

Analemmatic Sundial

Latitude: 31.5° N/S

Earliest Sunrise: 4:54 a.m. Latest Sunset: 7:06 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 522.5 mm
 Sunrise/Sunset Markers: X = ± 708.3 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	522.5	522.5	0.0							
11:55	12:05	21.8	522.4	522.8	21.8	8:10	3:50	843.4	280.7	888.9	877.4
11:50	12:10	43.6	522.0	523.8	43.6	8:05	3:55	854.9	271.1	896.9	891.1
11:45	12:15	65.4	521.4	525.5	65.4	8:00	4:00	866.0	261.2	904.6	904.6
11:40	12:20	87.2	520.5	527.8	87.2	7:55	4:05	876.7	251.3	912.0	917.7
11:35	12:25	108.9	519.4	530.7	108.9	7:50	4:10	887.0	241.3	919.2	930.5
11:30	12:30	130.5	518.0	534.2	130.6	7:45	4:15	896.9	231.1	926.2	943.0
11:25	12:35	152.1	516.4	538.4	152.2	7:40	4:20	906.3	220.8	932.8	955.2
11:20	12:40	173.6	514.6	543.1	173.8	7:35	4:25	915.3	210.4	939.2	967.0
11:15	12:45	195.1	512.5	548.3	195.3	7:30	4:30	923.9	200.0	945.3	978.6
11:10	12:50	216.4	510.1	554.1	216.8	7:25	4:35	932.0	189.4	951.1	989.8
11:05	12:55	237.7	507.5	560.4	238.2	7:20	4:40	939.7	178.7	956.5	1000.6
11:00	1:00	258.8	504.7	567.2	259.4	7:15	4:45	946.9	168.0	961.7	1011.1
10:55	1:05	279.8	501.6	574.4	280.6	7:10	4:50	953.7	157.1	966.6	1021.3
10:50	1:10	300.7	498.3	582.0	301.7	7:05	4:55	960.0	146.2	971.1	1031.2
10:45	1:15	321.4	494.8	590.0	322.6	7:00	5:00	965.9	135.2	975.3	1040.7
10:40	1:20	342.0	491.0	598.4	343.5	6:55	5:05	971.3	124.2	979.2	1049.8
10:35	1:25	362.4	487.0	607.0	364.2	6:50	5:10	976.3	113.1	982.8	1058.7
10:30	1:30	382.7	482.7	616.0	384.7	6:45	5:15	980.8	101.9	986.1	1067.2
10:25	1:35	402.7	478.2	625.2	405.2	6:40	5:20	984.8	90.7	989.0	1075.3
10:20	1:40	422.6	473.5	634.7	425.4	6:35	5:25	988.4	79.5	991.6	1083.1
10:15	1:45	442.3	468.6	644.4	445.6	6:30	5:30	991.4	68.2	993.8	1090.6
10:10	1:50	461.7	463.5	654.2	465.5	6:25	5:35	994.1	56.9	995.7	1097.7
10:05	1:55	481.0	458.1	664.2	485.3	6:20	5:40	996.2	45.5	997.2	1104.5
10:00	2:00	500.0	452.5	674.4	504.9	6:15	5:45	997.9	34.2	998.4	1110.9
9:55	2:05	518.8	446.7	684.6	524.3	6:10	5:50	999.0	22.8	999.3	1117.1
9:50	2:10	537.3	440.7	694.9	543.5	6:05	5:55	999.8	11.4	999.8	1122.8
9:45	2:15	555.6	434.4	705.3	562.5	6:00	6:00	1000.0	0.0	1000.0	1128.3
9:40	2:20	573.6	428.0	715.7	581.3	5:55	6:05	999.8	-11.4	999.8	1133.4
9:35	2:25	591.3	421.4	726.1	599.9	5:50	6:10	999.0	-22.8	999.3	1138.2
9:30	2:30	608.8	414.5	736.5	618.3	5:45	6:15	997.9	-34.2	998.4	1142.6
9:25	2:35	625.9	407.5	746.9	636.4	5:40	6:20	996.2	-45.5	997.2	1146.8
9:20	2:40	642.8	400.3	757.2	654.3	5:35	6:25	994.1	-56.9	995.7	1150.6
9:15	2:45	659.3	392.8	767.5	672.0	5:30	6:30	991.4	-68.2	993.8	1154.1
9:10	2:50	675.6	385.2	777.7	689.4	5:25	6:35	988.4	-79.5	991.6	1157.3
9:05	2:55	691.5	377.4	787.8	706.6	5:20	6:40	984.8	-90.7	989.0	1160.1
9:00	3:00	707.1	369.5	797.8	723.5	5:15	6:45	980.8	-101.9	986.1	1162.7
8:55	3:05	722.4	361.3	807.7	740.1	5:10	6:50	976.3	-113.1	982.8	1165.0
8:50	3:10	737.3	353.0	817.4	756.5	5:05	6:55	971.3	-124.2	979.2	1166.9
8:45	3:15	751.8	344.5	827.0	772.6	5:00	7:00	965.9	-135.2	975.3	1168.6
8:40	3:20	766.0	335.9	836.4	788.5	4:55	7:05	960.0	-146.2	971.1	1170.0
8:35	3:25	779.9	327.0	845.7	804.0	4:50	7:10	953.7	-157.1	966.6	1171.1
8:30	3:30	793.4	318.1	854.7	819.3	4:45	7:15	946.9	-168.0	961.7	1171.9
8:25	3:35	806.4	309.0	863.6	834.2						
8:20	3:40	819.2	299.7	872.3	848.9						
8:15	3:45	831.5	290.3	880.7	863.3						

