

GEOCENTRIC COORDINATES FOR 0<sup>h</sup> TERRESTRIAL TIME

Date	Apparent Right Ascension	Apparent Declination	True Geocentric Distance	Date	Apparent Right Ascension	Apparent Declination	True Geocentric Distance
	h m s	° / ' "	au		h m s	° / ' "	au
Jan. 0	21 04 48.437	-18 37 42.29	1.283 5334	Feb. 15	0 30 45.321	+ 3 18 06.05	0.995 3499
1	21 09 44.587	-18 15 56.18	1.277 9183	16	0 34 54.655	+ 3 49 16.93	0.988 4261
2	21 14 39.264	-17 53 40.38	1.272 2729	17	0 39 03.644	+ 4 20 22.93	0.981 4766
3	21 19 32.467	-17 30 55.68	1.266 5975	18	0 43 12.314	+ 4 51 23.38	0.974 5013
4	21 24 24.199	-17 07 42.86	1.260 8922	19	0 47 20.687	+ 5 22 17.60	0.967 5000
5	21 29 14.462	-16 44 02.69	1.255 1571	20	0 51 28.784	+ 5 53 04.92	0.960 4726
6	21 34 03.263	-16 19 55.98	1.249 3925	21	0 55 36.625	+ 6 23 44.66	0.953 4192
7	21 38 50.611	-15 55 23.53	1.243 5987	22	0 59 44.229	+ 6 54 16.16	0.946 3397
8	21 43 36.515	-15 30 26.13	1.237 7758	23	1 03 51.611	+ 7 24 38.73	0.939 2341
9	21 48 20.989	-15 05 04.59	1.231 9242	24	1 07 58.787	+ 7 54 51.70	0.932 1025
10	21 53 04.044	-14 39 19.71	1.226 0442	25	1 12 05.771	+ 8 24 54.41	0.924 9449
11	21 57 45.698	-14 13 12.30	1.220 1360	26	1 16 12.577	+ 8 54 46.19	0.917 7615
12	22 02 25.969	-13 46 43.15	1.214 1999	27	1 20 19.214	+ 9 24 26.36	0.910 5526
13	22 07 04.876	-13 19 53.05	1.208 2360	28	1 24 25.692	+ 9 53 54.28	0.903 3183
14	22 11 42.443	-12 52 42.78	1.202 2446	29	1 28 32.018	+10 23 09.27	0.896 0590
15	22 16 18.695	-12 25 13.11	1.196 2256	Mar. 1	1 32 38.196	+10 52 10.68	0.888 7749
16	22 20 53.661	-11 57 24.79	1.190 1790	2	1 36 44.231	+11 20 57.86	0.881 4665
17	22 25 27.368	-11 29 18.58	1.184 1045	3	1 40 50.121	+11 49 30.15	0.874 1341
18	22 29 59.848	-11 00 55.26	1.178 0021	4	1 44 55.865	+12 17 46.91	0.866 7785
19	22 34 31.128	-10 32 15.58	1.171 8714	5	1 49 01.459	+12 45 47.47	0.859 4000
20	22 39 01.237	-10 03 20.31	1.165 7122	6	1 53 06.896	+13 13 31.20	0.851 9993
21	22 43 30.203	- 9 34 10.22	1.159 5242	7	1 57 12.166	+13 40 57.46	0.844 5772
22	22 47 58.053	- 9 04 46.11	1.153 3071	8	2 01 17.260	+14 08 05.61	0.837 1344
23	22 52 24.813	- 8 35 08.73	1.147 0607	9	2 05 22.169	+14 34 55.04	0.829 6718
24	22 56 50.510	- 8 05 18.87	1.140 7848	10	2 09 26.882	+15 01 25.15	0.822 1902
