

Analemmatic Sundial

Latitude: 31.0° N/S

Earliest Sunrise: 4:55 a.m. Latest Sunset: 7:05 p.m.
 Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 515.0 mm
 Sunrise/Sunset Markers: X = ± 716.6 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	515.0	515.0	0.0							
11:55	12:05	21.8	514.9	515.4	21.8	8:10	3:50	843.4	276.7	887.6	876.4
11:50	12:10	43.6	514.5	516.4	43.6	8:05	3:55	854.9	267.2	895.7	890.1
11:45	12:15	65.4	513.9	518.1	65.4	8:00	4:00	866.0	257.5	903.5	903.5
11:40	12:20	87.2	513.1	520.4	87.2	7:55	4:05	876.7	247.7	911.1	916.6
11:35	12:25	108.9	512.0	523.4	108.9	7:50	4:10	887.0	237.8	918.3	929.3
11:30	12:30	130.5	510.6	527.1	130.6	7:45	4:15	896.9	227.8	925.3	941.7
11:25	12:35	152.1	509.0	531.3	152.2	7:40	4:20	906.3	217.7	932.1	953.8
11:20	12:40	173.6	507.2	536.1	173.8	7:35	4:25	915.3	207.4	938.5	965.6
11:15	12:45	195.1	505.1	541.5	195.3	7:30	4:30	923.9	197.1	944.7	977.1
11:10	12:50	216.4	502.8	547.4	216.8	7:25	4:35	932.0	186.7	950.5	988.2
11:05	12:55	237.7	500.3	553.9	238.1	7:20	4:40	939.7	176.2	956.1	998.9
11:00	1:00	258.8	497.5	560.8	259.4	7:15	4:45	946.9	165.6	961.3	1009.4
10:55	1:05	279.8	494.5	568.2	280.6	7:10	4:50	953.7	154.9	966.2	1019.5
10:50	1:10	300.7	491.2	575.9	301.6	7:05	4:55	960.0	144.1	970.8	1029.2
10:45	1:15	321.4	487.7	584.1	322.6	7:00	5:00	965.9	133.3	975.1	1038.6
10:40	1:20	342.0	484.0	592.6	343.4	6:55	5:05	971.3	122.4	979.0	1047.7
10:35	1:25	362.4	480.0	601.5	364.1	6:50	5:10	976.3	111.5	982.6	1056.4
10:30	1:30	382.7	475.8	610.6	384.7	6:45	5:15	980.8	100.5	985.9	1064.8
10:25	1:35	402.7	471.4	620.0	405.1	6:40	5:20	984.8	89.4	988.9	1072.8
10:20	1:40	422.6	466.8	629.7	425.4	6:35	5:25	988.4	78.3	991.5	1080.5
10:15	1:45	442.3	461.9	639.5	445.5	6:30	5:30	991.4	67.2	993.7	1087.9
10:10	1:50	461.7	456.8	649.6	465.4	6:25	5:35	994.1	56.1	995.6	1094.9
10:05	1:55	481.0	451.5	659.7	485.2	6:20	5:40	996.2	44.9	997.2	1101.6
10:00	2:00	500.0	446.0	670.0	504.7	6:15	5:45	997.9	33.7	998.4	1107.9
9:55	2:05	518.8	440.3	680.4	524.1	6:10	5:50	999.0	22.5	999.3	1113.9
9:50	2:10	537.3	434.4	690.9	543.3	6:05	5:55	999.8	11.2	999.8	1119.5
9:45	2:15	555.6	428.2	701.5	562.3	6:00	6:00	1000.0	0.0	1000.0	1124.8
9:40	2:20	573.6	421.9	712.0	581.1	5:55	6:05	999.8	-11.2	999.8	1129.8
9:35	2:25	591.3	415.3	722.6	599.7	5:50	6:10	999.0	-22.5	999.3	1134.5
9:30	2:30	608.8	408.6	733.2	618.0	5:45	6:15	997.9	-33.7	998.4	1138.8
9:25	2:35	625.9	401.7	743.7	636.1	5:40	6:20	996.2	-44.9	997.2	1142.8
9:20	2:40	642.8	394.5	754.2	654.0	5:35	6:25	994.1	-56.1	995.6	1146.4
9:15	2:45	659.3	387.2	764.6	671.6	5:30	6:30	991.4	-67.2	993.7	1149.8
9:10	2:50	675.6	379.7	775.0	689.0	5:25	6:35	988.4	-78.3	991.5	1152.8
9:05	2:55	691.5	372.0	785.2	706.1	5:20	6:40	984.8	-89.4	988.9	1155.5
9:00	3:00	707.1	364.2	795.4	723.0	5:15	6:45	980.8	-100.5	985.9	1157.9
8:55	3:05	722.4	356.2	805.4	739.6	5:10	6:50	976.3	-111.5	982.6	1160.0
8:50	3:10	737.3	348.0	815.3	756.0	5:05	6:55	971.3	-122.4	979.0	1161.8
8:45	3:15	751.8	339.6	825.0	772.0	5:00	7:00	965.9	-133.3	975.1	1163.3
8:40	3:20	766.0	331.1	834.5	787.8	4:55	7:05	960.0	-144.1	970.8	1164.6
8:35	3:25	779.9	322.4	843.9	803.3	4:50	7:10	953.7	-154.9	966.2	1165.5
8:30	3:30	793.4	313.5	853.1	818.5	4:45	7:15	946.9	-165.6	961.3	1166.1
8:25	3:35	806.4	304.5	862.0	833.5						
8:20	3:40	819.2	295.4	870.8	848.1						
8:15	3:45	831.5	286.1	879.3	862.4						

