.1	0.1	0.1	0.1	0	-0.1	0	0	41° 30'	0.1	0.1	0.1	0	0	-0.1	0	0.1	0	
0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	41° 15'	0.1	0.1	0	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	41° 0'	0	0.1	0	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	40° 45'	0	0.1	0.1	0	0.1	0.1	0	0	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	40° 30'	0	0	0.1	0.1	0.1	0.1	0.1	-0.1	-0.2	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	0	0	0.1	0.1	0.1	0.1	0.1	-0.1	-0.3	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	0	0	0	0.1	0	0.1	0.1	-0.1	-0.3	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 16 to 20 °E									
Correction to Latitude										Correction to Longitude									
16° 0'	16° 30'	17° 0'	17° 30'	18° 0'	18° 30'	19° 0'	19° 30'	20° 0'	Longitude Latitude	16° 0'	16° 30'	17° 0'	17° 30'	18° 0'	18° 30'	19° 0'	19° 30'	20° 0'	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	50° 0'	0	0	0	-0.1	-0.1	0	-0.1	-0.2	-0.2	
-0.1	-0.1	0	0	0	0	0	0	-0.1	49° 45'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2
-0.1	0	0	0	0	0	0	0	-0.1	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	-0.1	-0.1	49° 15'	-0.1	-0.2	-0.1	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	-0.1	-0.1	-0.1	49° 0'	-0.2	-0.2	-0.1	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	48° 45'	-0.2	-0.2	-0.1	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	48° 30'	-0.2	-0.2	0	0	0	0	0	0	0	-0.1
-0.1	-0.1	0	0	0	0	0	0	0	48° 15'	-0.2	-0.2	-0.1	0	0	0	0	0	-0.1	-0.1
-0.1	-0.1	0	0	0	0	0	0	0	48° 0'	-0.2	-0.2	-0.1	0	0	0	0	0	-0.1	-0.1
0	0	-0.1	-0.1	-0.1	0	0	0	0	47° 45'	-0.1	-0.2	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1
0	0	0	-0.1	-0.1	0	0	0	0	47° 30'	-0.1	-0.2	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 30'	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 15'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 0'	0	0	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	45° 45'	0	0	0	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	45° 30'	0	0	0	0	-0.1	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	45° 15'	0	0	0	0	-0.1	-0.1	0	0	0	-0.1
0	0	0	0	0	-0.1	0	0	0	45° 0'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	0	-0.1	0	0	0	44° 45'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	0	0	0	0	0	44° 30'	0	0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1	0
0.1	0.1	0	0	0	0	-0.1	-0.1	-0.1	44° 15'	0.1	0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0	0	-0.1	-0.1	44° 0'	0.1	0.1	0.1	0	0	0	-0.1	-0.1	-0.1	-0.1
0	0.1	0.2	0.2	0.1	0.1	0	0	-0.1	43° 45'	0.1	0.1	0.1	0	0.1	0	0	0	0	-0.1
0	0.1	0.1	0.2	0.1	0.1	0.1	0	0	43° 30'	0.1	0	0	0.1	0.1	0.1	0	0	0	0
0	0	0	0.1	0.1	0.2	0.1	0.1	0	43° 15'	0.1	0	0	0	0.1	0.1	0.1	0	0	0
0	0	0	0	0.1	0.2	0.2	0.2	0.1	43° 0'	0.1	0	-0.1	0	0	0.1	0.1	0.1	0	0
-0.1	-0.1	0	0.1	0.2	0.2	0.2	0.2	0.2	42° 45'	0.1	0	-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0.1
-0.1	-0.1	0	0.1	0.1	0.2	0.2	0.2	0.2	42° 30'	0	0	-0.2	-0.2	-0.1	0	0.1	0.2	0.1	0.1
-0.2	-0.1	0	0	0.1	0.1	0.2	0.2	0.2	42° 15'	0	-0.1	-0.3	-0.2	-0.2	-0.1	0.1	0.2	0.3	0.3
-0.2	-0.1	0	0	0	0.1	0.2	0.2	0.1	42° 0'	0	-0.2	-0.3	-0.3	-0.2	-0.1	0	0.2	0.4	0.4
-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0.1	41° 45'	0	-0.3	-0.3	-0.3	-0.2	-0.2	-0.1	0.2	0.4	0.4
0	0	-0.1	-0.1	0	0	0	0.1	0.1	41° 30'	0	-0.2	-0.3	-0.3	-0.3	-0.2	-0.1	0.2	0.5	0.5
0.1	0	-0.1	-0.1	0	0	0	0	0.1	41° 15'	-0.1	-0.1	-0.3	-0.4	-0.3	-0.2	-0.1	0.1	0.4	0.4
0	0	0	-0.1	-0.1	0	0	0	0.1	41° 0'	-0.1	-0.1	-0.2	-0.4	-0.3	-0.2	-0.2	0.1	0.4	0.4
0	0.1	0.1	0	-0.1	0	0	0	0.1	40° 45'	-0.1	-0.1	-0.1	-0.3	-0.3	-0.3	-0.2	0.1	0.3	0.3
0.1	0.2	0.3	0.2	0	0	0	0	0.1	40° 30'	-0.2	-0.2	-0.1	-0.1	-0.3	-0.4	-0.2	0.1	0.2	0.2
0.1	0.2	0.4	0.3	0.1	0.1	0.1	0.1	0.1	40° 15'	-0.3	-0.3	-0.1	0	-0.2	-0.4	-0.2	0.1	0.1	0.1
0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.2	40° 0'	-0.3	-0.4	-0.2	0.1	0	-0.3	-0.2	0	0.1	0.1

## Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 20 to 24 °E									
Correction to Latitude										Correction to Longitude									
20°	20°	21°	21°	22°	22°	23°	23°	24°	Longitude	20°	20°	21°	21°	22°	22°	23°	23°	24°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	-0.1	-0.1	0	0	0	0	0	0	50° 0'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	49° 45'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	49° 30'	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	49° 15'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	49° 0'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	
0	0	0	0	0	-0.1	-0.1	-0.2	-0.2	48° 45'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	
0	0	0	0	0	0	0	-0.1	-0.2	48° 30'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	
0	0	0	0	0	0	0	-0.1	-0.1	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	-0.1	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	-0.1	-0.1	-0.1	0	0	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	47° 15'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	47° 0'	-0.1	0	0	0	0	0	-0.1	-0.2	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	0	46° 45'	-0.1	-0.1	0	0	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	-0.1	46° 30'	-0.1	-0.1	0	0	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	-0.1	46° 15'	-0.1	-0.1	0	0	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	-0.1	46° 0'	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1	
0	0	0	0	0	-0.1	0	0	0	45° 45'	-0.1	-0.1	0	0	0	0	0	0	-0.1	
0	0	0	0	-0.1	-0.1	0	0.1	0.1	45° 30'	-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0.1	0.1	0.2	45° 15'	-0.1	-0.1	0	0	0.1	0	-0.2	-0.2	-0.2	
0	0	0	0	0	0.1	0.1	0.1	0.1	45° 0'	-0.1	-0.1	0	0	0	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0.1	0.1	0	0	44° 45'	-0.1	-0.1	0	0	-0.1	-0.2	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	-0.1	44° 30'	0	-0.1	0	0	-0.1	-0.2	-0.1	0	-0.1	
-0.1	-0.1	0	0	0	0	0	0	-0.1	44° 15'	-0.1	-0.1	0	0	-0.2	-0.2	-0.1	0	-0.1	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	0	0	44° 0'	-0.1	-0.1	0	0	-0.1	-0.2	-0.1	0	0	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	43° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	43° 30'	0	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	43° 15'	0	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	-0.1	-0.1	-0.1	43° 0'	0	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	
0.2	0.1	0.1	0	0	0	0	-0.1	-0.1	42° 45'	0.1	-0.1	-0.1	0	0.1	0	0	-0.1	-0.1	
0.2	0.1	0	0	0	0	0	0	0	42° 30'	0.1	0	-0.1	0	0.1	0	0	-0.1	-0.2	
0.2	0	-0.1	-0.1	0	0	0	0	0	42° 15'	0.3	0.1	0	0	0.1	0	0	-0.1	-0.2	
0.1	0	-0.1	-0.1	0	0	0	0	0	42° 0'	0.4	0.2	0	0	0.1	0	0	-0.1	-0.1	
0.1	0.1	0	0	0	0	0.1	0.1	0	41° 45'	0.4	0.3	0	0	0	0	-0.1	0	0	
0.1	0.1	0.1	0	0	0.1	0.1	0.1	0	41° 30'	0.5	0.3	0.1	0	0	-0.1	-0.1	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	41° 15'	0.4	0.3	0.1	0.1	0	-0.1	-0.1	0	0	
0.1	0.2	0.2	0.1	0.1	0.1	0.1	0	0	41° 0'	0.4	0.3	0.2	0.1	-0.1	-0.1	0	0	-0.1	
0.1	0.2	0.2	0.1	0.1	0.1	0.1	0	0	40° 45'	0.3	0.2	0.2	0.1	-0.1	0	0	0	-0.1	
0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0	40° 30'	0.2	0.2	0.2	0.1	0	0	0.1	0	-0.1	
0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	40° 15'	0.1	0.1	0.2	0.2	0	0	0	0	0	
0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	40° 0'	0.1	0.1	0.2	0.2	0.1	0	0	0	0	

## Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 24 to 28 °E									
Correction to Latitude										Correction to Longitude									
24°	24°	25°	25°	26°	26°	27°	27°	28°	Longitude	24°	24°	25°	25°	26°	26°	27°	27°	28°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	50° 0'	0	0.1	0.1	0	0	0	-0.1	-0.1	-0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	49° 45'	0	0.1	0.1	0	0	0	0	-0.1	-0.1	
-0.1	0	0	0	0	0	-0.1	-0.1	0	49° 30'	0	0.1	0.1	0.1	0	0	0	-0.1	-0.1	
-0.1	0	0	0	0	0	0	0	0	49° 15'	-0.1	0.1	0.1	0.1	0	0	0	-0.1	-0.1	
-0.2	-0.1	0	0	0	0	0	0	0	49° 0'	-0.2	0	0.1	0.1	0	0	0	-0.1	-0.1	
-0.2	-0.1	0	0	0	0	0	0	0	48° 45'	-0.3	-0.2	0	0.1	0.1	0	0	-0.1	-0.1	
-0.2	-0.2	-0.1	0	0	0	0	0	0	48° 30'	-0.3	-0.2	-0.1	0	0.1	0	0	-0.1	-0.1	
-0.1	-0.2	-0.2	-0.1	0	0	0	0	0	48° 15'	-0.2	-0.2	-0.2	0	0	0	0	-0.1	-0.1	
-0.1	-0.2	-0.2	-0.1	0	0	0	0	0	48° 0'	-0.1	-0.2	-0.2	-0.1	0	0	0	-0.1	-0.1	
0	-0.1	-0.2	-0.1	-0.1	0	0	0	0	47° 45'	0	-0.1	-0.2	-0.2	-0.1	0	-0.1	-0.1	-0.1	
0	0	-0.1	-0.1	-0.1	0	0	0	0	47° 30'	0	0	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	-0.1	-0.1	-0.1	0	0	0	0	47° 15'	0	0	-0.1	-0.3	-0.3	-0.2	-0.1	0	-0.1	
0	0	0	0	-0.1	0	0	0	0	47° 0'	-0.1	0	0	-0.2	-0.3	-0.2	-0.1	0	0	
0	0	0	0	-0.1	0	0	0	0	46° 45'	-0.2	0	0	-0.2	-0.3	-0.2	-0.1	0	0	
-0.1	0	0	0	0	0	0	0.1	0.1	46° 30'	-0.2	0	0	-0.1	-0.3	-0.3	-0.2	-0.1	0	
-0.1	-0.1	0	0	0	0	0	0.1	0	46° 15'	-0.2	-0.1	0	-0.1	-0.2	-0.3	-0.3	-0.1	0	
-0.1	-0.1	0	0	0	0	0	0	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.1	0.1	
0	0	0	0.1	0.1	0.1	0	0	0	45° 45'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	0	0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	-0.1	45° 30'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2	0	0.1	
0.2	0.2	0.2	0.1	0.1	0.1	0	-0.1	-0.1	45° 15'	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0	0.1	
0.1	0.1	0.1	0.1	0.1	0	-0.1	-0.1	-0.1	45° 0'	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	0.1	0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	44° 45'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	44° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 0'	0	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 45'	0	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	43° 30'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	43° 15'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	43° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
-0.1	0	0	0	0	0	0	-0.1	-0.1	42° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0.1	0	0	0	-0.1	-0.1	-0.1	42° 30'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	-0.1	-0.1	-0.1	42° 15'	-0.2	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.2	
0	-0.1	-0.1	0	0	0	0	0	-0.1	42° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	-0.2	
0	-0.1	-0.1	-0.1	0	0	0	0	0	41° 45'	0	-0.1	-0.1	-0.1	0	0	0	0	-0.1	
0	0	0	0	0	0	0	0	0	41° 30'	0	-0.1	-0.1	-0.1	0	-0.1	0	0	-0.1	
0.1	0.1	0.1	0	0	0	0	0	0	41° 15'	0	-0.1	-0.1	-0.1	0	-0.1	0	0	-0.1	
0	0.1	0.1	0	0	0	0	0	0	41° 0'	-0.1	-0.1	0	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 45'	-0.1	-0.1	0	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 30'	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1	
0.1	0	0	0	0	0	0	0	0	40° 15'	0	-0.1	0	0	0	0	0	-0.1	-0.1	
0.1	0	0	0	0	0	-0.1	-0.1	0	40° 0'	0	0	0	0	0	0	0	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 28 to 32 °E									
Correction to Latitude										Correction to Longitude									
28°	28°	29°	29°	30°	30°	31°	31°	32°	Longitude	28°	28°	29°	29°	30°	30°	31°	31°	32°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	50° 0'	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	
-0.1	-0.1	-0.1	0	0	0	0	0	0	49° 45'	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 15'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	
0	0	0	0	-0.1	-0.1	-0.1	0	0	49° 0'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	48° 45'	-0.1	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0	0	-0.1	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	47° 0'	0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	46° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
0.1	0	0	0	0	0	0	0	0	46° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	46° 15'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	46° 0'	0.1	0	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	-0.1	-0.1	0	0	0	45° 45'	0.1	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.2	-0.1	
-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	45° 30'	0.1	0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	
-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	45° 15'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	
-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	45° 0'	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	0.1	44° 45'	0	-0.1	-0.1	-0.1	0	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	-0.1	0	0	0.1	0.1	44° 30'	0	-0.1	-0.1	-0.1	0	-0.1	-0.2	-0.3	-0.2	
0	0	0	0	0	0	0.1	0.1	0.1	44° 15'	-0.1	-0.1	-0.1	0	0	-0.1	-0.3	-0.3	-0.3	
-0.1	0	0	0	0	0.1	0.1	0	0	44° 0'	-0.1	-0.1	-0.1	0	0	-0.2	-0.3	-0.3	-0.3	
-0.1	0	0.1	0.1	0.1	0.1	0	0	0	43° 45'	-0.1	-0.1	-0.2	-0.1	0	-0.2	-0.3	-0.2	-0.2	
0	0	0.1	0.1	0.1	0.1	0	0	-0.1	43° 30'	-0.1	-0.2	-0.2	-0.1	0	-0.1	-0.2	-0.2	-0.2	
0	0.1	0.1	0.1	0.1	0	0	0	0	43° 15'	-0.2	-0.3	-0.3	-0.1	0	-0.1	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	0	43° 0'	-0.2	-0.3	-0.3	-0.1	0	-0.1	-0.1	-0.2	-0.2	
-0.1	0	-0.1	-0.1	-0.1	0	0	0	0	42° 45'	-0.2	-0.3	-0.2	0	0	-0.1	-0.1	-0.2	-0.2	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	42° 30'	-0.2	-0.3	-0.2	0	0	-0.1	-0.2	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	-0.1	42° 15'	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	42° 0'	-0.2	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0	
0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	41° 45'	-0.1	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1	0	0.1	
0	0	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	41° 30'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	0	0.1	
0	0	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	41° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	41° 0'	-0.1	0	0	-0.1	-0.1	0	0	0	0.1	
0	0	0	0	0	-0.1	-0.1	-0.2	-0.1	40° 45'	-0.1	0	0	-0.1	-0.1	0	0.1	0	0	
0	0	0	0	0	-0.1	-0.1	-0.1	0	40° 30'	-0.1	0	0	-0.1	0	0.1	0.1	0	0	
0	0	0	-0.1	-0.1	-0.1	0	0	0.1	40° 15'	-0.1	0	0	0	0	0.1	0.1	0	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	40° 0'	-0.1	0	0	0	0	0	0	-0.1	-0.1	



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 32 to 36 °E									
Correction to Latitude										Correction to Longitude									
32°	32°	33°	33°	34°	34°	35°	35°	36°	Longitude	32°	32°	33°	33°	34°	34°	35°	35°	36°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	-0.1	-0.1	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	-0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	
0	0	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	49° 30'	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	49° 15'	-0.1	0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	49° 0'	-0.1	0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	48° 45'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	48° 30'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	48° 15'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	0	0	0	0	0	0	0	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0.1	0	0	0.1	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0.1	0	0	0.1	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0.1	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	-0.1	-0.1	0	0	0	0.1	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0.1	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	
-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	45° 15'	-0.1	-0.1	-0.1	0	-0.1	-0.2	-0.3	-0.3	-0.3	
0	0	0	-0.1	-0.1	-0.1	0	0	-0.1	45° 0'	-0.1	-0.1	0	0	-0.1	-0.3	-0.3	-0.2	-0.2	
0.1	0.1	0.1	0	0	0.1	0.2	0.1	0	44° 45'	-0.2	-0.1	0	0.1	-0.1	-0.4	-0.3	-0.1	-0.1	
0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	44° 30'	-0.2	-0.1	0.1	0.1	-0.2	-0.4	-0.2	0	0	
0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0	44° 15'	-0.3	-0.1	0	0	-0.3	-0.4	-0.1	0.1	0	
0	0	0.1	0.2	0.2	0.1	0	0	0	44° 0'	-0.3	-0.2	0	0	-0.2	-0.3	0	0.1	0	
0	0	0	0.1	0.1	0	-0.1	-0.1	-0.1	43° 45'	-0.2	-0.2	-0.1	-0.1	-0.2	-0.1	0	0	0	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	43° 30'	-0.2	-0.2	-0.2	-0.1	-0.1	0	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 15'	-0.2	-0.2	-0.2	-0.1	-0.1	0	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	43° 0'	-0.2	-0.2	-0.1	-0.1	-0.1	0	-0.1	0	0	
0	0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	42° 45'	-0.2	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	0	
0	-0.1	-0.2	-0.2	-0.3	-0.3	-0.2	-0.2	-0.2	42° 30'	-0.2	-0.1	0	0	0	0	-0.1	-0.1	-0.1	
-0.1	-0.2	-0.2	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	42° 15'	-0.1	0	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	
-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	42° 0'	0	0	0.1	0.1	0	-0.1	-0.2	-0.1	-0.1	
-0.3	-0.3	-0.3	-0.2	-0.2	-0.1	-0.1	-0.2	-0.1	41° 45'	0.1	0	0.1	0.1	-0.1	-0.2	-0.1	-0.1	-0.1	
-0.3	-0.3	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	41° 30'	0.1	0	0	0	-0.1	-0.2	-0.1	-0.1	-0.2	
-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	41° 15'	0.1	0	0	0	-0.2	-0.2	-0.1	-0.1	-0.2	
-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	41° 0'	0.1	0	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	40° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0.1	0	0	0	0	0	-0.1	-0.1	-0.1	40° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	
0.1	0.1	0	0	0	0	-0.1	-0.1	-0.1	40° 0'	-0.1	0	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 36 to 40 °E									
Correction to Latitude										Correction to Longitude									
36°	36°	37°	37°	38°	38°	39°	39°	40°	Longitude	36°	36°	37°	37°	38°	38°	39°	39°	40°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
-0.1	-0.1	-0.1	0	0	0	0	0	0	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	49° 30'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0	49° 15'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 0'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	48° 45'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0	48° 30'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	48° 15'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0	-0.1	0	48° 0'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	47° 0'	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	46° 45'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0.1	0	0	46° 30'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	46° 15'	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	46° 0'	-0.2	-0.2	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	45° 45'	-0.2	-0.2	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0	0	0	-0.1	0	0	0	0	0	45° 30'	-0.3	-0.2	-0.1	-0.1	0	0	0	0	-0.1	
-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	0	0	0	45° 15'	-0.3	-0.1	-0.1	-0.1	-0.1	0	0	0	0	
-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0	45° 0'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	
0	-0.1	0	0	0	-0.1	-0.2	-0.2	0	44° 45'	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	0	0	0.1	
0.1	0	0.1	0.1	0.1	0	-0.1	-0.3	0	44° 30'	0	-0.1	-0.2	-0.2	0	0.1	0.1	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0	-0.2	0	44° 15'	0	-0.1	-0.2	-0.1	0	0.2	0.2	0.2	0.1	
0	0	0	0	0	0.1	0.1	0	0	44° 0'	0	-0.1	-0.2	-0.2	0	0.2	0.3	0.3	0.1	
-0.1	-0.1	-0.2	-0.2	-0.1	0	0.1	0.1	0	43° 45'	0	-0.1	-0.2	-0.2	-0.1	0.1	0.3	0.4	0.3	
-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0.1	0.2	0	43° 30'	0	0	-0.1	-0.2	-0.2	-0.1	0.2	0.4	0.4	
-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0.1	0	43° 15'	0	0	-0.1	-0.2	-0.2	-0.2	0	0.3	0.4	
-0.1	0	-0.1	-0.1	-0.2	-0.2	-0.2	0	0	43° 0'	0	0	0	-0.1	-0.2	-0.2	-0.1	0.1	0.3	
-0.1	-0.1	0	-0.1	-0.1	-0.2	-0.2	-0.1	0	42° 45'	0	0	0	-0.1	-0.1	-0.2	-0.1	0	0.1	
-0.2	-0.1	0	0	0	-0.1	-0.1	-0.2	0	42° 30'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	0	
-0.2	-0.2	-0.1	0	0	0	-0.1	-0.1	0	42° 15'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	0	0	
-0.2	-0.2	-0.1	-0.1	0	0	0	-0.1	0	42° 0'	-0.1	-0.2	-0.2	-0.1	0	0	0	0	0	
-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0	41° 45'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	0	0	-0.1	
-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	0	41° 30'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	0	41° 15'	-0.2	-0.1	0	-0.1	-0.2	-0.1	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	0	41° 0'	-0.2	-0.1	0	-0.1	-0.1	0	0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	0	40° 45'	-0.2	-0.1	0	-0.1	-0.1	0	0.1	0	0	
-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0	40° 30'	-0.2	-0.1	0	-0.1	-0.1	0	0.1	0	0	
-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	40° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0	0	
-0.1	-0.2	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	40° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 40 to 44 °E									
Correction to Latitude										Correction to Longitude									
40°	40°	41°	41°	42°	42°	43°	43°	44°	Longitude	40°	40°	41°	41°	42°	42°	43°	43°	44°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0.1	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2	
0	0	0	0	0	0	0	0	0.1	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0	0	0.1	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	
0.1	0.1	0	0	0	0	0	0	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	
0	0	0.1	0	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	
0	0	0	0	0	0	0	0	0	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	
-0.1	-0.1	0	0	0	0	0	0	0	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	
-0.1	-0.1	-0.1	0	0	0	0	0	0	48° 15'	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	
-0.1	-0.1	-0.1	0	0	0	0	0	0	48° 0'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	
0	0	0	0	0	0	0	0	0	47° 45'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	
0	0	0	0	0	0	0	0	-0.1	47° 30'	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0	0	-0.1	47° 15'	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0	0	-0.1	47° 0'	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	46° 30'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	-0.1	-0.1	-0.1	0	0	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	
-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	45° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	
-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0	45° 0'	0.1	0	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.2	
-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0	44° 45'	0.1	0	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.2	
-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	44° 30'	0.1	0	-0.1	-0.1	-0.2	-0.3	-0.3	-0.3	-0.2	
-0.3	-0.3	-0.2	-0.2	-0.3	-0.3	-0.2	-0.2	-0.1	44° 15'	0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.3	
-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	44° 0'	0.1	-0.1	-0.1	-0.1	-0.1	-0.3	-0.4	-0.5	-0.3	
0	-0.1	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	43° 45'	0.3	0	-0.1	-0.1	-0.1	-0.2	-0.5	-0.6	-0.4	
0.2	0	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	43° 30'	0.4	0.2	0	-0.1	-0.1	-0.2	-0.5	-0.6	-0.4	
0.2	0.2	0.1	0.1	0	-0.1	-0.2	-0.3	-0.5	43° 15'	0.4	0.3	0.1	0	-0.1	-0.2	-0.4	-0.5	-0.4	
0.1	0.3	0.3	0.3	0.2	0.1	0	-0.2	-0.4	43° 0'	0.3	0.3	0.2	0.1	0	-0.1	-0.2	-0.3	-0.3	
0	0.2	0.3	0.3	0.3	0.2	0.1	0	-0.2	42° 45'	0.1	0.1	0.1	0.1	0	0	0	-0.1	-0.2	
-0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0	42° 30'	0	0	0.1	0.1	0	0	0.1	0	-0.1	
-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	0.1	42° 15'	0	0	0	0.1	0.1	0	0.1	0	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	-0.1	42° 0'	0	0	0	0.1	0.1	0	0	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.2	-0.2	41° 45'	-0.1	0	0.1	0.2	0.2	0	-0.1	-0.1	-0.3	
-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	-0.2	41° 30'	-0.1	0	0.1	0.2	0.3	0.1	-0.1	-0.1	-0.3	
-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	41° 15'	-0.1	0	0	0.1	0.3	0.1	-0.1	-0.1	-0.2	
-0.3	-0.3	-0.3	-0.2	-0.1	0	-0.1	-0.1	-0.1	41° 0'	0	0	0	0	0.2	0.1	-0.1	-0.1	-0.2	
-0.2	-0.2	-0.2	-0.2	-0.1	0	-0.1	0	0	40° 45'	0	0	-0.1	-0.1	0.1	0	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	40° 30'	0	0	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
-0.1	-0.1	0	-0.1	-0.1	0	0	0.1	0.1	40° 15'	0	0	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
-0.1	0	0	-0.1	-0.1	0	0.1	0.1	0.1	40° 0'	-0.1	0	-0.1	-0.1	0	-0.1	-0.2	-0.2	-0.2	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 44 to 48 °E									
Correction to Latitude										Correction to Longitude									
44°	44°	45°	45°	46°	46°	47°	47°	48°	Longitude	44°	44°	45°	45°	46°	46°	47°	47°	48°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	50° 0'	-0.2	-0.2	-0.3	-0.4	-0.4	-0.2	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	49° 45'	-0.2	-0.3	-0.3	-0.4	-0.3	-0.1	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	49° 30'	-0.2	-0.3	-0.3	-0.3	-0.2	-0.1	0	0	-0.1	
0.1	0.1	0.1	0	0	-0.1	0	0	0	49° 15'	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	0	-0.1	-0.1	
0	0.1	0	0	-0.1	-0.1	0	0	0.1	49° 0'	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0.1	0.1	48° 45'	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0.1	0.1	0.1	48° 30'	-0.3	-0.3	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0.1	0.1	0.1	48° 15'	-0.3	-0.3	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.2	
0	0	-0.1	0	0	0	0	0	0	48° 0'	-0.3	-0.3	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	
0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	47° 45'	-0.2	-0.2	-0.2	-0.1	-0.2	-0.2	-0.3	-0.2	-0.1	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	47° 30'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	47° 15'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 0'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 45'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 30'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	
0	0	-0.1	-0.1	-0.1	0	0	0	-0.1	46° 15'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 45'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 30'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 15'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	45° 0'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0.1	44° 45'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	
-0.1	-0.1	0	0	0	0	0	0	0	44° 30'	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	
-0.1	-0.1	-0.1	0	0	0	0	0	0	44° 15'	-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	0	0	0	0.1	0	44° 0'	-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	
-0.2	-0.1	-0.1	-0.1	-0.1	0	0	0	0	43° 45'	-0.4	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	-0.1	-0.1	
-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	0	43° 30'	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	
-0.5	-0.5	-0.5	-0.4	-0.4	-0.3	-0.3	-0.1	-0.1	43° 15'	-0.4	-0.3	-0.3	-0.4	-0.3	-0.3	-0.3	-0.2	-0.1	
-0.4	-0.5	-0.5	-0.5	-0.5	-0.5	-0.4	-0.2	-0.1	43° 0'	-0.3	-0.3	-0.4	-0.4	-0.3	-0.3	-0.4	-0.3	-0.1	
-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.4	-0.2	-0.1	42° 45'	-0.2	-0.2	-0.3	-0.4	-0.3	-0.4	-0.6	-0.4	-0.2	
0	0	0	-0.1	-0.2	-0.3	-0.3	-0.3	-0.1	42° 30'	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.6	-0.6	-0.2	
0.1	0.1	0.2	0.1	0	-0.1	-0.3	-0.3	-0.2	42° 15'	-0.2	-0.2	-0.1	-0.2	-0.2	-0.3	-0.6	-0.6	-0.4	
-0.1	0	0.1	0.2	0.2	0.1	-0.2	-0.3	-0.2	42° 0'	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1	-0.4	-0.6	-0.6	
-0.2	-0.1	0	0.1	0.2	0.2	0	-0.2	-0.3	41° 45'	-0.3	-0.4	-0.3	-0.2	-0.1	0.1	-0.1	-0.5	-0.7	
-0.2	-0.2	-0.2	-0.1	0	0.2	0.2	0	-0.2	41° 30'	-0.3	-0.4	-0.4	-0.3	-0.2	0.1	0.1	-0.3	-0.7	
-0.1	-0.2	-0.3	-0.3	-0.2	0	0.2	0.2	-0.1	41° 15'	-0.2	-0.4	-0.4	-0.4	-0.3	-0.1	0.1	-0.1	-0.5	
-0.1	-0.1	-0.2	-0.3	-0.3	-0.1	0.1	0.2	0.1	41° 0'	-0.2	-0.3	-0.3	-0.4	-0.4	-0.3	-0.1	0	-0.3	
0	-0.1	-0.1	-0.2	-0.3	-0.3	-0.1	0.1	0.2	40° 45'	-0.1	-0.2	-0.2	-0.3	-0.5	-0.5	-0.3	0	-0.2	
0	0	0	-0.1	-0.3	-0.3	-0.2	0	0.1	40° 30'	-0.2	-0.1	-0.2	-0.2	-0.4	-0.6	-0.5	-0.2	-0.2	
0.1	0.1	0	-0.1	-0.2	-0.3	-0.3	-0.2	-0.1	40° 15'	-0.2	-0.1	-0.1	-0.1	-0.3	-0.5	-0.6	-0.3	-0.3	
0.1	0	0	0	-0.1	-0.1	-0.2	-0.2	-0.2	40° 0'	-0.2	-0.1	-0.1	0	-0.2	-0.5	-0.5	-0.4	-0.4	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 48 to 52 °E									
Correction to Latitude										Correction to Longitude									
48°	48°	49°	49°	50°	50°	51°	51°	52°	Longitude	48°	48°	49°	49°	50°	50°	51°	51°	52°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0.1	0	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0.1	0.1	0.1	0.1	0	0	49° 45'	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	0	0	
0	0	0	0.1	0.1	0.1	0.1	0.1	0	49° 30'	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0	0	
0	0.1	0.1	0.1	0	0	0	0.1	0.1	49° 15'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	0	0	
0.1	0.1	0.1	0.1	0	0	0	0	0.1	49° 0'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0	0	
0.1	0.1	0.1	0	0	0	0	0	0	48° 45'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0	0	0	0	0	0	0	48° 30'	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	0	0	0	0	0	48° 15'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	47° 15'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	47° 0'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	46° 45'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 30'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 15'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 0'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	45° 30'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0	0	0	45° 15'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0	0	0	0.1	0	0	0	45° 0'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0	0	0	0	0	0	0	44° 45'	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	-0.1	44° 30'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0	0	0	0	0	-0.1	0	0	-0.1	44° 15'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0	0	0	0	-0.1	-0.1	0	0	0	44° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	43° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0
0	0	0	0	-0.1	-0.1	-0.1	0	0	43° 30'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	0	0	0	0	-0.1	-0.1	0	43° 15'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	0	0	0	0	0	0	43° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	0	0	0	0	0	0	0	42° 45'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
-0.1	0	0	0	0.1	0.1	0.1	0	0	42° 30'	-0.2	-0.1	-0.2	-0.2	-0.1	0	0	0	0	-0.1
-0.2	0	0.1	0.1	0.1	0.1	0.1	0	0	42° 15'	-0.4	-0.2	-0.2	-0.2	-0.1	0	0	0	0	0
-0.2	0	0.1	0.1	0.1	0.1	0.1	0	0	42° 0'	-0.6	-0.4	-0.2	-0.2	-0.2	0	0.1	0.1	0	
-0.3	-0.1	0	0.1	0.2	0.2	0.1	0	0	41° 45'	-0.7	-0.5	-0.2	-0.2	-0.2	0	0.1	0.1	0.1	
-0.2	-0.2	-0.1	0.1	0.2	0.2	0.1	0.1	0	41° 30'	-0.7	-0.6	-0.4	-0.3	-0.2	0	0.2	0.1	0.1	
-0.1	-0.2	-0.1	0.1	0.1	0.2	0.2	0.1	0	41° 15'	-0.5	-0.7	-0.5	-0.5	-0.3	0	0.2	0.2	0.1	
0.1	-0.1	0	0	0.1	0.1	0.2	0.1	0.1	41° 0'	-0.3	-0.6	-0.7	-0.5	-0.3	0	0.3	0.3	0.1	
0.2	0.1	0.1	0.1	0	0.1	0.2	0.2	0.2	40° 45'	-0.2	-0.6	-0.7	-0.5	-0.4	-0.1	0.2	0.3	0.2	
0.1	0.1	0.1	0	0	0	0.1	0.2	0.2	40° 30'	-0.2	-0.5	-0.6	-0.5	-0.4	-0.2	0.2	0.3	0.2	
-0.1	0	0	0	0	0	0.1	0.2	0.3	40° 15'	-0.3	-0.6	-0.6	-0.4	-0.4	-0.2	0.1	0.3	0.2	
-0.2	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0.2	40° 0'	-0.4	-0.6	-0.6	-0.4	-0.4	-0.3	0	0.1	0.2	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 52 to 56 °E									
Correction to Latitude										Correction to Longitude									
52°	52°	53°	53°	54°	54°	55°	55°	56°	Longitude	52°	52°	53°	53°	54°	54°	55°	55°	56°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	-0.1	-0.1	0	0	0	50° 0'	-0.1	0	0	0	-0.1	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0	0	0	0.1	49° 45'	0	0	0	0	-0.1	-0.1	-0.2	-0.3	-0.2	
0	0	0	0	0	0	0.1	0.1	0.1	49° 30'	0	0	0	0	-0.1	-0.1	-0.2	-0.3	-0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	49° 15'	0	0	0	0	-0.1	-0.2	-0.2	-0.3	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	49° 0'	0	0	0	0	-0.1	-0.2	-0.2	-0.2	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	48° 45'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0	0	0	48° 30'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0.1	0	0	0	0	0	48° 15'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	-0.1	0	0	0	0	0	0	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0	0	0	0	0	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
-0.1	0	0	0	0	0	0	0	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	-0.1	-0.1	0	0	45° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	44° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	44° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	-0.1	0	0	0	0	0	0	0	44° 0'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	43° 45'	0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	43° 30'	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	43° 15'	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	43° 0'	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	-0.1	-0.1	0	0	0	0	42° 45'	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	42° 30'	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	42° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	42° 0'	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	41° 45'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	41° 30'	0.1	0	-0.1	-0.1	0	-0.1	-0.1	-0.2	-0.2	
0	0	0	0	0	0	-0.1	-0.1	0	41° 15'	0.1	0	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0.1	0.1	0	0	0	0	0	0	0	41° 0'	0.1	0	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0.2	0.1	0.1	0.1	0.1	0	0	0	0	40° 45'	0.2	0	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0.2	0.1	0.1	0.1	0.1	0	0.1	0	0	40° 30'	0.2	0	-0.1	-0.1	0	0	0	-0.1	-0.2	
0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	0.2	0.1	0	0	0	0	-0.1	-0.1	-0.2	
0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	40° 0'	0.2	0.2	0	0	0.1	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 56 to 60 °E									
Correction to Latitude										Correction to Longitude									
56°	56°	57°	57°	58°	58°	59°	59°	60°	Longitude	56°	56°	57°	57°	58°	58°	59°	59°	60°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0.1	0	0	0	0	50° 0'	-0.2	-0.1	0	0.2	0.3	0.1	-0.2	-0.2	-0.1	
0.1	0	0	0	0	0	0	0	0.1	49° 45'	-0.2	-0.1	0	0.2	0.3	0.1	-0.2	-0.2	-0.1	
0.1	0	0	0	0	0	0	0	0.1	49° 30'	-0.2	0	0	0.2	0.3	0.1	-0.2	-0.2	-0.2	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	49° 15'	-0.1	0	0	0.1	0.3	0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0.1	0.1	0.1	0.1	49° 0'	-0.1	0	0	0.1	0.3	0.1	-0.2	-0.2	-0.1	
0	0	0	0	0	0.1	0.1	0.1	0.1	48° 45'	-0.1	0	0	0.1	0.2	0.1	-0.2	-0.3	-0.1	
0	0	0	0	0	0.1	0.1	0.1	0.1	48° 30'	0	0	0	0.1	0.2	0.1	-0.2	-0.2	-0.1	
0	0	0	0	0	0.1	0.1	0.1	0.1	48° 15'	0	0	0	0.1	0.2	0	-0.2	-0.2	-0.1	
0	0	0	0	0	0.1	0.1	0.1	0.1	48° 0'	0	0	0	0.1	0.1	-0.1	-0.2	-0.2	-0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	47° 45'	0	0	0	0.1	0	-0.2	-0.2	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	47° 30'	0	0	0	0	-0.1	-0.2	-0.2	-0.1	-0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	0	0	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.1	-0.1	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	46° 15'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0.1	0.1	0.1	0	0	0	46° 0'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 45'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	-0.1	-0.1	-0.1	0	0	0	0	0	45° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	0	0	0	0	0	0	0	44° 45'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0	0	0	0	0	44° 30'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0	0	0	0	0	44° 15'	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	44° 0'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	43° 45'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	43° 30'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	-0.1	43° 15'	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	0	0	-0.1	-0.1	43° 0'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0.1	0	0	0	0	0	0	0	42° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0	0	0	0	0	0	0	42° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
-0.1	0	0	0	0	0	0	0	0	42° 15'	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
-0.1	-0.1	-0.1	0	0	0	0	0.1	0.1	42° 0'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0	0	
-0.1	-0.1	-0.1	0	0	0	0	0	0	41° 45'	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	0	0	0	0	0	0	41° 30'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	41° 15'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	41° 0'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 45'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 30'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	0	0	0	0	40° 15'	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	0	0	0	0	40° 0'	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	





# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 64 to 68 °E									
Correction to Latitude										Correction to Longitude									
64° 0'	64° 30'	65° 0'	65° 30'	66° 0'	66° 30'	67° 0'	67° 30'	68° 0'	Longitude Latitude	64° 0'	64° 30'	65° 0'	65° 30'	66° 0'	66° 30'	67° 0'	67° 30'	68° 0'	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	-0.1	-0.1	0	0	0	-0.1	-0.1	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	49° 45'	-0.1	-0.1	0	0	0	-0.1	-0.1	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	49° 30'	-0.1	-0.1	0	0	0	-0.1	-0.1	0	0	
0.1	0.1	0	0	0	0	0	0	0	49° 15'	-0.1	0	0	0	0	-0.1	-0.1	0	0	
0.1	0.1	0	0	0	0	0	0	0	49° 0'	-0.1	0	0	0	0	-0.1	-0.1	0	0	
0.1	0.1	0	0	0	0	0	0	0.1	48° 45'	-0.1	0	0	0	-0.1	-0.1	-0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	-0.1	0	0	0	-0.1	-0.1	-0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 30'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0	46° 30'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	-0.1	
0	0	0	0	0.1	0.1	0.1	0	0	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	45° 30'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	-0.1	0	45° 0'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	-0.1	44° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	-0.1	44° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	
0	0	0	0	0	0	0.1	0	-0.1	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0	-0.1	
0	0	0	0	0	0	0.1	0.1	0	44° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0.1	0.1	0.1	43° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	
0	0	0	0	0	0	0.1	0.1	0.2	43° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0.1	
-0.1	-0.1	0	0	0	0	0	0.1	0.2	43° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
-0.1	-0.1	-0.1	0	0	0	0	0	0.1	43° 0'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	42° 45'	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	-0.1	-0.1	0	0	0	0	0	42° 30'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	42° 15'	0	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	0	0	0	0	42° 0'	0	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	41° 45'	0	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	41° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	-0.1	-0.1	0	0	0	41° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	
0	0	0	0	-0.1	-0.1	-0.1	0	0	41° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	
0	0.1	0	0	0	-0.1	-0.1	-0.1	0	40° 45'	-0.1	-0.1	0	0	-0.1	-0.1	-0.2	-0.2	-0.2	
0	0	0	0	0	0	-0.1	-0.1	-0.1	40° 30'	-0.1	-0.1	0	0	0	-0.1	-0.2	-0.3	-0.2	
0	0	0	0	0	0	0	-0.1	-0.2	40° 15'	-0.1	-0.1	0	0	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0.1	0	-0.1	-0.2	40° 0'	-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 68 to 72 °E									
Correction to Latitude										Correction to Longitude									
68°	68°	69°	69°	70°	70°	71°	71°	72°	Longitude	68°	68°	69°	69°	70°	70°	71°	71°	72°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	50° 0'	0	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	49° 45'	0	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	49° 30'	0	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0	0	0	0	0.1	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0.1	0.1	0.1	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0	0	0	0	0	0	47° 0'	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	46° 45'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0	0	0	0	46° 30'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0	0	0	46° 15'	-0.1	-0.2	-0.1	0	0	-0.1	-0.1	0	-0.1	
0	0	0	0.1	0.1	0.1	0	0	0	46° 0'	0	-0.2	-0.2	0	0.1	0	-0.1	0	-0.1	
0	0	0	0	0.1	0.1	0	0	0	45° 45'	0	-0.1	-0.2	-0.1	0	0	0	0	-0.1	
0	0	0	0	0	0.1	0	0	0	45° 30'	0	-0.1	-0.2	-0.1	0	0	0	0	-0.1	
0	0	0	-0.1	0	0	0	0.1	0	45° 15'	0	-0.1	-0.2	-0.1	-0.1	0	0	0	0	
0	0	0	-0.1	-0.1	0	0	0.1	0	45° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	
0	0	0	0	-0.1	0	0	0	0	44° 45'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	
-0.1	-0.1	-0.1	0	0	0	0	0	0	44° 30'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	0	
-0.1	-0.1	-0.1	0	0	0	0	0	0	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	-0.1	-0.1	-0.1	0	0	0	0	0	44° 0'	0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0	0	-0.1	0	0	0	0	43° 45'	0.1	0	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.2	0.2	0.1	0	-0.1	0	0	0	-0.1	43° 30'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	
0.2	0.2	0.2	0.1	0	-0.1	-0.1	-0.1	-0.1	43° 15'	0	0	0.1	0.1	0	-0.2	-0.1	0	0	
0.1	0.2	0.2	0.1	0	-0.1	-0.2	-0.2	-0.2	43° 0'	0	0	0.1	0.2	0.1	-0.1	-0.1	0	0	
0	0.1	0.1	0.1	0	-0.1	-0.2	-0.3	-0.2	42° 45'	-0.1	0	0.1	0.2	0.2	0	-0.1	0	0.1	
0	0	0	0	0	-0.1	-0.2	-0.2	-0.2	42° 30'	-0.1	0	0.1	0.2	0.3	0.2	0	0	0	
0	0	-0.1	0	0	0	-0.1	-0.1	0	42° 15'	-0.1	0	0	0.2	0.3	0.3	0.1	-0.1	0	
0	0	0	0	0	0	0.1	0.2	0.2	42° 0'	-0.1	0	0.1	0.1	0.3	0.3	0	-0.1	-0.1	
0	0	0	0	0	0.1	0.2	0.3	0.4	41° 45'	-0.1	0	0.1	0.2	0.3	0.2	-0.1	-0.2	-0.1	
0	0	0.1	0	0	0.1	0.3	0.4	0.4	41° 30'	-0.1	-0.1	0	0.2	0.3	0.1	-0.2	-0.3	-0.1	
0	0	0.1	0	0.1	0.2	0.4	0.4	0.4	41° 15'	-0.1	-0.1	0	0.2	0.2	-0.1	-0.4	-0.3	0	
0	0	0	0.1	0.2	0.4	0.4	0.4	0.2	41° 0'	-0.1	-0.1	0	0.2	0.1	-0.2	-0.4	-0.2	0.1	
0	0	0	0.1	0.2	0.3	0.3	0.1	0	40° 45'	-0.2	-0.1	0	0.1	-0.1	-0.3	-0.3	-0.1	0.2	
-0.1	-0.1	0	0	0.1	0	-0.1	-0.3	-0.4	40° 30'	-0.2	-0.1	0	0	-0.1	-0.3	-0.2	0	0.2	
-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.6	-0.5	40° 15'	-0.2	-0.1	-0.1	0	-0.1	-0.1	0	0.1	0.1	
-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.5	-0.5	-0.5	40° 0'	-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 72 to 76 °E									
Correction to Latitude										Correction to Longitude									
72° 0'	72° 30'	73° 0'	73° 30'	74° 0'	74° 30'	75° 0'	75° 30'	76° 0'	Longitude Latitude	72° 0'	72° 30'	73° 0'	73° 30'	74° 0'	74° 30'	75° 0'	75° 30'	76° 0'	
0.1	0.1	0.1	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	49° 45'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	49° 30'	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	-0.1	0	-0.1	-0.1	-0.1	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	-0.1	-0.1	0	-0.1	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	-0.1	0	0	-0.1	0	0	0	0	0	
0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	0	0	0	-0.1	-0.1	0	0	0	0	
0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	0	0	-0.1	-0.1	-0.1	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	
0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	47° 30'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0.1	0.1	0	0	0	0	0	0.1	47° 15'	0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0.1	47° 0'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	46° 45'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0.1	0.1	46° 30'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0.1	0.1	0.1	46° 15'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	-0.1	-0.1	
0	0	0	0	0.1	0.1	0	0	0	45° 30'	-0.1	-0.1	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	
0	0	0	0	0.1	0.1	0	0	0	45° 15'	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	45° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	44° 45'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	44° 30'	0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	-0.1	-0.1	-0.2	-0.1	44° 15'	0	0	0	-0.1	-0.1	-0.1	0	0	0	
0	0	0	0	-0.1	-0.2	-0.2	-0.2	-0.1	44° 0'	-0.1	0	0	0	-0.1	0	0	-0.1	-0.1	
0	0	0	0	-0.1	-0.1	-0.2	-0.1	-0.1	43° 45'	-0.1	0	0	0	0	0.1	0	-0.1	-0.2	
-0.1	-0.1	0	0	0	0	0	-0.1	-0.1	43° 30'	-0.1	-0.1	0	0	0.1	0.1	0	-0.1	-0.2	
-0.1	-0.2	-0.1	-0.1	0	0	0	-0.1	-0.2	43° 15'	0	-0.1	-0.1	0	0.1	0.1	0	-0.1	-0.1	
-0.2	-0.3	-0.3	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	43° 0'	0	0	-0.1	-0.1	0	0.1	0	0.1	0.1	
-0.2	-0.3	-0.3	-0.4	-0.3	-0.3	-0.2	-0.2	-0.2	42° 45'	0.1	0	-0.1	-0.2	-0.1	0	0	0.1	0.1	
-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	42° 30'	0	0.1	0	-0.1	0	0	-0.1	0	0	
0	0.1	0.1	0	-0.1	-0.2	-0.2	-0.2	-0.1	42° 15'	0	0.1	0	0	0	0	-0.1	-0.1	-0.1	
0.2	0.2	0.2	0.1	0	0	-0.1	-0.1	-0.1	42° 0'	-0.1	0	0.1	0.1	0.1	0	0	-0.1	-0.1	
0.4	0.3	0.2	0.2	0.1	0.1	0	-0.1	-0.1	41° 45'	-0.1	0.1	0.1	0.1	0.1	0.1	0	0	-0.1	
0.4	0.3	0.2	0.1	0.1	0	0	0	-0.1	41° 30'	-0.1	0.2	0.2	0.2	0.2	0.1	0.1	0	0	
0.4	0.2	0.2	0.1	0	-0.1	-0.1	-0.1	-0.1	41° 15'	0	0.3	0.3	0.3	0.2	0.1	0.1	0	0	
0.2	0.2	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	41° 0'	0.1	0.3	0.3	0.3	0.4	0.2	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	40° 45'	0.2	0.3	0.3	0.4	0.4	0.2	0	0	0	
-0.4	-0.3	-0.2	-0.2	-0.1	0	0	0.1	0.2	40° 30'	0.2	0.3	0.3	0.4	0.4	0.1	-0.1	-0.1	-0.1	
-0.5	-0.4	-0.3	-0.2	-0.1	0.1	0.2	0.3	0.4	40° 15'	0.1	0.2	0.2	0.4	0.3	0.1	-0.1	-0.2	-0.2	
-0.5	-0.4	-0.3	-0.2	0	0.1	0.2	0.4	0.5	40° 0'	0.1	0.1	0.1	0.2	0.2	-0.1	-0.2	-0.3	-0.3	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 76 to 80 °E									
Correction to Latitude										Correction to Longitude									
76° 0'	76° 30'	77° 0'	77° 30'	78° 0'	78° 30'	79° 0'	79° 30'	80° 0'	Longitude Latitude	76° 0'	76° 30'	77° 0'	77° 30'	78° 0'	78° 30'	79° 0'	79° 30'	80° 0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	-0.1	0	0	0	0	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	-0.1	-0.1	-0.1	0	0	0	49° 30'	0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	-0.1	-0.1	-0.1	0	0	49° 15'	0	0	0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0	0	0	-0.1	-0.1	0	0	49° 0'	0	0	0	0	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1
0.1	0.1	0.1	0.1	0	0	-0.1	-0.1	0	48° 45'	0	0	0	0	0	-0.1	-0.1	-0.2	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	48° 30'	0	0	0	0	0	0	-0.1	-0.2	-0.2	-0.2
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	48° 15'	0	0	0	0	0	0	-0.1	-0.2	-0.2	-0.2
0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0	48° 0'	0	0	0.1	0	0	0	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0	47° 45'	0	0	0	0	0	0	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0	47° 30'	0	0	0	0	0	0	-0.1	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0	47° 15'	0	-0.1	0	0	0	0	-0.1	-0.1	0	0
0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0	47° 0'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0	46° 45'	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	46° 30'	-0.2	-0.2	-0.1	0	-0.1	0	0	0	0	0
0.1	0	0.1	0.1	0.1	0	0	0	0	46° 15'	-0.2	-0.2	-0.1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	0	0
0	0	0	0	0	0	-0.1	-0.2	0	45° 45'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	0.1
0	0	0	0	0	-0.1	-0.2	-0.3	0	45° 30'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.2	0.2	0.2
0	0	0	-0.1	-0.1	-0.2	-0.3	-0.4	0	45° 15'	-0.1	-0.1	-0.1	0	0.1	0.2	0.3	0.3	0.2	0.2
0	0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	0	45° 0'	-0.1	-0.1	0	0	0.1	0.2	0.3	0.4	0.2	0.2
0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0	44° 45'	-0.1	0	0	0.1	0.2	0.2	0.2	0.3	0.1	0.1
-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.3	0	44° 30'	0	0	0	0.1	0.2	0.1	0.1	0.1	0	0
-0.1	-0.1	-0.1	0	0	0.1	0.3	0.4	0	44° 15'	0	0	0	0	0.1	0	-0.1	0	0	0
-0.1	0	0	0	0.1	0.1	0.2	0.2	0	44° 0'	-0.1	-0.1	0	0	0	-0.1	-0.2	0	0	0
-0.1	0	0	-0.1	-0.1	0	0	0	0	43° 45'	-0.2	-0.1	0	0	-0.1	-0.1	-0.1	0	0	0
-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0	43° 30'	-0.2	-0.1	0	0	-0.1	-0.1	-0.1	0	0	0
-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	0	43° 15'	-0.1	0	0.1	0	-0.1	-0.1	-0.1	-0.1	0	0
-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0	43° 0'	0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	0	0
-0.2	-0.1	0	0	-0.1	-0.2	-0.2	-0.2	0	42° 45'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0
-0.1	0	0	0	-0.1	-0.2	-0.2	-0.2	0	42° 30'	0	-0.1	-0.1	0	0.1	0	-0.1	0	0.1	0.1
-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	0	42° 15'	-0.1	-0.1	-0.1	0	0.2	0.1	-0.2	0.1	0.2	0.2
-0.1	-0.2	-0.3	-0.3	-0.3	-0.2	0	0.1	0	42° 0'	-0.1	-0.1	-0.1	0	0.2	0	-0.3	0	0.1	0.1
-0.1	-0.2	-0.3	-0.4	-0.2	0	0.2	0.3	0	41° 45'	-0.1	0	0.1	0	0	-0.2	-0.4	-0.2	0	0
-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.2	0.4	0	41° 30'	0	0.1	0.2	0	-0.2	-0.4	-0.5	-0.4	-0.2	-0.2
-0.1	-0.1	0	0	0.1	0.2	0.2	0.3	0	41° 15'	0	0.1	0.2	-0.1	-0.3	-0.5	-0.6	-0.5	-0.3	-0.3
-0.1	0	0.1	0.2	0.3	0.2	0.2	0.2	0	41° 0'	0	0.1	0.1	-0.1	-0.4	-0.5	-0.6	-0.5	-0.4	-0.4
0	0.1	0.2	0.4	0.4	0.3	0.2	0.1	0	40° 45'	0	0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.5	-0.5
0.2	0.3	0.4	0.4	0.4	0.3	0.2	0.1	0	40° 30'	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.4	-0.5	-0.4	-0.4
0.4	0.5	0.5	0.4	0.3	0.2	0.1	0	0	40° 15'	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.4	-0.4	-0.4
0.5	0.5	0.4	0.3	0.2	0.1	0	-0.1	0	40° 0'	-0.3	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.3	-0.3