Analematic Sundial

Latitude: 31.5° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 522.5 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-361.7	-354.9	-352.8	-343.5	-340.7	-329.0	-325.8	-311.9	-308.1	-292.4	-288.3
February	-261.7	-242.6	-237.6	-217.3	-212.3	-191.1	-185.6	-163.7	-158.2	-135.7	-129.9
March	-112.7	-89.6	-83.8	-60.4	-54.5	-31.0	-25.2	-1.5	4.3	27.8	33.6
April	68.6	91.6	97.3	119.8	125.5	147.6	153.0	174.6	179.8	200.6	205.6
May	230.4	249.3	253.9	271.5	275.7	291.9	295.8	310.5	314.0	327.0	329.9
June	345.9	354.2	356.1	362.3	363.7	367.6	368.1	369.5	369.7	367.0	368.3
July	363.7	357.9	356.1	348.3	346.0	335.9	333.1	321.0	317.8	303.9	300.3
August	276.7	259.5	255.2	236.8	232.1	212.7	207.7	187.5	182.3	161.3	155.9
September	123.3	101.1	95.5	72.8	67.1	44.2	38.6	15.5	9.7	-13.5	-19.3
October	-48.3	-71.4	-77.1	-100.2	-105.7	-128.5	-134.1	-156.3	-161.9	-183.6	-188.9
November	-220.0	-240.0	-244.8	-263.6	-268.2	-285.6	-289.8	-305.6	-309.3	-323.4	-326.8
December	-341.4	-351.3	-353.3	-360.5	-362.1	-366.7	-367.6	-369.5	-369.7	-368.8	-368.3

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	361.7	354.9	352.8	343.5	340.7	329.0	325.8	311.9	308.1	292.4	288.3
February	261.7	242.6	237.6	217.3	212.3	191.1	185.6	163.7	158.2	135.7	129.9
March	112.7	89.6	83.8	60.4	54.5	31.0	25.2	1.5	-4.3	-27.8	-33.6
April	-68.6	-91.6	-97.3	-119.8	-125.5	-147.6	-153.0	-174.6	-179.8	-200.6	-205.6
May	-230.4	-249.3	-253.9	-271.5	-275.7	-291.9	-295.8	-310.5	-314.0	-327.0	-329.9
June	-345.9	-354.2	-356.1	-362.3	-363.7	-367.6	-368.1	-369.5	-369.7	-367.0	-368.3
July	-363.7	-357.9	-356.1	-348.3	-346.0	-335.9	-333.1	-321.0	-317.8	-303.9	-300.3
August	-276.7	-259.5	-255.2	-236.8	-232.1	-212.7	-207.7	-187.5	-182.3	-161.3	-155.9
September	-123.3	-101.1	-95.5	-72.8	-67.1	-44.2	-38.6	-15.5	-9.7	13.5	19.3
October	48.3	71.4	77.1	100.2	105.7	128.5	134.1	156.3	161.9	183.6	188.9
November	220.0	240.0	244.8	263.6	268.2	285.6	289.8	305.6	309.3	323.4	326.8
December	341.4	351.3	353.3	360.5	362.1	366.7	367.6	369.5	369.7	368.8	368.3

