

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 861.6 mm
 Sunrise/Sunset Markers: X = ± 201.2 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	861.6	861.6	0.0							
11:55	12:05	21.8	861.4	861.7	21.8	8:25	3:35	806.4	509.5	953.9	880.0
11:50	12:10	43.6	860.8	861.9	43.6	8:20	3:40	819.2	494.2	956.7	897.8
11:45	12:15	65.4	859.8	862.3	65.4	8:15	3:45	831.5	478.7	959.4	915.4
11:40	12:20	87.2	858.4	862.8	87.2	8:10	3:50	843.4	463.0	962.1	932.9
11:35	12:25	108.9	856.5	863.4	109.0	8:05	3:55	854.9	447.0	964.7	950.2
11:30	12:30	130.5	854.3	864.2	130.7	8:00	4:00	866.0	430.8	967.3	967.3
11:25	12:35	152.1	851.6	865.1	152.5	7:55	4:05	876.7	414.4	969.7	984.2
11:20	12:40	173.6	848.5	866.1	174.1	7:50	4:10	887.0	397.9	972.2	1000.9
11:15	12:45	195.1	845.1	867.3	195.8	7:45	4:15	896.9	381.1	974.5	1017.5
11:10	12:50	216.4	841.2	868.6	217.4	7:40	4:20	906.3	364.1	976.7	1033.9
11:05	12:55	237.7	836.9	870.0	239.0	7:35	4:25	915.3	347.0	978.9	1050.1
11:00	1:00	258.8	832.3	871.6	260.5	7:30	4:30	923.9	329.7	981.0	1066.1
10:55	1:05	279.8	827.2	873.3	281.9	7:25	4:35	932.0	312.3	982.9	1081.9
10:50	1:10	300.7	821.8	875.0	303.3	7:20	4:40	939.7	294.7	984.8	1097.5
10:45	1:15	321.4	815.9	876.9	324.7	7:15	4:45	946.9	277.0	986.6	1112.9
10:40	1:20	342.0	809.7	878.9	345.9	7:10	4:50	953.7	259.1	988.3	1128.1
10:35	1:25	362.4	803.0	881.0	367.1	7:05	4:55	960.0	241.1	989.9	1143.1
10:30	1:30	382.7	796.0	883.2	388.3	7:00	5:00	965.9	223.0	991.3	1158.0
10:25	1:35	402.7	788.7	885.5	409.3	6:55	5:05	971.3	204.8	992.7	1172.6
10:20	1:40	422.6	780.9	887.9	430.3	6:50	5:10	976.3	186.5	993.9	1187.0
10:15	1:45	442.3	772.8	890.4	451.1	6:45	5:15	980.8	168.1	995.1	1201.2
10:10	1:50	461.7	764.3	892.9	471.9	6:40	5:20	984.8	149.6	996.1	1215.2
10:05	1:55	481.0	755.4	895.5	492.6	6:35	5:25	988.4	131.1	997.0	1229.1
10:00	2:00	500.0	746.2	898.2	513.2	6:30	5:30	991.4	112.5	997.8	1242.7
9:55	2:05	518.8	736.6	901.0	533.6	6:25	5:35	994.1	93.8	998.5	1256.1
9:50	2:10	537.3	726.7	903.8	554.0	6:20	5:40	996.2	75.1	999.0	1269.3
9:45	2:15	555.6	716.4	906.6	574.2	6:15	5:45	997.9	56.4	999.4	1282.3
9:40	2:20	573.6	705.8	909.5	594.4	6:10	5:50	999.0	37.6	999.8	1295.0
9:35	2:25	591.3	694.9	912.4	614.4	6:05	5:55	999.8	18.8	999.9	1307.6
9:30	2:30	608.8	683.6	915.4	634.3	6:00	6:00	1000.0	0.0	1000.0	1320.0
9:25	2:35	625.9	672.0	918.3	654.0	5:55	6:05	999.8	-18.8	999.9	1332.2
9:20	2:40	642.8	660.0	921.3	673.7	5:50	6:10	999.0	-37.6	999.8	1344.1
9:15	2:45	659.3	647.8	924.3	693.1	5:45	6:15	997.9	-56.4	999.4	1355.9
9:10	2:50	675.6	635.3	927.3	712.5	5:40	6:20	996.2	-75.1	999.0	1367.4
9:05	2:55	691.5	622.4	930.4	731.7	5:35	6:25	994.1	-93.8	998.5	1378.8
9:00	3:00	707.1	609.3	933.4	750.8	5:30	6:30	991.4	-112.5	997.8	1389.9
8:55	3:05	722.4	595.8	936.4	769.7	5:25	6:35	988.4	-131.1	997.0	1400.8
8:50	3:10	737.3	582.1	939.4	788.5	5:20	6:40	984.8	-149.6	996.1	1411.5
8:45	3:15	751.8	568.1	942.3	807.1	5:15	6:45	980.8	-168.1	995.1	1422.1
8:40	3:20	766.0	553.8	945.3	825.6	5:10	6:50	976.3	-186.5	993.9	1432.4
8:35	3:25	779.9	539.3	948.2	843.9	5:05	6:55	971.3	-204.8	992.7	1442.5
8:30	3:30	793.4	524.5	951.1	862.0	5:00	7:00	965.9	-223.0	991.3	1452.4