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 80 to 84 °E									
Correction to Latitude										Correction to Longitude									
80°	80°	81°	81°	82°	82°	83°	83°	84°	Longitude	80°	80°	81°	81°	82°	82°	83°	83°	84°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0.1	0.1	0.2	50° 0'	-0.1	-0.1	0	0	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0.1	0.1	0.2	49° 45'	-0.1	-0.1	-0.1	0	0.1	0.1	0	0	-0.1	
0	0	0	0	0	0	0.1	0.1	0.1	49° 30'	-0.1	-0.1	-0.1	0	0.1	0	0	-0.1	-0.1	
0	0	0	0	0	0.1	0.1	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	0	
0	0	0	0	0	0.1	0.1	0.1	0.1	49° 0'	-0.1	0	0	0	0	-0.1	-0.1	-0.1	0.1	
0	0	0	0	0	0.1	0.1	0.1	0.1	48° 45'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	0.1	
0	0	0	0	0.1	0.1	0.2	0.2	0.2	48° 30'	-0.2	-0.1	0	0	-0.1	-0.2	-0.2	0	0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	48° 15'	-0.2	-0.1	0	0	-0.2	-0.2	-0.2	0	0	
0.1	0	0	0	0	0	0	0	0	48° 0'	-0.1	-0.1	0	0	-0.2	-0.3	-0.1	0	0	
0.1	0.1	0	0	0	-0.1	-0.2	-0.2	-0.1	47° 45'	-0.1	0	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	
0.2	0.1	0.1	0.1	0	-0.1	-0.2	-0.2	-0.2	47° 30'	0	0	0	0	-0.1	-0.1	0	-0.1	-0.2	
0.2	0.1	0.2	0.2	0.2	0.1	0	0	-0.1	47° 15'	0	0	0	0	0	0	0.1	0	-0.2	
0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.1	47° 0'	0	0	0	0	0	0.1	0.1	0	-0.1	
0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	46° 45'	0	0	-0.1	-0.1	0	0	0.1	0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	0	0	-0.1	-0.1	0	0	0.1	0.1	0	
0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	46° 15'	0	0	-0.1	-0.1	0	0.1	0.1	0	0	
-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	46° 0'	0	0.1	0	-0.2	0	0.1	0.1	-0.1	-0.2	
-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	0	0	0.1	45° 45'	0.1	0.2	0	-0.2	-0.1	0.2	0.1	-0.1	-0.3	
-0.4	-0.4	-0.2	-0.1	0	0.1	0.2	0.2	0.2	45° 30'	0.2	0.1	-0.2	-0.4	-0.2	0.1	0.1	-0.2	-0.3	
-0.4	-0.3	-0.1	0	0.1	0.3	0.4	0.4	0.4	45° 15'	0.2	-0.1	-0.4	-0.5	-0.3	-0.1	0	-0.2	-0.3	
-0.2	0	0	0.1	0.1	0.2	0.3	0.3	0.3	45° 0'	0.2	-0.3	-0.5	-0.5	-0.5	-0.2	0	-0.1	-0.3	
0.2	0.2	0.2	0	0	0	0	0	0.1	44° 45'	0.1	-0.3	-0.5	-0.5	-0.5	-0.3	0	-0.2	-0.3	
0.4	0.4	0.3	0.1	-0.1	-0.2	-0.3	-0.3	-0.2	44° 30'	0	-0.2	-0.3	-0.3	-0.4	-0.3	0	-0.2	-0.4	
0.4	0.4	0.3	0.2	0	-0.2	-0.3	-0.4	-0.4	44° 15'	0	-0.2	-0.1	-0.1	-0.2	-0.1	0.1	-0.2	-0.4	
0.2	0.2	0.1	0.1	0.1	0	-0.1	-0.2	-0.4	44° 0'	0	-0.1	-0.1	0	-0.1	0	0.2	0	-0.3	
0	-0.1	-0.1	0	0	0	0	0	-0.2	43° 45'	0	-0.1	-0.1	0	-0.1	0	0.2	0.1	0	
-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	0	0	0	43° 30'	0	0	-0.1	-0.1	-0.2	0	0.2	0.2	0.1	
-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.2	0	0.1	43° 15'	0	0	-0.1	-0.2	-0.2	-0.1	0.1	0.1	0.1	
-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.2	-0.1	0	43° 0'	0	0	0	-0.1	-0.2	-0.1	0	-0.1	0	
-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	0	0	0	42° 45'	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
-0.4	-0.4	-0.2	0	0.1	0.2	0.2	0.2	0.1	42° 30'	0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0	-0.1	-0.1	
-0.2	-0.1	0.1	0.3	0.4	0.4	0.4	0.4	0.3	42° 15'	0.2	-0.2	-0.4	-0.3	-0.3	-0.2	0	0	-0.1	
0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.5	42° 0'	0.1	-0.3	-0.6	-0.5	-0.4	-0.2	0	0	-0.1	
0.5	0.6	0.6	0.5	0.4	0.3	0.3	0.4	0.4	41° 45'	0	-0.4	-0.6	-0.4	-0.3	-0.2	0	0	-0.1	
0.6	0.7	0.5	0.4	0.3	0.2	0.2	0.3	0.3	41° 30'	-0.2	-0.3	-0.4	-0.3	-0.2	-0.1	0	-0.1	-0.1	
0.4	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.1	41° 15'	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0	41° 0'	-0.4	-0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	40° 45'	-0.5	-0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	0	0	0	0	40° 30'	-0.4	-0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	-0.1	-0.1	0	0	-0.1	-0.1	0	0	40° 15'	-0.4	-0.2	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	40° 0'	-0.3	-0.2	-0.2	-0.1	0	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 84 to 88 °E									
Correction to Latitude										Correction to Longitude									
84° 0'	84° 30'	85° 0'	85° 30'	86° 0'	86° 30'	87° 0'	87° 30'	88° 0'	Longitude	84° 0'	84° 30'	85° 0'	85° 30'	86° 0'	86° 30'	87° 0'	87° 30'	88° 0'	Latitude
0.2	0.2	0.2	0.1	0	0	0	0	0	50° 0'	0	0	0.1	0.2	0	-0.1	0	0.1	0	50° 0'
0.2	0.2	0.1	0.1	0.1	0.1	0	0	0	49° 45'	-0.1	0	0.2	0.2	0.1	0	0.1	0	-0.1	49° 45'
0.1	0.1	0	0.1	0.1	0.1	0	0	0	49° 30'	-0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	-0.1	49° 30'
0.1	0	0	0	0.1	0.1	0.1	0	0	49° 15'	0	0.1	0.2	0.1	0	0.2	0.2	0.1	-0.1	49° 15'
0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	0.1	0.2	0.1	0	0	0.2	0.2	0.1	-0.1	49° 0'
0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.1	48° 45'	0.1	0.2	0.1	0	0	0.1	0.2	0.1	0	48° 45'
0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	48° 30'	0.1	0.1	0	0	0.1	0.2	0.1	0.1	0.2	48° 30'
0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	48° 15'	0	0	0	0	0.1	0.2	0.1	0.2	0.3	48° 15'
0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	48° 0'	0	0	0	0	0.1	0.2	0.1	0.2	0.3	48° 0'
-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.2	0.2	0.3	47° 45'	-0.1	0	0.1	0	-0.1	0.1	0.1	0.1	0.3	47° 45'
-0.2	-0.2	-0.3	-0.3	-0.2	0	0.1	0.2	0.2	47° 30'	-0.2	0	0.2	-0.1	-0.3	-0.1	0	0	0.2	47° 30'
-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.2	47° 15'	-0.2	0	0.2	-0.1	-0.4	-0.3	-0.1	0	0.1	47° 15'
0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	47° 0'	-0.1	0.1	0.2	-0.1	-0.4	-0.3	-0.2	0	0.1	47° 0'
0.2	0.2	0.3	0.4	0.4	0.3	0.2	0.2	0.2	46° 45'	0	0	0.1	-0.1	-0.3	-0.3	-0.2	0	0.1	46° 45'
0.1	0.2	0.3	0.4	0.4	0.3	0.3	0.2	0.2	46° 30'	0	0	-0.1	-0.1	-0.2	-0.2	-0.2	0	0.2	46° 30'
0	0.1	0.2	0.3	0.4	0.3	0.3	0.2	0.2	46° 15'	0	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1	0	0.1	46° 15'
-0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.2	46° 0'	-0.2	-0.3	-0.4	-0.3	-0.1	-0.1	0	0	0.1	46° 0'
0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	45° 45'	-0.3	-0.4	-0.4	-0.3	-0.1	-0.1	0	0.1	0.1	45° 45'
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	45° 30'	-0.3	-0.4	-0.5	-0.3	-0.1	-0.1	0	0.1	0.1	45° 30'
0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	45° 15'	-0.3	-0.4	-0.4	-0.2	-0.1	-0.1	0	0.2	0.2	45° 15'
0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	45° 0'	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	0	0.1	0.2	45° 0'
0.1	0.1	0.1	0	0.1	0.1	0.1	0.2	0.2	44° 45'	-0.3	-0.2	-0.2	-0.2	-0.1	0	0	0.1	0.2	44° 45'
-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0	0.1	0	44° 30'	-0.4	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	0.1	0.2	44° 30'
-0.4	-0.5	-0.5	-0.4	-0.4	-0.2	-0.1	-0.1	-0.2	44° 15'	-0.4	-0.3	-0.2	-0.3	-0.2	-0.2	-0.1	0.1	0.3	44° 15'
-0.4	-0.6	-0.6	-0.6	-0.6	-0.4	-0.3	-0.3	-0.3	44° 0'	-0.3	-0.2	-0.2	-0.3	-0.3	-0.3	-0.2	0.2	0.4	44° 0'
-0.2	-0.4	-0.5	-0.6	-0.6	-0.5	-0.4	-0.3	-0.2	43° 45'	0	0	-0.2	-0.3	-0.4	-0.5	-0.3	0.2	0.4	43° 45'
0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.3	0	43° 30'	0.1	0.1	-0.1	-0.2	-0.4	-0.5	-0.4	0	0.2	43° 30'
0.1	0.1	0	-0.1	-0.2	-0.3	-0.4	-0.3	0.1	43° 15'	0.1	0.2	0.1	-0.1	-0.3	-0.4	-0.4	-0.3	-0.2	43° 15'
0	0.1	0.1	0.1	0.1	0	-0.1	-0.1	0.1	43° 0'	0	0.2	0.2	-0.1	-0.2	-0.2	-0.3	-0.6	-0.5	43° 0'
0	0	0.1	0.2	0.3	0.4	0.2	0.1	0	42° 45'	-0.1	0.2	0.1	-0.2	-0.3	-0.1	-0.2	-0.6	-0.6	42° 45'
0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.3	0	42° 30'	-0.1	0.1	0	-0.3	-0.4	-0.1	0	-0.4	-0.4	42° 30'
0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.2	0	42° 15'	-0.1	0	0	-0.3	-0.4	-0.1	0	-0.1	-0.2	42° 15'
0.5	0.5	0.5	0.5	0.3	0.1	0.1	0.1	0	42° 0'	-0.1	-0.1	0	-0.2	-0.3	-0.1	0	0	0	42° 0'
0.4	0.4	0.4	0.3	0.2	0	0	-0.1	-0.1	41° 45'	-0.1	-0.1	0	0	-0.1	0	0.1	0	0	41° 45'
0.3	0.2	0.2	0.2	0.1	0.1	0	0	-0.1	41° 30'	-0.1	-0.1	0	0.1	0	0.1	0.1	0.1	0	41° 30'
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 15'	-0.1	-0.1	0	0.1	0.1	0.1	0.1	0.1	0	41° 15'
0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	41° 0'	-0.1	-0.1	0	0	0.1	0.1	0.1	0.1	0.1	41° 0'
0	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	40° 45'	-0.1	-0.1	-0.1	0	0.1	0	0	0	0	40° 45'
0	0	0	0	0.1	0.1	0.1	0.1	0.1	40° 30'	-0.1	-0.1	-0.1	0	0	0	0	0	0	40° 30'
0	0	-0.1	0	0	0	0	0	0	40° 15'	-0.1	-0.1	-0.1	0	0	0	0	0	0	40° 15'
0	-0.1	-0.1	-0.1	0	0	0	0	0	40° 0'	-0.1	-0.1	-0.1	0	-0.1	0	0	0	0	40° 0'

## Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 88 to 92 °E									
Correction to Latitude										Correction to Longitude									
88°	88°	89°	89°	90°	90°	91°	91°	92°	Longitude	88°	88°	89°	89°	90°	90°	91°	91°	92°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0.1	0.1	0	-0.1	-0.1	50° 0'	0	0	0	-0.1	-0.1	0	0	-0.2	-0.2	
0	0	0	0	0.1	0.1	0.1	0	0	49° 45'	-0.1	0	0	-0.2	-0.2	0	0.1	-0.1	-0.2	
0	0	0	0	0	0.1	0.1	0.1	0.1	49° 30'	-0.1	-0.1	0	-0.2	-0.2	0	0.1	0	-0.2	
0	0	0.1	0	0	0	0.1	0.1	0.1	49° 15'	-0.1	-0.1	0	-0.1	-0.2	-0.1	0.1	0	-0.1	
0.1	0	0.1	0	0	-0.1	0	0.1	0.1	49° 0'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	-0.1	0	0	0.1	48° 45'	0	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	-0.1	
0.2	0	0	0	0	0	0	0.1	0.1	48° 30'	0.2	0	-0.1	0	0	-0.1	-0.2	-0.2	-0.1	
0.2	0.1	0	0	0	0	0	0.1	0.1	48° 15'	0.3	0.2	0	0	0	-0.1	-0.2	-0.3	-0.2	
0.3	0.3	0.2	0	0	0	0	0	0	48° 0'	0.3	0.3	0.1	0	0	-0.1	-0.2	-0.3	-0.2	
0.3	0.3	0.3	0.1	0	0	-0.1	-0.1	0	47° 45'	0.3	0.3	0.3	0.2	0	-0.1	-0.2	-0.3	-0.3	
0.2	0.3	0.3	0.3	0.2	0	-0.1	-0.1	-0.1	47° 30'	0.2	0.3	0.3	0.3	0.2	0	-0.1	-0.3	-0.4	
0.2	0.2	0.3	0.3	0.3	0.1	0	-0.1	-0.1	47° 15'	0.1	0.2	0.3	0.3	0.3	0.2	0	-0.3	-0.4	
0.2	0.1	0.2	0.3	0.3	0.2	0.2	0	-0.1	47° 0'	0.1	0.2	0.2	0.3	0.4	0.3	0.1	-0.2	-0.3	
0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0	46° 45'	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0	-0.1	
0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.2	46° 30'	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.1	0.1	
0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	46° 15'	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	
0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.3	46° 0'	0.1	0.2	0.2	0.2	0.2	0.1	0	0.1	0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	0.2	45° 45'	0.1	0.2	0.3	0.2	0.2	0.1	0	0	0.1	
0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	45° 30'	0.1	0.2	0.3	0.2	0.2	0.2	0	0	0	
0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	45° 15'	0.2	0.2	0.3	0.1	0.1	0.2	0.1	-0.1	0	
0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	45° 0'	0.2	0.2	0.2	0.1	0.1	0.2	0.1	-0.1	0	
0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	44° 45'	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	
0	0	0	0.1	0.1	0	0.1	0	0	44° 30'	0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	
-0.2	-0.3	-0.2	-0.1	0	0	0	-0.1	-0.1	44° 15'	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0	
-0.3	-0.4	-0.3	-0.2	-0.1	-0.1	0	0	0	44° 0'	0.4	0.2	-0.1	0	0.1	0.1	0.1	0.1	0	
-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	0	0.1	0.1	43° 45'	0.4	0.2	-0.1	-0.1	0	0	0	0.1	0.1	
0	0.2	0.2	0.1	0	0.1	0.2	0.2	0.2	43° 30'	0.2	0.2	0	0	0	-0.1	-0.1	0	0.1	
0.1	0.4	0.5	0.3	0.3	0.3	0.2	0.2	0.3	43° 15'	-0.2	0	0.1	0.1	0	-0.2	-0.2	0	0.1	
0.1	0.3	0.4	0.4	0.4	0.3	0.2	0.1	0.2	43° 0'	-0.5	-0.1	0.1	0.1	0	-0.1	-0.1	0	0.1	
0	0	0.1	0.2	0.2	0.1	0	0	0	42° 45'	-0.6	-0.2	0	0	0	0	0	0	0	
0	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	42° 30'	-0.4	-0.2	-0.1	0	0.1	0.1	0.1	0	0	
0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	42° 15'	-0.2	-0.1	-0.1	0	0.1	0.1	0	0	-0.1	
0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	42° 0'	0	-0.1	-0.1	0	0.1	0.1	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	41° 45'	0	-0.1	0	0.1	0.1	0	0	0	0	
-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0	41° 30'	0	-0.1	0	0.1	0	-0.1	0	0	0	
0.1	0	0	0	0.1	0.1	0.1	0.1	0	41° 15'	0	0	0	0	-0.1	-0.1	0	0	0.1	
0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0	41° 0'	0.1	0	0	0	-0.1	-0.1	0	0.1	0.1	
0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	40° 45'	0	0	0	0	-0.1	0	0	0.1	0.1	
0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	40° 30'	0	0	0	0	0	0	0.1	0.1	0.1	
0	0	0.1	0.1	0.1	0	0	0	0	40° 15'	0	0	0	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	40° 0'	0	0	0	0	0	0	0.1	0.1	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 92 to 96 °E									
Correction to Latitude										Correction to Longitude									
92°	92°	93°	93°	94°	94°	95°	95°	96°	Longitude	92°	92°	93°	93°	94°	94°	95°	95°	96°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	-0.1	0	0	0	0	0	0.1	0.1	50° 0'	-0.2	-0.1	0	0	-0.1	0	0.1	0.1	0.1	
0	0	0	0	0	-0.1	-0.1	0	0.1	49° 45'	-0.2	-0.1	0	0	0	0	0	0	0	
0.1	0	0.1	0.1	0	0	-0.1	0	0	49° 30'	-0.2	-0.1	0	0	0	0	0	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	49° 15'	-0.1	-0.1	-0.1	0.1	0.1	0.1	0	0	-0.1	
0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0	49° 0'	-0.1	-0.1	-0.1	0.1	0.1	0.1	0	0	0	
0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0	48° 45'	-0.1	-0.1	-0.1	0	0.1	0	0	0.1	0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	48° 30'	-0.1	-0.1	-0.1	0	0.1	0	0	0.1	0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	48° 15'	-0.2	-0.1	0	0	0.1	0.1	0	0.1	0.1	
0	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	48° 0'	-0.2	-0.1	0	0.1	0.1	0.1	0	0.1	0.1	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	47° 45'	-0.3	-0.1	0.1	0	0	0.1	0	0	0.1	
-0.1	-0.1	-0.1	0	0	0.1	0	0	0.1	47° 30'	-0.4	-0.1	0.1	0	0	0.1	0	0	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	47° 15'	-0.4	-0.1	0	-0.1	-0.1	0.1	0.1	0	0	
-0.1	-0.2	-0.1	-0.1	0	0	0.1	0	0	47° 0'	-0.3	-0.1	0	-0.1	-0.2	0	0.1	0.1	0	
0	-0.1	-0.1	0	0	0.1	0.1	0.1	0	46° 45'	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.1	0.1	
0.2	0.1	0.1	0	0	0	0.1	0.1	0.1	46° 30'	0.1	-0.1	-0.1	-0.2	-0.2	-0.2	0	0.2	0.1	
0.3	0.3	0.2	0.1	0	0	0	0	0	46° 15'	0.2	0	0	0	-0.2	-0.2	0	0.2	0.2	
0.3	0.3	0.2	0.1	0	0	0	0	0	46° 0'	0.2	0.1	0.1	0.1	-0.1	-0.2	0	0.2	0.1	
0.2	0.2	0.2	0.1	0.1	0.1	0	0	0.1	45° 45'	0.1	0.1	0.1	0.2	0	-0.2	0	0.1	0.1	
0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	45° 30'	0	0.1	0.1	0.1	0	-0.1	0	0.1	0.1	
0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	45° 15'	0	0.1	0.1	0	0	0.1	0.1	0	0	
0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	45° 0'	0	0.1	0.1	0	0.1	0.2	0.2	0	0	
0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.1	44° 45'	0	0	0	0	0.1	0.3	0.3	0	-0.1	
0	0	0.1	0.1	0.2	0.3	0.3	0.3	0.2	44° 30'	0	-0.1	0	0	0.1	0.3	0.3	0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	0	0.1	0.3	0.3	0.2	44° 15'	0	-0.1	-0.1	0	-0.1	0.1	0.3	0.2	0	
0	-0.1	-0.2	-0.2	-0.2	-0.1	0.2	0.3	0.2	44° 0'	0	-0.1	0	0	-0.2	-0.1	0.1	0.2	0.2	
0.1	0	-0.1	-0.2	-0.3	-0.2	-0.1	0.1	0.1	43° 45'	0.1	0	0.1	0	-0.2	-0.3	-0.1	0.2	0.3	
0.2	0.2	0.1	0	-0.1	-0.2	-0.2	0	0	43° 30'	0.1	0.1	0.2	0.1	-0.1	-0.4	-0.3	0.1	0.3	
0.3	0.3	0.3	0.3	0.1	-0.1	-0.2	-0.1	0	43° 15'	0.1	0.2	0.2	0.2	0.1	-0.2	-0.3	-0.1	0.2	
0.2	0.3	0.3	0.3	0.3	0.1	-0.1	-0.1	0	43° 0'	0.1	0.2	0.2	0.2	0.3	0	-0.3	-0.2	0.1	
0	0.1	0.2	0.2	0.3	0.2	0.1	0	-0.1	42° 45'	0	0.1	0.1	0.2	0.3	0.1	-0.1	-0.1	0.1	
-0.1	0	0	0.1	0.2	0.2	0.2	0	-0.1	42° 30'	0	0	0.1	0.2	0.3	0.2	0	0	0.1	
-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0	-0.1	42° 15'	-0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	-0.1	42° 0'	-0.1	0	0	0	0.1	0.1	0.1	0.2	0.2	
0	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	41° 45'	0	0	0	0	0.1	0.1	0.2	0.2	0.2	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	41° 30'	0	0	0	0	0.1	0.2	0.1	0.1	0.1	
0	0	0	-0.1	-0.1	0	0	0	0.1	41° 15'	0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0.1	0.1	0.1	41° 0'	0.1	0.1	0	0	0	0.1	0.1	0.1	0.1	
0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.1	40° 45'	0.1	0	0	0.1	0	0	0.1	0.1	0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	40° 30'	0.1	0	0	0.1	0.1	0	0.1	0.1	0.1	
0	0	0	0	0	0	-0.1	-0.2	-0.2	40° 15'	0.1	0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	
-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	40° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 96 to 100 °E									
Correction to Latitude										Correction to Longitude									
96°	96°	97°	97°	98°	98°	99°	99°	100°	Longitude	96°	96°	97°	97°	98°	98°	99°	99°	100°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	50° 0'	0.1	0.1	0.1	0	0	0	0	0.1	0.1	
0.1	0.1	0.1	0.1	0	0.1	0	0	0.1	49° 45'	0	0.1	0.1	0.1	0	0	0	0	0	
0	0	0.1	0.1	0.1	0.1	0	0	0	49° 30'	0	0.1	0.2	0.1	0	0	0	0	0	
0	0	0	0.1	0.1	0.1	0	0	0	49° 15'	-0.1	0	0.1	0.1	0	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	49° 0'	0	0	0.1	0.1	0	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	48° 45'	0.1	0	0	0	0	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	48° 30'	0.1	0	0	0.1	0.1	0.1	0	0	0	
0.1	0	0	0	0	0	0	0	0	48° 15'	0.1	0	0	0.1	0.1	0	0	0	0	
0.1	0.1	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0	0.1	0.1	0	0	0	0	
0.1	0.1	0	0	0	0	0	0	0	47° 45'	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
0.1	0.1	0.1	0.1	0	0	0	0	0	47° 30'	0.1	0.2	0.1	0.1	0.1	0	0	0	0	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	0	0.1	0.1	0.1	0.1	0	0	0	0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	0	0.1	0.1	0.1	0.1	0	0	0	0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	
0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	0.1	0.1	0	0.1	0.1	0	0	0	0.1	
0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	46° 15'	0.2	0	0	0	0.1	0	0	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	46° 0'	0.1	0	0	0	0	0	0	0.1	0.1	
0.1	0.1	0	0	0	0	0	0.1	0.1	45° 45'	0.1	0	0	0	0	0	0	0.1	0.1	
0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	45° 30'	0.1	0.1	0.1	0	0	-0.1	-0.1	0	0	
0.1	0.1	0.1	0.1	0	0	0	-0.1	0	45° 15'	0	0.1	0.2	0.1	0	-0.1	-0.1	0	0	
0.1	0.1	0.2	0.2	0.2	0.1	0.1	0	0	45° 0'	0	0.1	0.2	0.1	0.1	0	0	0	0	
0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0	44° 45'	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	
0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	44° 30'	-0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0	
0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	44° 15'	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	44° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	43° 45'	0.3	0.2	0.1	0.1	0.1	0.1	0	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 30'	0.3	0.2	0	0	0.1	0	0	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 15'	0.2	0.2	0.1	0	0.1	0	0	0.1	0.2	
0	0	0	0	0.1	0.1	0	0	0.1	43° 0'	0.1	0.2	0.1	0	0.1	0.1	0	0.1	0.2	
-0.1	0	0	0	0	0.1	0	0	0.1	42° 45'	0.1	0.1	0.1	0	0	0.1	0	0.1	0.1	
-0.1	-0.1	0	0	0	0	0	0	0.1	42° 30'	0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	42° 15'	0.1	0.1	0.1	0	0	0	0	0.1	0.1	
-0.1	-0.1	-0.1	0	0	0	0	0	0	42° 0'	0.2	0.1	0	0	0	0	0	0	0.1	
0	-0.1	0	0	0	0	0	0	0	41° 45'	0.2	0.1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	41° 30'	0.1	0.1	0	0	0	0	0	0	0	
0.1	0.1	0	0	0	0	0	0	0	41° 15'	0.1	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0	0	0	0	0	0	41° 0'	0.1	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	40° 45'	0.1	0.1	0.1	0	0	0.1	0	0	0	
0	0	0	0	0.1	0.1	0.1	0	0	40° 30'	0.1	0.1	0	0	0	0.1	0.1	0	0	
-0.2	-0.2	-0.2	-0.1	0	0	0	0	0	40° 15'	0.1	0.1	0	-0.1	-0.1	0.1	0.1	0.1	0	
-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	0	0	-0.1	40° 0'	0.1	0	0	-0.1	-0.1	0	0.1	0.1	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 100 to 104 °E									
Correction to Latitude										Correction to Longitude									
100° 0'	100° 30'	101° 0'	101° 30'	102° 0'	102° 30'	103° 0'	103° 30'	104° 0'	Longitude	100° 0'	100° 30'	101° 0'	101° 30'	102° 0'	102° 30'	103° 0'	103° 30'	104° 0'	Latitude
0.1	0.1	0	0	0.1	0.1	0.1	0	0	50° 0'	0.1	0	0	0	0	0	0.1	0	0	50° 0'
0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0	49° 45'	0	0.1	0	0	0	0	0.1	0.1	0	49° 45'
0	0.1	0.1	0.1	0	0	0	0	0	49° 30'	0	0	0.1	0	0	0	0.1	0.1	0.1	49° 30'
0	0	0	0	0	0	0	0	0	49° 15'	0	0	0	0.1	0.1	0.1	0	0	0.1	49° 15'
0	0	0	0	0	0	0	0	0	49° 0'	0	0	0	0	0.1	0.1	0	0	0.1	49° 0'
0	0	0	0	0	0.1	0	0	0	48° 45'	0	0	0	0	0.1	0.1	0.1	0	0	48° 45'
0	0	0	0	0	0.1	0	0	0	48° 30'	0	0	0	0	0	0.1	0.1	0	0	48° 30'
0	0	0	0	0	0.1	0.1	0.1	0.1	48° 15'	0	0	0	0	0	0.1	0.1	0	0	48° 15'
0	0	0	0	0.1	0.1	0.1	0.1	0.1	48° 0'	0	0	0	0	0	0.1	0.1	0	0.1	48° 0'
0	0	0	0	0	0	0.1	0.1	0.1	47° 45'	0	-0.1	-0.1	0	0	0	0	0	0.1	47° 45'
0	0	0	0	0	0	0	0	0	47° 30'	0	0	-0.1	0	0	0	0	0	0.1	47° 30'
0.1	0	0	-0.1	-0.1	0	0	0	0	47° 15'	0.1	0	0	0	0	0	0	0	0.1	47° 15'
0.1	0	0	-0.1	-0.1	0	0	0	0	47° 0'	0.1	0.1	0	0	0	0	0	0	0.1	47° 0'
0.1	0.1	0	0	0	0	0	0	0	46° 45'	0.1	0.1	0.1	0	-0.1	0	0	0	0.1	46° 45'
0.1	0.1	0.1	0	0	0	0	0	0	46° 30'	0.1	0.1	0.1	0	-0.1	0	0	0	0.1	46° 30'
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 15'	0.1	0.1	0.1	0.1	-0.1	0	0	0	0.1	46° 15'
0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	46° 0'	0.1	0.1	0.1	0.1	0	0	0	0	0.1	46° 0'
0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0	45° 45'	0.1	0.1	0.1	0.1	0	0	0	0	0.1	45° 45'
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	45° 30'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 30'
0	0	0	0	0	0	0.1	0.1	0.1	45° 15'	0	0	0.1	0.1	0.1	0	0.1	0.1	0.1	45° 15'
0	0	0	0	0	0	0	0.1	0.1	45° 0'	0	0	0.1	0.1	0	0	0	0.1	0.1	45° 0'
0	0	0	0.1	0.1	0	0	0.1	0.1	44° 45'	0	0	0.1	0.1	0.1	0	0	0.1	0.1	44° 45'
0.1	0.1	0.1	0.1	0.1	0	0	0	0	44° 30'	0	0	0	0.1	0.1	0	0	0.1	0.1	44° 30'
0.1	0.1	0.1	0.1	0.1	0	0	-0.1	0	44° 15'	0.1	0	0	0.1	0.1	0.1	0	0.1	0.1	44° 15'
0.1	0.1	0	0	0	0	-0.1	-0.1	-0.1	44° 0'	0.1	0.1	0	0.1	0.2	0.2	0.1	0.1	0.1	44° 0'
0.1	0	0	-0.1	0	0	0	0	-0.1	43° 45'	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	43° 45'
0	0	0	0	0	0.1	0.1	0	0	43° 30'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 30'
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 15'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	43° 15'
0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	43° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	43° 0'
0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	42° 45'	0.1	0	0.1	0.2	0.1	0.1	0.1	0.2	0.2	42° 45'
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	42° 30'	0.1	0	0.1	0.2	0.1	0.1	0.1	0.1	0.2	42° 30'
0	0	0	0.1	0.1	0.1	0	0	0.1	42° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	42° 15'
0	0	0	0	0.1	0.1	0	0.1	0.1	42° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	42° 0'
0	0	0	0	0	0	0	0.1	0.1	41° 45'	0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	41° 45'
0	0	0	0	0	0	0	0	0	41° 30'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 30'
0	0	0	0	0	0	0	0	-0.1	41° 15'	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 15'
0	0	0	0	0	0	0	-0.1	-0.1	41° 0'	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 0'
0	0	0	0	0	0	0	-0.1	-0.1	40° 45'	0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	40° 45'
0	0	0	0	0	0	0	0	0	40° 30'	0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	40° 30'
0	0	0	0	0	0	0	0	0	40° 15'	0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	40° 15'
-0.1	-0.1	-0.1	0	0	0	0	0	0	40° 0'	0.1	0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	40° 0'