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: 31.5° N/S

Earliest Sunrise: 4:54 a.m. Latest Sunset: 7:06 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 783.7 mm
 Sunrise/Sunset Markers: X = ± 1062.4 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	783.7	783.7	0.0							
11:55	12:05	32.7	783.6	784.2	32.7	8:10	3:50	1265.1	421.1	1333.3	1316.0
11:50	12:10	65.4	783.0	785.7	65.4	8:05	3:55	1282.4	406.6	1345.3	1336.7
11:45	12:15	98.1	782.1	788.2	98.1	8:00	4:00	1299.0	391.9	1356.9	1356.9
11:40	12:20	130.7	780.8	791.6	130.8	7:55	4:05	1315.1	377.0	1368.1	1376.6
11:35	12:25	163.3	779.1	796.0	163.4	7:50	4:10	1330.5	361.9	1378.9	1395.8
11:30	12:30	195.8	777.0	801.3	195.9	7:45	4:15	1345.3	346.6	1389.3	1414.5
11:25	12:35	228.2	774.6	807.5	228.4	7:40	4:20	1359.5	331.2	1399.2	1432.8
11:20	12:40	260.5	771.8	814.6	260.7	7:35	4:25	1373.0	315.7	1408.8	1450.6
11:15	12:45	292.6	768.7	822.5	293.0	7:30	4:30	1385.8	299.9	1417.9	1467.8
11:10	12:50	324.7	765.2	831.2	325.2	7:25	4:35	1398.0	284.1	1426.6	1484.6
11:05	12:55	356.5	761.3	840.6	357.2	7:20	4:40	1409.5	268.1	1434.8	1500.9
11:00	1:00	388.2	757.0	850.8	389.1	7:15	4:45	1420.4	251.9	1442.6	1516.7
10:55	1:05	419.7	752.4	861.6	420.9	7:10	4:50	1430.6	235.7	1449.9	1532.0
10:50	1:10	451.1	747.5	873.0	452.5	7:05	4:55	1440.1	219.3	1456.7	1546.7
10:45	1:15	482.2	742.2	885.0	483.9	7:00	5:00	1448.9	202.8	1463.0	1561.0
10:40	1:20	513.0	736.5	897.6	515.2	6:55	5:05	1457.0	186.3	1468.9	1574.8
10:35	1:25	543.7	730.5	910.6	546.3	6:50	5:10	1464.4	169.6	1474.2	1588.0
10:30	1:30	574.0	724.1	924.0	577.1	6:45	5:15	1471.2	152.9	1479.1	1600.7
10:25	1:35	604.1	717.4	937.9	607.8	6:40	5:20	1477.2	136.1	1483.5	1612.9
10:20	1:40	633.9	710.3	952.1	638.2	6:35	5:25	1482.5	119.2	1487.3	1624.7
10:15	1:45	663.4	702.9	966.6	668.3	6:30	5:30	1487.2	102.3	1490.7	1635.9
10:10	1:50	692.6	695.2	981.3	698.3	6:25	5:35	1491.1	85.3	1493.5	1646.6
10:05	1:55	721.5	687.1	996.3	727.9	6:20	5:40	1494.3	68.3	1495.9	1656.7
10:00	2:00	750.0	678.7	1011.5	757.3	6:15	5:45	1496.8	51.3	1497.7	1666.4
9:55	2:05	778.2	670.0	1026.9	786.4	6:10	5:50	1498.6	34.2	1499.0	1675.6
9:50	2:10	805.9	661.0	1042.3	815.2	6:05	5:55	1499.6	17.1	1499.7	1684.2
9:45	2:15	833.4	651.7	1057.9	843.8	6:00	6:00	1500.0	0.0	1500.0	1692.4
9:40	2:20	860.4	642.0	1073.5	872.0	5:55	6:05	1499.6	-17.1	1499.7	1700.1
9:35	2:25	887.0	632.0	1089.1	899.8	5:50	6:10	1498.6	-34.2	1499.0	1707.3
9:30	2:30	913.1	621.8	1104.7	927.4	5:45	6:15	1496.8	-51.3	1497.7	1713.9
9:25	2:35	938.9	611.2	1120.3	954.6	5:40	6:20	1494.3	-68.3	1495.9	1720.1
9:20	2:40	964.2	600.4	1135.8	981.5	5:35	6:25	1491.1	-85.3	1493.5	1725.9
9:15	2:45	989.0	589.3	1151.3	1008.0	5:30	6:30	1487.2	-102.3	1490.7	1731.1
9:10	2:50	1013.4	577.8	1166.6	1034.1	5:25	6:35	1482.5	-119.2	1487.3	1735.9
9:05	2:55	1037.3	566.2	1181.7	1059.8	5:20	6:40	1477.2	-136.1	1483.5	1740.2
9:00	3:00	1060.7	554.2	1196.7	1085.2	5:15	6:45	1471.2	-152.9	1479.1	1744.0
8:55	3:05	1083.5	542.0	1211.5	1110.2	5:10	6:50	1464.4	-169.6	1474.2	1747.4
8:50	3:10	1105.9	529.5	1226.1	1134.8	5:05	6:55	1457.0	-186.3	1468.9	1750.4
8:45	3:15	1127.8	516.8	1240.5	1158.9	5:00	7:00	1448.9	-202.8	1463.0	1752.9
8:40	3:20	1149.1	503.8	1254.7	1182.7	4:55	7:05	1440.1	-219.3	1456.7	1755.0
8:35	3:25	1169.8	490.6	1268.5	1206.0	4:50	7:10	1430.6	-235.7	1449.9	1756.6
8:30	3:30	1190.0	477.1	1282.1	1228.9	4:45	7:15	1420.4	-251.9	1442.6	1757.9
8:25	3:35	1209.7	463.4	1295.4	1251.4						
8:20	3:40	1228.7	449.5	1308.4	1273.4						
8:15	3:45	1247.2	435.4	1321.0	1294.9						