25	23 01 15.171	- 7 35 17.30	1.134 4791	11	2 13 31.389	+15 27 35.37	0.814 6904
26	23 05 38.823	- 7 05 04.80	1.128 1436	12	2 17 35.682	+15 53 25.17	0.807 1732
27	23 10 01.495	- 6 34 42.13	1.121 7783	13	2 21 39.747	+16 18 54.02	0.799 6392
28	23 14 23.214	- 6 04 10.05	1.115 3830	14	2 25 43.568	+16 44 01.39	0.792 0890
29	23 18 44.011	- 5 33 29.32	1.108 9578	15	2 29 47.124	+17 08 46.79	0.784 5231
30	23 23 03.915	- 5 02 40.70	1.102 5027	16	2 33 50.389	+17 33 09.70	0.776 9420
31	23 27 22.956	- 4 31 44.94	1.096 0179	17	2 37 53.333	+17 57 09.62	0.769 3460
Feb. 1	23 31 41.164	- 4 00 42.80	1.089 5035	18	2 41 55.922	+18 20 46.04	0.761 7357
2	23 35 58.570	- 3 29 35.01	1.082 9597	19	2 45 58.117	+18 43 58.48	0.754 1114
3	23 40 15.202	- 2 58 22.32	1.076 3865	20	2 49 59.874	+19 06 46.43	0.746 4736
4	23 44 31.091	- 2 27 05.48	1.069 7844	21	2 54 01.149	+19 29 09.42	0.738 8229
5	23 48 46.267	- 1 55 45.23	1.063 1537	22	2 58 01.889	+19 51 06.98	0.731 1597
6	23 53 00.758	- 1 24 22.31	1.056 4945	23	3 02 02.039	+20 12 38.66	0.723 4846
7	23 57 14.594	- 0 52 57.45	1.049 8074	24	3 06 01.540	+20 33 44.00	0.715 7982
8	0 01 27.802	- 0 21 31.38	1.043 0927	25	3 10 00.326	+20 54 22.59	0.708 1014
9	0 05 40.412	+ 0 09 55.17	1.036 3509	26	3 13 58.328	+21 14 34.00	0.700 3947
10	0 09 52.455	+ 0 41 21.49	1.029 5824	27	3 17 55.470	+21 34 17.84	0.692 6790
11	0 14 03.963	+ 1 12 46.90	1.022 7876	28	3 21 51.672	+21 53 33.71	0.684 9552
12	0 18 14.970	+ 1 44 10.72	1.015 9668	29	3 25 46.849	+22 12 21.24	0.677 2242
13	0 22 25.509	+ 2 15 32.29	1.009 1202	30	3 29 40.907	+22 30 40.09	0.669 4872
14	0 26 35.616	+ 2 46 50.95	1.002 2479	31	3 33 33.749	+22 48 29.91	0.661 7452
15	0 30 45.321	+ 3 18 06.05	0.995 3499	Apr. 1	3 37 25.271	+23 05 50.37	0.653 9994

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Date		Light-time	Magnitude	Surface Brightness	Diameter	Phase	Phase Angle	Defect of Illumination
		m		mag/arcsec <sup>2</sup>	"		°	"
Jan.	0	10.68	-4.0	+1.1	13.00	0.824	49.6	2.29
	4	10.49	-4.0	+1.2	13.23	0.814	51.1	2.46
	8	10.30	-4.0	+1.2	13.48	0.804	52.6	2.64
	12	10.10	-4.0	+1.2	13.74	0.793	54.1	2.84
	16	9.90	-4.0	+1.2	14.02	0.782	55.6	3.05
Feb.	20	9.70	-4.0	+1.2	14.31	0.771	57.2	3.28
	24	9.49	-4.1	+1.2	14.63	0.759	58.8	3.52