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 861.6 mm
 Sunrise/Sunset Markers: X = ± 201.2 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	960.0	-241.1	989.9	1462.1	2:55	9:05	691.5	-622.4	930.4	1637.2
4:50	7:10	953.7	-259.1	988.3	1471.6	2:50	9:10	675.6	-635.3	927.3	1642.3
4:45	7:15	946.9	-277.0	986.6	1480.9	2:45	9:15	659.3	-647.8	924.3	1647.2
4:40	7:20	939.7	-294.7	984.8	1490.0	2:40	9:20	642.8	-660.0	921.3	1651.9
4:35	7:25	932.0	-312.3	982.9	1498.9	2:35	9:25	625.9	-672.0	918.3	1656.4
4:30	7:30	923.9	-329.7	981.0	1507.6	2:30	9:30	608.8	-683.6	915.4	1660.8
4:25	7:35	915.3	-347.0	978.9	1516.1						
4:20	7:40	906.3	-364.1	976.7	1524.4						
4:15	7:45	896.9	-381.1	974.5	1532.6						
4:10	7:50	887.0	-397.9	972.2	1540.5						
4:05	7:55	876.7	-414.4	969.7	1548.2						
4:00	8:00	866.0	-430.8	967.3	1555.8						
3:55	8:05	854.9	-447.0	964.7	1563.1						
3:50	8:10	843.4	-463.0	962.1	1570.3						
3:45	8:15	831.5	-478.7	959.4	1577.3						
3:40	8:20	819.2	-494.2	956.7	1584.1						
3:35	8:25	806.4	-509.5	953.9	1590.7						
3:30	8:30	793.4	-524.5	951.1	1597.1						
3:25	8:35	779.9	-539.3	948.2	1603.4						
3:20	8:40	766.0	-553.8	945.3	1609.5						
3:15	8:45	751.8	-568.1	942.3	1615.4						
3:10	8:50	737.3	-582.1	939.4	1621.1						
3:05	8:55	722.4	-595.8	936.4	1626.7						
3:00	9:00	707.1	-609.3	933.4	1632.0						

Analematic Sundial

Latitude: 59.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 861.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-215.3	-211.3	-210.0	-204.4	-202.8	-195.8	-193.9	-185.6	-183.4	-174.1	-171.6
February	-155.8	-144.4	-141.4	-129.4	-126.4	-113.7	-110.5	-97.5	-94.2	-80.7	-77.3
March	-67.1	-53.3	-49.9	-35.9	-32.5	-18.4	-15.0	-0.9	2.6	16.6	20.0
April	40.8	54.5	57.9	71.3	74.7	87.8	91.0	103.9	107.0	119.4	122.4
May	137.1	148.4	151.1	161.6	164.1	173.8	176.0	184.8	186.9	194.6	196.4
June	205.9	210.9	212.0	215.6	216.5	218.8	219.1	219.9	220.1	218.5	219.2
July	216.5	213.0	212.0	207.3	206.0	199.9	198.3	191.1	189.2	180.9	178.7
August	164.7	154.5	151.9	140.9	138.2	126.6	123.6	111.6	108.5	96.0	92.8
September	73.4	60.2	56.8	43.3	39.9	26.3	23.0	9.2	5.8	-8.1	-11.5
October	-28.7	-42.5	-45.9	-59.6	-62.9	-76.5	-79.8	-93.1	-96.4	-109.3	-112.4
November	-131.0	-142.9	-145.7	-156.9	-159.6	-170.0	-172.5	-181.9	-184.1	-192.5	-194.5
December	-203.2	-209.1	-210.3	-214.6	-215.5	-218.3	-218.8	-219.9	-220.1	-219.5	-219.2

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	215.3	211.3	210.0	204.4	202.8	195.8	193.9	185.6	183.4	174.1	171.6
February	155.8	144.4	141.4	129.4	126.4	113.7	110.5	97.5	94.2	80.7	77.3
March	67.1	53.3	49.9	35.9	32.5	18.4	15.0	0.9	-2.6	-16.6	-20.0
April	-40.8	-54.5	-57.9	-71.3	-74.7	-87.8	-91.0	-103.9	-107.0	-119.4	-122.4
May	-137.1	-148.4	-151.1	-161.6	-164.1	-173.8	-176.0	-184.8	-186.9	-194.6	-196.4
June	-205.9	-210.9	-212.0	-215.6	-216.5	-218.8	-219.1	-219.9	-220.1	-218.5	-219.2
July	-216.5	-213.0	-212.0	-207.3	-206.0	-199.9	-198.3	-191.1	-189.2	-180.9	-178.7
August	-164.7	-154.5	-151.9	-140.9	-138.2	-126.6	-123.6	-111.6	-108.5	-96.0	-92.8
September	-73.4	-60.2	-56.8	-43.3	-39.9	-26.3	-23.0	-9.2	-5.8	8.1	11.5
October	28.7	42.5	45.9	59.6	62.9	76.5	79.8	93.1	96.4	109.3	112.4
November	131.0	142.9	145.7	156.9	159.6	170.0	172.5	181.9	184.1	192.5	194.5
December	203.2	209.1	210.3	214.6	215.5	218.3	218.8	219.9	220.1	219.5	219.2