Analemmatic Sundial

Latitude: 31.5° N/S

Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 783.7 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-542.6	-532.4	-529.2	-515.2	-511.0	-493.5	-488.6	-467.8	-462.2	-438.6	-432.4
February	-392.5	-363.8	-356.4	-326.0	-318.4	-286.6	-278.4	-245.6	-237.3	-203.5	-194.8
March	-169.1	-134.4	-125.6	-90.6	-81.8	-46.5	-37.7	-2.2	6.5	41.8	50.5
April	102.9	137.4	145.9	179.7	188.2	221.4	229.4	261.8	269.8	300.9	308.5
May	345.6	374.0	380.8	407.2	413.6	437.9	443.6	465.8	471.1	490.4	494.8
June	518.8	531.3	534.2	543.4	545.5	551.3	552.1	554.3	554.5	550.5	552.4
July	545.5	536.8	534.2	522.5	519.1	503.8	499.7	481.5	476.7	455.9	450.4
August	415.1	389.3	382.7	355.2	348.2	319.1	311.5	281.2	273.5	241.9	233.8
September	185.0	151.6	143.2	109.2	100.7	66.4	57.9	23.2	14.5	-20.3	-29.0
October	-72.4	-107.2	-115.7	-150.2	-158.6	-192.7	-201.2	-234.5	-242.8	-275.4	-283.3
November	-330.0	-360.0	-367.2	-395.4	-402.3	-428.4	-434.6	-458.4	-464.0	-485.1	-490.2
December	-512.1	-526.9	-530.0	-540.8	-543.1	-550.0	-551.3	-554.3	-554.5	-553.2	-552.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	542.6	532.4	529.2	515.2	511.0	493.5	488.6	467.8	462.2	438.6	432.4
February	392.5	363.8	356.4	326.0	318.4	286.6	278.4	245.6	237.3	203.5	194.8
March	169.1	134.4	125.6	90.6	81.8	46.5	37.7	2.2	-6.5	-41.8	-50.5
April	-102.9	-137.4	-145.9	-179.7	-188.2	-221.4	-229.4	-261.8	-269.8	-300.9	-308.5
May	-345.6	-374.0	-380.8	-407.2	-413.6	-437.9	-443.6	-465.8	-471.1	-490.4	-494.8
June	-518.8	-531.3	-534.2	-543.4	-545.5	-551.3	-552.1	-554.3	-554.5	-550.5	-552.4
July	-545.5	-536.8	-534.2	-522.5	-519.1	-503.8	-499.7	-481.5	-476.7	-455.9	-450.4
August	-415.1	-389.3	-382.7	-355.2	-348.2	-319.1	-311.5	-281.2	-273.5	-241.9	-233.8
September	-185.0	-151.6	-143.2	-109.2	-100.7	-66.4	-57.9	-23.2	-14.5	20.3	29.0
October	72.4	107.2	115.7	150.2	158.6	192.7	201.2	234.5	242.8	275.4	283.3
November	330.0	360.0	367.2	395.4	402.3	428.4	434.6	458.4	464.0	485.1	490.2
December	512.1	526.9	530.0	540.8	543.1	550.0	551.3	554.3	554.5	553.2	552.4