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 104 to 108 °E									
Correction to Latitude										Correction to Longitude									
104° 0'	104° 30'	105° 0'	105° 30'	106° 0'	106° 30'	107° 0'	107° 30'	108° 0'	Longitude	104° 0'	104° 30'	105° 0'	105° 30'	106° 0'	106° 30'	107° 0'	107° 30'	108° 0'	Latitude
0	0	0	0	0	0	0	0	0	50° 0'	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	49° 45'	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	49° 30'	0.1	0	0	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	49° 15'	0.1	0	0	0.1	0.1	0.2	0.2	0.2	0.2	
0	0	0	0	0	0	0	-0.1	-0.1	49° 0'	0.1	0	0	0.1	0.1	0.2	0.2	0.2	0.2	
0	0	0	0	0	0	0	-0.1	0	48° 45'	0	0	0	0.1	0.1	0.2	0.3	0.2	0.1	
0	0	0	0	0	0	0	0	0	48° 30'	0	0	0.1	0.1	0.1	0.3	0.3	0.2	0.1	
0.1	0	0	0	0	0	0	0.1	0.1	48° 15'	0	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	
0.1	0	0	0	0	0	0.1	0.1	0.1	48° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	
0.1	0	0	0	0	0	0	0.1	0.1	47° 45'	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	47° 30'	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	47° 15'	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	47° 0'	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	46° 45'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	46° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	
0.1	0	0	0	0	0	0	0	0	46° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	
0.1	0	0	0	0	0	0	0	0	46° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	45° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	45° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0	0	0	0	0	0	0	0	45° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0.1	0	0	0	0	0	0	0	45° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0	0	0	0	0	0	0	0	44° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	44° 30'	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	44° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	
-0.1	0	0	0	0	0	0	0	0	44° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	0	0	0	0	0	0	0	0	43° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	43° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0	0	0	0	0	0	0	0	43° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0	0	0	0	0	0	0	0	43° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0.1	0	0	0	0	0	0	0	42° 45'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0.1	0.1	0.1	0	0	0	0	0	-0.1	42° 30'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
0.1	0.1	0.1	0.1	0	0	-0.1	-0.1	-0.1	42° 15'	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	
0.1	0.1	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	42° 0'	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	
0.1	0.1	0.1	0	0	-0.1	-0.1	0	0	41° 45'	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	
0	0	0	0	-0.1	0	0	0.1	0.1	41° 30'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.1	41° 15'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.2	
-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0	41° 0'	0.1	0.1	0.1	0.2	0.2	0.1	0	0.1	0.2	
-0.1	-0.1	-0.1	0	0	0.1	0	0	0	40° 45'	0.1	0.1	0.1	0.2	0.1	0	0.1	0.2	0.2	
0	0	0	0	0.1	0.1	0	-0.1	-0.1	40° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	-0.1	-0.1	-0.1	40° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	-0.1	-0.1	0	40° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 112 to 116 °E										
Correction to Latitude										Correction to Longitude										
112° 0'	112° 30'	113° 0'	113° 30'	114° 0'	114° 30'	115° 0'	115° 30'	116° 0'	Longitude	112° 0'	112° 30'	113° 0'	113° 30'	114° 0'	114° 30'	115° 0'	115° 30'	116° 0'		
										Latitude										
0	0	0	0	0	0	0	0	0	50° 0'	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	49° 30'	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	49° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	49° 0'	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	48° 45'	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	48° 30'	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	48° 15'	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	48° 0'	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	47° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	47° 30'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	47° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1		
0	0	0	0	0	0	0	0	0	47° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1		
0	0	0	0	0	0	0	0	-0.1	46° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1		
0	0	0	0	0	0	0	0	-0.1	46° 30'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1		
0	0	0	0	0	0	0	0	0	46° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	46° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2		
0	0	0	0	0	0	0	0	0	45° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2		
0	0	0	0	0	0	0	0	0	45° 30'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2		
0	0	0	0	0	0	0	0	0	45° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1		
0	0	0	0	0	0	0	0	-0.1	45° 0'	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.2	0.2		
0	0	0	0	0	0	0	0	-0.1	44° 45'	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	-0.1	44° 30'	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	44° 15'	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	44° 0'	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2		
0	0	0	0	0	0	0	0	0	43° 45'	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2		
0	0	0	0	0	0	0	0	-0.1	43° 30'	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2		
0	0	0	0	0	0	0	0	-0.1	43° 15'	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2		
0	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	43° 0'	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2		
0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	42° 45'	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2		
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	42° 30'	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2		
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	42° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2		
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	42° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2		
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	41° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1		
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	41° 30'	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1		
0	0	0	-0.1	0	0	0	0	0.1	41° 15'	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1		
0	0	0	0	0	0	0	0.1	0.1	41° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0		
0	0	0	0	0	0	0	0.1	0.1	40° 45'	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0		
0	0	0	0	0	0	0	0	0.1	40° 30'	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0		
-0.1	-0.1	0	0	0	-0.1	0	0	0	40° 15'	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0		
-0.1	0	0	0	-0.1	-0.1	0	0	0.1	40° 0'	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0	0		

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 116 to 120 °E									
Correction to Latitude										Correction to Longitude									
116°	116°	117°	117°	118°	118°	119°	119°	120°	Longitude	116°	116°	117°	117°	118°	118°	119°	119°	120°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	
0	0	0	0	0	0	0	0	0	49° 45'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	
0	0	0	0	0	0	0	0	0	49° 30'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	
0	0	0	0	0	0	0	0	0	49° 15'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	
0	0	0	0	0	0	-0.1	-0.1	0	49° 0'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	
0	0	0	0	0	0	-0.1	-0.1	0	48° 45'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	
0	0	0	0	0	0	0	0	0	48° 30'	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	
0	0	0	0	0	0	0	0	0	48° 15'	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	
0	0	0	0	-0.1	0	0	0	0	48° 0'	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.3	
0	0	0	0	-0.1	0	0	0	0	47° 45'	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	
0	0	0	0	0	0	0	0	0	47° 30'	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	
0	0	0	0	0	0	-0.1	-0.1	0	47° 15'	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	
0	0	0	0	0	0	-0.1	-0.1	0	47° 0'	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	
-0.1	0	0	0	0	0	-0.1	-0.1	0	46° 45'	0.2	0.2	0.1	0.2	0.3	0.3	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	46° 30'	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	
0	0	-0.1	-0.1	-0.1	0	0	0	0	46° 15'	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	46° 0'	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	45° 45'	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	45° 30'	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	45° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	45° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	44° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	44° 30'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	-0.1	0	0	0	0	0	44° 15'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	-0.1	0	0	0	0	0	44° 0'	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	0	0	0	0	0	0	43° 45'	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	-0.1	0	0	0	0	0	0	0	43° 30'	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	43° 15'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	0	0	-0.1	-0.1	-0.1	0	0	0	43° 0'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	42° 45'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	42° 30'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0.1	0.1	0	0	0	0	0	42° 15'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0.1	0.1	0	0	0	0	0	42° 0'	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	
0	0	0.1	0.1	0	0	0	0	0	41° 45'	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	
0	0.1	0	0	0	0	0	0	0	41° 30'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	
0.1	0.1	0	0	0	0	0	0	0	41° 15'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	
0.1	0.1	0	0	0	0.1	0	0	0	41° 0'	0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0.1	0.1	0	0	0	0.1	0	0	0	40° 45'	0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0.1	0.1	0.1	0	0	0	0	0	0	40° 30'	0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0	0	0.1	0.1	0	0	0	0	0	40° 15'	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	40° 0'	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 120 to 124 °E									
Correction to Latitude										Correction to Longitude									
120°	120°	121°	121°	122°	122°	123°	123°	124°	Longitude	120°	120°	121°	121°	122°	122°	123°	123°	124°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	49° 45'	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	49° 30'	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	49° 15'	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.1	
-0.1	0	0	0	0	0	0	0	0	49° 0'	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	48° 45'	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 30'	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	-0.1	0	0	0	0	0	0	0	48° 15'	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	-0.1	0	0	0	0	0	0	0	48° 0'	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 45'	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	47° 30'	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	47° 15'	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 45'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	46° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	46° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	46° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	45° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	45° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	45° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	45° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	44° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	44° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	44° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	44° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	43° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	43° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
-0.1	-0.1	0	0	0	0	0	0	0	43° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
-0.1	-0.1	-0.1	0	0	0	0	0	0	43° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	-0.1	42° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	-0.1	42° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	
0	0	0	0	0	0	0	0	-0.1	42° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	
0	0	0	0	0	0	0	0	-0.1	42° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	
0	0	0	0	0	0	0	0	-0.1	41° 45'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	
0	0	0	0	0	0	0	0	0	41° 30'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	41° 15'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	41° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	40° 45'	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	40° 30'	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	40° 15'	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	40° 0'	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 124 to 128 °E									
Correction to Latitude										Correction to Longitude									
124° 0'	124° 30'	125° 0'	125° 30'	126° 0'	126° 30'	127° 0'	127° 30'	128° 0'	Longitude	124° 0'	124° 30'	125° 0'	125° 30'	126° 0'	126° 30'	127° 0'	127° 30'	128° 0'	Latitude
0	0	0	0	0	0	0	0	0	50° 0'	0.2	0.2	0.1	0.1	0.2	0.1	0	0	0	
0	0	0	0	0	0	0	0	-0.1	49° 45'	0.2	0.2	0.1	0.2	0.2	0.1	0	0	0.1	
0	0	0	0	0	0	0	-0.1	-0.1	49° 30'	0.2	0.1	0.1	0.2	0.2	0.1	0	0	0.1	
0	0	0	0	0	0	0	-0.1	-0.1	49° 15'	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	-0.1	-0.1	49° 0'	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	-0.1	-0.1	48° 45'	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	-0.1	48° 30'	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	48° 15'	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	47° 45'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	47° 30'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	47° 15'	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	47° 0'	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	46° 45'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	46° 30'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	46° 15'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	46° 0'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	-0.1	0	45° 45'	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	0	45° 30'	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	45° 15'	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	45° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 30'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	-0.1
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 15'	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 0'	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	-0.1
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	43° 30'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	-0.1
0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	43° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0
0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	43° 0'	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	42° 45'	0.2	0.3	0.2	0.2	0.2	0.1	0	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	42° 30'	0.3	0.3	0.2	0.2	0.2	0	-0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	42° 15'	0.3	0.3	0.2	0.2	0.2	0.1	0	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	42° 0'	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	41° 45'	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	-0.1	-0.1	0	41° 30'	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	-0.1	-0.1	-0.1	41° 15'	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	
0	0	0.1	0.1	0	0	-0.1	-0.1	-0.1	41° 0'	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	
0	0	0	0	0	0	0	0	0	40° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0
0	0	0	0	0	0	0	0.1	0.1	40° 30'	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0
0	0	0	0	0	0	0.1	0.1	0.1	40° 15'	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0	0	
0	0	0	0	0	0	0.1	0.1	0.1	40° 0'	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0	0	



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 128 to 132 °E										
Correction to Latitude										Correction to Longitude										
128° 0'	128° 30'	129° 0'	129° 30'	130° 0'	130° 30'	131° 0'	131° 30'	132° 0'	Longitude	128° 0'	128° 30'	129° 0'	129° 30'	130° 0'	130° 30'	131° 0'	131° 30'	132° 0'		
										Latitude										
0	-0.1	-0.1	-0.1	0	0	0	0	0	50° 0'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	49° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	49° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	49° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	49° 0'	0.1	0.1	0.1	0	0	0.1	0.2	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	48° 45'	0.1	0.1	0.1	0	0	0.1	0.2	0.1	0	0	
-0.1	0	0	-0.1	-0.1	-0.1	0	0	0	48° 30'	0.1	0.1	0.1	0	0	0.1	0.1	0	0	0	
0	0	0	0	0	-0.1	0	0	0	48° 15'	0.1	0.1	0.1	0	0	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0.1	0.1	0	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	47° 45'	0.2	0.1	0.1	0.1	0	0	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	47° 30'	0.2	0.1	0.1	0	0	0	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	47° 15'	0.2	0.1	0.1	0	0	0	0.1	0.1	0	0	
0	0	0	0	0	0	-0.1	0	0	47° 0'	0.2	0.2	0.1	0	0	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	46° 45'	0.2	0.2	0.1	0	0.1	0.1	0.1	0	0	0	
0	0	0	0	-0.1	-0.1	0	0	-0.1	46° 30'	0.2	0.1	0.1	0	0.1	0.1	0.1	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 15'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	46° 0'	0.2	0.1	0.1	0.1	0.1	0	0.1	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	45° 45'	0.1	0.1	0.2	0.1	0	0	0	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	45° 30'	0.1	0.2	0.2	0.1	0	0	0	0	0	0	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	45° 15'	0.1	0.2	0.2	0.1	0	0.1	0	0	0	0	
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	45° 0'	0	0.1	0.3	0.1	0.1	0.1	0	-0.1	0	0	
-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	44° 45'	0	0.1	0.3	0.2	0.1	0.1	0	-0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	44° 30'	-0.1	0.1	0.3	0.2	0.1	0.1	0	-0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	44° 15'	-0.1	0.1	0.3	0.2	0.1	0	-0.1	-0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	44° 0'	-0.1	0.1	0.3	0.2	0.1	0	-0.1	-0.1	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	43° 45'	-0.1	0.1	0.3	0.2	0.1	0	-0.1	-0.1	0	0	
-0.1	-0.1	0	0	0	0	0	0	-0.1	43° 30'	-0.1	0.1	0.3	0.2	0.1	0	-0.1	0	0	0	
0	-0.1	0	0	0.1	0.1	0	0	-0.1	43° 15'	0	0.1	0.2	0.1	0	0	-0.1	0	0.1	0.1	
0	-0.1	-0.1	0	0.1	0.1	0.1	0	0	43° 0'	0	0.1	0.2	0.1	0	0	0	0.1	0.1	0.1	
0	-0.1	-0.1	0	0	0.1	0.1	0.1	0.1	42° 45'	0.1	0.1	0.2	0	-0.1	0	0.1	0.1	0.1	0.1	
-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0.1	42° 30'	0.1	0.1	0.2	0	-0.1	0	0	0	0	0	
-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0.1	42° 15'	0.1	0.1	0.1	-0.1	-0.2	0	0	0	0	0	
-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0	42° 0'	0.1	0.1	0	-0.1	-0.2	-0.1	0	0	0	0	
0	-0.1	-0.1	0	0	0	0	0	0	41° 45'	0.2	0.1	0	-0.2	-0.2	-0.1	0	0	0	0.1	
0	0	0	0	0	0	0	0	0	41° 30'	0.2	0.2	0	-0.2	-0.2	-0.1	0	0	0	0.1	
-0.1	0	0.1	0.1	0	0	0	0	0	41° 15'	0.2	0.1	-0.1	-0.2	-0.2	0	0	0	0	0.1	
-0.1	0.1	0.1	0.1	0	0	0	0	0	41° 0'	0.1	0	-0.1	-0.2	-0.2	0	0.1	0	0	0.1	
0	0.1	0.1	0.1	0	0	0	0	0	40° 45'	0	-0.1	-0.1	-0.1	-0.1	0	0.1	0	0	0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	40° 30'	0	-0.1	-0.1	-0.1	-0.1	0	0	0	0.1	0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	40° 15'	0	-0.1	-0.1	-0.1	0	0	0	0	0.1	0.1	
0.1	0.1	0.1	0	0	-0.1	0	0	0	40° 0'	0	0	-0.1	0	0	0.1	0	0.1	0	0.1	

# Correct Astronomical Position to WGS84

**Latitude 40 to 50 °N**

**Longitude 132 to 136 °E**

**Correction to Latitude**

**Correction to Longitude**

Correction to Latitude										Longitude	Correction to Longitude									
132° 0'	132° 30'	133° 0'	133° 30'	134° 0'	134° 30'	135° 0'	135° 30'	136° 0'	Latitude	132° 0'	132° 30'	133° 0'	133° 30'	134° 0'	134° 30'	135° 0'	135° 30'	136° 0'		
0	0	0	0	0	0	0	0	0	50° 0'	0.1	0.1	0.1	0.1	0.1	0	-0.1	0	0		
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.1	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	49° 30'	0.1	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	49° 15'	0.1	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0	49° 0'	0.1	0	0	0	0.1	0	0	0	0.1		
0	0	0	0	0	0	0	0	-0.1	48° 45'	0	0	0	0	0.1	0.1	0	0.1	0.1		
0	0	0	0	0	0	0	0	-0.1	48° 30'	0	0	0	0	0.1	0.1	0.1	0.1	0.1		
0	0	0	0	0	0	0	-0.1	-0.1	48° 15'	0	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1		
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	48° 0'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	47° 45'	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.2		
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	47° 30'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.2		
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 15'	0	0	0	0.1	0.2	0.1	0.1	0.1	0.2		
0	0	0	-0.1	0	0	-0.1	-0.1	-0.1	47° 0'	0	0	0.1	0.1	0.2	0.1	0.1	0.1	0.1		
0	0	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	46° 45'	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	46° 30'	0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1		
-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	46° 15'	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1		
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	46° 0'	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0.1		
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	45° 45'	0	0	0	0.1	0.2	0.2	0.2	0.2	0.1		
0	0	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	45° 30'	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0		
0	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	0	45° 15'	0	0	0.1	0.1	0.2	0.2	0.2	0.1	-0.1		
-0.1	0	0	0	0	0	0	0	0.1	45° 0'	0	0	0.1	0.1	0.1	0.2	0.2	0.1	-0.1		
0	0	0	0	0	0	0	0.1	0.1	44° 45'	0	0	0	0.1	0.1	0.2	0.2	0	-0.2		
0	0	0	0	0	0	0.1	0.1	0.1	44° 30'	0	0	0	0.1	0.1	0.2	0.1	0	-0.1		
0	0	0	0	0	0	0.1	0.1	0.1	44° 15'	0	0	0	0	0.1	0.2	0.1	0	-0.1		
0	0	0	0	0	0	0.1	0.1	0	44° 0'	0	0	0	0	0	0.1	0.1	0	0		
-0.1	0	0	0	0	0	0	0.1	0.1	43° 45'	0	0	0	0.1	0.1	0.1	0.1	0	0		
-0.1	-0.1	0	-0.1	-0.1	0	0	0.1	0	43° 30'	0	-0.1	0	0.1	0.1	0.1	0	-0.1	0		
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	43° 15'	0.1	-0.1	0	0.1	0.1	0	0	-0.1	0		
0	0	-0.1	-0.1	0	0	0	0	0	43° 0'	0.1	0	0	0.1	0	-0.1	0	0	0		
0.1	0.1	0	0	0.1	0.1	0	0	-0.1	42° 45'	0.1	0	0	0	0	-0.1	0	0	0		
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	42° 30'	0	0	0	0	0	0	0	0.1	0.1		
0.1	0.1	0.1	0.1	0.1	0	0	0	0	42° 15'	0	0	0	0	0	0	0.1	0.1	0.1		
0	0	0	0	0	0	0	0	0	42° 0'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1		
0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	41° 45'	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0		
0	0	0	-0.1	0	0	0	0	0	41° 30'	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1		
0	0	0	0	0	0	0	0	0	41° 15'	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1		
0	0	0	0	0	0	-0.1	0	0	41° 0'	0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1		
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	40° 45'	0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1		
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 30'	0.1	0	0.1	0.1	0.1	0.1	0.1	0	0		
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 15'	0.1	0	0.1	0.1	0.1	0.1	0.1	0	0		
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 0'	0.1	0	0.1	0.2	0.1	0.1	0.1	0	0		

# Correct Astronomical Position to WGS84

**Latitude 40 to 50 °N**
**Longitude 136 to 140 °E**

**Correction to Latitude**
**Correction to Longitude**

Latitude										Longitude									
136°	136°	137°	137°	138°	138°	139°	139°	140°	Longitude	136°	136°	137°	137°	138°	138°	139°	139°	140°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	-0.1	-0.1	-0.1	0	0	0	50° 0'	0	0	0.1	0.1	0.1	0.1	0	0	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 45'	0	0	0.1	0.1	0.1	0	0	0	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 30'	0	0.1	0.1	0.1	0.1	0	0	0	-0.1	
0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 15'	0	0.1	0.1	0.1	0.1	0	0	0	-0.1	
0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 0'	0.1	0.1	0.1	0.1	0	0	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	48° 45'	0.1	0.1	0.1	0.1	0	0	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	48° 30'	0.1	0.2	0.1	0.1	0	0	-0.1	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	48° 15'	0.1	0.1	0.1	0.1	0	0	-0.1	-0.1	-0.2	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	48° 0'	0.1	0.1	0.1	0	0	0	-0.1	-0.2	-0.2	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	47° 45'	0.2	0.2	0.1	0	0	0	-0.1	-0.2	-0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	47° 30'	0.2	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
-0.1	0	0	-0.1	0	0	0	0	0	47° 15'	0.2	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	
-0.1	0	0	0	0	0	0	0	0	47° 0'	0.1	0.2	0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0	0	0	0	0	46° 45'	0.1	0.1	0.1	0	-0.2	-0.2	-0.1	-0.1	0	
-0.1	-0.1	0	0	0	0	0	0	-0.1	46° 30'	0.1	0.1	0	-0.1	-0.2	-0.2	-0.1	0	0	
-0.1	-0.1	0	0.1	0.1	0	0	0	-0.1	46° 15'	0.1	0	-0.1	-0.1	-0.2	-0.2	0	0	0	
-0.1	-0.1	0	0.1	0.1	0	0	-0.1	-0.1	46° 0'	0.1	0	-0.2	-0.2	-0.1	-0.1	0	0.1	0.1	
-0.1	0	0.1	0.1	0.1	0	0	-0.1	-0.1	45° 45'	0.1	-0.1	-0.2	-0.2	-0.1	0	0	0.1	0.1	
0	0	0.1	0.1	0	0	-0.1	-0.1	-0.1	45° 30'	0	-0.2	-0.3	-0.1	0	0	0.1	0.1	0.1	
0	0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1	45° 15'	-0.1	-0.2	-0.2	-0.1	0	0	0.1	0.1	0.1	
0.1	0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1	45° 0'	-0.1	-0.3	-0.2	0	0	0.1	0.1	0.1	0.1	
0.1	0.1	0	0	0	0	0	-0.1	-0.1	44° 45'	-0.2	-0.2	-0.1	0	0	0.1	0.1	0.1	0.1	
0.1	0	0	0	0	0	0	0	0	44° 30'	-0.1	-0.1	0	0	0	0.1	0.1	0.1	0.1	
0.1	0	0	0	0	0	0	0	0	44° 15'	-0.1	0	0	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	44° 0'	0	0	0	0	0.1	0	0.1	0.1	0.1	
0.1	0	0	0	0	0	0	0	0	43° 45'	0	0	0	0.1	0.1	0	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	-0.1	43° 30'	0	0	0	0.1	0.1	0	0.1	0.1	0.1	
0	0	-0.1	0	0	0	0	0	-0.1	43° 15'	0	0.1	0.1	0.1	0.1	0	0	0.2	0.2	
0	-0.1	-0.1	0	0	0	0	-0.1	-0.1	43° 0'	0	0.1	0.1	0.1	0.1	0	0	0.2	0.2	
-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1	42° 45'	0	0.1	0	0	0.1	0	0.1	0.2	0.2	
0	0	0	0	0	0	-0.1	-0.1	-0.1	42° 30'	0.1	0.1	0	0	0.1	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	42° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	
0	0	0	0	0	0	-0.1	-0.1	0	42° 0'	0.1	0	0.1	0	0	0.1	0.2	0.3	0.1	
0	0	0	0	0	-0.1	-0.1	0	0	41° 45'	0	0	0.1	0	0.1	0.1	0.2	0.2	0.1	
0	0	-0.1	0	0	-0.1	-0.1	0	0	41° 30'	0.1	0	0	0	0.1	0.1	0.1	0.2	0.1	
0	0	0	-0.1	-0.1	0	0	0	0	41° 15'	0.1	0.1	0	0	0.1	0.1	0.1	0.2	0.2	
0	0	0	-0.1	-0.1	0	0	0	-0.1	41° 0'	0.1	0.1	0.1	0	0.1	0.1	0.1	0.2	0.2	
-0.1	0	0	-0.1	-0.1	0	0	-0.1	-0.1	40° 45'	0.1	0.1	0.1	0	0.1	0.1	0.1	0.2	0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 30'	0	0	0.1	0.1	0	0.1	0.1	0.2	0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 15'	0	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	40° 0'	0	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 140 to 144 °E									
Correction to Latitude										Correction to Longitude									
140° 0'	140° 30'	141° 0'	141° 30'	142° 0'	142° 30'	143° 0'	143° 30'	144° 0'	Longitude	140° 0'	140° 30'	141° 0'	141° 30'	142° 0'	142° 30'	143° 0'	143° 30'	144° 0'	
									Latitude										
0	0	0	0	0	0	0	0	0	-0.1	50° 0'	-0.1	-0.1	-0.1	0	0.1	0.1	0	0	-0.1
0	0	0	0	0	-0.1	0	0	0	0	49° 45'	-0.1	-0.1	-0.2	0	0.1	0.1	0	0	-0.1
0	0	0	0	-0.1	-0.1	0	0	0	0	49° 30'	-0.1	-0.2	-0.2	0	0.2	0	-0.1	0	0
0	0	0	0	-0.1	0	0	0	0	0	49° 15'	-0.1	-0.2	-0.1	0.1	0.2	0	-0.1	-0.1	0
0	0	0	-0.1	-0.1	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.1	0.1	0.2	0	-0.2	-0.1	0
0	0	0	0	0	0	0	0	0	0	48° 45'	-0.1	-0.2	-0.1	0.1	0.1	-0.1	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	0	48° 30'	-0.2	-0.2	0	0.2	0.1	-0.1	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	0	48° 15'	-0.2	-0.2	0	0.2	0.1	-0.1	-0.1	-0.1	0
0	0	0	0	0	-0.1	-0.1	0	0	0	48° 0'	-0.2	-0.1	0	0.2	0.1	-0.1	-0.1	-0.1	0
0	0	-0.1	0	0	-0.1	-0.1	0	0	0	47° 45'	-0.1	-0.1	0	0.2	0.1	-0.1	-0.1	-0.1	-0.1
0	0	-0.1	0	0	-0.1	-0.1	0	0	0	47° 30'	-0.1	-0.1	0	0.1	0.2	0	-0.2	-0.2	-0.1
0	0	-0.1	-0.1	0	0	0	0	0	0	47° 15'	-0.1	0	0	0.1	0.2	0	-0.2	-0.2	-0.1
0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	47° 0'	-0.1	0	0	0.1	0.1	0	-0.2	-0.2	-0.1
0	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	46° 45'	0	0	0.1	0.1	0	-0.1	-0.2	-0.2	-0.1
-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	46° 30'	0	0.1	0.1	0	0	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	46° 15'	0	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	46° 0'	0.1	0.1	0	0	0	0	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	45° 45'	0.1	0	0	0	0	0	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	45° 30'	0.1	0	0	0	0	0	-0.1	0	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	45° 15'	0.1	0	-0.1	0	0	0	-0.1	0	0
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	45° 0'	0.1	0	-0.1	0	0.1	0	-0.1	0	0
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 45'	0.1	0	-0.1	0	0.1	0	-0.1	-0.1	0
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 30'	0.1	0	0	0	0.1	0	-0.1	-0.1	0
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 15'	0.1	0.1	0	0	0.1	0	-0.1	-0.1	-0.1
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	44° 0'	0.1	0.1	0	0	0.1	0	0	-0.1	-0.1
0	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1	43° 45'	0.1	0.1	0	0	0.1	0	0	0	0
-0.1	-0.1	-0.1	0	0	0	0	0	0	0	43° 30'	0.1	0.1	0	0	0	0	-0.1	0	0
-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0.2	0.2	0.2	43° 15'	0.2	0.1	-0.1	-0.1	0	0	-0.1	-0.1	0.1
-0.1	-0.1	0	0.1	0.2	0.1	0.1	0.3	0.4	0.4	43° 0'	0.2	0.1	-0.1	-0.2	0	0.1	-0.2	-0.2	0.1
-0.1	0	0	0.1	0.3	0.3	0.2	0.3	0.5	0.5	42° 45'	0.2	0.1	-0.2	-0.3	-0.1	0.1	-0.2	-0.4	0
-0.1	0	0	0.1	0.3	0.4	0.3	0.3	0.5	0.5	42° 30'	0.1	0	-0.2	-0.5	-0.2	0.2	-0.2	-0.5	-0.2
-0.1	0	0	0.1	0.2	0.4	0.4	0.3	0.3	0.3	42° 15'	0.1	-0.1	-0.3	-0.6	-0.4	0.1	-0.1	-0.5	-0.3
0	0	0	0	0.1	0.3	0.4	0.3	0.2	0.2	42° 0'	0.1	-0.1	-0.3	-0.6	-0.6	0	0	-0.4	-0.3
0	-0.1	-0.1	-0.1	-0.1	0.1	0.3	0.2	0.1	0.1	41° 45'	0.1	-0.1	-0.2	-0.6	-0.7	-0.2	-0.1	-0.3	-0.3
0	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.2	0.1	0.1	41° 30'	0.1	0	-0.2	-0.5	-0.8	-0.5	-0.2	-0.2	-0.3
0	-0.1	-0.1	-0.2	-0.3	-0.2	0	0	0.1	0.1	41° 15'	0.2	0	-0.2	-0.4	-0.7	-0.6	-0.3	-0.2	-0.3
-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.2	-0.1	0	0	41° 0'	0.2	0	-0.1	-0.3	-0.7	-0.7	-0.4	-0.3	-0.3
-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	40° 45'	0.2	0	-0.1	-0.2	-0.6	-0.7	-0.4	-0.4	-0.3
-0.1	-0.1	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	40° 30'	0.2	0.1	0	-0.2	-0.6	-0.7	-0.5	-0.5	-0.4
-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	40° 15'	0.2	0.1	0	-0.1	-0.6	-0.7	-0.5	-0.5	-0.4
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	40° 0'	0.2	0.1	0.1	-0.1	-0.6	-0.8	-0.5	-0.5	-0.3