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- | | | |
|---------|------------|--------------------|
| a) 1 | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1292.4 mm
 Sunrise/Sunset Markers: $X = \pm 301.7$ mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1292.4	1292.4	0.0							
11:55	12:05	32.7	1292.1	1292.6	32.7	8:25	3:35	1209.7	764.2	1430.9	1320.0
11:50	12:10	65.4	1291.2	1292.9	65.4	8:20	3:40	1228.7	741.3	1435.0	1346.7
11:45	12:15	98.1	1289.7	1293.4	98.1	8:15	3:45	1247.2	718.0	1439.1	1373.1
11:40	12:20	130.7	1287.5	1294.1	130.8	8:10	3:50	1265.1	694.4	1443.1	1399.3
11:35	12:25	163.3	1284.8	1295.1	163.5	8:05	3:55	1282.4	670.5	1447.1	1425.2
11:30	12:30	195.8	1281.4	1296.3	196.1	8:00	4:00	1299.0	646.2	1450.9	1450.9
11:25	12:35	228.2	1277.4	1297.6	228.7	7:55	4:05	1315.1	621.7	1454.6	1476.3
11:20	12:40	260.5	1272.8	1299.2	261.2	7:50	4:10	1330.5	596.8	1458.2	1501.4
11:15	12:45	292.6	1267.6	1300.9	293.7	7:45	4:15	1345.3	571.6	1461.7	1526.2
11:10	12:50	324.7	1261.8	1302.9	326.1	7:40	4:20	1359.5	546.2	1465.1	1550.8
11:05	12:55	356.5	1255.4	1305.0	358.4	7:35	4:25	1373.0	520.5	1468.3	1575.1
11:00	1:00	388.2	1248.4	1307.4	390.7	7:30	4:30	1385.8	494.6	1471.4	1599.1
10:55	1:05	419.7	1240.8	1309.9	422.9	7:25	4:35	1398.0	468.4	1474.4	1622.8
10:50	1:10	451.1	1232.6	1312.6	455.0	7:20	4:40	1409.5	442.0	1477.2	1646.2
10:45	1:15	482.2	1223.9	1315.4	487.0	7:15	4:45	1420.4	415.4	1479.9	1669.3
10:40	1:20	513.0	1214.5	1318.4	518.9	7:10	4:50	1430.6	388.6	1482.4	1692.2
10:35	1:25	543.7	1204.6	1321.6	550.7	7:05	4:55	1440.1	361.7	1484.8	1714.7
10:30	1:30	574.0	1194.1	1324.9	582.4	7:00	5:00	1448.9	334.5	1487.0	1736.9
10:25	1:35	604.1	1183.0	1328.3	614.0	6:55	5:05	1457.0	307.2	1489.0	1758.9
10:20	1:40	633.9	1171.4	1331.9	645.4	6:50	5:10	1464.4	279.7	1490.9	1780.5
10:15	1:45	663.4	1159.2	1335.6	676.7	6:45	5:15	1471.2	252.1	1492.6	1801.8
10:10	1:50	692.6	1146.4	1339.4	707.9	6:40	5:20	1477.2	224.4	1494.2	1822.9
10:05	1:55	721.5	1133.1	1343.3	738.9	6:35	5:25	1482.5	196.6	1495.5	1843.6
10:00	2:00	750.0	1119.3	1347.3	769.7	6:30	5:30	1487.2	168.7	1496.7	1864.0
9:55	2:05	778.2	1104.9	1351.4	800.4	6:25	5:35	1491.1	140.7	1497.7	1884.1
9:50	2:10	805.9	1090.0	1355.6	831.0	6:20	5:40	1494.3	112.6	1498.5	1903.9
9:45	2:15	833.4	1074.6	1359.9	861.4	6:15	5:45	1496.8	84.5	1499.2	1923.4
9:40	2:20	860.4	1058.7	1364.2	891.5	6:10	5:50	1498.6	56.4	1499.6	1942.6
9:35	2:25	887.0	1042.3	1368.6	921.6	6:05	5:55	1499.6	28.2	1499.9	1961.4
9:30	2:30	913.1	1025.4	1373.0	951.4	6:00	6:00	1500.0	0.0	1500.0	1980.0
9:25	2:35	938.9	1008.0	1377.5	981.0	5:55	6:05	1499.6	-28.2	1499.9	1998.3
9:20	2:40	964.2	990.1	1382.0	1010.5	5:50	6:10	1498.6	-56.4	1499.6	2016.2
9:15	2:45	989.0	971.7	1386.5	1039.7	5:45	6:15	1496.8	-84.5	1499.2	2033.8
9:10	2:50	1013.4	952.9	1391.0	1068.8	5:40	6:20	1494.3	-112.6	1498.5	2051.1
9:05	2:55	1037.3	933.6	1395.6	1097.6	5:35	6:25	1491.1	-140.7	1497.7	2068.2
9:00	3:00	1060.7	913.9	1400.1	1126.2	5:30	6:30	1487.2	-168.7	1496.7	2084.9
8:55	3:05	1083.5	893.7	1404.6	1154.6	5:25	6:35	1482.5	-196.6	1495.5	2101.2
8:50	3:10	1105.9	873.2	1409.1	1182.7	5:20	6:40	1477.2	-224.4	1494.2	2117.3
8:45	3:15	1127.8	852.2	1413.5	1210.7	5:15	6:45	1471.2	-252.1	1492.6	2133.1
8:40	3:20	1149.1	830.8	1417.9	1238.3	5:10	6:50	1464.4	-279.7	1490.9	2148.6
8:35	3:25	1169.8	809.0	1422.3	1265.8	5:05	6:55	1457.0	-307.2	1489.0	2163.7
8:30	3:30	1190.0	786.8	1426.6	1293.0	5:00	7:00	1448.9	-334.5	1487.0	2178.6