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: 31.5° N/S

Earliest Sunrise: 4:54 a.m. Latest Sunset: 7:06 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1045.0 mm
 Sunrise/Sunset Markers: X = ± 1416.6 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1045.0	1045.0	0.0							
11:55	12:05	43.6	1044.7	1045.7	43.6	8:10	3:50	1686.8	561.5	1777.8	1754.7
11:50	12:10	87.2	1044.0	1047.6	87.2	8:05	3:55	1709.8	542.1	1793.7	1782.2
11:45	12:15	130.8	1042.8	1050.9	130.8	8:00	4:00	1732.1	522.5	1809.1	1809.1
11:40	12:20	174.3	1041.0	1055.5	174.4	7:55	4:05	1753.5	502.6	1824.1	1835.4
11:35	12:25	217.7	1038.8	1061.4	217.8	7:50	4:10	1774.0	482.5	1838.5	1861.1
11:30	12:30	261.1	1036.1	1068.4	261.2	7:45	4:15	1793.7	462.2	1852.3	1886.1
11:25	12:35	304.2	1032.8	1076.7	304.5	7:40	4:20	1812.6	441.6	1865.6	1910.4
11:20	12:40	347.3	1029.1	1086.1	347.7	7:35	4:25	1830.6	420.9	1878.4	1934.1
11:15	12:45	390.2	1024.9	1096.7	390.7	7:30	4:30	1847.8	399.9	1890.5	1957.1
11:10	12:50	432.9	1020.2	1108.3	433.6	7:25	4:35	1864.0	378.7	1902.1	1979.5
11:05	12:55	475.4	1015.0	1120.8	476.3	7:20	4:40	1879.4	357.4	1913.1	2001.2
11:00	1:00	517.6	1009.4	1134.4	518.9	7:15	4:45	1893.9	335.9	1923.4	2022.3
10:55	1:05	559.7	1003.2	1148.8	561.2	7:10	4:50	1907.4	314.2	1933.1	2042.6
10:50	1:10	601.4	996.6	1164.0	603.4	7:05	4:55	1920.1	292.4	1942.2	2062.3
10:45	1:15	642.9	989.5	1180.0	645.3	7:00	5:00	1931.9	270.5	1950.7	2081.3
10:40	1:20	684.0	982.0	1196.7	686.9	6:55	5:05	1942.7	248.4	1958.5	2099.7
10:35	1:25	724.9	973.9	1214.1	728.3	6:50	5:10	1952.6	226.2	1965.6	2117.3
10:30	1:30	765.4	965.5	1232.0	769.5	6:45	5:15	1961.6	203.9	1972.1	2134.3
10:25	1:35	805.5	956.5	1250.5	810.3	6:40	5:20	1969.6	181.5	1978.0	2150.6
10:20	1:40	845.2	947.1	1269.4	850.9	6:35	5:25	1976.7	159.0	1983.1	2166.2
10:15	1:45	884.6	937.2	1288.7	891.1	6:30	5:30	1982.9	136.4	1987.6	2181.1
10:10	1:50	923.5	926.9	1308.4	931.0	6:25	5:35	1988.1	113.8	1991.4	2195.4
10:05	1:55	962.0	916.2	1328.5	970.6	6:20	5:40	1992.4	91.1	1994.5	2209.0
10:00	2:00	1000.0	905.0	1348.7	1009.8	6:15	5:45	1995.7	68.3	1996.9	2221.9
9:55	2:05	1037.5	893.4	1369.2	1048.6	6:10	5:50	1998.1	45.6	1998.6	2234.1
9:50	2:10	1074.6	881.3	1389.8	1087.0	6:05	5:55	1999.5	22.8	1999.7	2245.7
9:45	2:15	1111.1	868.9	1410.5	1125.0	6:00	6:00	2000.0	0.0	2000.0	2256.6
9:40	2:20	1147.2	856.0	1431.3	1162.6	5:55	6:05	1999.5	-22.8	1999.7	2266.8
9:35	2:25	1182.6	842.7	1452.2	1199.8	5:50	6:10	1998.1	-45.6	1998.6	2276.3
9:30	2:30	1217.5	829.1	1473.0	1236.5	5:45	6:15	1995.7	-68.3	1996.9	2285.3
9:25	2:35	1251.8	815.0	1493.8	1272.8	5:40	6:20	1992.4	-91.1	1994.5	2293.5
9:20	2:40	1285.6	800.5	1514.4	1308.6	5:35	6:25	1988.1	-113.8	1991.4	2301.2
9:15	2:45	1318.7	785.7	1535.0	1343.9	5:30	6:30	1982.9	-136.4	1987.6	2308.1
9:10	2:50	1351.2	770.5	1555.4	1378.8	5:25	6:35	1976.7	-159.0	1983.1	2314.5
9:05	2:55	1383.0	754.9	1575.6	1413.1	5:20	6:40	1969.6	-181.5	1978.0	2320.3
9:00	3:00	1414.2	738.9	1595.6	1447.0	5:15	6:45	1961.6	-203.9	1972.1	2325.4
8:55	3:05	1444.7	722.6	1615.4	1480.3	5:10	6:50	1952.6	-226.2	1965.6	2329.9
8:50	3:10	1474.6	706.0	1634.8	1513.0	5:05	6:55	1942.7	-248.4	1958.5	2333.8
8:45	3:15	1503.7	689.0	1654.0	1545.2	5:00	7:00	1931.9	-270.5	1950.7	2337.2
8:40	3:20	1532.1	671.7	1672.9	1576.9	4:55	7:05	1920.1	-292.4	1942.2	2340.0
8:35	3:25	1559.8	654.1	1691.4	1608.0	4:50	7:10	1907.4	-314.2	1933.1	2342.2
8:30	3:30	1586.7	636.2	1709.5	1638.5	4:45	7:15	1893.9	-335.9	1923.4	2343.8
8:25	3:35	1612.9	617.9	1727.2	1668.5						
8:20	3:40	1638.3	599.4	1744.5	1697.8						
8:15	3:45	1662.9	580.6	1761.4	1726.6						