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 144 to 148 °E									
Correction to Latitude										Correction to Longitude									
144° 0'	144° 30'	145° 0'	145° 30'	146° 0'	146° 30'	147° 0'	147° 30'	148° 0'	Longitude	144° 0'	144° 30'	145° 0'	145° 30'	146° 0'	146° 30'	147° 0'	147° 30'	148° 0'	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	0	0	0	0.1	0	0	
0	-0.1	-0.1	-0.1	0	0	0	0	0	49° 45'	-0.1	-0.1	-0.1	0	-0.1	0	0	0	0	
0	0	-0.1	0	0	0	0	0	0	49° 30'	0	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0.1	
0	0	0	0	0	-0.1	0	0	0	49° 15'	0	0	-0.1	-0.1	0	0	0	0	0.1	
0	0	0	0	0	0	0	0	0	49° 0'	0	0	-0.1	-0.1	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	48° 45'	0	0	-0.1	-0.1	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	48° 30'	0	0	0	-0.1	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	48° 15'	0	0	0	-0.1	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	48° 0'	0	0	0	-0.2	-0.1	0	0.1	0	0	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	0	0	-0.2	-0.1	0	0.1	0	0	
0	0	0	0	0	0	0	0	-0.1	47° 30'	-0.1	0	0	-0.1	-0.1	0	0.1	0	0	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	47° 15'	-0.1	0	0	-0.1	-0.1	0.1	0.1	0	0	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	47° 0'	-0.1	0	0	-0.1	0	0.1	0.1	0	0	
-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	46° 45'	-0.1	0	0	0	0	0	0	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	46° 30'	-0.1	-0.1	0	0	0	0	0	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	46° 15'	-0.1	-0.1	0	0	0	0	0	0	0	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	46° 0'	-0.1	-0.1	0	0	0	0	0	0	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	45° 45'	-0.1	-0.1	0	0	0	0	0	0	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	45° 30'	-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	45° 15'	0	-0.1	-0.1	0	0	0	0.1	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	45° 0'	0	-0.1	-0.1	0	0	0	0.1	0.1	0	
-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	0.1	44° 45'	0	-0.1	-0.1	0	0.1	0.1	0.1	0	-0.2	
-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	0	0.3	44° 30'	0	0	0	0	0.1	0.1	0	-0.1	-0.5	
-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0	0.2	0.5	44° 15'	-0.1	0	0	0	0.1	0.1	-0.1	-0.4	-0.8	
-0.1	-0.1	-0.1	-0.2	-0.1	0.1	0.3	0.5	0.7	44° 0'	-0.1	0	0	0	0	-0.1	-0.3	-0.6	-1	
-0.1	-0.1	-0.1	-0.1	0.1	0.3	0.5	0.7	0.7	43° 45'	0	0	0.1	0	-0.1	-0.3	-0.5	-0.8	-0.9	
0	0	0	0.1	0.3	0.5	0.7	0.7	0.6	43° 30'	0	0	0	-0.1	-0.3	-0.5	-0.7	-0.8	-0.8	
0.2	0.2	0.2	0.4	0.5	0.6	0.6	0.5	0.3	43° 15'	0.1	0	-0.1	-0.2	-0.5	-0.7	-0.7	-0.7	-0.5	
0.4	0.4	0.5	0.6	0.6	0.6	0.5	0.2	0	43° 0'	0.1	0	-0.2	-0.4	-0.6	-0.6	-0.6	-0.5	-0.2	
0.5	0.6	0.6	0.6	0.6	0.4	0.2	0	-0.3	42° 45'	0	0	-0.3	-0.4	-0.5	-0.5	-0.4	-0.2	0.1	
0.5	0.6	0.6	0.5	0.4	0.2	0	-0.2	-0.4	42° 30'	-0.2	-0.1	-0.3	-0.3	-0.3	-0.3	-0.2	0	0.2	
0.3	0.4	0.4	0.4	0.2	0	-0.2	-0.3	-0.4	42° 15'	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1	0	0.2	0.3	
0.2	0.2	0.3	0.2	0	-0.2	-0.3	-0.4	-0.3	42° 0'	-0.3	-0.2	-0.2	-0.1	0	0.1	0.1	0.2	0.2	
0.1	0.2	0.1	0	-0.1	-0.3	-0.3	-0.3	-0.2	41° 45'	-0.3	-0.2	-0.1	0	0.1	0.2	0.2	0.2	0.1	
0.1	0.1	0	-0.2	-0.3	-0.3	-0.3	-0.2	-0.1	41° 30'	-0.3	-0.2	0	0.2	0.2	0.2	0.2	0.1	0	
0.1	0	-0.1	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	41° 15'	-0.3	-0.1	0.1	0.3	0.3	0.2	0.1	0	0	
0	-0.1	-0.2	-0.3	-0.2	-0.2	-0.1	-0.1	-0.1	41° 0'	-0.3	0	0.3	0.3	0.2	0.1	0.1	0	0	
-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	0	40° 45'	-0.3	0	0.3	0.3	0.2	0.1	0	0	0	
-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	0	0	40° 30'	-0.4	0.1	0.4	0.3	0.1	0	0	0	0	
-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0	0	40° 15'	-0.4	0.2	0.4	0.2	0.1	0	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	40° 0'	-0.3	0.2	0.4	0.2	0.1	0	-0.1	0	-0.1	











# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 164 to 168 °E									
Correction to Latitude										Correction to Longitude									
164° 0'	164° 30'	165° 0'	165° 30'	166° 0'	166° 30'	167° 0'	167° 30'	168° 0'	Longitude	164° 0'	164° 30'	165° 0'	165° 30'	166° 0'	166° 30'	167° 0'	167° 30'	168° 0'	
									Latitude										
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	-0.2	
0	0	0	0	0	0.1	0.1	0.2	0.1	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	-0.1	
0.1	0	0	0	0	0.1	0.1	0.2	0.1	49° 30'	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	0	0.1	0	
0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0.1	0.1	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	0.3	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0	0.2	
0.1	0.1	0.1	0.1	0	0	0	0.1	0.2	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	0.2	
0.1	0.1	0.1	0.1	0	0	0	0.1	0.2	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.3	-0.3	0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	0	
0.1	0.1	0.1	0	0	0.1	0.1	0	0.1	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.1	
0	0.1	0.1	0	0	0	0.1	0	0	47° 0'	-0.1	-0.1	-0.1	0	-0.1	-0.2	-0.1	-0.2	-0.2	
0	0.1	0.1	0.1	0	0	0	0	0	46° 45'	-0.1	-0.1	-0.1	0	-0.1	-0.2	-0.1	-0.2	-0.3	
0.1	0	0	0.1	0.1	0	0	0	0	46° 30'	-0.1	-0.1	-0.1	0	-0.1	-0.2	-0.1	-0.2	-0.3	
0.1	0.1	0	0.1	0.1	0	0	0	0	46° 15'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.2	-0.3	
0.1	0.1	0	0	0.1	0	0	0	0	46° 0'	-0.1	0	-0.1	-0.1	0	-0.1	-0.1	-0.2	-0.2	
0.1	0.1	0.1	0	0	0	0	0	0	45° 45'	-0.1	0	-0.1	-0.1	0	-0.1	-0.2	-0.2	-0.2	
0	0.1	0.1	0	0	0	0	0	0	45° 30'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.2	-0.2	
0	0	0.1	0	0	0	0	0	0	45° 15'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	45° 0'	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	44° 45'	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	44° 30'	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	44° 15'	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.2	-0.1	
0	0	0	0	0	0	0	0	0	44° 0'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.2	-0.1	
0.1	0	0	0	0	0	0	0	0	43° 45'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0	0	0	0	0	0	0	0	43° 30'	0	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.2	
0	0.1	0	0	0	0	0	0	0	43° 15'	0	0	-0.1	0	0	-0.1	0	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	43° 0'	-0.1	0	0	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	42° 45'	-0.1	0	0	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	42° 30'	-0.1	0	0	0	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	42° 15'	-0.1	0	-0.1	0	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0.1	0	42° 0'	-0.1	0	-0.1	0	0	-0.1	0	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	41° 45'	-0.1	0	-0.1	0	0	-0.1	0	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	41° 30'	-0.1	0	-0.1	0	0	-0.1	0	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	41° 15'	-0.1	0	-0.1	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	41° 0'	-0.1	0	-0.1	-0.1	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 45'	-0.1	0	-0.1	-0.1	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 30'	-0.1	-0.1	-0.1	0	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 15'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 0'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

**Latitude 40 to 50 °N**
**Longitude 168 to 172 °E**

**Correction to Latitude**
**Correction to Longitude**

Latitude										Longitude									
168°	168°	169°	169°	170°	170°	171°	171°	172°	Longitude	168°	168°	169°	169°	170°	170°	171°	171°	172°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0	50° 0'	-0.2	-0.3	0	0.1	0.1	0	0	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 45'	-0.1	-0.3	-0.1	0.2	0.1	0	0	0	0	0
0.1	0	0	0.1	0.1	0.1	0	0	0.1	49° 30'	0	-0.2	-0.1	0.1	0.1	0	0	0	0	0
0.1	-0.1	-0.1	0	0.1	0.1	0	0	0	49° 15'	0.1	-0.1	-0.2	-0.1	0.1	0.1	0	0	0	0
0.1	0	-0.1	0	0.1	0.1	0.1	0	0	49° 0'	0.2	0.1	-0.2	-0.2	0	0.2	0.1	0	0	-0.1
0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	0.3	0.1	-0.3	-0.4	0	0.2	0.1	0	0	0
0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	0.2	0.2	-0.2	-0.4	0	0.2	0.1	0	0	0
0.2	0.2	0.1	0	0.1	0.1	0.1	0.1	0.1	48° 15'	0.2	0.2	-0.2	-0.4	-0.1	0.3	0.2	0	0	0
0.2	0.1	0	-0.1	0	0.1	0.1	0.1	0.1	48° 0'	0.1	0.3	-0.1	-0.5	-0.2	0.2	0.2	0	0	0
0.1	0.1	0	-0.1	-0.1	0.1	0.1	0.1	0.1	47° 45'	0.1	0.4	0.1	-0.5	-0.3	0.2	0.2	0.1	0	0
0.1	0.2	0.1	-0.1	-0.1	0	0.1	0.1	0.1	47° 30'	0	0.5	0.3	-0.4	-0.5	0.1	0.2	0.1	0.1	0.1
0.1	0.2	0.2	0	0	0.1	0.1	0.1	0.1	47° 15'	-0.1	0.4	0.4	-0.3	-0.5	0	0.2	0.1	0.1	0.1
0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.2	0.3	0.5	-0.1	-0.5	-0.1	0.2	0	0.1	0.1
0	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	46° 45'	-0.3	0.2	0.5	-0.1	-0.6	-0.1	0.2	0	0	0
0	0	0	0	0	0.1	0.1	0.1	0.1	46° 30'	-0.3	0.2	0.6	-0.1	-0.6	-0.1	0.3	0.1	0	0
0	0	0	0	0	0	0.1	0.1	0.1	46° 15'	-0.3	0.2	0.6	-0.1	-0.6	-0.2	0.2	0.1	0	0
0	0	0.1	0.1	0	-0.1	0	0.1	0.1	46° 0'	-0.2	0.2	0.5	0	-0.5	-0.3	0.1	0.1	0.1	0.1
0	0	0.2	0.3	0	-0.1	0	0.1	0	45° 45'	-0.2	0.1	0.3	0.1	-0.3	-0.3	0	0.1	0.1	0.1
0	0	0.2	0.2	0	-0.1	0	0.1	0	45° 30'	-0.2	-0.1	0.2	0.3	0	-0.3	-0.1	0.1	0.1	0.1
0	0	0.1	0.1	-0.1	-0.1	0	0.1	0.1	45° 15'	-0.2	-0.2	0	0.4	0.2	-0.4	-0.3	0.1	0.1	0.1
0	0	0	0	-0.1	-0.1	0	0.1	0.1	45° 0'	-0.1	-0.2	0	0.5	0.2	-0.5	-0.4	0.1	0.2	0.2
0	0	0	0	0	0	0	0.1	0.1	44° 45'	-0.1	-0.2	0	0.6	0.3	-0.6	-0.5	0.1	0.2	0.2
0	0	0	0.1	0.2	0.1	0	0	0	44° 30'	-0.1	-0.2	0	0.5	0.3	-0.5	-0.5	0.1	0.2	0.2
0	0	0	0.2	0.2	0.2	0	0	0	44° 15'	-0.1	-0.2	-0.1	0.3	0.3	-0.4	-0.4	0.1	0.2	0.2
0	0	0	0.1	0.1	0.1	0	0	0	44° 0'	-0.1	-0.2	-0.2	0.2	0.3	-0.3	-0.3	0.1	0.2	0.2
0	0	0	0	0	0	0	0	0	43° 45'	-0.1	-0.2	-0.1	0.2	0.2	-0.2	-0.3	0.1	0.2	0.2
0	0	0	0	0	0	0	0	0	43° 30'	-0.2	-0.1	-0.1	0.2	0.2	-0.2	-0.3	0.1	0.2	0.2
0	0	0	0.1	0	0	0	0	0	43° 15'	-0.2	-0.1	-0.1	0.2	0.2	-0.2	-0.3	0	0.2	0.2
0	0	0.1	0.1	0	0	0	0	0.1	43° 0'	-0.1	-0.2	-0.2	0.2	0.3	-0.2	-0.4	0	0.2	0.2
0	0	0	0.1	0	0	0	0	0.1	42° 45'	-0.1	-0.2	-0.2	0.2	0.4	-0.1	-0.4	-0.1	0.1	0.1
0	0	0	0	0	0	0	0	0.1	42° 30'	-0.1	-0.2	-0.2	0.2	0.4	-0.1	-0.5	-0.1	0.2	0.2
0	0.1	0	0	0.1	0.1	0.1	0.1	0	42° 15'	-0.1	-0.1	-0.2	0.2	0.4	-0.1	-0.5	-0.1	0.2	0.2
0	0	0	0	0	0	0	0	0	42° 0'	-0.2	-0.1	-0.2	0.1	0.4	-0.1	-0.4	0	0.2	0.2
0	0	0	0	0	-0.1	-0.1	0	0	41° 45'	-0.2	-0.1	-0.1	0.1	0.4	0	-0.5	-0.1	0.2	0.2
0	0	0	0	-0.1	-0.2	-0.2	0	0	41° 30'	-0.2	-0.1	-0.1	0.1	0.5	0	-0.5	-0.2	0.1	0.1
0	0	0	0	-0.1	-0.1	-0.1	0	0	41° 15'	-0.1	-0.1	-0.1	0.2	0.6	0	-0.6	-0.3	0.1	0.1
0	0	0.1	0	0	0.1	0.1	0.1	0	41° 0'	-0.1	-0.1	-0.1	0.3	0.6	0	-0.7	-0.3	0.2	0.2
0	0	0	0	0	0.2	0.3	0.1	0	40° 45'	-0.1	-0.1	-0.1	0.3	0.5	-0.2	-0.6	-0.2	0.2	0.2
0	0	0	0	0.1	0.3	0.3	0	0	40° 30'	-0.1	-0.1	-0.1	0.3	0.3	-0.3	-0.5	0	0.2	0.2
0	0	0	0	0.2	0.3	0.2	0	0	40° 15'	-0.1	-0.1	0	0.2	0.2	-0.4	-0.3	0.1	0.1	0.1
0	0	0	0.1	0.2	0.3	0.1	0	0	40° 0'	-0.1	-0.1	-0.1	0.2	0	-0.3	-0.2	0.1	0.1	0.1

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N

Longitude 172 to 176 °E

Correction to Latitude

Correction to Longitude

Correction to Latitude										Correction to Longitude									
172°	172°	173°	173°	174°	174°	175°	175°	176°	Longitude	172°	172°	173°	173°	174°	174°	175°	175°	176°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	-0.1	50° 0'	-0.1	-0.1	0	0	0	0	0	0	-0.1	
0.1	0	0	0	0	0	0	0	0	49° 45'	0	-0.1	0	0	0	0	0	0	0	
0.1	0.1	0	0	0	0	0	0	0	49° 30'	0	0	0	0	0	0	0	0	0	
0	0.1	0.1	0	0	0	0	0	0	49° 15'	0	0	0	0	0	0	0	0	0	
0	0	0.1	0.1	0	0.1	0.1	0.1	0	49° 0'	-0.1	0	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	48° 45'	0	-0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	0	-0.1	0	0.1	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	0	-0.1	0	0.1	0	0	0	0	0	
0.1	0	0.1	0.1	0.1	0.1	0.1	0	0.1	48° 0'	0	-0.1	-0.1	0.1	0.1	0	0	0	0	
0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	0	-0.1	-0.1	0	0.1	0	0	0	0	
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	47° 30'	0.1	0	-0.1	0	0	0	0.1	0	0	
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	47° 15'	0.1	0	-0.1	0	0	0	0.1	0	0	
0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	47° 0'	0.1	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.1	46° 45'	0	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	46° 30'	0	0.1	0	0	0	0	0	0	0	
0.1	0	0.1	0.1	0.1	0	0	0.1	0.1	46° 15'	0	0.1	0	0	0	0	0	0	0	
0.1	0	0	0.1	0.1	0.1	0	0.1	0.1	46° 0'	0.1	0.1	0	0	0	0	0	0	0	
0	0	0	0.1	0.1	0.1	0	0	0.1	45° 45'	0.1	0.1	0	-0.1	0	0	0	0	0	
0	0.1	0.1	0	0.1	0.1	0	0	0	45° 30'	0.1	0.1	0	-0.1	0	0.1	0	0	0	
0.1	0.1	0.1	0	0.1	0.1	0	0	0	45° 15'	0.1	0	0	-0.1	0	0.1	0	0	0	
0.1	0.1	0	0	0	0.1	0	0	0	45° 0'	0.2	0	0	-0.1	-0.1	0.1	0.1	0	0	
0.1	0	0	0	0	0.1	0.1	0	0	44° 45'	0.2	0.1	0.1	-0.1	-0.1	0.1	0.1	0	0	
0	0	0	0	0	0.1	0.1	0.1	0	44° 30'	0.2	0.1	0.1	-0.1	-0.1	0.1	0.1	0	0	
0	0	0	0	0	0.1	0.1	0.1	0	44° 15'	0.2	0.1	0.1	-0.1	-0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0.1	0.1	0	44° 0'	0.2	0.1	0	-0.1	-0.1	0	0	0.1	0.1	
0	0	0	0	0	0	0	0.1	0	43° 45'	0.2	0.1	0	0	-0.1	-0.1	0	0.1	0.1	
0	0	0	0	0	0	0	0.1	0.1	43° 30'	0.2	0.1	0	0	-0.1	-0.1	0	0.1	0.1	
0	0	0	0	0	0	0	0.1	0.1	43° 15'	0.2	0.1	0	0	-0.1	-0.1	-0.1	0.1	0.1	
0.1	0.1	0	0	0	0	0	0	0.1	43° 0'	0.2	0.1	0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	
0.1	0.1	0	0	0	0	0	0	0.1	42° 45'	0.1	0.1	0.1	0	-0.1	-0.1	-0.1	0	0.1	
0	0	0.1	0	0	0	0	0	0	42° 30'	0.2	0.1	0.1	0	-0.1	0	-0.1	0	0.1	
0	0	0.1	0	0	0	0	0	0	42° 15'	0.2	0.1	0.1	0	-0.1	0	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	42° 0'	0.2	0.1	0.1	0	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	41° 45'	0.2	0.1	0.1	0	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	41° 30'	0.1	0.1	0.1	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 15'	0.1	0.1	0.1	0	0	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 0'	0.2	0.1	0	0	0	0	-0.1	0	0	
0	0	0	0	0	0	0	0	0	40° 45'	0.2	0.1	0.1	0	0	0	-0.1	0	0	
0	0	0	0	0	0	0	0	0	40° 30'	0.2	0.1	0.1	0	0	0	-0.1	0	0	
0	0	0	0	0	0	0	0	0	40° 15'	0.1	0.1	0.1	0	0	0	-0.1	0	0	
0	0	0	0	0	0	0	0	0	40° 0'	0.1	0.1	0.1	0	0	0	0	0	0	















# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 160 to 156 °W									
Correction to Latitude										Correction to Longitude									
160°	159°	159°	158°	158°	157°	157°	156°	156°	Longitude	160°	159°	159°	158°	158°	157°	157°	156°	156°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	0	0	0	0	0	0	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 45'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 30'	0	0	0	0	0	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	0	0	0	0	0	-0.1	-0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	0	0	0	0	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	0	0	-0.1	-0.1	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 30'	0	0	-0.1	-0.1	0	0	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	0	0	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	0	0	0	-0.1	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	0	0	0	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	0	-0.1	0	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 15'	0	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 0'	0	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 45'	0	-0.1	-0.1	-0.1	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 30'	0	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 15'	0	-0.1	0	0	-0.1	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 0'	0	-0.1	0	0	-0.1	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 45'	0	0	0	0	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 30'	0	0	0	0	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 15'	0	0	0	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 0'	0	0	0	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 45'	0	0	0	0	0	0	0	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 30'	0	0	0	0	0	0	0	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	43° 15'	0	0	0	0	0	0	0	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	43° 0'	0	0	0	0	0	0	0	0	0	0
0.1	0	0	0	0.1	0.1	0	0	0	42° 45'	0	0	0	0	0	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	42° 30'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	42° 15'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	42° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	41° 45'	0	0	0	0	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	41° 30'	0	0	0	0	-0.1	0	0	0	0	0
0.1	0.1	0	0	0	0	0	0	0	41° 15'	0	0	0	0	-0.1	0	0	0	0	0
0.1	0.1	0	0	0	0	0	0	0	41° 0'	0	0	0	0	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	40° 45'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	40° 30'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	40° 15'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	40° 0'	0	0	0	0	0	-0.1	0	0	0	0

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 156 to 152 °W									
Correction to Latitude										Correction to Longitude									
156°	155°	155°	154°	154°	153°	153°	152°	152°	Longitude	156°	155°	155°	154°	154°	153°	153°	152°	152°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 45'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	0	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 30'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 15'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 0'	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 45'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 30'	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	43° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	
0.1	0.1	0	0	0	0	0	0	0	43° 30'	-0.1	-0.1	0	0	0	0	0	0	-0.1	
0	0	0	0	0	0	0	0	0	43° 15'	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0.1	0.1	43° 0'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	42° 45'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	42° 30'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	42° 15'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	42° 0'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	41° 45'	0	0	0	0	0	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	41° 30'	0	0	0	0	0	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	41° 15'	0	0	0	0	0	-0.1	-0.1	0	0	
0	0	0	0	0	0.1	0	0	0	41° 0'	0	0	0	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	40° 45'	0	0	0	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	40° 30'	0	0	0	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0.1	0.1	40° 15'	0	0	0	0	0	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0.1	40° 0'	0	0	0	0	-0.1	-0.1	-0.1	0	0	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 152 to 148 °W									
Correction to Latitude										Correction to Longitude									
152°	151°	151°	150°	150°	149°	149°	148°	148°	Longitude	152°	151°	151°	150°	150°	149°	149°	148°	148°	Longitude
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1
0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0	0	0.1	0	0.1	0.1	44° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0.1	0	0	0	0	0	0	43° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	43° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0.1	0.1	0	0	43° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	0.1	0	0	0	0	43° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	0	0	0	0	0	42° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	42° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	42° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	42° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 45'	0	0	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 30'	0	0	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 15'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0.1	0.1	0	0	0	0	0	40° 45'	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0.1	0.1	0.1	0.1	0.1	0.1	0	0	40° 30'	0	-0.1	-0.1	0	-0.1	-0.1	0	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 144 to 140 °W									
Correction to Latitude										Correction to Longitude									
144°	143°	143°	142°	142°	141°	141°	140°	140°	Longitude	144°	143°	143°	142°	142°	141°	141°	140°	140°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0	0	0.1	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0	0.1	0.1	45° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0	0.1	0.1	45° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0	0	0	0	0	0.1	0.1	44° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0	0	0	0	0	0	0	44° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0.1	0	0	0	0	0	0	0	44° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	44° 0'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	43° 45'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0.1	0.1	0.1	0	0	0	43° 30'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	43° 15'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 0'	0	0	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	42° 45'	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	42° 30'	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	42° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0	0	0	42° 0'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0.1	0.1	0	41° 45'	-0.1	-0.1	0	0	0	0	-0.1	0	0	
0	0	0	0	0	0	0.1	0.1	0.1	41° 30'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0.1	0.1	0.1	41° 15'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	41° 0'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	40° 45'	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	40° 30'	-0.1	-0.1	0	-0.1	-0.1	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	-0.1	0	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	-0.1	0	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 140 to 136 °W									
Correction to Latitude										Correction to Longitude									
140°	139°	139°	138°	138°	137°	137°	136°	136°	Longitude	140°	139°	139°	138°	138°	137°	137°	136°	136°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	0	0
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	45° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0.1	0	0	0	0	0	0	0	0	44° 45'	0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	44° 30'	0	0	-0.1	-0.1	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	44° 15'	-0.1	-0.1	-0.1	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	44° 0'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	0	0
0	0	0	0	0	0	0	0	0	43° 45'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	0	0
0	0	0	0	0	0	0	0	0	43° 30'	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	0	0
0	0	0	0	0	0	0	0.1	0	43° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	43° 0'	-0.1	0	-0.1	-0.1	0	-0.1	0	0	0	0
0.1	0	0	0	0	0	0	0	0	42° 45'	-0.1	0	-0.1	-0.1	0	-0.1	-0.1	0	0	0
0	0	0.1	0.1	0	0	0	0	0	42° 30'	-0.1	0	-0.1	-0.1	0	0	-0.1	0	0	0
0	0	0	0	0	0	0	0	0	42° 15'	-0.1	0	-0.1	-0.1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	42° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	41° 45'	0	-0.1	0	0	0	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	41° 30'	0	-0.1	0	0	0	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	41° 15'	0	-0.1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	41° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0.1	0.1	40° 45'	0	0	0	0	0	0	0	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 30'	0	0	0	0	0	0	-0.1	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	-0.1	0	0	0	-0.1	0	-0.1	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	-0.1	0	0	0	-0.1	0	0	0	0	0







# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 128 to 124 °W									
Correction to Latitude										Correction to Longitude									
128°	127°	127°	126°	126°	125°	125°	124°	124°	Longitude	128°	127°	127°	126°	126°	125°	125°	124°	124°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0.2	0.2	0.2	0.1	0	0	0	0	0.1	50° 0'	0.2	0.3	0.2	0.1	0	-0.2	-0.2	0	0	
0.1	0.2	0.2	0.2	0.1	0	0	0	0.1	49° 45'	0.1	0.2	0.2	0.2	0.1	-0.1	-0.2	-0.1	0	
0	0.1	0.2	0.2	0.2	0.1	0	-0.1	0	49° 30'	0	0.1	0.2	0.2	0.2	0	-0.1	-0.2	-0.1	
0	0.1	0.1	0.1	0.2	0.2	0.1	0	-0.1	49° 15'	-0.1	0	0.1	0.2	0.2	0.1	0	-0.1	-0.2	
0	0	0.1	0.1	0.2	0.2	0.2	0	0	49° 0'	-0.1	0	0.1	0.1	0.2	0.2	0.2	0	-0.2	
0	0	0.1	0.1	0.1	0.2	0.2	0.1	0	48° 45'	-0.1	0	0	0.1	0.1	0.1	0.2	0.2	-0.2	
0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	48° 30'	-0.1	-0.1	0	0.1	0	0.1	0.2	0.2	0	
0	0	0	0.1	0.1	0.1	0.1	0.2	0.2	48° 15'	-0.1	-0.1	0	0.1	0	0	0.1	0.2	0.1	
0	0	0	0	0.1	0	0.1	0.1	0.1	48° 0'	0	-0.1	0	0	0	0	0	0.2	0.3	
0.1	0	0	0	0.1	0	0	0.1	0.1	47° 45'	0	-0.1	0	0	0	0	0	0.1	0.3	
0.1	0.1	0	0	0.1	0.1	0	0.1	0.1	47° 30'	0	0	0	0	0	0	0	0.1	0.3	
0.1	0.1	0	0	0.1	0.1	0.1	0	0.1	47° 15'	0	0	0	0	0	0	0	0.1	0.3	
0	0	0.1	0.1	0.1	0.1	0.1	0	0	47° 0'	0	0	0	0	0	0	0	0.1	0.3	
0	0	0	0.1	0.1	0.1	0.1	0	0	46° 45'	0	0	0	0	0	0	0	0.1	0.3	
0	0	0	0	0.1	0	0	0	0	46° 30'	0	0	0	-0.1	0	0	0	0.1	0.3	
0	0	0	0	0	0	0	0	0	46° 15'	0	0	0	-0.1	0	0	0	0.2	0.4	
0	0.1	0	0	0	0	0	0	0	46° 0'	0	0	0	-0.1	0	0	0	0.2	0.4	
0	0.1	0	0	0	0	0	0	0	45° 45'	0	0	0	-0.1	0	0	0	0.2	0.4	
0	0	0	0	0	0.1	0	0	0	45° 30'	0	0	0	-0.1	0	0	0.1	0.3	0.4	
0	0	0	0	0.1	0.1	0	0	0	45° 15'	0	0	0	-0.1	-0.1	0	0.1	0.3	0.4	
0	0	0	0	0	0.1	0	0	0	45° 0'	0	0	0	-0.1	-0.1	0	0.1	0.3	0.3	
0	0	0	0	0	0	0	0	0	44° 45'	0	0	0	-0.1	-0.1	0.1	0.2	0.3	0.3	
0	0	0	0	0	0	0	0	0	44° 30'	0	0	0	-0.1	-0.1	0.1	0.2	0.3	0.3	
0	0	0	0	0	0	0.1	0	0	44° 15'	0	0	0	-0.1	-0.1	0.1	0.2	0.3	0.2	
0.1	0	0	0	0	0	0.1	0.1	0.1	44° 0'	0	0	0	-0.1	-0.1	0.1	0.2	0.3	0.2	
0.1	0	0.1	0	0	0.1	0.1	0.1	0	43° 45'	0	0	0	0	-0.1	0	0.2	0.3	0.2	
0.1	0	0	0	0	0	0	0	0	43° 30'	0	0	0	0	-0.1	0	0.2	0.3	0.2	
0	0	0	0	0	0	0	0	0	43° 15'	0	0	0	0	-0.1	0	0.2	0.3	0.2	
0	0	0	0	0	0	0	0	0	43° 0'	0	0	0	0	-0.1	0	0.2	0.3	0.2	
0	0	0	0	0	0	0	0.1	0.1	42° 45'	0	0	0	0	-0.1	0	0.2	0.3	0.2	
0	0	0	0	0	0	0	0.1	0.1	42° 30'	0	0	0	0	-0.1	0	0.2	0.3	0.2	
0	0	0	0.1	0.1	0	0	0.1	0.1	42° 15'	0	0	0	0	0	0	0.1	0.2	0.2	
0	0	0	0.1	0.1	0	0	0.1	0.1	42° 0'	0	0	0	0	0	0	0.1	0.2	0.2	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	41° 45'	0	0	0	0	0	0	0.1	0.2	0.2	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	41° 30'	0	0	0	0	0	0	0.1	0.2	0.2	
0	0	0	0	0	0.1	0.1	0.1	0.1	41° 15'	0	0	0	0	0	0	0.1	0.1	0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	41° 0'	0	0	0	0	0	-0.1	0.1	0.2	0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	40° 45'	0	0	0	0	0	0	0.1	0.2	0.2	
0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	40° 30'	0	0	0	0	0	0	0.1	0.2	0.2	
0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0	40° 15'	0	0	0	0	0.1	0	0.1	0.1	0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	0	0	0	0	0.1	0.1	0.1	0.2	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 124 to 120 °W									
Correction to Latitude										Correction to Longitude									
124° 0'	123° 30'	123° 0'	122° 30'	122° 0'	121° 30'	121° 0'	120° 30'	120° 0'	Longitude	124° 0'	123° 30'	123° 0'	122° 30'	122° 0'	121° 30'	121° 0'	120° 30'	120° 0'	Latitude
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	50° 0'	0	0	0.1	0	0	0.1	0.1	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	49° 45'	0	0	0.1	0	0	0.1	0.1	0	-0.1	
0	0.1	0.1	0.1	0.1	0	0	0	0	49° 30'	-0.1	-0.1	0.1	0.1	0	0.1	0.2	0	-0.1	
-0.1	0	0.1	0.1	0.1	0	0	0	0	49° 15'	-0.2	-0.2	0	0.1	0.1	0.1	0.2	0	-0.1	
0	0	0.1	0.1	0.1	0	0	0	0	49° 0'	-0.2	-0.3	0	0.1	0.1	0.2	0.2	0	-0.1	
0	0	0	0.1	0.1	0	0	0	0	48° 45'	-0.2	-0.3	-0.1	0.1	0.2	0.2	0.1	0	-0.1	
0.1	0	0	0.1	0.1	0.1	0	0.1	0	48° 30'	0	-0.3	-0.2	0.1	0.2	0.2	0.1	0	-0.1	
0.2	0	0	0	0.1	0.1	0	0.1	0	48° 15'	0.1	-0.1	-0.2	0	0.2	0.3	0.1	0	-0.1	
0.1	0	0	0	0.1	0.1	0	0	0	48° 0'	0.3	0	-0.3	-0.1	0.2	0.3	0.1	0	-0.1	
0.1	0.1	0	0	0	0	0	0	0	47° 45'	0.3	0.1	-0.2	-0.2	0.2	0.3	0.1	0	-0.1	
0.1	0.1	0	0	0	0	0	0	0	47° 30'	0.3	0.2	-0.2	-0.2	0.2	0.3	0.1	0	-0.1	
0.1	0.1	0	-0.1	-0.1	-0.1	0	0.1	0	47° 15'	0.3	0.2	-0.1	-0.1	0.2	0.2	0	-0.1	-0.1	
0	0	0	-0.1	-0.1	-0.1	0	0.1	0	47° 0'	0.3	0.2	0	0	0.2	0.1	-0.1	-0.1	-0.1	
0	0	0	-0.1	-0.1	0	0	0	0	46° 45'	0.3	0.2	0	0.1	0.2	0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	46° 30'	0.3	0.2	0	0.1	0.2	0	-0.1	-0.1	0	
0	0	0	0.1	0.1	0.1	0.1	0	0	46° 15'	0.4	0.2	0	0.1	0.1	0	-0.1	-0.1	0	
0	0	0	0.1	0.1	0.1	0.1	0	0	46° 0'	0.4	0.1	-0.1	0	0.1	0	0	0	-0.1	
0	0	0	0.1	0	0	0	0	0	45° 45'	0.4	0.1	-0.1	0	0.1	0	0	0	-0.1	
0	0	0	0	0	0	0	0	0	45° 30'	0.4	0	-0.2	0.1	0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	45° 15'	0.4	0	-0.1	0.1	0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	45° 0'	0.3	0	-0.1	0.1	0.1	0	0	0.1	0	
0	0	0	0	0	0	0	0	0	44° 45'	0.3	0	-0.1	0.1	0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	44° 30'	0.3	0	-0.1	0.1	0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	44° 15'	0.2	0	-0.1	0.1	0.1	0	0.1	0.1	0	
0.1	0	0	0	0	0	0	0	0	44° 0'	0.2	0	0	0.1	0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	43° 45'	0.2	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	43° 30'	0.2	0.1	0	0.1	0.1	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	43° 15'	0.2	0	0.1	0.1	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	43° 0'	0.2	0	0.1	0.1	0.1	0.1	0.1	0	0	
0.1	0	0	0	0	0	0	0	0	42° 45'	0.2	0	0.1	0.1	0.1	0.1	0.1	0.1	0	
0.1	0	0	0.1	0.1	0	0	0	0	42° 30'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0.1	0.1	0	0.1	0.1	0	0	0	0	42° 15'	0.2	0.1	0	0.1	0.1	0.1	0.1	0.1	0	
0.1	0.1	0	0	0	0.1	0.1	0.1	0	42° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0.1	0.1	0	0	0	0.1	0.1	0.1	0	41° 45'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0.1	0.1	0	0	0.1	0.1	0	0	0	41° 30'	0.2	0.2	0.1	0	0	0.1	0.1	0.1	0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	41° 15'	0.2	0.3	0.2	0	0	0.1	0.1	0.1	0	
0	0.1	0.1	0.2	0.1	0	0	0	0	41° 0'	0.2	0.3	0.1	0	0.1	0.1	0.1	0.1	0	
0	0.1	0.1	0.2	0.1	0	0	0.1	0	40° 45'	0.2	0.2	0.1	0	0.2	0.2	0.1	0	0	
0	0.1	0.1	0.1	0.1	0	0	0.1	0	40° 30'	0.2	0.2	0	0	0.2	0.2	0	0	0	
0	0.1	0	0	0.1	0.1	0	0	0	40° 15'	0.1	0.1	0	0	0.3	0.2	0	0	0	
0.1	0	0	0	0.1	0.1	0.1	0	0	40° 0'	0.1	0.2	0	0	0.2	0.3	0.1	0	0	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 120 to 116 °W									
Correction to Latitude										Correction to Longitude									
120°	119°	119°	118°	118°	117°	117°	116°	116°	Longitude	120°	119°	119°	118°	118°	117°	117°	116°	116°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	0	0	0	0	0	0.1	0	0.1	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	0	0.1	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	49° 15'	-0.1	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	49° 0'	-0.1	0	0	0	0	0	0	0	0	
0.1	0	0	0	0	0	0	0	0	48° 45'	-0.1	0	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0	0	0	0	0	48° 30'	-0.1	0	0	0	0	0	0	0	0.1	
0.1	0.1	0.1	0.1	0.1	0	0	0	0	48° 15'	-0.1	0	0	0	0	0.1	0	0	0.1	
0	0.1	0.1	0.1	0	0	0	0	0	48° 0'	-0.1	0	0	0	0.1	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	0	0	0.1	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	0	0	0.1	0.1	0.1	0.1	0.1	0	
0.1	0.1	0	0	0	0	0	0	0	47° 15'	-0.1	0	0.1	0.1	0	0.1	0.1	0.1	0.1	
0.1	0	0	0.1	0.1	0	0	0	0	47° 0'	-0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0.1	0	0	0	0	0	46° 45'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	-0.1	0	0	0	46° 30'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	-0.1	0	0	0	46° 15'	0	0	0	0.1	0.2	0.1	0	0	0.1	
0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	46° 0'	-0.1	0	0.1	0.2	0.2	0.1	0	0	0.1	
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	45° 45'	-0.1	0	0.1	0.2	0.2	0.1	0	0	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	45° 30'	0	0.1	0.1	0.1	0.1	0.1	0	0	0	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	45° 15'	0	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	45° 0'	0	0.1	0.1	0	0	0.1	0	0	0	
0	0	0	0	0	0	0.1	0.1	0	44° 45'	0	0.1	0.1	0	0	0	0.1	0	0.1	
0	0	0	0	0	0	0	0.1	0	44° 30'	0	0.1	0.1	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	44° 15'	0	0	0.1	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	44° 0'	0	0	0	0	0	0	0	0.1	0.1	
0	0	0	0	0	0	0	0	0	43° 45'	0.1	0	0	0	0	0	0	0.1	0.1	
0.1	0	0	0	0	0	0	0	0	43° 30'	0.1	0	0	0.1	0.1	0	0	0.1	0.1	
0	0	0	0	0	0	0	0	0	43° 15'	0	0.1	0	0.1	0.1	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	43° 0'	0	0.1	0.1	0	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	42° 45'	0	0.1	0.1	0	0	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	42° 30'	0	0	0.1	0	0.1	0.1	0.1	0	0	
0	0	0	0.1	0	0	0	0	0	42° 15'	0	0	0	0.1	0.1	0.1	0.1	0	0	
0	0	0	0.1	0.1	0	0.1	0	0	42° 0'	0	0	0	0.1	0.1	0.1	0	0.1	0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0	0	41° 45'	0.1	0	0	0.1	0.1	0.1	0	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	41° 30'	0.1	0	0	0	0.1	0.1	0.1	0.1	0.1	
0	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	41° 15'	0	0	0	0	0.1	0.1	0.1	0.1	0	
0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	41° 0'	0	0	0	0	0.1	0.1	0.1	0.1	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 45'	0	0	0	0.1	0	0	0.1	0.1	0.1	
0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0	40° 30'	0	0	0	0	0	0	0.1	0.1	0.1	
0	0	0.1	0.1	0.1	0.1	0	0	0	40° 15'	0	0	0	0	0.1	0.1	0.1	0.1	0.1	
0	0.1	0.1	0.1	0.1	0	0	0	0	40° 0'	0	0	0	0	0.1	0.1	0.1	0.1	0	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N

Longitude 116 to 112 °W

Correction to Latitude

Correction to Longitude

Correction to Latitude										Correction to Longitude									
116°	115°	115°	114°	114°	113°	113°	112°	112°	Longitude	116°	115°	115°	114°	114°	113°	113°	112°	112°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0.1	0	0	0	0	-0.1	-0.1	50° 0'	0.1	0.1	0	-0.1	-0.2	-0.1	0	-0.1	0	
0	0	0.1	0	0	0	-0.1	-0.1	-0.1	49° 45'	0	0.1	0	-0.1	-0.1	-0.1	0	0	0	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	49° 30'	0	0	0	0	-0.1	-0.1	0	0	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	49° 15'	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	49° 0'	0	0	0	0	0.1	0	0	0	0	
0	0	0	0	0	0	-0.1	0	0	48° 45'	0	0	0	0	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	48° 30'	0.1	0.1	0	0	0.1	0.1	0	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 15'	0.1	0.1	0	0	0.1	0.2	0	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0	0	0.2	0.2	0	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 45'	0	0.1	0	0	0.2	0.2	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 30'	0	0	0	0	0.2	0.2	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	-0.1	47° 15'	0.1	0	0	0	0.1	0.2	0	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 0'	0.1	0.1	0	0	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	46° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	
0	0	0	0	0	0	0	0	0	46° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	
0	0	0	0	0	0	-0.1	-0.1	0	46° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	46° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	-0.1	45° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	-0.1	45° 30'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	-0.1	-0.1	45° 15'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	45° 0'	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	44° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	-0.1	-0.1	0	0	0	0.1	44° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	
0	0	0	0	0	0	0	0	0.1	44° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0.1	0.1	44° 0'	0.1	0.1	0.2	0.1	0	0	0	0	0	
0	0	0	0.1	0.1	0.1	0.1	0.1	0	43° 45'	0.1	0.2	0.1	0.1	0	0	0	0	0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0	0	43° 30'	0.1	0.1	0.1	0.1	0	0	0	0	0.1	
0	0.1	0.1	0.1	0.1	0.1	0	0	0	43° 15'	0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	
0	0.1	0.1	0.1	0	0.1	0	0	0	43° 0'	0	0.1	0.1	0.1	0.1	0	0	0	0.1	
0	0	0	0	0	0	0	0.1	0	42° 45'	0	0.1	0.1	0.1	0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	42° 30'	0	0	0.1	0.1	0	0	0.1	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	42° 15'	0	0.1	0	0.1	0	0	0	0	0	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	42° 0'	0.1	0.1	0	0	0	0	0	0	0	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	41° 45'	0.1	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 30'	0.1	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 15'	0	0.1	0	0	0	0	0	0	0	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	41° 0'	0	0.1	0	0	0	0	0	0	0	
0.1	0	0.1	0.1	0.1	0.1	0	0	0	40° 45'	0.1	0.1	0	0	0	0	0	0	0	
0	0.1	0.1	0.1	0	0	0	0	0	40° 30'	0.1	0	0	0	0	0	0.1	0	0	
0	0.1	0.1	0.1	0	0	0	0	0	40° 15'	0.1	0	0	0	0	0	0.1	0	0	
0	0.1	0.1	0	0	0	0	0	0	40° 0'	0	0	0	0	0	0	0.1	0	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 112 to 108 °W									
Correction to Latitude										Correction to Longitude									
112°	111°	111°	110°	110°	109°	109°	108°	108°	Longitude	112°	111°	111°	110°	110°	109°	109°	108°	108°	Longitude
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude
-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	50° 0'	0	0	0	0	0	0	0	0	0	-0.1
-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	49° 45'	0	0	0	0	0	0	0	0	0	-0.1
-0.1	-0.1	-0.1	0	0	0	0	0	0	49° 30'	-0.1	0	0	0	0	0	0	0	0	-0.1
-0.1	-0.1	-0.1	0	0	0	0	0	0	49° 15'	0	-0.1	0	0	0	0	0	0	0	-0.1
-0.1	-0.1	-0.1	0	0	0	0	0	0	49° 0'	0	0	-0.1	-0.1	0	0	0	0	0	0
0	0	0	0	-0.1	-0.1	0	0	0	48° 45'	0	0	-0.1	-0.1	0	0	0	0	0	0
0	0	0	0	-0.1	-0.1	-0.1	0	0	48° 30'	0	0	-0.1	-0.1	0	0	-0.1	-0.1	0	0
0	0	0	0	0	-0.1	-0.1	0	0	48° 15'	0	0	-0.1	0	0	0	-0.1	-0.1	0	0
0	0	0	0	0	0	0	0	0	48° 0'	0	0	0	0	0	0	-0.1	-0.1	0	0
0	0	-0.1	-0.1	0	0	0	-0.1	-0.1	47° 45'	-0.1	0	0	0	0	0	-0.1	-0.1	0	0
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 30'	-0.1	0	0	-0.1	0	0	0	-0.1	0	0
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	47° 15'	0	0.1	0.1	0	-0.1	0	-0.1	-0.1	0	0
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	47° 0'	0	0.1	0.1	0	-0.1	0	-0.1	-0.1	-0.1	-0.1
0	0	0	-0.1	-0.1	0	0	0	0	46° 45'	0.1	0.1	0.1	0	-0.1	0	-0.1	-0.2	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 30'	0.1	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 15'	0	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	46° 0'	0	0	0.1	0	-0.1	-0.1	0	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	45° 45'	0	0	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	45° 30'	0.1	0	0	0.1	-0.1	-0.2	-0.1	0	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	45° 15'	0.1	0.1	0	0.1	-0.1	-0.3	-0.2	0	-0.1	-0.1
-0.1	0	0	0	0	0	0	0.1	-0.1	45° 0'	0.1	0	0	0.1	0	-0.3	-0.3	0.1	0.1	0.1
0	0	0	0	0	0	0	0.1	0	44° 45'	0.1	0	0	0.1	0	-0.3	-0.3	0.1	0.3	0.3
0.1	0.1	0	0	0	0	-0.1	0	0.1	44° 30'	0.1	0	0	0.1	0	-0.3	-0.4	0	0.4	0.4
0.1	0.1	0	0	0	-0.1	-0.1	-0.1	0.1	44° 15'	0	0.1	0.1	0.1	0	-0.2	-0.4	-0.1	0.3	0.3
0.1	0.1	0	0	0	0	-0.1	-0.1	0	44° 0'	0	0.1	0.1	0.1	0	-0.1	-0.3	-0.2	0.2	0.2
0	0	0.1	0.1	0	0	0	0	0.1	43° 45'	0.1	0.1	0.1	0.1	0.1	-0.1	-0.3	-0.3	0.1	0.1
0	0	0	0.1	0.1	0	0	0.1	0	43° 30'	0.1	0.1	0.1	0.1	0.1	-0.1	-0.3	-0.2	0.1	0.1
0	0	0	0.1	0.1	0	0	0	0	43° 15'	0.1	0.1	0	0.1	0.1	-0.1	-0.4	-0.2	0.1	0.1
0	0.1	0	0.1	0.2	0.1	0	-0.1	-0.1	43° 0'	0.1	0.1	0	0	0.1	0	-0.3	-0.2	0.1	0.1
0.1	0.1	0.1	0.1	0.2	0.2	0.1	0	0	42° 45'	0	0.1	0	-0.1	0.1	0.1	-0.1	-0.2	0	0
0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0	42° 30'	0	0.1	0.1	-0.1	0	0.2	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 15'	0	0.1	0.1	-0.1	-0.1	0.1	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 0'	0	0.1	0.1	-0.1	-0.1	0.1	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0	0	0	0	41° 45'	0	0	0.1	0	0	0.1	0	-0.1	0	0
0.1	0	0	0	0	0	0	0	0	41° 30'	0.1	0	0	0	0	0.1	0	-0.1	0	0
0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	0	41° 15'	0.1	0.1	0.1	0	0	0	0	-0.1	0.1	0.1
0	0	-0.1	-0.1	-0.1	0	0	0.1	0	41° 0'	0.1	0.2	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	40° 45'	0.1	0.2	0.2	0	-0.1	-0.1	-0.1	-0.1	-0.1	0.1
0	0	0.1	0.2	0.3	0.2	0.1	0	0	40° 30'	0	0.2	0.2	0	-0.1	0	0	-0.1	0.1	0.1
0	0	0.1	0.2	0.2	0.1	0.1	0	0	40° 15'	0	0.1	0	-0.1	-0.1	0.1	0.1	0	0.1	0.1
0	0	0	0.1	0	0	0	0	0	40° 0'	0.1	0.1	0	-0.1	0	0.1	0.1	0	0.1	0.1

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 108 to 104 °W									
Correction to Latitude										Correction to Longitude									
108°	107°	107°	106°	106°	105°	105°	104°	104°	Longitude	108°	107°	107°	106°	106°	105°	105°	104°	104°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	50° 0'	-0.1	-0.1	-0.1	0	0	0	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	49° 45'	-0.1	-0.1	-0.1	0	0	0	0	0	0	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 30'	-0.1	-0.1	0	0	0	0	0	0	0	
0	0	0	-0.1	-0.1	-0.1	0	0	0	49° 15'	-0.1	0	0	0	0	0	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	49° 0'	0	0	0	0	0	0	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 45'	0	0	0	0	0	0	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 30'	0	0	0	0	0	0	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 15'	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	48° 0'	0	0	0	0	0	0	0	0	0	
-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	47° 45'	0	0	0	0	0	0	0	0	-0.1	
-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	47° 30'	0	0	-0.1	-0.1	0	0	0	0	-0.1	
0	0	0	0	0	0	0	0	-0.1	47° 15'	0	0	-0.1	-0.1	0	0	0	0	-0.1	
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	0	-0.1	-0.1	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	0	-0.1	-0.1	0	-0.1	0	0.1	0	
0	0	0	0	0	0	0	0	0	46° 30'	-0.1	0	-0.1	-0.1	0	0	0	0.1	0	
0	0	0	0	0	0	0	0	0	46° 15'	-0.1	0	-0.1	-0.1	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	0	0	-0.1	0	0	0	0	0	
0	0	0	0	-0.1	0	0	0	0	45° 45'	-0.1	-0.1	0	-0.1	-0.1	0	0	0	0	
-0.1	-0.1	0	0	0	-0.1	0	0	0	45° 30'	-0.1	-0.1	0	0	0	0	0	-0.1	0	
-0.1	-0.2	-0.1	0	0	0	0	0	0	45° 15'	-0.1	-0.2	-0.1	0	0	0	0	-0.1	-0.1	
-0.1	-0.2	-0.2	0	0	0	0	0	-0.1	45° 0'	0.1	-0.2	-0.3	-0.1	0.1	0	0	0	-0.1	
0	-0.1	-0.2	-0.1	0	0	0	-0.1	-0.1	44° 45'	0.3	-0.1	-0.4	-0.2	0.1	0	0	0	-0.1	
0.1	0	-0.1	-0.1	0	0	0	0	-0.1	44° 30'	0.4	0.1	-0.4	-0.3	0	0	0	0	-0.1	
0.1	0.1	0	0	0	0	0	0	-0.1	44° 15'	0.3	0.2	-0.3	-0.3	0	0	0	0.1	0	
0	0.1	0.1	0	0	0	0.1	0.1	0	44° 0'	0.2	0.2	-0.2	-0.3	0	0	0	0.1	0	
0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	43° 45'	0.1	0.2	-0.1	-0.2	-0.1	0	0	0.1	0.1	
0	0.1	0.1	0	0	0	0	0	0.1	43° 30'	0.1	0.1	-0.1	-0.2	-0.1	-0.1	0	0.1	0	
0	0	0	0	0	0	0	0	0	43° 15'	0.1	0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0	
-0.1	0	0	-0.1	-0.1	-0.1	-0.1	0	0	43° 0'	0.1	0.1	0	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0	0	-0.1	-0.1	-0.1	0	0.1	42° 45'	0	0	0	0	-0.1	-0.1	0	0	-0.2	
0	0	0	0	-0.1	-0.1	0	0.1	0.1	42° 30'	0	0	0	0.1	0	-0.1	-0.1	-0.1	-0.2	
0.1	0.1	0.1	0.1	0	-0.1	0	0.1	0.1	42° 15'	0	0	0	0.1	0.1	-0.1	-0.2	-0.2	-0.1	
0.1	0	0	0	0	0	0	0.1	0.1	42° 0'	0	0.1	0	0.1	0.1	-0.1	-0.3	-0.2	-0.1	
0	0	-0.1	-0.1	0	0	0	0	0	41° 45'	0	0.1	0	0.1	0.1	-0.1	-0.3	-0.3	-0.1	
0	0	-0.1	-0.1	-0.1	0	0	0	0	41° 30'	0	0.2	0.1	0	0	-0.2	-0.3	-0.2	-0.1	
0	0	0	-0.1	0	0	0.1	0	0	41° 15'	0.1	0.2	0.1	0	0	-0.2	-0.3	-0.2	-0.1	
0	0	0	0	0	0	0.1	0.1	0	41° 0'	0.1	0.3	0.1	0	0	-0.3	-0.3	-0.2	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 45'	0.1	0.3	0.1	0	0	-0.3	-0.3	-0.1	-0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0	40° 30'	0.1	0.2	0.1	0	0	-0.3	-0.3	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 15'	0.1	0.2	0	0	0	-0.3	-0.3	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 0'	0.1	0.2	0	0	0	-0.3	-0.3	-0.1	-0.1	



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 104 to 100 °W									
Correction to Latitude										Correction to Longitude									
104°	103°	103°	102°	102°	101°	101°	100°	100°	Longitude	104°	103°	103°	102°	102°	101°	101°	100°	100°	Latitude
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	50° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	50° 0'
0	0	0	0	-0.1	0	-0.1	-0.1	-0.1	49° 45'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	49° 45'
0	0	0	0	0	0	0	-0.1	-0.1	49° 30'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	49° 30'
0	0	0	0	0	0	0	0	-0.1	49° 15'	0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	49° 15'
0	0	0	-0.1	-0.1	0	0	0	0	49° 0'	0	0	0	-0.1	-0.1	-0.1	0	0	-0.1	49° 0'
0	0	0	-0.1	-0.1	0	0	0	0	48° 45'	0	0	0	-0.1	-0.1	-0.1	0	0	-0.1	48° 45'
0	0	0	0	-0.1	-0.1	0	0	0	48° 30'	0	0	0	0	-0.1	-0.2	-0.1	0	-0.1	48° 30'
0	0	0	0	0	0	0	0	0	48° 15'	0	0	0	0	-0.1	-0.2	-0.1	0	-0.1	48° 15'
0	0	0	0	0	0	0	0	0	48° 0'	0	0	0	0	-0.1	-0.2	-0.2	-0.1	-0.1	48° 0'
-0.1	0	0	0	0	0	0	0	0	47° 45'	-0.1	0	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	47° 45'
-0.1	0	0	0	0	0	0	0	0	47° 30'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	47° 30'
-0.1	0	0	0	0	0	0	0	0	47° 15'	-0.1	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	47° 15'
0	0	0	0	0	0	0	0	0	47° 0'	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	47° 0'
0	0	0	0	0	0	0	0	0	46° 45'	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	46° 45'
0	0	0	0	0	0	0	0	0	46° 30'	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	46° 30'
0	0	0	0	0	0	0	0	0	46° 15'	0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	46° 15'
0	0	0	0	0	0	0	0	0	46° 0'	0	0	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	46° 0'
0	0	0	0	0	0	0	0	0	45° 45'	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	45° 45'
0	0	0	0	0	0	0	0	0	45° 30'	0	0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	45° 30'
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	45° 15'
-0.1	0	0	0	0	0	0	0	0	45° 0'	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	45° 0'
-0.1	-0.1	0	0	0	0	0	0	0	44° 45'	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	44° 45'
-0.1	-0.1	0	0	0	0	0.1	0.1	0.1	44° 30'	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	44° 30'
-0.1	-0.1	0	0	0	0	0.1	0.1	0.1	44° 15'	0	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	0	44° 15'
0	0	0	0	0	0	0	0.1	0.1	44° 0'	0	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	0	44° 0'
0.1	0.1	0	0	0	0	0	0	0	43° 45'	0.1	-0.2	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	43° 45'
0.1	0.1	0	0	0	-0.1	-0.1	-0.1	0	43° 30'	0	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	43° 30'
0	0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	43° 15'	0	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	43° 15'
0	0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	43° 0'	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	43° 0'
0.1	0.1	0	0	0	0	0	0	-0.1	42° 45'	-0.2	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	42° 45'
0.1	0.1	0	0	0	0	0	0	0	42° 30'	-0.2	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	42° 30'
0.1	0.1	0.1	0	0	0	0	0	0	42° 15'	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	42° 15'
0.1	0.1	0.1	0.1	0	0	0	0	0	42° 0'	-0.1	0	0	0	0	-0.1	-0.1	-0.1	-0.1	42° 0'
0	0	0	0.1	0.1	0.1	0	0	0	41° 45'	-0.1	0	0	0	0	-0.1	-0.1	-0.1	-0.1	41° 45'
0	0	0	0	0.1	0.1	0.1	0	0	41° 30'	-0.1	-0.1	0	0	0	-0.1	-0.1	0	-0.1	41° 30'
0	0	0	0	0.1	0.1	0.1	0.1	0	41° 15'	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	-0.1	41° 15'
0	0	0	0	0.1	0.1	0.1	0.1	0.1	41° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	41° 0'
0.1	0	0	0	0.1	0.1	0.1	0.1	0.1	40° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 45'
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 30'
0	0	0	0.1	0.1	0.1	0.1	0	0	40° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	40° 15'
0	0	0	0.1	0.1	0.1	0	0	0	40° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	40° 0'