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Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1292.4 mm
 Sunrise/Sunset Markers: $X = \pm 301.7$ mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
4:55	7:05	1440.1	-361.7	1484.8	2193.1	2:55	9:05	1037.3	-933.6	1395.6	2455.9
4:50	7:10	1430.6	-388.6	1482.4	2207.4	2:50	9:10	1013.4	-952.9	1391.0	2463.4
4:45	7:15	1420.4	-415.4	1479.9	2221.4	2:45	9:15	989.0	-971.7	1386.5	2470.7
4:40	7:20	1409.5	-442.0	1477.2	2235.0	2:40	9:20	964.2	-990.1	1382.0	2477.8
4:35	7:25	1398.0	-468.4	1474.4	2248.4	2:35	9:25	938.9	-1008.0	1377.5	2484.6
4:30	7:30	1385.8	-494.6	1471.4	2261.4	2:30	9:30	913.1	-1025.4	1373.0	2491.2
4:25	7:35	1373.0	-520.5	1468.3	2274.2						
4:20	7:40	1359.5	-546.2	1465.1	2286.7						
4:15	7:45	1345.3	-571.6	1461.7	2298.8						
4:10	7:50	1330.5	-596.8	1458.2	2310.7						
4:05	7:55	1315.1	-621.7	1454.6	2322.3						
4:00	8:00	1299.0	-646.2	1450.9	2333.7						
3:55	8:05	1282.4	-670.5	1447.1	2344.7						
3:50	8:10	1265.1	-694.4	1443.1	2355.4						
3:45	8:15	1247.2	-718.0	1439.1	2365.9						
3:40	8:20	1228.7	-741.3	1435.0	2376.1						
3:35	8:25	1209.7	-764.2	1430.9	2386.0						
3:30	8:30	1190.0	-786.8	1426.6	2395.7						
3:25	8:35	1169.8	-809.0	1422.3	2405.1						
3:20	8:40	1149.1	-830.8	1417.9	2414.2						
3:15	8:45	1127.8	-852.2	1413.5	2423.1						
3:10	8:50	1105.9	-873.2	1409.1	2431.6						
3:05	8:55	1083.5	-893.7	1404.6	2440.0						
3:00	9:00	1060.7	-913.9	1400.1	2448.0						

Analemmatic Sundial

Latitude: 59.5° N/S

Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 1292.4 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-323.0	-316.9	-315.0	-306.7	-304.2	-293.8	-290.9	-278.4	-275.1	-261.1	-257.4
February	-233.6	-216.6	-212.1	-194.1	-189.5	-170.6	-165.7	-146.2	-141.2	-121.1	-116.0
March	-100.6	-80.0	-74.8	-53.9	-48.7	-27.6	-22.5	-1.3	3.9	24.9	30.0
April	61.3	81.8	86.9	107.0	112.0	131.8	136.6	155.9	160.6	179.1	183.6
May	205.7	222.6	226.7	242.4	246.2	260.7	264.1	277.2	280.4	291.9	294.5
June	308.8	316.3	318.0	323.5	324.7	328.2	328.7	329.9	330.1	327.7	328.8
July	324.7	319.6	318.0	311.0	309.0	299.9	297.4	286.6	283.7	271.4	268.1
August	247.1	231.7	227.8	211.4	207.3	190.0	185.4	167.4	162.8	144.0	139.2
September	110.1	90.2	85.3	65.0	59.9	39.5	34.4	13.8	8.6	-12.1	-17.3
October	-43.1	-63.8	-68.9	-89.4	-94.4	-114.7	-119.8	-139.6	-144.5	-163.9	-168.6
November	-196.5	-214.3	-218.6	-235.4	-239.5	-255.0	-258.7	-272.9	-276.2	-288.7	-291.8
December	-304.8	-313.6	-315.5	-321.9	-323.3	-327.4	-328.2	-329.9	-330.1	-329.3	-328.8

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	323.0	316.9	315.0	306.7	304.2	293.8	290.9	278.4	275.1	261.1	257.4
February	233.6	216.6	212.1	194.1	189.5	170.6	165.7	146.2	141.2	121.1	116.0
March	100.6	80.0	74.8	53.9	48.7	27.6	22.5	1.3	-3.9	-24.9	-30.0
April	-61.3	-81.8	-86.9	-107.0	-112.0	-131.8	-136.6	-155.9	-160.6	-179.1	-183.6
May	-205.7	-222.6	-226.7	-242.4	-246.2	-260.7	-264.1	-277.2	-280.4	-291.9	-294.5
June	-308.8	-316.3	-318.0	-323.5	-324.7	-328.2	-328.7	-329.9	-330.1	-327.7	-328.8
July	-324.7	-319.6	-318.0	-311.0	-309.0	-299.9	-297.4	-286.6	-283.7	-271.4	-268.1
August	-247.1	-231.7	-227.8	-211.4	-207.3	-190.0	-185.4	-167.4	-162.8	-144.0	-139.2
September	-110.1	-90.2	-85.3	-65.0	-59.9	-39.5	-34.4	-13.8	-8.6	12.1	17.3
October	43.1	63.8	68.9	89.4	94.4	114.7	119.8	139.6	144.5	163.9	168.6
November	196.5	214.3	218.6	235.4	239.5	255.0	258.7	272.9	276.2	288.7	291.8
December	304.8	313.6	315.5	321.9	323.3	327.4	328.2	329.9	330.1	329.3	328.8