Analemmatic Sundial

Latitude: 31.0° N/S

Date Scale

Semi-Major Axis (E-W): 1000 mm Semi-Minor Axis (N-S): 515.0 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-363.7	-356.8	-354.7	-345.3	-342.5	-330.8	-327.5	-313.5	-309.8	-294.0	-289.8
February	-263.0	-243.8	-238.8	-218.5	-213.4	-192.1	-186.6	-164.6	-159.0	-136.4	-130.6
March	-113.3	-90.1	-84.2	-60.7	-54.8	-31.1	-25.3	-1.5	4.3	28.0	33.8
April	69.0	92.1	97.8	120.5	126.1	148.4	153.8	175.5	180.8	201.7	206.7
May	231.6	250.7	255.2	272.9	277.2	293.5	297.3	312.2	315.7	328.7	331.6
June	347.7	356.1	358.0	364.2	365.6	369.5	370.0	371.5	371.6	369.0	370.2
July	365.6	359.8	358.0	350.2	347.9	337.6	334.9	322.7	319.5	305.6	301.9
August	278.2	260.9	256.5	238.0	233.4	213.9	208.8	188.5	183.3	162.1	156.7
September	124.0	101.6	96.0	73.2	67.5	44.5	38.8	15.6	9.7	-13.6	-19.5
October	-48.5	-71.8	-77.6	-100.7	-106.3	-129.2	-134.8	-157.2	-162.7	-184.5	-189.9
November	-221.2	-241.3	-246.1	-265.0	-269.6	-287.1	-291.3	-307.2	-311.0	-325.1	-328.5
December	-343.2	-353.1	-355.2	-362.4	-364.0	-368.6	-369.5	-371.5	-371.6	-370.8	-370.2

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	363.7	356.8	354.7	345.3	342.5	330.8	327.5	313.5	309.8	294.0	289.8
February	263.0	243.8	238.8	218.5	213.4	192.1	186.6	164.6	159.0	136.4	130.6
March	113.3	90.1	84.2	60.7	54.8	31.1	25.3	1.5	-4.3	-28.0	-33.8
April	-69.0	-92.1	-97.8	-120.5	-126.1	-148.4	-153.8	-175.5	-180.8	-201.7	-206.7
May	-231.6	-250.7	-255.2	-272.9	-277.2	-293.5	-297.3	-312.2	-315.7	-328.7	-331.6
June	-347.7	-356.1	-358.0	-364.2	-365.6	-369.5	-370.0	-371.5	-371.6	-369.0	-370.2
July	-365.6	-359.8	-358.0	-350.2	-347.9	-337.6	-334.9	-322.7	-319.5	-305.6	-301.9
August	-278.2	-260.9	-256.5	-238.0	-233.4	-213.9	-208.8	-188.5	-183.3	-162.1	-156.7
September	-124.0	-101.6	-96.0	-73.2	-67.5	-44.5	-38.8	-15.6	-9.7	13.6	19.5
October	48.5	71.8	77.6	100.7	106.3	129.2	134.8	157.2	162.7	184.5	189.9
November	221.2	241.3	246.1	265.0	269.6	287.1	291.3	307.2	311.0	325.1	328.5
December	343.2	353.1	355.2	362.4	364.0	368.6	369.5	371.5	371.6	370.8	370.2

