

# Topocentric ephemeris of the Moon

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

	Date	Hour	R. A. (2000.0)	Decl. (2000.0)	Const.	Dist. E.	Age	Magn.	Diam.	Illum.	Elong.	Separ.	Rise	Transit	Set	Elevation	Azimuth	Azimuth
	yyyy mm dd	hh:mm	topocentric	topocentric		km	days	mV	"	%	°	°	hh:mm	hh:mm	hh:mm	(max.)	at rise	at set
1	2024 01 01	00:00	10h 37m 49,1s	+12° 14' 0"	Leo	402005	19d 0h 28m	-11,81	1783	77,5	123,3° W	123,2°	22:41	04:38	11:24	55,0°	80,0°	283,4°
2	2024 01 02	00:00	11h 20m 58,2s	+6° 55' 46"	Leo	403302	20d 0h 28m	-11,62	1778	69,2	112,4° W	112,4°	23:41	05:18	11:44	49,2°	87,5°	276,1°
3	2024 01 03	00:00	12h 3m 2,6s	+1° 23' 23"	Vir	403434	21d 0h 28m	-11,41	1777	60,2	101,6° W	101,6°		05:57	12:03	43,4°	95,3°	268,6°
4	2024 01 04	00:00	12h 45m 6,3s	-4° 13' 57"	Vir	402322	22d 0h 28m	-11,18	1782	50,8	90,7° W	90,7°	00:41	06:36	12:22	43,4°	95,3°	261,1°
5	2024 01 05	00:00	13h 28m 16,4s	-9° 46' 59"	Vir	399979	23d 0h 28m	-10,93	1792	41,2	79,7° W	79,7°	01:42	07:17	12:43	37,6°	103,0°	253,7°
6	2024 01 06	00:00	14h 13m 41,8s	-15° 5' 1"	Vir	396526	24d 0h 28m	-10,65	1808	31,8	68,5° W	68,5°	02:47	08:01	13:08	32,2°	110,4°	246,6°
7	2024 01 07	00:00	15h 2m 29,2s	-19° 54' 23"	Lib	392185	25d 0h 28m	-10,33	1828	22,9	57,0° W	57,0°	03:54	08:49	13:37	27,3°	117,3°	240,3°
8	2024 01 08	00:00	15h 55m 33,1s	-23° 57' 26"	Sco	387274	26d 0h 28m	-9,95	1851	14,8	45,1° W	45,2°	05:05	09:43	14:15	23,4°	123,2°	235,1°
9	2024 01 09	00:00	16h 53m 15,2s	-26° 52' 45"	Oph	382177	27d 0h 28m	-9,51	1876	8,1	32,7° W	33,0°	06:16	10:41	15:04	20,9°	127,2°	232,0°
10	2024 01 10	00:00	17h 54m 59,3s	-28° 18' 8"	Sgr	377312	28d 0h 28m	-8,99	1900	3,2	20,0° W	20,5°	07:24	11:44	16:05	20,3°	128,7°	231,5°
11	2024 01 11	00:00	18h 58m 59,4s	-27° 56' 38"	Sgr	373078	29d 0h 28m	-8,42	1922	0,6	6,8° W	8,6°	08:22	12:48	17:18	21,7°	127,1°	234,2°
12	2024 01 12	00:00	20h 2m 47,8s	-25° 43' 13"	Sgr	369804	0d 12h 03m	-8,45	1939	0,5	6,6° E	8,4°	09:10	13:50	18:38	25,2°	122,6°	239,7°
13	2024 01 13	00:00	21h 4m 13,5s	-21° 47' 35"	Cap	367701	1d 12h 03m	-9,07	1950	3,3	20,2° E	20,8°	09:48	14:48	19:58	30,4°	115,9°	247,3°
14	2024 01 14	00:00	22h 2m 9,1s	-16° 31' 0"	Aqr	366835	2d 12h 03m	-9,65	1954	8,6	33,9° E	34,1°	10:19	15:42	21:17	36,7°	107,8°	256,1°
15	2024 01 15	00:00	22h 56m 36,4s	-10° 19' 52"	Aqr	367130	3d 12h 03m	-10,15	1953	16,3	47,5° E	47,6°	10:45	16:33	22:32	43,6°	98,9°	265,5°
16	2024 01 16	00:00	23h 48m 24,1s	-3° 40' 31"	Aqr	368404	4d 12h 03m	-10,58	1946	25,8	60,9° E	60,9°	11:09	17:21	23:45	50,7°	89,8°	274,8°