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- | | | |
|---------|------------|--------------------|
| a) 1 | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1723.3 mm
 Sunrise/Sunset Markers: X = ± 402.3 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1723.3	1723.3	0.0							
11:55	12:05	43.6	1722.8	1723.4	43.6	8:25	3:35	1612.9	1019.0	1907.8	1759.9
11:50	12:10	87.2	1721.6	1723.8	87.3	8:20	3:40	1638.3	988.4	1913.4	1795.6
11:45	12:15	130.8	1719.6	1724.5	130.9	8:15	3:45	1662.9	957.4	1918.8	1830.8
11:40	12:20	174.3	1716.7	1725.5	174.4	8:10	3:50	1686.8	925.9	1924.2	1865.7
11:35	12:25	217.7	1713.0	1726.8	218.0	8:05	3:55	1709.8	894.0	1929.4	1900.3
11:30	12:30	261.1	1708.5	1728.3	261.5	8:00	4:00	1732.1	861.6	1934.5	1934.5
11:25	12:35	304.2	1703.2	1730.2	304.9	7:55	4:05	1753.5	828.9	1939.5	1968.4
11:20	12:40	347.3	1697.1	1732.2	348.3	7:50	4:10	1774.0	795.7	1944.3	2001.9
11:15	12:45	390.2	1690.1	1734.6	391.6	7:45	4:15	1793.7	762.2	1949.0	2035.0
11:10	12:50	432.9	1682.4	1737.2	434.8	7:40	4:20	1812.6	728.3	1953.5	2067.7
11:05	12:55	475.4	1673.9	1740.1	477.9	7:35	4:25	1830.6	694.0	1957.8	2100.1
11:00	1:00	517.6	1664.5	1743.2	521.0	7:30	4:30	1847.8	659.5	1961.9	2132.1
10:55	1:05	559.7	1654.4	1746.5	563.9	7:25	4:35	1864.0	624.6	1965.9	2163.7
10:50	1:10	601.4	1643.5	1750.1	606.7	7:20	4:40	1879.4	589.4	1969.6	2194.9
10:45	1:15	642.9	1631.8	1753.9	649.4	7:15	4:45	1893.9	553.9	1973.2	2225.8
10:40	1:20	684.0	1619.3	1757.9	691.9	7:10	4:50	1907.4	518.2	1976.6	2256.2
10:35	1:25	724.9	1606.1	1762.1	734.3	7:05	4:55	1920.1	482.2	1979.7	2286.3
10:30	1:30	765.4	1592.1	1766.5	776.5	7:00	5:00	1931.9	446.0	1982.7	2315.9
10:25	1:35	805.5	1577.3	1771.1	818.6	6:55	5:05	1942.7	409.6	1985.4	2345.2
10:20	1:40	845.2	1561.8	1775.9	860.5	6:50	5:10	1952.6	373.0	1987.9	2374.0
10:15	1:45	884.6	1545.5	1780.8	902.3	6:45	5:15	1961.6	336.2	1990.2	2402.4
10:10	1:50	923.5	1528.5	1785.9	943.8	6:40	5:20	1969.6	299.2	1992.2	2430.5
10:05	1:55	962.0	1510.8	1791.1	985.2	6:35	5:25	1976.7	262.1	1994.0	2458.1
10:00	2:00	1000.0	1492.4	1796.4	1026.3	6:30	5:30	1982.9	224.9	1995.6	2485.3
9:55	2:05	1037.5	1473.2	1801.9	1067.2	6:25	5:35	1988.1	187.6	1996.9	2512.1
9:50	2:10	1074.6	1453.4	1807.5	1108.0	6:20	5:40	1992.4	150.2	1998.0	2538.5
9:45	2:15	1111.1	1432.8	1813.2	1148.5	6:15	5:45	1995.7	112.7	1998.9	2564.5
9:40	2:20	1147.2	1411.6	1819.0	1188.7	6:10	5:50	1998.1	75.2	1999.5	2590.1
9:35	2:25	1182.6	1389.7	1824.8	1228.8	6:05	5:55	1999.5	37.6	1999.9	2615.3
9:30	2:30	1217.5	1367.2	1830.7	1268.5	6:00	6:00	2000.0	0.0	2000.0	2640.0
9:25	2:35	1251.8	1343.9	1836.7	1308.1	5:55	6:05	1999.5	-37.6	1999.9	2664.3
9:20	2:40	1285.6	1320.1	1842.6	1347.3	5:50	6:10	1998.1	-75.2	1999.5	2688.3
9:15	2:45	1318.7	1295.6	1848.7	1386.3	5:45	6:15	1995.7	-112.7	1998.9	2711.8
9:10	2:50	1351.2	1270.5	1854.7	1425.0	5:40	6:20	1992.4	-150.2	1998.0	2734.9
9:05	2:55	1383.0	1244.8	1860.7	1463.4	5:35	6:25	1988.1	-187.6	1996.9	2757.5
9:00	3:00	1414.2	1218.5	1866.8	1501.6	5:30	6:30	1982.9	-224.9	1995.6	2779.8
8:55	3:05	1444.7	1191.7	1872.8	1539.4	5:25	6:35	1976.7	-262.1	1994.0	2801.7
8:50	3:10	1474.6	1164.2	1878.8	1577.0	5:20	6:40	1969.6	-299.2	1992.2	2823.1
8:45	3:15	1503.7	1136.2	1884.7	1614.2	5:15	6:45	1961.6	-336.2	1990.2	2844.1
8:40	3:20	1532.1	1107.7	1890.6	1651.1	5:10	6:50	1952.6	-373.0	1987.9	2864.8
8:35	3:25	1559.8	1078.6	1896.4	1687.7	5:05	6:55	1942.7	-409.6	1985.4	2885.0
8:30	3:30	1586.7	1049.1	1902.1	1724.0	5:00	7:00	1931.9	-446.0	1982.7	2904.8