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: 31.0° N/S

Earliest Sunrise: 4:55 a.m. Latest Sunset: 7:05 p.m.
 Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 772.6 mm
 Sunrise/Sunset Markers: X = ± 1074.8 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	772.6	772.6	0.0							
11:55	12:05	32.7	772.4	773.1	32.7	8:10	3:50	1265.1	415.1	1331.4	1314.6
11:50	12:10	65.4	771.8	774.6	65.4	8:05	3:55	1282.4	400.8	1343.5	1335.2
11:45	12:15	98.1	770.9	777.1	98.1	8:00	4:00	1299.0	386.3	1355.3	1355.3
11:40	12:20	130.7	769.6	780.6	130.8	7:55	4:05	1315.1	371.6	1366.6	1374.9
11:35	12:25	163.3	768.0	785.1	163.4	7:50	4:10	1330.5	356.7	1377.5	1394.0
11:30	12:30	195.8	765.9	790.6	195.9	7:45	4:15	1345.3	341.7	1388.0	1412.6
11:25	12:35	228.2	763.6	796.9	228.4	7:40	4:20	1359.5	326.5	1398.1	1430.8
11:20	12:40	260.5	760.8	804.2	260.7	7:35	4:25	1373.0	311.1	1407.8	1448.4
11:15	12:45	292.6	757.7	812.3	293.0	7:30	4:30	1385.8	295.6	1417.0	1465.6
11:10	12:50	324.7	754.2	821.2	325.2	7:25	4:35	1398.0	280.0	1425.8	1482.2
11:05	12:55	356.5	750.4	830.8	357.2	7:20	4:40	1409.5	264.2	1434.1	1498.4
11:00	1:00	388.2	746.2	841.2	389.1	7:15	4:45	1420.4	248.3	1441.9	1514.0
10:55	1:05	419.7	741.7	852.2	420.9	7:10	4:50	1430.6	232.3	1449.3	1529.2
10:50	1:10	451.1	736.8	863.9	452.5	7:05	4:55	1440.1	216.2	1456.2	1543.8
10:45	1:15	482.2	731.6	876.2	483.9	7:00	5:00	1448.9	200.0	1462.6	1557.9
10:40	1:20	513.0	726.0	888.9	515.1	6:55	5:05	1457.0	183.6	1468.5	1571.5
10:35	1:25	543.7	720.0	902.2	546.2	6:50	5:10	1464.4	167.2	1474.0	1584.6
10:30	1:30	574.0	713.7	915.9	577.0	6:45	5:15	1471.2	150.7	1478.9	1597.2
10:25	1:35	604.1	707.1	930.1	607.7	6:40	5:20	1477.2	134.2	1483.3	1609.3
10:20	1:40	633.9	700.2	944.5	638.0	6:35	5:25	1482.5	117.5	1487.2	1620.8
10:15	1:45	663.4	692.9	959.3	668.2	6:30	5:30	1487.2	100.8	1490.6	1631.8
10:10	1:50	692.6	685.3	974.3	698.1	6:25	5:35	1491.1	84.1	1493.5	1642.3
10:05	1:55	721.5	677.3	989.6	727.7	6:20	5:40	1494.3	67.3	1495.8	1652.3
10:00	2:00	750.0	669.1	1005.1	757.1	6:15	5:45	1496.8	50.5	1497.6	1661.8
9:55	2:05	778.2	660.5	1020.7	786.2	6:10	5:50	1498.6	33.7	1499.0	1670.8
9:50	2:10	805.9	651.6	1036.4	815.0	6:05	5:55	1499.6	16.9	1499.7	1679.3
9:45	2:15	833.4	642.4	1052.2	843.5	6:00	6:00	1500.0	0.0	1500.0	1687.3
9:40	2:20	860.4	632.8	1068.0	871.6	5:55	6:05	1499.6	-16.9	1499.7	1694.7
9:35	2:25	887.0	623.0	1083.9	899.5	5:50	6:10	1498.6	-33.7	1499.0	1701.7
9:30	2:30	913.1	612.9	1099.8	927.0	5:45	6:15	1496.8	-50.5	1497.6	1708.2
9:25	2:35	938.9	602.5	1115.6	954.2	5:40	6:20	1494.3	-67.3	1495.8	1714.2
9:20	2:40	964.2	591.8	1131.3	981.0	5:35	6:25	1491.1	-84.1	1493.5	1719.7
9:15	2:45	989.0	580.8	1147.0	1007.4	5:30	6:30	1487.2	-100.8	1490.6	1724.7
9:10	2:50	1013.4	569.6	1162.5	1033.5	5:25	6:35	1482.5	-117.5	1487.2	1729.2
9:05	2:55	1037.3	558.1	1177.9	1059.2	5:20	6:40	1477.2	-134.2	1483.3	1733.3
9:00	3:00	1060.7	546.3	1193.1	1084.5	5:15	6:45	1471.2	-150.7	1478.9	1736.9
8:55	3:05	1083.5	534.2	1208.1	1109.4	5:10	6:50	1464.4	-167.2	1474.0	1740.0
8:50	3:10	1105.9	521.9	1222.9	1134.0	5:05	6:55	1457.0	-183.6	1468.5	1742.7
8:45	3:15	1127.8	509.4	1237.5	1158.1	5:00	7:00	1448.9	-200.0	1462.6	1745.0
8:40	3:20	1149.1	496.6	1251.8	1181.7	4:55	7:05	1440.1	-216.2	1456.2	1746.8
8:35	3:25	1169.8	483.6	1265.8	1205.0	4:50	7:10	1430.6	-232.3	1449.3	1748.2
8:30	3:30	1190.0	470.3	1279.6	1227.8	4:45	7:15	1420.4	-248.3	1441.9	1749.2
8:25	3:35	1209.7	456.8	1293.1	1250.2						
8:20	3:40	1228.7	443.1	1306.2	1272.1						
8:15	3:45	1247.2	429.2	1319.0	1293.6						