	28	9.28	-4.1	+1.2	14.96	0.747	60.4	3.78
	1	9.06	-4.1	+1.2	15.32	0.735	62.0	4.07
	5	8.84	-4.1	+1.2	15.70	0.721	63.7	4.37
	9	8.62	-4.1	+1.2	16.10	0.708	65.4	4.70
	13	8.39	-4.2	+1.3	16.54	0.694	67.2	5.06
	17	8.16	-4.2	+1.3	17.00	0.679	69.0	5.46
	21	7.93	-4.2	+1.3	17.50	0.664	70.9	5.88
	25	7.69	-4.3	+1.3	18.04	0.648	72.8	6.35
	29	7.45	-4.3	+1.3	18.62	0.632	74.7	6.86
	4	7.21	-4.3	+1.3	19.25	0.614	76.8	7.42
	8	6.96	-4.3	+1.3	19.93	0.597	78.9	8.04
Mar.	12	6.71	-4.4	+1.3	20.67	0.578	81.0	8.73
	16	6.46	-4.4	+1.4	21.48	0.558	83.3	9.48
	20	6.21	-4.4	+1.4	22.35	0.538	85.6	10.32
	24	5.95	-4.5	+1.4	23.31	0.517	88.1	11.26
	28	5.70	-4.5	+1.4	24.36	0.495	90.6	12.31
Apr.	1	5.44	-4.5	+1.4	25.51	0.471	93.3	13.49
	5	5.18	-4.6	+1.4	26.78	0.447	96.1	14.82
	9	4.92	-4.6	+1.4	28.18	0.421	99.1	16.33
	13	4.67	-4.6	+1.4	29.73	0.393	102.3	18.04
	17	4.42	-4.7	+1.5	31.43	0.364	105.7	19.98
May	21	4.17	-4.7	+1.5	33.31	0.334	109.4	22.19
	25	3.92	-4.7	+1.5	35.38	0.301	113.4	24.72
	29	3.69	-4.7	+1.5	37.66	0.267	117.8	27.60
	3	3.46	-4.7	+1.4	40.14	0.231	122.5	30.86
	7	3.24	-4.7	+1.4	42.82	0.194	127.7	34.52
	11	3.04	-4.7	+1.4	45.65	0.156	133.5	38.54
	15	2.86	-4.6	+1.3	48.54	0.117	139.9	42.84
	19	2.70	-4.5	+1.1	51.37	0.081	146.9	47.21
	23	2.57	-4.3	+0.8	53.95	0.048	154.6	51.34
	27	2.48	-4.0	+0.3	56.04	0.022	162.8	54.80
	31	2.42	—	—	57.40	0.005	171.5	57.09
	4	2.40	—	—	57.83	0.000	179.2	57.82
	8	2.42	—	—	57.26	0.007	170.6	56.87
June	12	2.49	-4.1	+0.4	55.78	0.025	162.0	54.41
	16	2.59	-4.3	+0.9	53.59	0.051	153.8	50.84
	20	2.72	-4.5	+1.1	50.96	0.084	146.3	46.67
	24	2.89	-4.6	+1.3	48.10	0.120	139.4	42.31
	28	3.07	-4.6	+1.4	45.21	0.158	133.1	38.06
	2	3.27	-4.7	+1.4	42.40	0.196	127.5	34.10
	6	3.50	-4.8	+1.5	39.54	0.231	121.2	30.24
	10	3.74	-4.9	+1.6	36.82	0.267	114.8	26.36
	14	3.98	-5.0	+1.7	34.31	0.301	108.4	22.52
	18	4.22	-5.1	+1.8	31.96	0.334	102.0	18.72
July	22	4.46	-5.2	+1.9	29.73	0.364	95.7	14.96
	26	4.69	-5.3	+2.0	27.66	0.393	89.4	11.24
	30	4.92	-5.4	+2.1	25.70	0.421	83.2	7.56
	3	5.14	-5.5	+2.2	23.82	0.447	77.1	3.92
	7	5.35	-5.6	+2.3	22.00	0.471	71.1	0.32



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Date		$L_s$	Sub-Earth Point		Sub-Solar Point				North Pole	
			Long.	Lat.	Long.	Lat.	Dist.	P.A.	Dist.	P.A.