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1723.3 mm
 Sunrise/Sunset Markers: X = ± 402.3 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	1920.1	-482.2	1979.7	2924.2	2:55	9:05	1383.0	-1244.8	1860.7	3274.5
4:50	7:10	1907.4	-518.2	1976.6	2943.2	2:50	9:10	1351.2	-1270.5	1854.7	3284.6
4:45	7:15	1893.9	-553.9	1973.2	2961.8	2:45	9:15	1318.7	-1295.6	1848.7	3294.3
4:40	7:20	1879.4	-589.4	1969.6	2980.0	2:40	9:20	1285.6	-1320.1	1842.6	3303.7
4:35	7:25	1864.0	-624.6	1965.9	2997.8	2:35	9:25	1251.8	-1343.9	1836.7	3312.8
4:30	7:30	1847.8	-659.5	1961.9	3015.2	2:30	9:30	1217.5	-1367.2	1830.7	3321.6
4:25	7:35	1830.6	-694.0	1957.8	3032.2						
4:20	7:40	1812.6	-728.3	1953.5	3048.9						
4:15	7:45	1793.7	-762.2	1949.0	3065.1						
4:10	7:50	1774.0	-795.7	1944.3	3081.0						
4:05	7:55	1753.5	-828.9	1939.5	3096.4						
4:00	8:00	1732.1	-861.6	1934.5	3111.5						
3:55	8:05	1709.8	-894.0	1929.4	3126.2						
3:50	8:10	1686.8	-925.9	1924.2	3140.6						
3:45	8:15	1662.9	-957.4	1918.8	3154.6						
3:40	8:20	1638.3	-988.4	1913.4	3168.2						
3:35	8:25	1612.9	-1019.0	1907.8	3181.4						
3:30	8:30	1586.7	-1049.1	1902.1	3194.3						
3:25	8:35	1559.8	-1078.6	1896.4	3206.8						
3:20	8:40	1532.1	-1107.7	1890.6	3218.9						
3:15	8:45	1503.7	-1136.2	1884.7	3230.7						
3:10	8:50	1474.6	-1164.2	1878.8	3242.2						
3:05	8:55	1444.7	-1191.7	1872.8	3253.3						
3:00	9:00	1414.2	-1218.5	1866.8	3264.1						

Analematic Sundial

Latitude: 59.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1723.3 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-430.7	-422.5	-420.0	-408.9	-405.6	-391.7	-387.8	-371.3	-366.9	-348.1	-343.2
February	-311.5	-288.8	-282.8	-258.7	-252.7	-227.5	-221.0	-194.9	-188.3	-161.5	-154.6
March	-134.2	-106.7	-99.7	-71.9	-64.9	-36.9	-29.9	-1.8	5.1	33.1	40.1
April	81.7	109.0	115.8	142.7	149.4	175.7	182.1	207.8	214.1	238.8	244.8
May	274.3	296.8	302.2	323.2	328.3	347.5	352.1	369.7	373.9	389.2	392.7
June	411.8	421.7	424.0	431.3	433.0	437.6	438.2	439.9	440.1	437.0	438.4
July	433.0	426.1	424.0	414.7	412.0	399.8	396.6	382.1	378.3	361.9	357.5
August	329.4	309.0	303.8	281.9	276.4	253.3	247.3	223.2	217.1	192.0	185.6
September	146.8	120.3	113.7	86.7	79.9	52.7	45.9	18.4	11.5	-16.1	-23.0
October	-57.5	-85.1	-91.8	-119.2	-125.9	-153.0	-159.7	-186.1	-192.7	-218.5	-224.9
November	-261.9	-285.7	-291.5	-313.8	-319.3	-340.0	-345.0	-363.8	-368.3	-385.0	-389.0
December	-406.4	-418.2	-420.7	-429.2	-431.1	-436.5	-437.6	-439.9	-440.1	-439.1	-438.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	430.7	422.5	420.0	408.9	405.6	391.7	387.8	371.3	366.9	348.1	343.2
February	311.5	288.8	282.8	258.7	252.7	227.5	221.0	194.9	188.3	161.5	154.6
March	134.2	106.7	99.7	71.9	64.9	36.9	29.9	1.8	-5.1	-33.1	-40.1
April	-81.7	-109.0	-115.8	-142.7	-149.4	-175.7	-182.1	-207.8	-214.1	-238.8	-244.8
May	-274.3	-296.8	-302.2	-323.2	-328.3	-347.5	-352.1	-369.7	-373.9	-389.2	-392.7
June	-411.8	-421.7	-424.0	-431.3	-433.0	-437.6	-438.2	-439.9	-440.1	-437.0	-438.4
July	-433.0	-426.1	-424.0	-414.7	-412.0	-399.8	-396.6	-382.1	-378.3	-361.9	-357.5
August	-329.4	-309.0	-303.8	-281.9	-276.4	-253.3	-247.3	-223.2	-217.1	-192.0	-185.6
September	-146.8	-120.3	-113.7	-86.7	-79.9	-52.7	-45.9	-18.4	-11.5	16.1	23.0
October	57.5	85.1	91.8	119.2	125.9	153.0	159.7	186.1	192.7	218.5	224.9
November	261.9	285.7	291.5	313.8	319.3	340.0	345.0	363.8	368.3	385.0	389.0
December	406.4	418.2	420.7	429.2	431.1	436.5	437.6	439.9	440.1	439.1	438.4