Analematic Sundial

Latitude: 31.0° N/S

Date Scale

Semi-Major Axis (E-W): 1500 mm Semi-Minor Axis (N-S): 772.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-545.5	-535.2	-532.0	-517.9	-513.7	-496.1	-491.2	-470.3	-464.7	-441.0	-434.7
February	-394.6	-365.8	-358.3	-327.7	-320.1	-288.1	-279.9	-246.9	-238.5	-204.6	-195.8
March	-170.0	-135.1	-126.3	-91.0	-82.2	-46.7	-37.9	-2.2	6.5	42.0	50.7
April	103.4	138.1	146.7	180.7	189.2	222.5	230.6	263.2	271.2	302.5	310.1
May	347.4	376.0	382.8	409.3	415.8	440.2	446.0	468.2	473.6	493.0	497.4
June	521.6	534.2	537.1	546.3	548.4	554.3	555.1	557.2	557.5	553.5	555.3
July	548.4	539.7	537.1	525.2	521.8	506.5	502.3	484.1	479.2	458.3	452.8
August	417.3	391.4	384.8	357.1	350.1	320.8	313.2	282.7	274.9	243.2	235.1
September	186.0	152.4	144.0	109.8	101.2	66.7	58.2	23.3	14.6	-20.4	-29.2
October	-72.8	-107.7	-116.3	-151.0	-159.5	-193.8	-202.3	-235.7	-244.1	-276.8	-284.8
November	-331.8	-361.9	-369.2	-397.5	-404.4	-430.7	-437.0	-460.9	-466.5	-487.6	-492.8
December	-514.8	-529.7	-532.8	-543.7	-546.0	-552.9	-554.3	-557.2	-557.5	-556.1	-555.3

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	545.5	535.2	532.0	517.9	513.7	496.1	491.2	470.3	464.7	441.0	434.7
February	394.6	365.8	358.3	327.7	320.1	288.1	279.9	246.9	238.5	204.6	195.8
March	170.0	135.1	126.3	91.0	82.2	46.7	37.9	2.2	-6.5	-42.0	-50.7
April	-103.4	-138.1	-146.7	-180.7	-189.2	-222.5	-230.6	-263.2	-271.2	-302.5	-310.1
May	-347.4	-376.0	-382.8	-409.3	-415.8	-440.2	-446.0	-468.2	-473.6	-493.0	-497.4
June	-521.6	-534.2	-537.1	-546.3	-548.4	-554.3	-555.1	-557.2	-557.5	-553.5	-555.3
July	-548.4	-539.7	-537.1	-525.2	-521.8	-506.5	-502.3	-484.1	-479.2	-458.3	-452.8
August	-417.3	-391.4	-384.8	-357.1	-350.1	-320.8	-313.2	-282.7	-274.9	-243.2	-235.1
September	-186.0	-152.4	-144.0	-109.8	-101.2	-66.7	-58.2	-23.3	-14.6	20.4	29.2
October	72.8	107.7	116.3	151.0	159.5	193.8	202.3	235.7	244.1	276.8	284.8
November	331.8	361.9	369.2	397.5	404.4	430.7	437.0	460.9	466.5	487.6	492.8
December	514.8	529.7	532.8	543.7	546.0	552.9	554.3	557.2	557.5	556.1	555.3