17	2024 01 17	00:00	0h 38m 42,7s	+3° 3' 24"	Psc	370414	5d 12h 03m	-10,94	1936	36,4	74,1° E	74,1°	11:33	18:09		50,7°	80,9°	274,8°
18	2024 01 18	00:00	1h 28m 47,2s	+9° 31' 15"	Psc	372911	6d 12h 03m	-11,25	1923	47,5	87,0° E	87,0°	11:57	18:57	00:58	57,6°	72,5°	283,8°
19	2024 01 19	00:00	2h 19m 46,6s	+15° 24' 36"	Ari	375681	7d 12h 03m	-11,51	1908	58,6	99,7° E	99,7°	12:25	19:47	02:10	63,8°	65,1°	291,9°
20	2024 01 20	00:00	3h 12m 33,5s	+20° 26' 26"	Ari	378571	8d 12h 03m	-11,74	1894	69,0	112,2° E	112,2°	12:57	20:39	03:21	69,2°	58,9°	298,9°
21	2024 01 21	00:00	4h 7m 32,8s	+24° 20' 53"	Tau	381491	9d 12h 03m	-11,93	1879	78,3	124,4° E	124,4°	13:36	21:34	04:32	73,4°	54,3°	304,2°
22	2024 01 22	00:00	5h 4m 29,4s	+26° 54' 30"	Tau	384402	10d 12h 03m	-12,10	1865	86,2	136,5° E	136,4°	14:23	22:29	05:37	76,2°	51,9°	307,5°
23	2024 01 23	00:00	6h 2m 24,8s	+27° 58' 26"	Gem	387294	11d 12h 03m	-12,26	1851	92,5	148,4° E	148,1°	15:18	23:24	06:36	77,3°	51,8°	308,4°
24	2024 01 24	00:00	6h 59m 50,4s	+27° 30' 53"	Gem	390163	12d 12h 03m	-12,40	1838	96,9	160,1° E	159,6°	16:19		07:25	76,9°	54,0°	307,0°
25	2024 01 25	00:00	7h 55m 18,0s	+25° 37' 51"	Gem	392983	13d 12h 03m	-12,52	1824	99,3	171,7° E	170,5°	17:23	00:16	08:06	71,6°	58,1°	303,6°
26	2024 01 26	00:00	8h 47m 47,9s	+22° 31' 30"	Cnc	395691	14d 12h 03m	-12,57	1812	99,8	176,9° W	174,5°	18:27	01:06	08:38	67,4°	63,7°	298,6°
27	2024 01 27	00:00	9h 37m 1,3s	+18° 27' 7"	Leo	398181	15d 12h 03m	-12,44	1801	98,3	165,7° W	165,1°	19:30	01:52	09:05	62,4°	70,2°	292,6°
28	2024 01 28	00:00	10h 23m 14,7s	+13° 40' 10"	Leo	400305	16d 12h 03m	-12,28	1791	95,1	154,6° W	154,4°	20:31	02:35	09:28	56,9°	77,4°	285,8°
29	2024 01 29	00:00	11h 7m 7,7s	+8° 24' 39"	Leo	401887	17d 12h 03m	-12,13	1784	90,3	143,6° W	143,6°	21:31	03:15	09:48	51,2°	84,9°	278,6°
30	2024 01 30	00:00	11h 49m 32,6s	+2° 52' 38"	Vir	402741	18d 12h 03m	-11,96	1780	84,0	132,8° W	132,8°	22:31	03:54	10:07	45,4°	92,6°	271,2°
31	2024 01 31	00:00	12h 31m 28,0s	-2° 45' 29"	Vir	402694	19d 12h 03m	-11,79	1780	76,5	121,9° W	121,9°	23:31	04:33	10:26	39,6°	100,3°	263,7°
32	2024 02 01	00:00	13h 13m 55,7s	-8° 20' 0"	Vir	401616	20d 12h 03m	-11,60	1785	68,1	111,1° W	111,1°		05:13	10:46	34,1°	107,8°	256,3°
33	2024 02 02	00:00	13h 58m 0,5s	-13° 40' 54"	Vir	399436	21d 12h 03m	-11,40	1795	58,9	100,0° W	100,0°	00:33	05:55	11:08	34,1°	107,8°	249,2°
34	2024 02 03	00:00	14h 44m 47,2s	-18° 36' 28"	Lib	396171	22d 12h 03m	-11,17	1810	49,1	88,8° W	88,8°	01:37	06:40	11:34	29,1°	114,8°	242,6°