Analematic Sundial

Latitude: 31.5° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1045.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-723.5	-709.8	-705.7	-686.9	-681.4	-658.0	-651.5	-623.7	-616.3	-584.8	-576.5
February	-523.3	-485.1	-475.2	-434.7	-424.5	-382.1	-371.2	-327.5	-316.4	-271.3	-259.7
March	-225.4	-179.2	-167.5	-120.7	-109.1	-61.9	-50.3	-3.0	8.6	55.7	67.3
April	137.2	183.1	194.6	239.7	250.9	295.2	305.9	349.1	359.7	401.2	411.3
May	460.8	498.7	507.7	542.9	551.4	583.8	591.5	621.0	628.1	653.9	659.7
June	691.7	708.4	712.3	724.6	727.4	735.1	736.2	739.0	739.4	734.1	736.5
July	727.4	715.8	712.3	696.6	692.1	671.7	666.2	642.0	635.5	607.9	600.5
August	553.4	519.1	510.3	473.6	464.3	425.5	415.4	374.9	364.6	322.5	311.7
September	246.6	202.1	191.0	145.6	134.2	88.5	77.1	31.0	19.3	-27.1	-38.7
October	-96.5	-142.9	-154.3	-200.3	-211.5	-257.0	-268.3	-312.7	-323.8	-367.1	-377.7
November	-440.1	-480.0	-489.6	-527.2	-536.4	-571.2	-579.5	-611.3	-618.6	-646.8	-653.6
December	-682.8	-702.5	-706.7	-721.0	-724.2	-733.4	-735.1	-739.0	-739.4	-737.6	-736.5

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	723.5	709.8	705.7	686.9	681.4	658.0	651.5	623.7	616.3	584.8	576.5
February	523.3	485.1	475.2	434.7	424.5	382.1	371.2	327.5	316.4	271.3	259.7
March	225.4	179.2	167.5	120.7	109.1	61.9	50.3	3.0	-8.6	-55.7	-67.3
April	-137.2	-183.1	-194.6	-239.7	-250.9	-295.2	-305.9	-349.1	-359.7	-401.2	-411.3
May	-460.8	-498.7	-507.7	-542.9	-551.4	-583.8	-591.5	-621.0	-628.1	-653.9	-659.7
June	-691.7	-708.4	-712.3	-724.6	-727.4	-735.1	-736.2	-739.0	-739.4	-734.1	-736.5
July	-727.4	-715.8	-712.3	-696.6	-692.1	-671.7	-666.2	-642.0	-635.5	-607.9	-600.5
August	-553.4	-519.1	-510.3	-473.6	-464.3	-425.5	-415.4	-374.9	-364.6	-322.5	-311.7
September	-246.6	-202.1	-191.0	-145.6	-134.2	-88.5	-77.1	-31.0	-19.3	27.1	38.7
October	96.5	142.9	154.3	200.3	211.5	257.0	268.3	312.7	323.8	367.1	377.7
November	440.1	480.0	489.6	527.2	536.4	571.2	579.5	611.3	618.6	646.8	653.6
December	682.8	702.5	706.7	721.0	724.2	733.4	735.1	739.0	739.4	737.6	736.5