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: 31.0° N/S

Earliest Sunrise: 4:55 a.m. Latest Sunset: 7:05 p.m.
 Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1030.1 mm
 Sunrise/Sunset Markers: X = ± 1433.1 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1030.1	1030.1	0.0							
11:55	12:05	43.6	1029.8	1030.8	43.6	8:10	3:50	1686.8	553.5	1775.3	1752.8
11:50	12:10	87.2	1029.1	1032.8	87.2	8:05	3:55	1709.8	534.4	1791.4	1780.2
11:45	12:15	130.8	1027.9	1036.2	130.8	8:00	4:00	1732.1	515.0	1807.0	1807.0
11:40	12:20	174.3	1026.2	1040.9	174.4	7:55	4:05	1753.5	495.5	1822.1	1833.1
11:35	12:25	217.7	1024.0	1046.8	217.8	7:50	4:10	1774.0	475.6	1836.7	1858.6
11:30	12:30	261.1	1021.3	1054.1	261.2	7:45	4:15	1793.7	455.6	1850.7	1883.5
11:25	12:35	304.2	1018.1	1062.6	304.5	7:40	4:20	1812.6	435.3	1864.2	1907.7
11:20	12:40	347.3	1014.4	1072.2	347.6	7:35	4:25	1830.6	414.9	1877.0	1931.2
11:15	12:45	390.2	1010.3	1083.0	390.7	7:30	4:30	1847.8	394.2	1889.3	1954.1
11:10	12:50	432.9	1005.7	1094.9	433.6	7:25	4:35	1864.0	373.3	1901.0	1976.3
11:05	12:55	475.4	1000.6	1107.7	476.3	7:20	4:40	1879.4	352.3	1912.1	1997.9
11:00	1:00	517.6	995.0	1121.6	518.8	7:15	4:45	1893.9	331.1	1922.6	2018.7
10:55	1:05	559.7	988.9	1136.3	561.2	7:10	4:50	1907.4	309.7	1932.4	2038.9
10:50	1:10	601.4	982.4	1151.9	603.3	7:05	4:55	1920.1	288.2	1941.6	2058.4
10:45	1:15	642.9	975.4	1168.2	645.2	7:00	5:00	1931.9	266.6	1950.2	2077.2
10:40	1:20	684.0	968.0	1185.3	686.9	6:55	5:05	1942.7	244.8	1958.1	2095.4
10:35	1:25	724.9	960.0	1203.0	728.3	6:50	5:10	1952.6	222.9	1965.3	2112.8
10:30	1:30	765.4	951.7	1221.3	769.4	6:45	5:15	1961.6	201.0	1971.8	2129.6
10:25	1:35	805.5	942.8	1240.1	810.2	6:40	5:20	1969.6	178.9	1977.7	2145.7
10:20	1:40	845.2	933.6	1259.4	850.7	6:35	5:25	1976.7	156.7	1982.9	2161.1
10:15	1:45	884.6	923.8	1279.1	890.9	6:30	5:30	1982.9	134.5	1987.4	2175.8
10:10	1:50	923.5	913.7	1299.1	930.8	6:25	5:35	1988.1	112.1	1991.3	2189.8
10:05	1:55	962.0	903.1	1319.5	970.3	6:20	5:40	1992.4	89.8	1994.4	2203.1
10:00	2:00	1000.0	892.1	1340.1	1009.5	6:15	5:45	1995.7	67.4	1996.9	2215.8
9:55	2:05	1037.5	880.6	1360.9	1048.3	6:10	5:50	1998.1	44.9	1998.6	2227.8
9:50	2:10	1074.6	868.8	1381.8	1086.6	6:05	5:55	1999.5	22.5	1999.7	2239.1
9:45	2:15	1111.1	856.5	1402.9	1124.6	6:00	6:00	2000.0	0.0	2000.0	2249.7
9:40	2:20	1147.2	843.8	1424.1	1162.2	5:55	6:05	1999.5	-22.5	1999.7	2259.6
9:35	2:25	1182.6	830.7	1445.2	1199.3	5:50	6:10	1998.1	-44.9	1998.6	2268.9
9:30	2:30	1217.5	817.2	1466.4	1236.0	5:45	6:15	1995.7	-67.4	1996.9	2277.6
9:25	2:35	1251.8	803.3	1487.4	1272.2	5:40	6:20	1992.4	-89.8	1994.4	2285.5
9:20	2:40	1285.6	789.1	1508.4	1308.0	5:35	6:25	1988.1	-112.1	1991.3	2292.9
9:15	2:45	1318.7	774.5	1529.3	1343.2	5:30	6:30	1982.9	-134.5	1987.4	2299.6
9:10	2:50	1351.2	759.5	1550.0	1378.0	5:25	6:35	1976.7	-156.7	1982.9	2305.6
9:05	2:55	1383.0	744.1	1570.5	1412.3	5:20	6:40	1969.6	-178.9	1977.7	2311.0
9:00	3:00	1414.2	728.4	1590.8	1446.0	5:15	6:45	1961.6	-201.0	1971.8	2315.9
8:55	3:05	1444.7	712.3	1610.8	1479.3	5:10	6:50	1952.6	-222.9	1965.3	2320.1
8:50	3:10	1474.6	695.9	1630.5	1511.9	5:05	6:55	1942.7	-244.8	1958.1	2323.7
8:45	3:15	1503.7	679.2	1649.9	1544.1	5:00	7:00	1931.9	-266.6	1950.2	2326.7
8:40	3:20	1532.1	662.1	1669.0	1575.7	4:55	7:05	1920.1	-288.2	1941.6	2329.1
8:35	3:25	1559.8	644.7	1687.8	1606.7	4:50	7:10	1907.4	-309.7	1932.4	2331.0
8:30	3:30	1586.7	627.1	1706.1	1637.1	4:45	7:15	1893.9	-331.1	1922.6	2332.3
8:25	3:35	1612.9	609.1	1724.1	1666.9						
8:20	3:40	1638.3	590.8	1741.6	1696.2						
8:15	3:45	1662.9	572.3	1758.7	1724.8						