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 100 to 96 °W									
Correction to Latitude										Correction to Longitude									
100°	99°	99°	98°	98°	97°	97°	96°	96°	Longitude	100°	99°	99°	98°	98°	97°	97°	96°	96°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	50° 0'	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	0	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	49° 45'	0	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	
-0.1	-0.1	-0.1	0	0	-0.1	0	0	0	49° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
-0.1	0	0	0	0	0	0	0	0	49° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 45'	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	48° 30'	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	48° 15'	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2	0	0	0	
0	0	0	0	0	0	0	0	0	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	0	0	0	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	0	0	-0.1	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	0	0	
0	0	0	0	0	0	0	0	0	45° 30'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	0	0	
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	45° 0'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	44° 45'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0	0	0	0	0	0	0	44° 30'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0.1	0	0	44° 15'	0	0	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0	0	0	44° 0'	0	0	0	0	0	0	0	0	-0.1	
0	0.1	0.1	0.1	0	0	0	0	0	43° 45'	-0.1	0	0	0	0	0	0	0	-0.1	
0	0	0	0	0	0	0	0	0	43° 30'	-0.1	0	0	0	0	0	0	0	-0.1	
-0.1	-0.1	0	0	0	0	0	0	0	43° 15'	-0.1	-0.1	-0.1	0	0	0	0	0	-0.1	
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	43° 0'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	42° 45'	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	
0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	42° 30'	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	42° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.2	
0	0	0	0	0	0	0	0.1	0.1	42° 0'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0.1	0.1	0	41° 45'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0.1	0.1	0	0	41° 30'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0.1	0.1	0.1	0	0	41° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0	0	0.1	0	0	0	41° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	
0.1	0.1	0.1	0	0	0	0	0	0.1	40° 45'	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	-0.1	-0.2	
0.1	0.1	0.1	0.1	0	0	0	0.1	0.1	40° 30'	-0.1	-0.1	0	-0.1	-0.1	0	0	-0.1	-0.2	
0	0	0	0	0	0	0	0.1	0.1	40° 15'	-0.1	-0.1	0	0	-0.1	0	0	-0.1	-0.2	
0	0	0	0	0	0	0	0.1	0.1	40° 0'	0	-0.1	0	0	-0.1	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 96 to 92 °W									
Correction to Latitude										Correction to Longitude									
96°	95°	95°	94°	94°	93°	93°	92°	92°	Longitude	96°	95°	95°	94°	94°	93°	93°	92°	92°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	0	0	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	-0.1	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	-0.1	0	0	0	0	-0.1	48° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	-0.1	0	0	48° 30'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1
0	0	0	0	0	-0.1	-0.1	0	-0.1	48° 15'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	-0.1	48° 0'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0
0	0	0	0	0	0	0	0	-0.1	47° 45'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1
0	0	0	0	0	0	0	0	-0.1	47° 30'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1
0	0	0	0	0	0	-0.1	-0.1	0	47° 15'	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0.1
0	0	0	0	0	-0.1	-0.1	-0.1	0	47° 0'	0	0	-0.1	-0.1	-0.1	-0.1	0	0	0.1	0
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	46° 45'	0	0	-0.1	-0.1	0	0	0	0	0.1	-0.1
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	46° 30'	0	0	-0.1	0	0	-0.1	0	0	0.1	-0.1
0	0	0	-0.1	0	0	0	0	0	46° 15'	0	0	0	0	0	-0.1	0.1	0.1	0	-0.1
0	0	0	0	0	0	0	0	0.1	46° 0'	0	0	0	0	-0.1	0	0.1	0	0	-0.1
0	0	0	0	0	0	0	0	0.1	45° 45'	0	0	0	-0.1	-0.1	0	0.1	-0.1	-0.1	-0.2
0	0	0	0	0	0	0	0	0.1	45° 30'	0	0	0	-0.1	-0.1	0	0	-0.1	-0.1	-0.2
0	0	0	0	0	0	0	0	0.1	45° 15'	0	0	0	-0.1	0	0	-0.1	-0.1	-0.2	-0.1
0	0	0	0	0	0	0	0	0.1	45° 0'	-0.1	0	0	0	0	0	-0.1	-0.1	-0.2	-0.1
0	0	0	0	0	0	0	0	0	44° 45'	-0.1	-0.1	0	0	0	-0.1	-0.2	-0.2	0	0
0	0	0	0	0.1	0.1	0	0	0	44° 30'	-0.1	-0.1	0	0	0	0	-0.2	-0.1	0	0
0	0	0	0	0.1	0.1	0	0	0	44° 15'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	0	0
0	0	0	0	0	0.1	0	0	0	44° 0'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	0	0
0	0	0	0	0	0	0	0	0	43° 45'	-0.1	-0.1	0	-0.1	-0.1	0	-0.1	-0.1	0	0
0	0	0.1	0.1	0	0	0	0	0	43° 30'	-0.1	-0.1	0	-0.1	0	0	-0.1	-0.1	0	0
0	0	0.1	0.1	0	0	0	0.1	0	43° 15'	-0.1	-0.1	-0.1	0	0	0	-0.1	0	0	0
0	0	0	0	-0.1	0	0	0.1	0	43° 0'	-0.1	-0.1	-0.1	0	0.1	-0.1	-0.2	0	0	0.1
0	0	0	0	-0.1	0	0.1	0	0	42° 45'	-0.1	-0.1	-0.1	0.1	0.1	-0.2	-0.2	0	0	0.1
0	0.1	0	-0.1	-0.1	0	0.1	0	0	42° 30'	-0.1	-0.1	0	0.1	0.1	-0.2	-0.2	0	0	0.1
0.1	0.1	0	-0.1	0	0.1	0.1	0	0	42° 15'	-0.2	-0.1	0.1	0.1	0	-0.3	-0.2	0.1	0	0
0.1	0	0	0	0.1	0.1	0	0	0.1	42° 0'	-0.2	-0.1	0.1	0.1	-0.1	-0.3	-0.1	0.1	0	0
0	0	0	0.1	0.2	0.1	0	0	0.1	41° 45'	-0.2	0	0.1	-0.1	-0.2	-0.2	0	0	0	0
0	0	0	0.1	0.1	0	0	0	0.1	41° 30'	-0.1	0	0	-0.1	-0.2	-0.1	0	0	0	-0.1
0	0	0.1	0.1	0.1	0	0	0	0	41° 15'	-0.1	0	-0.1	-0.2	-0.1	0	0	0	0	0
0	0.1	0.1	0.1	0	0	0	0	0	41° 0'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	0	0	0
0.1	0.1	0.1	0.1	0	0	0	0	0	40° 45'	-0.2	-0.2	-0.1	0	0	0	-0.1	0	0	0
0.1	0.1	0	0	0	0	0	0	0	40° 30'	-0.2	-0.1	0	0	0	0	-0.1	0	0	0
0.1	0	0	0	0.1	0	0	0	0	40° 15'	-0.2	-0.1	0	0	0	0	0	0	0	0
0.1	0	0	0	0	0	0	0	0	40° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	0



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 88 to 84 °W								
Correction to Latitude										Correction to Longitude								
88°	87°	87°	86°	86°	85°	85°	84°	84°	Longitude	88°	87°	87°	86°	86°	85°	85°	84°	84°
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'
0	0	0	0	0	0	0	-0.1	-0.1	50° 0'	-0.1	-0.1	-0.1	0	0	0	0	0	0
0	0	0	0	0	0	-0.1	-0.1	-0.1	49° 45'	-0.1	-0.1	-0.1	0	0	0	0	0	0
0	0	0	-0.1	0	0	0	0	0	49° 30'	-0.1	-0.1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	49° 15'	0	0	0	0	-0.1	0	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0	49° 0'	0	0	0	0	-0.1	0	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0	48° 45'	0	-0.1	-0.1	0	0	0	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0	48° 30'	0	-0.1	-0.1	-0.1	0	0	0	0	0
-0.1	0	0	0	0	0	0	0	0	48° 15'	0	-0.1	-0.1	-0.1	0	0	0	0	0
0	0	-0.1	-0.1	0	0	0	0	0	48° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	0	0	-0.1	-0.1	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	0	0	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	0	0	-0.1	0	0	0	0	0
-0.1	-0.1	0	0	-0.1	-0.1	0	0	0	46° 45'	-0.1	-0.1	-0.1	0	0	0	-0.1	0	0
-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	0	46° 30'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	0
0	0	0	0	0	0	-0.1	0	0	46° 15'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0	0	0	0	0	0	46° 0'	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0	0	0	0	0	45° 45'	-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0	0	0	0	0	45° 30'	-0.1	-0.1	0	0	0.1	0.1	0	-0.1	-0.1
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	-0.1	0	0.1	0.1	0.1	0	-0.1	-0.1
0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	45° 0'	-0.1	0	0	0.1	0.1	0.1	0	-0.1	-0.1
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	44° 45'	0	0	0	0.1	0.1	0.1	0	-0.1	-0.1
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	44° 30'	0	0	0	0.1	0.1	0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	44° 15'	0	0	0	0.1	0.1	0.1	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	44° 0'	0	0	0	0.1	0.1	0.1	-0.1	-0.1	0
0	0	0	0	0	0	0	-0.1	0	43° 45'	0	0	0	0.1	0.1	0.1	-0.1	-0.1	0
0	0	0	0	0	0	0	-0.1	-0.1	43° 30'	0	0	0	0.1	0.1	0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	43° 15'	0	0	0.1	0	0.1	0	0	-0.1	-0.1
0	0	0	0	0	0	0.1	0	0	43° 0'	0	0	0.1	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	42° 45'	0	0	0.1	0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	42° 30'	0	0	0.1	0.1	0	-0.1	0	0	0
0	0	0	0	0	0	0	0	0.1	42° 15'	0	0	0	0	0	0	-0.1	0	0
0	0	0	0	0	0	0	0	0.1	42° 0'	0	0	0	0	0.1	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	41° 45'	0	0	0	0	0.1	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 30'	0	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 15'	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1
0	0	0	0	0	0	0	0	0	41° 0'	-0.1	-0.1	0	0	0	0	0	-0.1	-0.1
0	0	0	0	0	0	0	0	-0.1	40° 45'	-0.1	-0.1	-0.1	0	0	0.1	0	-0.1	-0.1
0	0	0	0	0	0	0	0	-0.1	40° 30'	-0.1	-0.1	-0.1	-0.1	0	0.1	0	0	-0.1
0	0	0	0	0	0	0	0	-0.1	40° 15'	-0.1	-0.1	-0.1	0	0	0	0.1	0	0
0	0	0	0	0	0	0	0	0	40° 0'	0	-0.1	0	0	0	0	0.1	0	0

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 84 to 80 °W									
Correction to Latitude										Correction to Longitude									
84°	83°	83°	82°	82°	81°	81°	80°	80°	Longitude	84°	83°	83°	82°	82°	81°	81°	80°	80°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	50° 0'	0	0	0	0	0	0	0	0	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	49° 45'	0	0.1	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 30'	0	0.1	0.1	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 15'	0	0.1	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 0'	0	0.1	0	-0.1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 45'	0	0.1	0	-0.1	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 30'	0	0.1	0	-0.1	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 15'	0	0.1	0	-0.1	0	0	0	0	0	0
0	0	0	0	0	-0.1	-0.1	0	0	48° 0'	0	0	0	-0.1	0	0	0	0	0	0
0	0	0	0	0	-0.1	-0.1	-0.1	0	47° 45'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-0.1	0	47° 30'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 15'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	46° 45'	0	0	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	46° 30'	0	0	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	46° 15'	-0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	46° 0'	-0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	0	0	0	0	0	0	0	0.1	0.1
0	0	0	0	0	0	0	0	0	45° 30'	-0.1	0	0	0	0	0	0	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	45° 15'	-0.1	0	0	0	0	0	0	0	0.1	0.1
-0.1	-0.1	0	-0.1	0	0	0	0	0	45° 0'	-0.1	0	0	0	0	0	0	0	0	0
0	-0.1	-0.1	-0.1	0	0	0	0	0	44° 45'	-0.1	0	0	0	-0.1	0	0	0	0	0
0	0	-0.1	0	0	0	0	0	0	44° 30'	-0.1	0	0	0	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	44° 15'	0	0	0	-0.1	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	44° 0'	0	0	0	-0.1	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	43° 45'	0	0	0	-0.1	0	0	0	-0.1	-0.1	-0.1
-0.1	0	0	0	0	0	0	0	0	43° 30'	-0.1	0	0	-0.1	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	43° 15'	-0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	43° 0'	-0.1	-0.1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	42° 45'	0	-0.1	-0.1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	42° 30'	0	-0.1	-0.1	0	0	0	0	0	0	0
0.1	0.1	0	0	0	0	0	-0.1	0	42° 15'	0	-0.1	0	0	0	0	0	0	0	0
0.1	0.1	0	0	0	0	0	-0.1	0	42° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	41° 45'	-0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	-0.1	-0.1	0	0	0	41° 30'	-0.1	0	0	0.1	0.1	0	0	0	0	0
0	0	0	-0.1	-0.1	-0.1	0	0	0	41° 15'	-0.1	0	0	0.1	0.1	0	0	0	0	0
0	0	0	-0.1	0	0	0	0	0	41° 0'	-0.1	0	0.1	0.1	0.1	0	-0.1	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0	40° 45'	-0.1	0	0.1	0.1	0	-0.1	-0.1	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0	40° 30'	-0.1	0	0	0.1	0	-0.1	-0.1	0	0	0.1
-0.1	-0.1	0	0	0	0	0	0	0	40° 15'	0	0	0	0	0	0	0	0	0	0.1
0	0	0	0	0	0	0	0	0	40° 0'	0	0	-0.1	0	0	0	0	0	0	0.1

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 80 to 76 °W									
Correction to Latitude										Correction to Longitude									
80°	79°	79°	78°	78°	77°	77°	76°	76°	Longitude	80°	79°	79°	78°	78°	77°	77°	76°	76°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	-0.1	-0.1	0	0	0	0	0	50° 0'	-0.1	-0.1	0	0	0	0	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	0	0	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	0	0	0	0	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	-0.1	-0.1	0	49° 15'	-0.1	0	0	0	0	0.1	0.1	0.1	0.1	
0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	49° 0'	0	0	0	0	0	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	48° 45'	0	0	0	0	0	0.1	0.1	0.1	0.1	
0	-0.1	0	0	0	0	-0.1	-0.1	-0.1	48° 30'	0	0	0	0	0	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	-0.1	-0.1	-0.1	48° 15'	0	0	0	0	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	-0.1	-0.1	48° 0'	0	0	0	0	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 45'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
-0.1	0	0	0	0	0	0	0	0	47° 30'	0	0	0	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	47° 15'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 0'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	-0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 30'	-0.1	0	0	0.1	0.1	0.1	0.1	0.1	0	
0	0	-0.1	0	0	0	0	0	0	46° 15'	0	0	0	0	0	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	-0.1	0	0	0	0	0	46° 0'	0	0	0	0	0	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	45° 45'	0.1	0	0	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	-0.1	0	0	0	45° 30'	0.1	0	0	0	0	0	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	45° 15'	0.1	0	0	0	0	0	0	0	0.1	
0	0	0	0	0	0	0	0	0	45° 0'	0	0	0	0	0	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	44° 45'	0	0	0	0	0	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	44° 30'	0	0	0	0	0	0.1	0	0.1	0.1	
0	0	0	0.1	0.1	0.1	0	0	0	44° 15'	0	0	0	0	0	0.1	0	0.1	0.2	
0	0	0	0	0	0	0	0	0	44° 0'	-0.1	0	0	0	0	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 45'	-0.1	0	0	0	0	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 30'	-0.1	0	0	0	0	0.1	0.1	0.1	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	43° 15'	0	0	0	0	0	0	0.1	0.1	0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 0'	0	0	0.1	0.1	0	0	0	0.1	0.1	
0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	42° 45'	0	0	0.1	0.1	0	0	0	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	42° 30'	0	0.1	0.1	0.1	0	0	0	0.1	0.1	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	42° 15'	0	0.1	0.1	0.1	0	0	0	0	0.1	
-0.1	-0.1	-0.1	0	0	0	0	0	0	42° 0'	0	0.1	0.1	0.1	0	-0.1	-0.1	0	0.1	
0	0	0	0	0	0	0	0	0	41° 45'	0	0.1	0.1	0	0	-0.1	0	0.1	0.1	
0	0	0	0	0.1	0.1	0	0	0	41° 30'	0	0.1	0.1	0	0	-0.1	0	0.1	0.1	
0	0	0	0	0.1	0.1	0	0	0.1	41° 15'	0	0.1	0.1	0	0	0	0	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	41° 0'	0	0.1	0.1	0	-0.1	0	0	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	40° 45'	0	0.1	0	0	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0.1	0.1	40° 30'	0.1	0.1	0	-0.1	-0.1	0	0	0	0	
0	-0.1	0	0	0.1	0	0	0	0	40° 15'	0.1	0.1	0	-0.1	-0.1	0	0	0	0	
-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1	40° 0'	0.1	0.1	0	-0.1	-0.1	0	0	0	0	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 76 to 72 °W									
Correction to Latitude										Correction to Longitude									
76°	75°	75°	74°	74°	73°	73°	72°	72°	Longitude	76°	75°	75°	74°	74°	73°	73°	72°	72°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0.1	0.1	49° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0.1	49° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	49° 15'	0.1	0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.2
-0.1	-0.1	0	0	-0.1	0	0	0	0	49° 0'	0.1	0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.2
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	48° 45'	0.1	0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	48° 30'	0.1	0.1	0	0.1	0.1	0	0	0.1	0.1	0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	48° 15'	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	-0.1	-0.1	48° 0'	0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	-0.1	-0.1	47° 45'	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.2	0.2
0	0	0	0	0	0	0	0	0	47° 30'	0	0.1	0.1	0.1	0	0.1	0.1	0.1	0.2	0.2
0	0	0	0	0	0	0	0	0.1	47° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
0	0	0	0	0	0	0	0.1	0.1	47° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0.1	0.1	0.1	46° 45'	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	46° 30'	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	-0.1	46° 15'	0.1	0	0	0.1	0.1	0	0.1	0.1	0.2	0.2
0	0	0	-0.1	0	0	-0.1	-0.1	-0.1	46° 0'	0.1	0	0	0	0	0	0.1	0.1	0.2	0.2
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	45° 45'	0.1	0.1	0.1	0	0	0	0.2	0.2	0.1	0.1
0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	45° 30'	0.1	0.1	0.1	0.1	0	0	0.2	0.2	0.1	0.1
0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	45° 15'	0.1	0.1	0.1	0.1	0	0	0.2	0.1	0	0
0	0	0	-0.1	-0.1	-0.1	-0.1	0	0	45° 0'	0.1	0.1	0.2	0.1	0	0	0.1	0.1	0	0
0	0	0	-0.1	-0.1	-0.1	0	0	0	44° 45'	0.1	0.1	0.2	0.2	0	0	0.1	0.1	0	0
0	0	0	0	0	0	0	0	0	44° 30'	0.1	0.2	0.2	0.2	0	0	0.1	0.1	0	0
0	0	0	0	0	0	0	0	0	44° 15'	0.2	0.2	0.2	0.1	0	0	0.1	0.1	0	0
0	0	0	0	0	0	0	0	0	44° 0'	0.2	0.2	0.2	0.1	-0.1	0	0.1	0.1	0	0
0	0	0	0	0	0	0	0	0	43° 45'	0.2	0.2	0.2	0.1	-0.1	0	0.2	0.1	0	0
0	0	0.1	0.1	0.1	0	0	0	0	43° 30'	0.1	0.2	0.2	0.1	-0.1	0	0.2	0	0	0
0	0	0	0.1	0.1	0.1	0	0	0	43° 15'	0.1	0.1	0.2	0.1	0	0.1	0.2	0	0	0
-0.1	0	0	0	0.1	0.1	0	0	0	43° 0'	0.1	0.1	0.1	0	0	0.1	0.2	0	0	0
0	0	-0.1	0	0	0	0	0	0	42° 45'	0.1	0.1	0.1	0	0	0.2	0.2	0	0	0
0	0	-0.1	0	0	0	0	0	0	42° 30'	0.1	0.1	0.1	-0.1	-0.1	0.1	0.2	0	0	0
0	0	0	0	0	0	0	0.1	0.1	42° 15'	0.1	0.2	0.1	-0.1	-0.1	0.1	0.2	0	0	0
0	0	0	0.1	0	0	0	0.1	0.1	42° 0'	0.1	0.1	0	-0.1	0	0.2	0.1	0	0	0
0	0	0.1	0.1	0	0	0	0.1	0.1	41° 45'	0.1	0.1	0	-0.1	0	0.2	0	-0.1	0	0
0	0.1	0.1	0.1	0	0	0.1	0.1	0.1	41° 30'	0.1	0	-0.1	0	0.1	0.2	0	-0.1	0	0
0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.1	41° 15'	0	0	0	0	0.1	0.1	-0.1	-0.1	0	0
0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	41° 0'	0	-0.1	0	0.1	0.1	0.1	-0.1	0	0	0
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	40° 45'	0	0	0.1	0.1	0.1	0	-0.1	0	0	0
0.1	0	0	0	0	0.1	0.1	0.1	0.1	40° 30'	0	0.1	0.1	0.1	0.1	0	-0.1	0	0	0
0	0	0	0	0	0.1	0.1	0.1	0.1	40° 15'	0	0.1	0.1	0	0	0	-0.1	0	0	0
-0.1	-0.1	0	0	0.1	0.1	0.1	0.1	0.1	40° 0'	0	0	0	0	0	-0.1	0	0	0	0













# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 52 to 48 °W									
Correction to Latitude										Correction to Longitude									
52°	51°	51°	50°	50°	49°	49°	48°	48°	Longitude	52°	51°	51°	50°	50°	49°	49°	48°	48°	Latitude
0'	30'	0'	30'	0'	30'	0'	30'	0'		0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	-0.1	-0.1	0	0	0	0	0	50° 0'	0.4	0.4	0.3	0.2	0	-0.1	-0.1	0	0.1	
0	0	0	0	0	0	0	0	0	49° 45'	0.4	0.4	0.4	0.1	-0.1	-0.1	-0.1	0	0.1	
0	0	0	0	0	0	0	0	0	49° 30'	0.4	0.4	0.4	0.1	-0.1	-0.1	0	0.1	0.2	
0.1	0.1	0	0	0	0	0	0	0	49° 15'	0.3	0.5	0.4	0.1	-0.1	-0.1	0	0.1	0.2	
0.1	0.1	0.1	0	0	0	0	0	0	49° 0'	0.3	0.5	0.4	0.1	-0.1	-0.1	0	0.1	0.2	
0.1	0.1	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	48° 45'	0.3	0.5	0.5	0.2	0	-0.1	0	0	0.1	
0.1	0.1	0.2	0.2	0.1	0	-0.1	-0.2	-0.1	48° 30'	0.3	0.4	0.4	0.3	0.1	0	0	0	0.1	
0.1	0.1	0.2	0.2	0.2	0.1	-0.1	-0.2	-0.2	48° 15'	0.3	0.3	0.4	0.3	0.2	0.2	0.1	0	0.1	
0.1	0.1	0.1	0.2	0.2	0.1	0	-0.1	-0.1	48° 0'	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.1	0.1	
0.1	0.1	0.1	0.1	0.2	0.2	0.1	0	0	47° 45'	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.2	0.1	
0.1	0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	47° 30'	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.1	
0	0	0	0.1	0	0.1	0.2	0.2	0.2	47° 15'	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	
0	0	0	0	0	0	0.1	0.2	0.1	47° 0'	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	
0	0	0	0	0	0	0.1	0.1	0.1	46° 45'	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.3	
0	0	0	0	0	0	0	0	0	46° 30'	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.3	
0	0.1	0	0	0	0	0	0	0	46° 15'	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.3	
0	0	0	0	0	0	0	0	0	46° 0'	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0.1	45° 45'	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0.1	45° 30'	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	
0	0	0	0	0	0	0.1	0.1	0.1	45° 15'	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	
0	0	0	0	0	0	0.1	0.1	0.1	45° 0'	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	
0	0	0.1	0.1	0	0	0.1	0.1	0.1	44° 45'	0.3	0.3	0.2	0.2	0.2	0.1	0	0.1	0.2	
0	0.1	0.1	0.1	0	0	0.1	0.1	0.1	44° 30'	0.3	0.2	0.2	0.2	0.2	0.1	-0.1	0	0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 15'	0.3	0.2	0.2	0.2	0.2	0.1	-0.1	0	0.2	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	44° 0'	0.3	0.2	0.2	0.2	0.2	0.1	-0.1	0.1	0.2	
0.1	0.1	0.1	0	0	0.1	0	0	0	43° 45'	0.3	0.2	0.2	0.2	0.2	0.1	0	0.1	0.2	
0.2	0.1	0.1	0	0.1	0	0	0	0	43° 30'	0.3	0.3	0.3	0.2	0.2	0.1	0	0.1	0.1	
0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	43° 15'	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	
0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	43° 0'	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	
0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	42° 45'	0.4	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.1	
0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	42° 30'	0.4	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.2	
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	42° 15'	0.3	0.3	0.1	0	0.2	0.3	0.1	0.1	0.2	
0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	42° 0'	0.3	0.3	0.1	0.1	0.2	0.3	0.1	0.1	0.2	
0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	41° 45'	0.3	0.2	0.1	0.1	0.3	0.3	0.1	0.1	0.2	
0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	41° 30'	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	
0.1	0.1	0.1	0	0	0.1	0.1	0	0	41° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0.1	0.1	0	0	0	0.1	0.1	0	0	41° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	
0.1	0	0	0	0.1	0.1	0	0	0.1	40° 45'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	40° 30'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 48 to 44 °W									
Correction to Latitude										Correction to Longitude									
48°	47°	47°	46°	46°	45°	45°	44°	44°	Longitude	48°	47°	47°	46°	46°	45°	45°	44°	44°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0.1	0.1	0	0	0	0	50° 0'	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
0	0	0	0	0	0	0	0	0	49° 30'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2
0	0	0	0	0	0	-0.1	0	0	49° 15'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2
0	0	0	0	0	-0.1	-0.1	-0.1	0	49° 0'	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	48° 45'	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	48° 30'	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1
-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	48° 15'	0.1	0.2	0.2	0.2	0.3	0.3	0.1	0.1	0.1	0.1
-0.1	-0.1	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	47° 45'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1
0.1	0.1	0	0	0	0	0	0	0	47° 30'	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0
0.2	0.1	0.1	0	0	0	0	0	0	47° 15'	0.2	0.1	0.1	0.3	0.3	0.2	0.2	0.1	0.1	0
0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	47° 0'	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0	0	-0.1
0.1	0.1	0	0	0	0.1	0.1	0.2	0.2	46° 45'	0.3	0.2	0.2	0.3	0.2	0.2	0.1	0	0	-0.1
0	0	0	0	0.1	0.2	0.2	0.2	0.2	46° 30'	0.3	0.2	0.2	0.3	0.2	0.1	0.1	0	0	0
0	0.1	0	0.1	0.1	0.2	0.2	0.2	0.1	46° 15'	0.3	0.2	0.2	0.3	0.1	0	0.1	0	0.1	0.1
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	46° 0'	0.2	0.1	0.2	0.2	0	0	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	45° 45'	0.1	0.1	0.2	0.2	0	0	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0	0	0	0	45° 30'	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0	0	0.1	0.1	45° 15'	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.1	45° 0'	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 45'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 30'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 15'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	44° 0'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 45'	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0	43° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	43° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 45'	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2
0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 30'	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2
0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 15'	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2
0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 0'	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 45'	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 30'	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 15'	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	41° 0'	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2
0.1	0	0	0	0.1	0.1	0.1	0.1	0.1	40° 45'	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	40° 30'	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2





# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 40 to 36 °W									
Correction to Latitude										Correction to Longitude									
40°	39°	39°	38°	38°	37°	37°	36°	36°	Longitude	40°	39°	39°	38°	38°	37°	37°	36°	36°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0	0	0.1	0.1	0.1	0	0	0	49° 45'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0	0	49° 30'	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0	0	49° 15'	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	
0	0.1	0.1	0.1	0.1	0	0	0	0	49° 0'	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	
0	0.1	0.1	0.1	0	0	0	0	0	48° 45'	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 30'	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 15'	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 45'	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 30'	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 15'	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	47° 0'	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	46° 45'	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	
0	0	0	0	0	0	0	0	0	46° 30'	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	
0	0	0	0	0	0	0	0	0	46° 15'	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	
0.1	0	0	0	0	0	0	0	0	46° 0'	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	
0.1	0	0	0	0	0	0	0	0	45° 45'	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	45° 30'	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	45° 15'	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	45° 0'	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0	44° 45'	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	
0.1	0.1	0	0	0	0	0	0	0	44° 30'	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	
0.1	0.1	0	0	0	0	0	0	0	44° 15'	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	44° 0'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	43° 45'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 30'	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 15'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	
0	0	0	0	0	0	0	0	0	43° 0'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	42° 45'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0.1	0.1	0	0	0	0	0	0	42° 30'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0.1	0.1	0	0	0	0	0	0	0	42° 15'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0	0	0	0.1	0.1	0	0	0	42° 0'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0	0	0.1	0.1	0.1	0	0	0	41° 45'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	41° 30'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	41° 15'	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	
0	0	0	0	0.1	0.1	0.1	0	0	41° 0'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0.1	0.1	0	0	40° 45'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0.1	0.1	0.1	0	0	0	0	40° 30'	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0.1	0.1	0.1	0	0	0	0	40° 15'	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	40° 0'	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 36 to 32 °W									
Correction to Latitude										Correction to Longitude									
36°	35°	35°	34°	34°	33°	33°	32°	32°	Longitude	36°	35°	35°	34°	34°	33°	33°	32°	32°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0	0	0	0	0	0	0	49° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	49° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	49° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	48° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	48° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	48° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	47° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	47° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	47° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	47° 0'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	46° 45'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	46° 30'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	46° 15'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	46° 0'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	45° 45'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	45° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	45° 15'	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	45° 0'	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1
0	0	0	0	0	0	0	0	0	44° 45'	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0	0	0	0	0	0	0	44° 30'	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0	0	0	0	0	0	0	44° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0	0	0	0	0	0	0	44° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0	0	0	0	0	0	0	43° 45'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0	0	0	0	0	0	0	43° 30'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0.1	0	0	0	0	0	0	43° 15'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
0	0	0.1	0	0	0	0	0	0	43° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0.1	0	0	0	0	0	0	0	42° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	42° 30'	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	42° 15'	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	42° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
0	0	0	0	0	0	0	0	0	41° 45'	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1
0	0	0	0	0	0	0	0	0	41° 30'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1
0	0	0	0	0	0	0	0	0	41° 15'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1
0	0	0	0	0	0	0	0	0	41° 0'	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	40° 45'	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1
0	0	0	0	0	0	0	0	0	40° 30'	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
0	0	0	0	0	0	0	0	0	40° 15'	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
0	0	0	0	0	0	0	0	0	40° 0'	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 32 to 28 °W									
Correction to Latitude										Correction to Longitude									
32°	31°	31°	30°	30°	29°	29°	28°	28°	Longitude	32°	31°	31°	30°	30°	29°	29°	28°	28°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.1	0.1	0.2	0.1	0.1	0	0.1	0.1	
0	0	0	0	0	0	0	0	0	49° 30'	0.1	0.1	0.1	0.2	0.1	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	49° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0.1	
0	0	0	0	0	0	0	0	0	49° 0'	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 45'	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	48° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	47° 30'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	47° 15'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0	47° 0'	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 45'	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 30'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 15'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	46° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	45° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	45° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	45° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	45° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	44° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	44° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	44° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	44° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0	0	43° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0	43° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	
0	0	0	0	0	0	0	0	0.1	43° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	43° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	42° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	42° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	42° 15'	0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	42° 0'	0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 30'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 15'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 0'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0	40° 45'	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
0	0	0	0	0	0	0	0	0.1	40° 30'	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
0	0	0	0	0	0	0	0.1	0.1	40° 15'	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
0	0	0	0	0	0	0	0.1	0	40° 0'	0.1	0.1	0.1	0.1	0.1	0	0	0	0	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 28 to 24 °W									
Correction to Latitude										Correction to Longitude									
28°	27°	27°	26°	26°	25°	25°	24°	24°	Longitude	28°	27°	27°	26°	26°	25°	25°	24°	24°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0	-0.1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	49° 30'	0.1	0	-0.1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	49° 15'	0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	49° 0'	0.1	0	0	-0.1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 45'	0.1	0	0	-0.1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 30'	0	0	0	-0.1	0	0	0	-0.1	0	0
0	0	0	0	0	0	0	0	0	48° 15'	0.1	0	0	-0.1	-0.1	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	48° 0'	0.1	0	0	0	-0.1	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	-0.1	47° 45'	0.1	0	0	0	-0.1	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	-0.1	47° 30'	0.1	0	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	47° 15'	0.1	0.1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	47° 0'	0.1	0.1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	46° 45'	0.1	0.1	0	0	0	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	46° 30'	0.1	0.1	0	0	0	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	46° 15'	0.1	0.1	0	0	0	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	46° 0'	0.1	0	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	45° 45'	0.1	0	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	45° 30'	0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	45° 15'	0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0.1	45° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0.1	44° 45'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	44° 30'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	44° 15'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	44° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	43° 45'	0	0	0	0	0	0	0	0	0	0
0	0.1	0	0	0	0	0	0	0.1	43° 30'	0	0	0	0	0	0	0	0	0	0
0.1	0.1	0.1	0	0.1	0.1	0.1	0	0.1	43° 15'	0	0	0	0	0	0	0	0	0	0
0	0	0	0.1	0.1	0.1	0.1	0.1	0	43° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0.1	0.1	0.1	0.1	0	42° 45'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0.1	0.1	0.1	42° 30'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0.1	0.1	42° 15'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0.1	0	0	0.1	42° 0'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	41° 45'	0	0	0	0	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0.1	41° 30'	0	0	0	0	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0.1	41° 15'	0	0	0	0	-0.1	0	0	-0.1	0	0
0	0	0	0.1	0	0	0	0	0.1	41° 0'	0	0	0	0	0	0	0	-0.1	-0.1	0
0	0	0	0	0	0	0	0	0	40° 45'	0	0	0	0	0	0	-0.1	-0.1	-0.1	0
0.1	0	0	0	0	0	0	0	0	40° 30'	0	0	0	0	0	0	-0.1	-0.1	-0.1	0
0.1	0	0	0	0	0	0	0	0	40° 15'	0	0	0	-0.1	0	-0.1	0	0	0	-0.1
0	0	0	0.1	0.1	0	0	0.1	0	40° 0'	0	0	0	-0.1	0	-0.1	0	0	0	-0.1

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 24 to 20 °W									
Correction to Latitude										Correction to Longitude									
24°	23°	23°	22°	22°	21°	21°	20°	20°	Longitude	24°	23°	23°	22°	22°	21°	21°	20°	20°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0	0	0	0	0	0	0	0	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 45'	0	0	0	0	0	0	0	0	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 30'	0	0	0	0	0	0	0	0	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 15'	0	-0.1	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	49° 0'	0	-0.1	0	0	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	48° 45'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 30'	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 15'	-0.1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	48° 0'	-0.1	-0.1	0	0	0	0	0	0	0	0
-0.1	-0.1	0	0	0	0	0	0	0	47° 45'	-0.1	-0.1	-0.1	0	0	0	0	0	0	-0.1
-0.1	-0.1	-0.1	0	0	0	0	0	0	47° 30'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	47° 15'	0	-0.1	-0.1	-0.1	0	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	47° 0'	0	-0.1	-0.1	-0.1	-0.1	0	0	0	0	-0.1
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	46° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0	0	0	0	0	0	0	0	0	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0	0	0	0	0	-0.1	0	0	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	45° 30'	0	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	45° 15'	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0	0	0	0	0	0	0	0	45° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0	0	0	0	0	0	44° 45'	0	0	0	0	-0.1	-0.1	-0.1	0	0	-0.1
0	0.1	0.1	0	0	0	0	0	0	44° 30'	0	0	0	0	0	-0.1	-0.1	0	0	-0.1
0	0	0	0	0	0	0	0	0	44° 15'	0	-0.1	0	0	0	-0.1	-0.1	0	0	-0.1
0	0	0	0	0.1	0	0	0	0	44° 0'	0	0	0	0	0	-0.1	-0.1	0	0	-0.1
0	0	0	0	0.1	0.1	0	0	0.1	43° 45'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0	0	0.1	0.1	0	0.1	0.1	43° 30'	0	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	43° 15'	0	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	43° 0'	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0.1	0.1	0.1	0.1	0.1	0	0	42° 45'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	42° 30'	0	0	0	-0.1	-0.1	-0.1	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	42° 15'	0	0	0	-0.1	-0.1	-0.1	0	-0.1	0	0
0.1	0.1	0.1	0.1	0.1	0	0.1	0	0.1	42° 0'	0	0	0	-0.1	-0.1	0	0	0	0	-0.1
0	0.1	0.1	0.1	0.1	0	0	0	0.1	41° 45'	0	0	-0.1	-0.1	0	0	0	0	0	-0.1
0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	41° 30'	0	0	-0.1	-0.1	0	0	0	0	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 15'	0	0	-0.1	-0.1	0	0	0	0	-0.1	-0.1
0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	41° 0'	-0.1	0	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	-0.1
0	0.1	0	0	0.1	0.1	0.1	0.1	0.1	40° 45'	-0.1	0	0	-0.1	0	0	-0.1	-0.1	-0.1	-0.1
0	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	40° 30'	-0.1	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	40° 15'	-0.1	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	40° 0'	-0.1	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	0

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 20 to 16 °W									
Correction to Latitude										Correction to Longitude									
20°	19°	19°	18°	18°	17°	17°	16°	16°	Longitude	20°	19°	19°	18°	18°	17°	17°	16°	16°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 45'	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 30'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 15'	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 0'	0	0	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 45'	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 30'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	46° 45'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	46° 30'	0	0	0	0	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0	46° 15'	0	0	0.1	0	-0.1	-0.1	0	0	-0.1	
0	0	0	0.1	0.1	0	0	0	0	46° 0'	0	0	0	0	-0.1	-0.1	0	0	-0.1	
0	0	0	0.1	0.1	0	0	0	0	45° 45'	-0.1	0	0	0	-0.1	-0.1	0	0	-0.1	
0	0	0	0.1	0.1	0	0	0	0	45° 30'	-0.1	0	0	0	-0.1	0	0	-0.1	-0.1	
0	0	0	0.1	0.1	0	0	0	0	45° 15'	-0.1	-0.1	0	0	0	0	0	0	0	
0	0	0.1	0.1	0.1	0.1	0	0	0	45° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	
0	0	0.1	0.1	0.1	0.1	0	0	0.1	44° 45'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	-0.1	
0	0	0	0	0	0	0	0	0.1	44° 30'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	-0.1	-0.2	
0	0	0	0	0	0	0	0.1	0.1	44° 15'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.2	
0	0	0	0	-0.1	-0.1	0	0	0.1	44° 0'	-0.1	-0.1	0	0	0	0	0	-0.2	-0.2	
0.1	0	0	0	0	0	0	0.1	0	43° 45'	-0.1	-0.1	0	0.1	0	0	-0.1	-0.2	-0.2	
0.1	0	0	0	0	0.1	0.1	0.1	0	43° 30'	-0.1	0	0	0	0	-0.1	-0.1	-0.2	-0.1	
0.1	0	0	0	0.1	0.1	0.1	0.1	0	43° 15'	-0.1	0	0	0	0	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0.1	0.1	0.1	0.1	0.1	0	43° 0'	-0.1	0.1	0	0	-0.1	-0.1	0	-0.1	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 45'	0	0	0	-0.1	-0.1	-0.1	0	0	-0.1	
0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 30'	0	0	-0.1	-0.1	0	0	0	0	-0.1	
0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 15'	0	0	-0.1	-0.1	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	42° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	41° 45'	-0.1	-0.1	-0.1	0	0	0	0	-0.1	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	41° 30'	-0.1	-0.1	-0.1	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	41° 15'	-0.1	-0.1	-0.1	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	41° 0'	-0.1	-0.1	0	0	0	0	0	0	-0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	40° 45'	-0.1	-0.1	0	0	0	0	0	0	0	
0.1	0	0	0	0	0	0	0	0.1	40° 30'	-0.1	-0.1	-0.1	0	0	0	0	0	-0.1	
0.1	0	0	0	0	0	0	0	0.1	40° 15'	-0.1	-0.1	-0.1	0	0.1	-0.1	-0.1	0	-0.1	
0.1	0	0	0	0	0	0	0	0.1	40° 0'	0	-0.1	-0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 16 to 12 °W									
Correction to Latitude										Correction to Longitude									
16°	15°	15°	14°	14°	13°	13°	12°	12°	Longitude	16°	15°	15°	14°	14°	13°	13°	12°	12°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	0	0	0.1	0	0	0.1	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	0.1	
0	0	0	0	0	0	0	0	0	49° 30'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0.1	
0	0	0	0	0	0	0	0	0	49° 15'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.2	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	48° 45'	0	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	
0	0	0	0	0	0	0	0.1	0.1	48° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0	
0	0	0	0	0	0	0	0	0.1	48° 15'	-0.1	-0.1	-0.1	0	-0.1	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0.1	48° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0.1	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0	0	0	0	46° 45'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
0	0	0	0	0	0.1	0	0	0	46° 30'	0	-0.1	-0.1	-0.1	-0.1	0	0	-0.2	-0.3	
0	0	0	0	0	0.1	0.1	0.1	0	46° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.2	-0.3	
0	0.1	0	0	0	0.1	0.1	0.1	0	46° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.2	
0	0	0	0	0	0	0	0	0	45° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	45° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	-0.1	0	0	0	-0.1	-0.1	-0.1	-0.1	45° 15'	0	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	-0.1	-0.1	0	45° 0'	0	-0.1	-0.2	-0.1	0	0.1	-0.1	-0.2	-0.1	
0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	44° 45'	-0.1	-0.1	-0.1	-0.1	0.1	0.1	-0.1	-0.1	-0.2	
0.1	0.2	0.1	0	0	0.1	0.2	0.2	0.2	44° 30'	-0.2	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.2	
0.1	0.1	0	0	0	0	0.1	0.2	0.2	44° 15'	-0.2	-0.1	0	0	0	-0.1	-0.1	-0.2	-0.2	
0.1	0	0	0	0	0	0	0	0	44° 0'	-0.2	-0.1	0.1	0	0	-0.1	-0.2	-0.2	-0.2	
0	0	0	0.1	0.1	0.1	0	-0.1	-0.1	43° 45'	-0.2	0	0	0	0	-0.1	-0.2	-0.2	-0.2	
0	0	0.1	0.2	0.2	0.1	0	-0.1	-0.2	43° 30'	-0.1	0	0	-0.1	0	-0.1	-0.1	0	-0.1	
0	0	0.1	0.2	0.2	0.2	0.1	-0.1	-0.2	43° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0	0.1	0	
0	0	0.1	0.1	0.1	0.1	0	0	-0.1	43° 0'	-0.1	-0.1	-0.2	-0.1	0	0.1	0.1	0.2	0.1	
0.1	0.1	0.1	0	0	0	0	0.1	0.1	42° 45'	-0.1	-0.2	-0.2	-0.1	0	0.1	0.2	0.2	0.1	
0.1	0.1	0.1	0	0	0	0.1	0.1	0.2	42° 30'	-0.1	-0.2	-0.2	-0.1	0	0.1	0.1	0.1	0.1	
0.1	0.1	0.1	0	0	0	0.1	0.1	0.2	42° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0	0.1	0.1	
0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	42° 0'	-0.1	-0.1	-0.1	0	0	0	0	0.1	0.1	
0.1	0.1	0	0	0	0	0	0.1	0.1	41° 45'	-0.1	-0.1	0	0	0	0	0	0	0	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	41° 30'	-0.1	-0.1	0	0	0	0	0	0	0	
0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	41° 15'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	
0	0	0	0	0.1	0.1	0.1	0.1	0.1	41° 0'	-0.1	-0.1	-0.1	-0.1	0	0	0	0	0	
0	0	0	0	0	0.1	0.1	0.1	0.1	40° 45'	0	-0.1	-0.1	0	-0.1	-0.1	0	0	0	
0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	40° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	
0.1	0.1	0	0	0.1	0	0	0	0	40° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	
0.1	0	0	0	0	-0.1	-0.1	-0.1	-0.1	40° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	

## Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 12 to 8 °W									
Correction to Latitude										Correction to Longitude									
12°	11°	11°	10°	10°	9°	9°	8°	8°	Longitude	12°	11°	11°	10°	10°	9°	9°	8°	8°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	0.1	0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0	0	0	49° 45'	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0	0	0	0	0	0.1	0.1	0	49° 30'	0.1	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0	0.1	0.1	0	0	0	0.1	0.1	0	49° 15'	0	0.1	0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	49° 0'	0	0	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.2	0.2	0.1	0.1	0	0	0.1	48° 45'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0	48° 30'	0	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1
0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0	48° 15'	0	-0.1	-0.1	0	0	0	0	0	0	0
0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	48° 0'	0	-0.1	-0.1	-0.1	0	0	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	47° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0	0	0	0.1	0.2	47° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0	0.1	0.1	0.1	0	0	0	0	0.1	47° 15'	-0.2	-0.1	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0	0	0.1	0.1	0.1	0	0	0	0	47° 0'	-0.2	-0.2	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0.1	0.1	0.1	0.1	0.1	0	46° 45'	-0.2	-0.2	-0.1	0	0	0	0	-0.1	-0.1	-0.1
0	0	0	0	0	0.1	0.1	0.1	0.1	46° 30'	-0.3	-0.2	-0.1	0	0	0	0	0	-0.1	-0.1
0	0	0	0	0	0	0	0.1	0.1	46° 15'	-0.3	-0.2	-0.1	-0.1	-0.1	0	0	0	0	0
0	0	-0.1	-0.1	-0.1	-0.1	0	0	0	46° 0'	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0
0	-0.1	-0.1	-0.2	-0.1	-0.1	0	0	0	45° 45'	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1
-0.1	-0.1	-0.1	-0.1	-0.1	0	0	0	0	45° 30'	-0.1	0	0	0	-0.2	-0.2	-0.1	0	0	0
-0.1	-0.1	-0.1	0	0	0	0.1	0.1	0.1	45° 15'	-0.1	0	0	-0.1	-0.2	-0.2	-0.1	0	0	0
0	0	0.1	0.1	0.2	0.1	0	0.1	0.1	45° 0'	-0.1	0	0	-0.1	-0.2	-0.2	-0.1	-0.1	0	0
0.1	0.1	0.2	0.3	0.2	0.1	-0.1	0	0	44° 45'	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.2	-0.1	-0.1
0.2	0.2	0.2	0.2	0.2	0	-0.1	-0.2	-0.1	44° 30'	-0.2	-0.2	-0.2	-0.2	-0.1	0.1	0	-0.2	-0.2	-0.2
0.2	0.2	0.2	0.1	0	-0.1	-0.2	-0.3	-0.3	44° 15'	-0.2	-0.2	-0.1	-0.1	0	0.3	0.1	-0.2	-0.2	-0.2
0	0	0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.4	44° 0'	-0.2	-0.2	-0.1	0	0.1	0.3	0.2	-0.1	-0.1	-0.1
-0.1	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2	-0.3	43° 45'	-0.2	-0.1	0	0.1	0.1	0.2	0.2	0.1	0	0
-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	43° 30'	-0.1	-0.2	-0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 15'	0	-0.2	-0.2	0.1	0.2	0.1	0	0.1	0.1	0.1
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	43° 0'	0.1	-0.2	-0.2	0	0.2	0.1	0	0.1	0.1	0.1
0.1	0.1	0	0	0	0	0	0	0	42° 45'	0.1	-0.1	-0.1	0	0.2	0.1	0	0.1	0	0
0.2	0.1	0	0	0	0	0	0	0	42° 30'	0.1	0	-0.1	0	0.1	0.1	0	0	0	0
0.2	0.1	0.1	0.1	0.1	0	0	0	0	42° 15'	0.1	0	0	0	0.1	0.2	0.1	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	42° 0'	0.1	0.1	0	0	0.1	0.2	0.1	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	41° 45'	0	0	0	0	0.1	0.2	0.1	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	41° 30'	0	0	0.1	0.1	0.1	0.3	0.2	0	0	0
0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	41° 15'	0	0	0	0.1	0.2	0.3	0.2	0	0	0
0.1	0.1	0.1	0.1	0.1	0	0	0	0	41° 0'	0	0	0	0	0.2	0.3	0.2	0.1	0	0
0.1	0.1	0.1	0.1	0	0	0	0	0	40° 45'	0	0	0	0.1	0.3	0.3	0.2	0.1	0	0
0.1	0.1	0.1	0.1	0	0	0	0	0	40° 30'	0	0	0	0.1	0.3	0.3	0.1	0.1	0.1	0.1
0	0.1	0	0	0	0	0	0	0	40° 15'	0	0	0	0.1	0.4	0.3	0.1	0.1	0.1	0.1
-0.1	0	0	-0.1	0	0	0	0	0	40° 0'	-0.1	0	0	0.1	0.3	0.3	0.1	0.1	0	0



# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 8 to 4 °W									
Correction to Latitude										Correction to Longitude									
8°	7°	7°	6°	6°	5°	5°	4°	4°	Longitude	8°	7°	7°	6°	6°	5°	5°	4°	4°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	49° 30'	-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0.1	0.1	49° 15'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	-0.1	
0.1	0.1	0	0	0	0	0	0	0	49° 0'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.1	0	0	0	0	0	0	0	0	48° 45'	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 30'	-0.1	0	-0.1	-0.1	0	0	-0.1	-0.1	0	
0	0	0	0	0	0	0	0	0	48° 15'	0	0	-0.1	-0.1	0	0	-0.1	-0.1	-0.1	
0.1	0.1	0.1	0	0	0	0	0.1	0	48° 0'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0	
0.2	0.2	0.2	0.1	0.1	0	0	0	0	47° 45'	0.1	0	0	0	0	-0.1	-0.1	-0.1	0	
0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	47° 30'	0	0	0	0	0	0	-0.1	-0.1	0	
0.1	0.2	0.2	0.2	0.2	0.1	0	0	0	47° 15'	-0.1	0	0	0	0.1	0.1	0	-0.1	-0.1	
0	0.1	0.1	0.1	0.2	0.2	0.1	0	0	47° 0'	-0.1	0	0	0	0.1	0.2	0.1	-0.1	-0.1	
0	0	0	0.1	0.1	0.2	0.2	0.1	0	46° 45'	-0.1	-0.1	-0.1	-0.1	0.1	0.2	0.1	0	0	
0.1	0	0	0	0	0.1	0.2	0.1	0	46° 30'	-0.1	0	-0.1	-0.1	0	0.1	0.2	0.1	0	
0.1	0	0	0	0	0	0.1	0.1	0.1	46° 15'	0	0	0	-0.1	-0.1	0	0.1	0.2	0.1	
0	0	0	0	0	0	0	0	0.1	46° 0'	0	0	0	0	-0.1	0	0.1	0.2	0.2	
0	0	0	0	0	0	0	0	0.1	45° 45'	-0.1	-0.1	0	0	0	0	0	0.1	0.2	
0	0	0	0.1	0	0	0	0.1	0.1	45° 30'	0	-0.1	0	0	0	0	0	0	0.1	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	45° 15'	0	-0.1	-0.1	0	0	0	0	0	0.1	
0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	45° 0'	0	-0.1	-0.1	0	0	0	0	0	0	
0	0.1	0.1	0.1	0.1	0.1	0	0	0	44° 45'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	0	
-0.1	-0.1	-0.1	0	-0.1	-0.1	-0.2	-0.1	-0.1	44° 30'	-0.2	-0.1	-0.1	-0.1	0	0.1	0.1	-0.1	0	
-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.1	44° 15'	-0.2	-0.1	-0.1	-0.1	0.1	0.2	0	-0.2	-0.1	
-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.2	-0.2	44° 0'	-0.1	-0.1	-0.2	-0.1	0.1	0.1	0	-0.2	-0.2	
-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-0.2	-0.2	-0.2	43° 45'	0	-0.1	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	
-0.2	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.3	43° 30'	0.1	-0.1	-0.1	0	0	0	-0.1	-0.2	-0.2	
-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	43° 15'	0.1	0	-0.1	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	43° 0'	0.1	0	0	0	-0.1	-0.1	0	-0.1	-0.1	
0	0	-0.1	-0.1	-0.1	0	0	0	0	42° 45'	0	0	0.1	0	-0.1	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	42° 30'	0	0	0.1	0	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	42° 15'	0	0.1	0.1	0	-0.2	-0.1	-0.1	-0.1	0	
0	0	0.1	0.1	0	0	0	0	0	42° 0'	0	0	0.1	0	-0.1	-0.1	-0.1	-0.1	0	
0	0	0.1	0.1	0	0	0	0	0	41° 45'	0	0	0	0	-0.1	-0.1	-0.1	-0.1	0.1	
0	0	0	0	0	0	0	0	0	41° 30'	0	0	0	0	-0.1	-0.1	-0.1	0	0.1	
0	0	0	0	0	0	0	0	0	41° 15'	0	0	0	0	0	-0.1	-0.1	0	0.1	
0	0	0	0	0	0	-0.1	0	0	41° 0'	0	0	0	0	0	-0.1	-0.1	0	0	
0	0	0	0	0	0	0	0	0.1	40° 45'	0	0	0	0	0	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0.1	40° 30'	0.1	0	0	0	0	0	-0.1	-0.2	-0.1	
0	0	0.1	0.1	0.1	0.1	0	0	0	40° 15'	0.1	0	0	0	0	0	-0.1	-0.2	-0.1	
0	0	0	0	0.1	0.1	0	0	-0.1	40° 0'	0	-0.1	0	0	0	0	-0.1	-0.1	-0.1	

# Correct Astronomical Position to WGS84

Latitude 40 to 50 °N										Longitude 4 to 0 °W									
Correction to Latitude										Correction to Longitude									
4°	3°	3°	2°	2°	1°	1°	0°	0°	Longitude	4°	3°	3°	2°	2°	1°	1°	0°	0°	
0'	30'	0'	30'	0'	30'	0'	30'	0'	Latitude	0'	30'	0'	30'	0'	30'	0'	30'	0'	
0	0	0	0	0	0	0	0	0	50° 0'	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	0	49° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	-0.1	-0.1	-0.1	0	49° 30'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0.1	0	0	0	0	0	-0.1	-0.1	0	49° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	49° 0'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 45'	0	0	-0.1	-0.1	-0.1	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 30'	0	0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0.1	0	0	0	0	0	0	48° 15'	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	48° 0'	0	-0.1	-0.1	0	0	0	-0.1	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 45'	0	-0.1	-0.1	-0.1	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 30'	0	0	-0.1	-0.1	0	0	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	47° 15'	-0.1	0	0	-0.1	-0.1	0	0	-0.1	0	
0	0	0	0	0	0	0	0	0	47° 0'	-0.1	0	0	-0.1	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	46° 45'	0	0	0	0	-0.1	0	0	0	0	
0	0	0	0	0	0	0	0	0	46° 30'	0	0	0	0	0	0	0	0	0	
0.1	0	0	0	0	0	0	0	0	46° 15'	0.1	0	-0.1	0	0	0	0	0	0	
0.1	0	0	0	0	0	0	0	0	46° 0'	0.2	0.1	-0.1	-0.1	0	0	0	0	0	
0.1	0.1	0	0	0	0	0	0.1	0	45° 45'	0.2	0.1	0	-0.1	-0.1	-0.1	0	0	0	
0.1	0.1	0.1	0.1	0	0	0	0	0	45° 30'	0.1	0.2	0	-0.1	-0.1	-0.1	0	0	0.1	
0.2	0.2	0.2	0.1	0	0	0	0	0	45° 15'	0.1	0.2	0.1	0	0	0	0	0	0.1	
0.1	0.1	0.1	0.1	0	0	0	0	0	45° 0'	0	0.2	0.1	0	0	0	-0.1	0	0.1	
0	0	0	0	-0.1	-0.1	0	0	0	44° 45'	0	0.2	0.2	0.1	0.1	0	-0.1	0	0	
-0.1	0	0	-0.1	-0.1	-0.1	0	-0.1	0	44° 30'	0	0.2	0.2	0.1	0	-0.1	-0.1	0	0	
-0.1	-0.1	0	0	0	0	0	-0.1	0	44° 15'	-0.1	0.1	0.2	0.1	0	-0.1	0	0	0	
-0.2	-0.1	0	0	0	0	0	0	0	44° 0'	-0.2	0.1	0.1	0.1	0.1	0	0	0	0	
-0.2	-0.2	-0.1	0	0	0	-0.1	0	0	43° 45'	-0.2	0	0	0.1	0.1	0	0	0	0	
-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0	43° 30'	-0.2	-0.1	-0.1	0	0.1	0.1	0	0	0	
-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	0	43° 15'	-0.1	-0.1	-0.1	0	0.1	0.1	0	0	0	
-0.1	-0.1	-0.1	-0.1	0	0	-0.1	-0.1	0	43° 0'	-0.1	-0.1	-0.1	-0.1	0	0.1	0.1	0	0	
0	-0.1	-0.1	-0.1	0	0	0	0	0	42° 45'	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.1	
0	-0.1	-0.1	-0.1	0	0	0.1	0.1	0	42° 30'	-0.1	0	-0.1	-0.1	-0.1	0	0.1	0.1	0	
0	0	-0.1	-0.1	-0.1	0	0	0.1	0	42° 15'	0	0	-0.1	-0.1	-0.2	0	0.1	0	0	
0	0	0	0	-0.1	0	0	0.1	0	42° 0'	0	0	-0.1	-0.1	-0.2	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 45'	0.1	0.1	0	-0.1	-0.2	-0.1	0	0	0	
0	0	0	0	0	0	0	0	0	41° 30'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0	0	0	0	-0.1	-0.1	-0.1	0	41° 15'	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.1	0	0	
0	0.1	0.1	0	0	-0.1	-0.1	-0.1	0	41° 0'	0	0	0	0	-0.1	-0.1	0	0	-0.1	
0.1	0.1	0.1	0	0	0	-0.1	-0.1	0	40° 45'	-0.1	0	0	0	0	-0.1	0	0	-0.1	
0.1	0.1	0.1	0	0	0	0	0	0	40° 30'	-0.1	0	0.1	0.1	0	-0.1	0	-0.1	-0.1	
0	0	0	0	0	0	0	0	0	40° 15'	-0.1	0	0.1	0.1	0	0	0	-0.1	-0.1	
-0.1	-0.1	0	0	0.1	0	0	0.1	0	40° 0'	-0.1	0	0	0	0	0	0	-0.1	-0.1	