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: 31.5° N/S

Earliest Sunrise: 4:54 a.m. Latest Sunset: 7:06 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1306.2 mm
 Sunrise/Sunset Markers: X = ± 1770.7 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1306.2	1306.2	0.0							
11:55	12:05	54.5	1305.9	1307.1	54.5	8:10	3:50	2108.5	701.8	2222.2	2193.4
11:50	12:10	109.0	1305.0	1309.6	109.1	8:05	3:55	2137.3	677.6	2242.1	2227.8
11:45	12:15	163.5	1303.4	1313.7	163.5	8:00	4:00	2165.1	653.1	2261.4	2261.4
11:40	12:20	217.9	1301.3	1319.4	217.9	7:55	4:05	2191.8	628.3	2280.1	2294.3
11:35	12:25	272.2	1298.5	1326.7	272.3	7:50	4:10	2217.5	603.2	2298.1	2326.3
11:30	12:30	326.3	1295.1	1335.5	326.5	7:45	4:15	2242.2	577.7	2315.4	2357.6
11:25	12:35	380.3	1291.0	1345.9	380.6	7:40	4:20	2265.8	552.0	2332.1	2388.0
11:20	12:40	434.1	1286.4	1357.7	434.6	7:35	4:25	2288.3	526.1	2348.0	2417.6
11:15	12:45	487.7	1281.1	1370.8	488.4	7:30	4:30	2309.7	499.9	2363.2	2446.4
11:10	12:50	541.1	1275.3	1385.3	542.0	7:25	4:35	2330.0	473.4	2377.6	2474.4
11:05	12:55	594.2	1268.8	1401.1	595.4	7:20	4:40	2349.2	446.8	2391.3	2501.5
11:00	1:00	647.0	1261.7	1418.0	648.6	7:15	4:45	2367.3	419.9	2404.3	2527.8
10:55	1:05	699.6	1254.1	1436.0	701.5	7:10	4:50	2384.3	392.8	2416.4	2553.3
10:50	1:10	751.8	1245.8	1455.0	754.2	7:05	4:55	2400.1	365.5	2427.8	2577.9
10:45	1:15	803.6	1236.9	1475.0	806.6	7:00	5:00	2414.8	338.1	2438.4	2601.7
10:40	1:20	855.1	1227.5	1495.9	858.7	6:55	5:05	2428.4	310.5	2448.1	2624.6
10:35	1:25	906.1	1217.4	1517.6	910.4	6:50	5:10	2440.7	282.7	2457.1	2646.7
10:30	1:30	956.7	1206.8	1540.0	961.9	6:45	5:15	2452.0	254.8	2465.2	2667.9
10:25	1:35	1006.9	1195.6	1563.1	1012.9	6:40	5:20	2462.0	226.8	2472.4	2688.2
10:20	1:40	1056.5	1183.9	1586.8	1063.6	6:35	5:25	2470.9	198.7	2478.9	2707.8
10:15	1:45	1105.7	1171.5	1610.9	1113.9	6:30	5:30	2478.6	170.5	2484.5	2726.4
10:10	1:50	1154.4	1158.7	1635.6	1163.8	6:25	5:35	2485.1	142.2	2489.2	2744.3
10:05	1:55	1202.5	1145.2	1660.6	1213.2	6:20	5:40	2490.5	113.8	2493.1	2761.2
10:00	2:00	1250.0	1131.2	1685.9	1262.2	6:15	5:45	2494.6	85.4	2496.1	2777.3
9:55	2:05	1296.9	1116.7	1711.5	1310.7	6:10	5:50	2497.6	57.0	2498.3	2792.6
9:50	2:10	1343.2	1101.7	1737.2	1358.7	6:05	5:55	2499.4	28.5	2499.6	2807.1
9:45	2:15	1388.9	1086.1	1763.2	1406.3	6:00	6:00	2500.0	0.0	2500.0	2820.7
9:40	2:20	1433.9	1070.0	1789.2	1453.3	5:55	6:05	2499.4	-28.5	2499.6	2833.5
9:35	2:25	1478.3	1053.4	1815.2	1499.7	5:50	6:10	2497.6	-57.0	2498.3	2845.4
9:30	2:30	1521.9	1036.3	1841.2	1545.7	5:45	6:15	2494.6	-85.4	2496.1	2856.6
9:25	2:35	1564.8	1018.7	1867.2	1591.0	5:40	6:20	2490.5	-113.8	2493.1	2866.9
9:20	2:40	1607.0	1000.6	1893.0	1635.8	5:35	6:25	2485.1	-142.2	2489.2	2876.4
9:15	2:45	1648.4	982.1	1918.8	1679.9	5:30	6:30	2478.6	-170.5	2484.5	2885.2
9:10	2:50	1689.0	963.1	1944.3	1723.5	5:25	6:35	2470.9	-198.7	2478.9	2893.1
9:05	2:55	1728.8	943.6	1969.5	1766.4	5:20	6:40	2462.0	-226.8	2472.4	2900.3
9:00	3:00	1767.8	923.7	1994.5	1808.7	5:15	6:45	2452.0	-254.8	2465.2	2906.7
8:55	3:05	1805.9	903.3	2019.2	1850.3	5:10	6:50	2440.7	-282.7	2457.1	2912.4
8:50	3:10	1843.2	882.5	2043.6	1891.3	5:05	6:55	2428.4	-310.5	2448.1	2917.3
8:45	3:15	1879.6	861.3	2067.5	1931.6	5:00	7:00	2414.8	-338.1	2438.4	2921.5
8:40	3:20	1915.1	839.6	2091.1	1971.1	4:55	7:05	2400.1	-365.5	2427.8	2925.0
8:35	3:25	1949.7	817.6	2114.2	2010.0	4:50	7:10	2384.3	-392.8	2416.4	2927.7
8:30	3:30	1983.4	795.2	2136.9	2048.2	4:45	7:15	2367.3	-419.9	2404.3	2929.8
8:25	3:35	2016.1	772.4	2159.0	2085.6						
8:20	3:40	2047.9	749.2	2180.6	2122.3						
8:15	3:45	2078.7	725.7	2201.7	2158.2						