		°	°	°	°	°	"	°	"	°
Jan.	0	124.79	349.37	+1.57	39.00	+2.17	+ 4.95	256.02	+ 6.50	344.52
	4	131.15	0.19	+1.43	51.29	+1.99	+ 5.15	254.54	+ 6.62	343.14
	8	137.51	11.00	+1.27	63.58	+1.78	+ 5.35	253.18	+ 6.74	341.90
	12	143.89	21.80	+1.09	75.88	+1.55	+ 5.56	251.95	+ 6.87	340.81
	16	150.27	32.57	+0.89	88.19	+1.31	+ 5.78	250.85	+ 7.01	339.87
	20	156.67	43.33	+0.67	100.50	+1.05	+ 6.01	249.88	+ 7.16	339.07
	24	163.07	54.07	+0.43	112.83	+0.77	+ 6.25	249.05	+ 7.31	338.41
	28	169.48	64.79	+0.18	125.16	+0.48	+ 6.50	248.35	+ 7.48	337.90
Feb.	1	175.91	75.48	-0.09	137.50	+0.19	+ 6.76	247.78	- 7.66	337.52
	5	182.34	86.14	-0.38	149.85	-0.11	+ 7.04	247.34	- 7.85	337.28
	9	188.78	96.77	-0.67	162.21	-0.40	+ 7.32	247.03	- 8.05	337.17
	13	195.23	107.37	-0.98	174.58	-0.69	+ 7.62	246.85	- 8.27	337.19
	17	201.69	117.93	-1.29	186.96	-0.97	+ 7.94	246.79	- 8.50	337.34
	21	208.16	128.45	-1.61	199.35	-1.24	+ 8.27	246.85	- 8.75	337.61
	25	214.63	138.93	-1.93	211.74	-1.50	+ 8.62	247.03	- 9.02	338.00
	29	221.11	149.35	-2.26	224.15	-1.73	+ 8.98	247.33	- 9.30	338.51
Mar.	4	227.59	159.72	-2.59	236.56	-1.95	+ 9.37	247.73	- 9.62	339.13
	8	234.08	170.02	-2.92	248.98	-2.14	+ 9.78	248.25	- 9.95	339.85
	12	240.57	180.25	-3.24	261.40	-2.30	+10.21	248.86	-10.32	340.68
	16	247.07	190.40	-3.55	273.82	-2.43	+10.66	249.56	-10.72	341.60
	20	253.57	200.46	-3.86	286.25	-2.53	+11.14	250.35	-11.15	342.60
	24	260.06	210.43	-4.15	298.68	-2.60	+11.65	251.21	-11.63	343.68
	28	266.56	220.28	-4.43	311.10	-2.63	-12.18	252.13	-12.14	344.82
Apr.	1	273.05	230.00	-4.69	323.53	-2.63	-12.74	253.08	-12.71	346.00
	5	279.54	239.56	-4.93	335.95	-2.60	-13.32	254.06	-13.34	347.22
	9	286.02	248.96	-5.14	348.37	-2.54	-13.91	255.04	-14.03	348.44
	13	292.50	258.15	-5.33	0.78	-2.44	-14.52	255.98	-14.80	349.65
	17	298.98	267.11	-5.47	13.18	-2.31	-15.12	256.87	-15.64	350.83
	21	305.44	275.81	-5.58	25.58	-2.15	-15.71	257.66	-16.58	351.93
	25	311.90	284.20	-5.64	37.96	-1.96	-16.23	258.33	-17.60	352.94
	29	318.35	292.23	-5.64	50.34	-1.75	-16.66	258.84	-18.74	353.82
May	3	324.80	299.83	-5.58	62.71	-1.52	-16.93	259.15	-19.98	354.53
	7	331.23	306.95	-5.43	75.06	-1.27	-16.93	259.21	-21.31	355.05
	11	337.65	313.52	-5.19	87.41	-1.00	-16.55	258.98	-22.73	355.33
	15	344.07	319.48	-4.85	99.74	-0.72	-15.63	258.45	-24.18	355.36
	19	350.47	324.80	-4.38	112.06	-0.44	-14.01	257.56	-25.61	355.13
	23	356.86	329.49	-3.78	124.38	-0.14	-11.57	256.30	-26.92	354.63
	27	3.25	333.60	-3.05	136.68	+0.15	- 8.27	254.48	-27.98	353.91
	31	9.62	337.26	-2.22	148.97	+0.44	- 4.23	251.01	-28.68	353.03
June	4	15.99	340.69	-1.33	161.26	+0.73	- 0.42	128.77	-28.91	352.09
	8	22.35	344.14	-0.42	173.54	+1.00	- 4.68	77.59	-28.63	351.18
	12	28.70	347.85	+0.44	185.81	+1.27	- 8.64	74.94	+27.89	350.39
	16	35.05	352.03	+1.22	198.08	+1.51	-11.82	73.87	+26.79	349.80
	20	41.38	356.80	+1.88	210.34	+1.74	-14.15	73.44	+25.46	349.42
	24	47.72	2.21	+2.42	222.60	+1.95	-15.66	73.42	+24.03	349.26
	28	54.05	8.23	+2.85	234.86	+2.14	-16.50	73.72	+22.58	349.32
July	2	60.37	14.84	+3.16	247.11	+2.29	-16.83	74.26	+21.17	349.59