Analematic Sundial

Latitude: 31.0° N/S

Date Scale

Semi-Major Axis (E-W): 2000 mm Semi-Minor Axis (N-S): 1030.1 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-727.3	-713.6	-709.4	-690.5	-685.0	-661.5	-655.0	-627.0	-619.6	-588.0	-579.6
February	-526.1	-487.7	-477.7	-437.0	-426.8	-384.1	-373.2	-329.2	-318.0	-272.8	-261.1
March	-226.6	-180.2	-168.4	-121.4	-109.7	-62.3	-50.6	-3.0	8.7	56.0	67.7
April	137.9	184.1	195.6	240.9	252.2	296.7	307.5	351.0	361.6	403.4	413.5
May	463.2	501.3	510.4	545.8	554.4	586.9	594.6	624.3	631.4	657.4	663.2
June	695.4	712.2	716.1	728.4	731.2	739.0	740.1	742.9	743.3	738.0	740.4
July	731.2	719.6	716.1	700.3	695.8	675.3	669.8	645.4	638.9	611.1	603.7
August	556.4	521.8	513.0	476.1	466.7	427.7	417.6	376.9	366.6	324.2	313.4
September	248.0	203.2	192.0	146.4	134.9	88.9	77.5	31.1	19.4	-27.2	-38.9
October	-97.0	-143.7	-155.1	-201.4	-212.6	-258.4	-269.7	-314.3	-325.5	-369.1	-379.7
November	-442.4	-482.5	-492.2	-530.0	-539.2	-574.3	-582.6	-614.5	-621.9	-650.2	-657.0
December	-686.4	-706.2	-710.5	-724.9	-728.0	-737.2	-739.0	-742.9	-743.3	-741.5	-740.4

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	727.3	713.6	709.4	690.5	685.0	661.5	655.0	627.0	619.6	588.0	579.6
February	526.1	487.7	477.7	437.0	426.8	384.1	373.2	329.2	318.0	272.8	261.1
March	226.6	180.2	168.4	121.4	109.7	62.3	50.6	3.0	-8.7	-56.0	-67.7
April	-137.9	-184.1	-195.6	-240.9	-252.2	-296.7	-307.5	-351.0	-361.6	-403.4	-413.5
May	-463.2	-501.3	-510.4	-545.8	-554.4	-586.9	-594.6	-624.3	-631.4	-657.4	-663.2
June	-695.4	-712.2	-716.1	-728.4	-731.2	-739.0	-740.1	-742.9	-743.3	-738.0	-740.4
July	-731.2	-719.6	-716.1	-700.3	-695.8	-675.3	-669.8	-645.4	-638.9	-611.1	-603.7
August	-556.4	-521.8	-513.0	-476.1	-466.7	-427.7	-417.6	-376.9	-366.6	-324.2	-313.4
September	-248.0	-203.2	-192.0	-146.4	-134.9	-88.9	-77.5	-31.1	-19.4	27.2	38.9
October	97.0	143.7	155.1	201.4	212.6	258.4	269.7	314.3	325.5	369.1	379.7
November	442.4	482.5	492.2	530.0	539.2	574.3	582.6	614.5	621.9	650.2	657.0
December	686.4	706.2	710.5	724.9	728.0	737.2	739.0	742.9	743.3	741.5	740.4

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: 31.0° N/S

Earliest Sunrise: 4:55 a.m. Latest Sunset: 7:05 p.m.
 Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1287.6 mm
 Sunrise/Sunset Markers: X = ± 1791.4 mm