Analemmatic Sundial

Latitude: 31.5° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1306.2 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-904.4	-887.3	-882.1	-858.6	-851.7	-822.5	-814.4	-779.6	-770.4	-731.1	-720.7
February	-654.1	-606.4	-594.0	-543.3	-530.7	-477.6	-464.0	-409.3	-395.5	-339.1	-324.7
March	-281.8	-224.0	-209.4	-150.9	-136.4	-77.4	-62.9	-3.7	10.8	69.6	84.1
April	171.5	228.9	243.2	299.6	313.6	369.0	382.4	436.4	449.6	501.5	514.1
May	575.9	623.3	634.6	678.6	689.3	729.8	739.4	776.3	785.1	817.4	824.7
June	864.7	885.6	890.4	905.7	909.2	918.9	920.2	923.8	924.2	917.6	920.7
July	909.2	894.7	890.4	870.8	865.1	839.7	832.8	802.5	794.4	759.9	750.7
August	691.8	648.8	637.9	591.9	580.3	531.9	519.2	468.7	455.8	403.2	389.7
September	308.3	252.7	238.7	182.0	167.8	110.6	96.4	38.7	24.2	-33.9	-48.4
October	-120.7	-178.6	-192.9	-250.4	-264.4	-321.2	-335.3	-390.8	-404.7	-458.9	-472.2
November	-550.1	-600.0	-612.0	-659.0	-670.5	-714.1	-724.4	-764.1	-773.3	-808.4	-817.0
December	-853.4	-878.1	-883.4	-901.3	-905.2	-916.7	-918.9	-923.8	-924.2	-922.0	-920.7

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	904.4	887.3	882.1	858.6	851.7	822.5	814.4	779.6	770.4	731.1	720.7
February	654.1	606.4	594.0	543.3	530.7	477.6	464.0	409.3	395.5	339.1	324.7
March	281.8	224.0	209.4	150.9	136.4	77.4	62.9	3.7	-10.8	-69.6	-84.1
April	-171.5	-228.9	-243.2	-299.6	-313.6	-369.0	-382.4	-436.4	-449.6	-501.5	-514.1
May	-575.9	-623.3	-634.6	-678.6	-689.3	-729.8	-739.4	-776.3	-785.1	-817.4	-824.7
June	-864.7	-885.6	-890.4	-905.7	-909.2	-918.9	-920.2	-923.8	-924.2	-917.6	-920.7
July	-909.2	-894.7	-890.4	-870.8	-865.1	-839.7	-832.8	-802.5	-794.4	-759.9	-750.7
August	-691.8	-648.8	-637.9	-591.9	-580.3	-531.9	-519.2	-468.7	-455.8	-403.2	-389.7
September	-308.3	-252.7	-238.7	-182.0	-167.8	-110.6	-96.4	-38.7	-24.2	33.9	48.4
October	120.7	178.6	192.9	250.4	264.4	321.2	335.3	390.8	404.7	458.9	472.2
November	550.1	600.0	612.0	659.0	670.5	714.1	724.4	764.1	773.3	808.4	817.0
December	853.4	878.1	883.4	901.3	905.2	916.7	918.9	923.8	924.2	922.0	920.7

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 |