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- | | | |
|---------|------------|--------------------|
| a) 1 | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 2154.1 mm
 Sunrise/Sunset Markers: X = ± 502.9 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	2154.1	2154.1	0.0							
11:55	12:05	54.5	2153.6	2154.3	54.5	8:25	3:35	2016.1	1273.7	2384.8	2199.9
11:50	12:10	109.0	2152.0	2154.8	109.1	8:20	3:40	2047.9	1235.5	2391.7	2244.4
11:45	12:15	163.5	2149.5	2155.7	163.6	8:15	3:45	2078.7	1196.7	2398.6	2288.5
11:40	12:20	217.9	2145.9	2156.9	218.0	8:10	3:50	2108.5	1157.4	2405.2	2332.2
11:35	12:25	272.2	2141.3	2158.5	272.5	8:05	3:55	2137.3	1117.5	2411.8	2375.4
11:30	12:30	326.3	2135.6	2160.4	326.8	8:00	4:00	2165.1	1077.0	2418.2	2418.2
11:25	12:35	380.3	2129.0	2162.7	381.1	7:55	4:05	2191.8	1036.1	2424.4	2460.5
11:20	12:40	434.1	2121.3	2165.3	435.4	7:50	4:10	2217.5	994.6	2430.4	2502.3
11:15	12:45	487.7	2112.7	2168.2	489.5	7:45	4:15	2242.2	952.7	2436.2	2543.7
11:10	12:50	541.1	2103.0	2171.5	543.5	7:40	4:20	2265.8	910.4	2441.8	2584.7
11:05	12:55	594.2	2092.3	2175.1	597.4	7:35	4:25	2288.3	867.5	2447.2	2625.1
11:00	1:00	647.0	2080.7	2179.0	651.2	7:30	4:30	2309.7	824.3	2452.4	2665.1
10:55	1:05	699.6	2068.0	2183.1	704.8	7:25	4:35	2330.0	780.7	2457.3	2704.6
10:50	1:10	751.8	2054.4	2187.6	758.3	7:20	4:40	2349.2	736.7	2462.0	2743.7
10:45	1:15	803.6	2039.8	2192.3	811.7	7:15	4:45	2367.3	692.4	2466.5	2782.2
10:40	1:20	855.1	2024.2	2197.4	864.9	7:10	4:50	2384.3	647.7	2470.7	2820.3
10:35	1:25	906.1	2007.6	2202.6	917.9	7:05	4:55	2400.1	602.8	2474.7	2857.8
10:30	1:30	956.7	1990.1	2208.1	970.7	7:00	5:00	2414.8	557.5	2478.3	2894.9
10:25	1:35	1006.9	1971.6	2213.9	1023.3	6:55	5:05	2428.4	512.0	2481.7	2931.4
10:20	1:40	1056.5	1952.3	2219.8	1075.6	6:50	5:10	2440.7	466.2	2484.9	2967.5
10:15	1:45	1105.7	1931.9	2226.0	1127.8	6:45	5:15	2452.0	420.2	2487.7	3003.0
10:10	1:50	1154.4	1910.7	2232.3	1179.8	6:40	5:20	2462.0	374.1	2490.3	3038.1
10:05	1:55	1202.5	1888.5	2238.9	1231.4	6:35	5:25	2470.9	327.7	2492.5	3072.6
10:00	2:00	1250.0	1865.5	2245.6	1282.9	6:30	5:30	2478.6	281.2	2494.5	3106.7
9:55	2:05	1296.9	1841.5	2252.4	1334.1	6:25	5:35	2485.1	234.5	2496.2	3140.2
9:50	2:10	1343.2	1816.7	2259.4	1385.0	6:20	5:40	2490.5	187.7	2497.6	3173.2
9:45	2:15	1388.9	1791.0	2266.5	1435.6	6:15	5:45	2494.6	140.9	2498.6	3205.7
9:40	2:20	1433.9	1764.5	2273.7	1485.9	6:10	5:50	2497.6	94.0	2499.4	3237.6
9:35	2:25	1478.3	1737.1	2281.0	1535.9	6:05	5:55	2499.4	47.0	2499.8	3269.1
9:30	2:30	1521.9	1708.9	2288.4	1585.7	6:00	6:00	2500.0	0.0	2500.0	3300.0
9:25	2:35	1564.8	1679.9	2295.8	1635.1	5:55	6:05	2499.4	-47.0	2499.8	3330.4
9:20	2:40	1607.0	1650.1	2303.3	1684.1	5:50	6:10	2497.6	-94.0	2499.4	3360.3
9:15	2:45	1648.4	1619.5	2310.8	1732.9	5:45	6:15	2494.6	-140.9	2498.6	3389.7
9:10	2:50	1689.0	1588.1	2318.4	1781.3	5:40	6:20	2490.5	-187.7	2497.6	3418.6
9:05	2:55	1728.8	1556.0	2325.9	1829.3	5:35	6:25	2485.1	-234.5	2496.2	3446.9
9:00	3:00	1767.8	1523.2	2333.5	1877.0	5:30	6:30	2478.6	-281.2	2494.5	3474.8
8:55	3:05	1805.9	1489.6	2341.0	1924.3	5:25	6:35	2470.9	-327.7	2492.5	3502.1
8:50	3:10	1843.2	1455.3	2348.4	1971.2	5:20	6:40	2462.0	-374.1	2490.3	3528.9
8:45	3:15	1879.6	1420.3	2355.9	2017.8	5:15	6:45	2452.0	-420.2	2487.7	3555.2
8:40	3:20	1915.1	1384.6	2363.2	2063.9	5:10	6:50	2440.7	-466.2	2484.9	3580.9
8:35	3:25	1949.7	1348.3	2370.5	2109.7	5:05	6:55	2428.4	-512.0	2481.7	3606.2
8:30	3:30	1983.4	1311.3	2377.7	2155.0	5:00	7:00	2414.8	-557.5	2478.3	3631.0

Analemmatic Sundial

Latitude: 59.5° N/S

Earliest Sunrise: 2:39 a.m. Latest Sunset: 9:21 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 2154.1 mm
 Sunrise/Sunset Markers: X = ± 502.9 mm