Local Time	X	Y	Z	W	Local Time	X	Y	Z	W		
12:00	0.0	1287.6	1287.6	0.0							
11:55	12:05	54.5	1287.3	1288.4	54.5	8:10	3:50	2108.5	691.8	2219.1	2191.0
11:50	12:10	109.0	1286.4	1291.0	109.1	8:05	3:55	2137.3	668.0	2239.2	2225.3
11:45	12:15	163.5	1284.8	1295.2	163.5	8:00	4:00	2165.1	643.8	2258.8	2258.8
11:40	12:20	217.9	1282.7	1301.1	217.9	7:55	4:05	2191.8	619.3	2277.6	2291.4
11:35	12:25	272.2	1279.9	1308.6	272.3	7:50	4:10	2217.5	594.5	2295.8	2323.3
11:30	12:30	326.3	1276.6	1317.6	326.5	7:45	4:15	2242.2	569.5	2313.4	2354.4
11:25	12:35	380.3	1272.6	1328.2	380.6	7:40	4:20	2265.8	544.2	2330.2	2384.6
11:20	12:40	434.1	1268.0	1340.3	434.6	7:35	4:25	2288.3	518.6	2346.3	2414.0
11:15	12:45	487.7	1262.9	1353.8	488.4	7:30	4:30	2309.7	492.7	2361.7	2442.6
11:10	12:50	541.1	1257.1	1368.6	542.0	7:25	4:35	2330.0	466.7	2376.3	2470.4
11:05	12:55	594.2	1250.7	1384.7	595.4	7:20	4:40	2349.2	440.4	2390.2	2497.3
11:00	1:00	647.0	1243.7	1402.0	648.5	7:15	4:45	2367.3	413.9	2403.2	2523.4
10:55	1:05	699.6	1236.2	1420.4	701.5	7:10	4:50	2384.3	387.2	2415.5	2548.6
10:50	1:10	751.8	1228.0	1439.8	754.1	7:05	4:55	2400.1	360.3	2427.0	2573.0
10:45	1:15	803.6	1219.3	1460.3	806.5	7:00	5:00	2414.8	333.3	2437.7	2596.6
10:40	1:20	855.1	1209.9	1481.6	858.6	6:55	5:05	2428.4	306.0	2447.6	2619.2
10:35	1:25	906.1	1200.0	1503.7	910.3	6:50	5:10	2440.7	278.7	2456.6	2641.0
10:30	1:30	956.7	1189.6	1526.6	961.7	6:45	5:15	2452.0	251.2	2464.8	2662.0
10:25	1:35	1006.9	1178.6	1550.1	1012.8	6:40	5:20	2462.0	223.6	2472.2	2682.1
10:20	1:40	1056.5	1167.0	1574.2	1063.4	6:35	5:25	2470.9	195.9	2478.7	2701.3
10:15	1:45	1105.7	1154.8	1598.8	1113.7	6:30	5:30	2478.6	168.1	2484.3	2719.7
10:10	1:50	1154.4	1142.1	1623.9	1163.5	6:25	5:35	2485.1	140.2	2489.1	2737.2
10:05	1:55	1202.5	1128.9	1649.3	1212.9	6:20	5:40	2490.5	112.2	2493.0	2753.9
10:00	2:00	1250.0	1115.1	1675.1	1261.8	6:15	5:45	2494.6	84.2	2496.1	2769.7
9:55	2:05	1296.9	1100.8	1701.1	1310.3	6:10	5:50	2497.6	56.2	2498.3	2784.7
9:50	2:10	1343.2	1085.9	1727.3	1358.3	6:05	5:55	2499.4	28.1	2499.6	2798.8
9:45	2:15	1388.9	1070.6	1753.7	1405.8	6:00	6:00	2500.0	0.0	2500.0	2812.1
9:40	2:20	1433.9	1054.7	1780.1	1452.7	5:55	6:05	2499.4	-28.1	2499.6	2824.5
9:35	2:25	1478.3	1038.4	1806.5	1499.1	5:50	6:10	2497.6	-56.2	2498.3	2836.2
9:30	2:30	1521.9	1021.5	1832.9	1545.0	5:45	6:15	2494.6	-84.2	2496.1	2846.9
9:25	2:35	1564.8	1004.2	1859.3	1590.3	5:40	6:20	2490.5	-112.2	2493.0	2856.9
9:20	2:40	1607.0	986.4	1885.5	1635.0	5:35	6:25	2485.1	-140.2	2489.1	2866.1
9:15	2:45	1648.4	968.1	1911.6	1679.0	5:30	6:30	2478.6	-168.1	2484.3	2874.5
9:10	2:50	1689.0	949.3	1937.5	1722.5	5:25	6:35	2470.9	-195.9	2478.7	2882.0
9:05	2:55	1728.8	930.1	1963.1	1765.4	5:20	6:40	2462.0	-223.6	2472.2	2888.8
9:00	3:00	1767.8	910.5	1988.5	1807.5	5:15	6:45	2452.0	-251.2	2464.8	2894.8
8:55	3:05	1805.9	890.4	2013.5	1849.1	5:10	6:50	2440.7	-278.7	2456.6	2900.1
8:50	3:10	1843.2	869.9	2038.2	1889.9	5:05	6:55	2428.4	-306.0	2447.6	2904.6
8:45	3:15	1879.6	849.0	2062.4	1930.1	5:00	7:00	2414.8	-333.3	2437.7	2908.3
8:40	3:20	1915.1	827.7	2086.3	1969.6	4:55	7:05	2400.1	-360.3	2427.0	2911.4
8:35	3:25	1949.7	805.9	2109.7	2008.3	4:50	7:10	2384.3	-387.2	2415.5	2913.7
8:30	3:30	1983.4	783.8	2132.7	2046.4	4:45	7:15	2367.3	-413.9	2403.2	2915.3
8:25	3:35	2016.1	761.4	2155.1	2083.7						
8:20	3:40	2047.9	738.5	2177.0	2120.2						
8:15	3:45	2078.7	715.3	2198.3	2156.0						

Analemmatic Sundial

Latitude: 31.0° N/S

Date Scale

Semi-Major Axis (E-W): 2500 mm Semi-Minor Axis (N-S): 1287.6 mm

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	-909.2	-892.0	-886.7	-863.2	-856.2	-826.9	-818.7	-783.8	-774.5	-734.9	-724.5
February	-657.6	-609.6	-597.1	-546.2	-533.5	-480.2	-466.4	-411.5	-397.6	-340.9	-326.4
March	-283.3	-225.2	-210.5	-151.7	-137.1	-77.8	-63.2	-3.7	10.8	70.0	84.6
April	172.4	230.1	244.5	301.2	315.3	370.9	384.4	438.7	452.0	504.2	516.8
May	579.0	626.6	638.0	682.2	693.0	733.7	743.3	780.4	789.3	821.7	829.0
June	869.3	890.3	895.1	910.5	914.0	923.8	925.1	928.7	929.1	922.4	925.5
July	914.0	899.5	895.1	875.4	869.7	844.1	837.2	806.8	798.6	763.9	754.6
August	695.4	652.3	641.3	595.1	583.4	534.7	522.0	471.2	458.2	405.3	391.8
September	309.9	254.0	240.0	183.0	168.7	111.2	96.9	38.9	24.3	-34.0	-48.6
October	-121.3	-179.6	-193.9	-251.7	-265.8	-322.9	-337.1	-392.9	-406.8	-461.4	-474.7
November	-553.0	-603.2	-615.3	-662.5	-674.0	-717.8	-728.3	-768.1	-777.4	-812.7	-821.3
December	-858.0	-882.8	-888.1	-906.1	-910.1	-921.6	-923.8	-928.7	-929.1	-926.9	-925.5

Northern Hemisphere

Month	Date										
	1	5	6	10	11	15	16	20	21	25	26
January	909.2	892.0	886.7	863.2	856.2	826.9	818.7	783.8	774.5	734.9	724.5
February	657.6	609.6	597.1	546.2	533.5	480.2	466.4	411.5	397.6	340.9	326.4
March	283.3	225.2	210.5	151.7	137.1	77.8	63.2	3.7	-10.8	-70.0	-84.6
April	-172.4	-230.1	-244.5	-301.2	-315.3	-370.9	-384.4	-438.7	-452.0	-504.2	-516.8
May	-579.0	-626.6	-638.0	-682.2	-693.0	-733.7	-743.3	-780.4	-789.3	-821.7	-829.0
June	-869.3	-890.3	-895.1	-910.5	-914.0	-923.8	-925.1	-928.7	-929.1	-922.4	-925.5
July	-914.0	-899.5	-895.1	-875.4	-869.7	-844.1	-837.2	-806.8	-798.6	-763.9	-754.6
August	-695.4	-652.3	-641.3	-595.1	-583.4	-534.7	-522.0	-471.2	-458.2	-405.3	-391.8
September	-309.9	-254.0	-240.0	-183.0	-168.7	-111.2	-96.9	-38.9	-24.3	34.0	48.6
October	121.3	179.6	193.9	251.7	265.8	322.9	337.1	392.9	406.8	461.4	474.7
November	553.0	603.2	615.3	662.5	674.0	717.8	728.3	768.1	777.4	812.7	821.3
December	858.0	882.8	888.1	906.1	910.1	921.6	923.8	928.7	929.1	926.9	925.5

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 |