Local Time		X	Y	Z	W	Local Time		X	Y	Z	W
4:55	7:05	2400.1	-602.8	2474.7	3655.2	2:55	9:05	1728.8	-1556.0	2325.9	4093.1
4:50	7:10	2384.3	-647.7	2470.7	3679.0	2:50	9:10	1689.0	-1588.1	2318.4	4105.7
4:45	7:15	2367.3	-692.4	2466.5	3702.3	2:45	9:15	1648.4	-1619.5	2310.8	4117.9
4:40	7:20	2349.2	-736.7	2462.0	3725.0	2:40	9:20	1607.0	-1650.1	2303.3	4129.7
4:35	7:25	2330.0	-780.7	2457.3	3747.3	2:35	9:25	1564.8	-1679.9	2295.8	4141.0
4:30	7:30	2309.7	-824.3	2452.4	3769.0	2:30	9:30	1521.9	-1708.9	2288.4	4152.0
4:25	7:35	2288.3	-867.5	2447.2	3790.3						
4:20	7:40	2265.8	-910.4	2441.8	3811.1						
4:15	7:45	2242.2	-952.7	2436.2	3831.4						
4:10	7:50	2217.5	-994.6	2430.4	3851.2						
4:05	7:55	2191.8	-1036.1	2424.4	3870.6						
4:00	8:00	2165.1	-1077.0	2418.2	3889.4						
3:55	8:05	2137.3	-1117.5	2411.8	3907.8						
3:50	8:10	2108.5	-1157.4	2405.2	3925.7						
3:45	8:15	2078.7	-1196.7	2398.6	3943.2						
3:40	8:20	2047.9	-1235.5	2391.7	3960.2						
3:35	8:25	2016.1	-1273.7	2384.8	3976.7						
3:30	8:30	1983.4	-1311.3	2377.7	3992.8						
3:25	8:35	1949.7	-1348.3	2370.5	4008.5						
3:20	8:40	1915.1	-1384.6	2363.2	4023.7						
3:15	8:45	1879.6	-1420.3	2355.9	4038.4						
3:10	8:50	1843.2	-1455.3	2348.4	4052.7						
3:05	8:55	1805.9	-1489.6	2341.0	4066.6						
3:00	9:00	1767.8	-1523.2	2333.5	4080.1						

Analemmatic Sundial

Latitude: 59.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 2154.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-538.3	-528.2	-525.1	-511.1	-507.0	-489.6	-484.8	-464.1	-458.6	-435.2	-429.0
February	-389.4	-361.0	-353.6	-323.4	-315.9	-284.3	-276.2	-243.7	-235.4	-201.9	-193.3
March	-167.7	-133.4	-124.6	-89.8	-81.2	-46.1	-37.4	-2.2	6.4	41.4	50.1
April	102.1	136.3	144.8	178.3	186.7	219.6	227.6	259.8	267.6	298.5	306.0
May	342.8	371.0	377.8	404.0	410.3	434.4	440.1	462.1	467.3	486.6	490.9
June	514.7	527.1	530.0	539.1	541.2	547.0	547.8	549.9	550.1	546.2	548.0
July	541.2	532.6	530.0	518.3	515.0	499.8	495.7	477.7	472.9	452.3	446.8
August	411.8	386.2	379.7	352.4	345.5	316.6	309.1	279.0	271.3	240.0	232.0
September	183.5	150.4	142.1	108.3	99.9	65.8	57.4	23.0	14.4	-20.2	-28.8
October	-71.8	-106.3	-114.8	-149.1	-157.4	-191.2	-199.6	-232.6	-240.9	-273.2	-281.1
November	-327.4	-357.1	-364.3	-392.3	-399.1	-425.0	-431.2	-454.8	-460.3	-481.2	-486.3
December	-508.0	-522.7	-525.8	-536.5	-538.9	-545.7	-547.0	-549.9	-550.1	-548.8	-548.0

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	538.3	528.2	525.1	511.1	507.0	489.6	484.8	464.1	458.6	435.2	429.0
February	389.4	361.0	353.6	323.4	315.9	284.3	276.2	243.7	235.4	201.9	193.3
March	167.7	133.4	124.6	89.8	81.2	46.1	37.4	2.2	-6.4	-41.4	-50.1
April	-102.1	-136.3	-144.8	-178.3	-186.7	-219.6	-227.6	-259.8	-267.6	-298.5	-306.0
May	-342.8	-371.0	-377.8	-404.0	-410.3	-434.4	-440.1	-462.1	-467.3	-486.6	-490.9
June	-514.7	-527.1	-530.0	-539.1	-541.2	-547.0	-547.8	-549.9	-550.1	-546.2	-548.0
July	-541.2	-532.6	-530.0	-518.3	-515.0	-499.8	-495.7	-477.7	-472.9	-452.3	-446.8
August	-411.8	-386.2	-379.7	-352.4	-345.5	-316.6	-309.1	-279.0	-271.3	-240.0	-232.0
September	-183.5	-150.4	-142.1	-108.3	-99.9	-65.8	-57.4	-23.0	-14.4	20.2	28.8
October	71.8	106.3	114.8	149.1	157.4	191.2	199.6	232.6	240.9	273.2	281.1
November	327.4	357.1	364.3	392.3	399.1	425.0	431.2	454.8	460.3	481.2	486.3
December	508.0	522.7	525.8	536.5	538.9	545.7	547.0	549.9	550.1	548.8	548.0

Southern Hemisphere

The shaded "Date" boxes identify the two extremes of the "Date Scale" that occur on the Summer and Winter Solstices.

A number of "Date Scale" configurations are available including the following "Date Line" combinations:

- | | | |
|---------|------------|--------------------|
| a) 1 | c) 1,10,20 | e) 1,5,10,15,20,25 |
| b) 1,15 | d) 1,11,21 | f) 1,6,11,16,21,26 |