35	2024 02 04	00:00	15h 35m 15,1s	-22° 52' 8"	Lib	391936	23d 12h 03m	-10,91	1829	39,2	77,3° W	77,4°	02:45	07:29	12:07	24,9°	121,0°	237,0°
36	2024 02 05	00:00	16h 30m 4,2s	-26° 9' 50"	Sco	386955	24d 12h 03m	-10,61	1853	29,4	65,5° W	65,5°	03:55	08:24	12:49	21,8°	125,8°	233,0°
37	2024 02 06	00:00	17h 29m 13,1s	-28° 9' 2"	Oph	381558	25d 12h 03m	-10,26	1879	20,2	53,1° W	53,3°	05:03	09:23	13:43	20,2°	128,5°	231,2°
38	2024 02 07	00:00	18h 31m 39,9s	-28° 30' 27"	Sgr	376160	26d 12h 03m	-9,84	1906	12,1	40,4° W	40,7°	06:05	10:26	14:50	20,6°	128,5°	232,3°
39	2024 02 08	00:00	19h 35m 25,1s	-27° 2' 4"	Sgr	371222	27d 12h 03m	-9,33	1931	5,7	27,2° W	27,6°	06:58	11:29	16:06	23,1°	125,4°	236,4°
40	2024 02 09	00:00	20h 38m 12,6s	-23° 44' 33"	Cap	367196	28d 12h 03m	-8,75	1952	1,6	13,6° W	14,5°	07:40	12:30	17:28	27,5°	119,7°	243,2°
41	2024 02 10	00:00	21h 38m 22,7s	-18° 52' 9"	Cap	364453	0d 1h 01m	-8,25	1967	0,2	0,3° E	4,5°	08:15	13:27	18:50	33,5°	112,0°	251,8°
42	2024 02 11	00:00	22h 35m 20,8s	-12° 48' 58"	Aqr	363223	1d 1h 01m	-8,80	1974	1,6	14,3° E	14,7°	08:44	14:21	20:10	40,4°	103,1°	261,3°
43	2024 02 12	00:00	23h 29m 29,7s	-6° 3' 19"	Aqr	363553	2d 1h 01m	-9,42	1972	6,0	28,2° E	28,3°	09:10	15:12	21:27	47,8°	93,6°	271,2°
44	2024 02 13	00:00	0h 21m 46,1s	+0° 56' 41"	Psc	365307	3d 1h 01m	-9,95	1963	12,9	41,9° E	42,0°	09:34	16:02	22:43	55,1°	84,2°	280,7°
45	2024 02 14	00:00	1h 13m 19,4s	+7° 45' 33"	Psc	368207	4d 1h 01m	-10,40	1947	21,7	55,4° E	55,4°	09:59	16:52	23:58	61,9°	75,2°	289,5°
46	2024 02 15	00:00	2h 5m 16,9s	+14° 1' 7"	Ari	371891	5d 1h 01m	-10,77	1928	31,8	68,6° E	68,6°	10:27	17:43		61,9°	67,2°	289,5°
47	2024 02 16	00:00	2h 58m 32,1s	+19° 24' 21"	Ari	375986	6d 1h 01m	-11,08	1907	42,6	81,3° E	81,3°	10:58	18:35	01:12	67,8°	60,3°	297,1°
48	2024 02 17	00:00	3h 53m 33,6s	+23° 39' 10"	Tau	380162	7d 1h 01m	-11,35	1886	53,4	93,8° E	93,8°	11:35	19:29	02:24	72,5°	55,2°	303,1°
49	2024 02 18	00:00	4h 50m 14,6s	+26° 32' 49"	Tau	384165	8d 1h 01m	-11,57	1866	63,8	105,9° E	105,9°	12:20	20:25	03:32	75,7°	52,1°	307,0°
50	2024 02 19	00:00	5h 47m 48,6s	+27° 57' 14"	Tau	387829	9d 1h 01m	-11,77	1849	73,4	117,8° E	117,7°	13:12	21:20	04:32	77,4°	51,3°	308,7°

# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

	Date	Hour	R. A. (2000.0)	Decl. (2000.0)	Const.	Dist. E.	Age	Magn.	Diam.	Illum.	Elong.	Separ.	Rise	Transit	Set	Elevation	Azimuth	Azimuth	
	yyyy	mm	dd	hh:mm	topocentric	topocentric	km	mV	"	%	°	°	hh:mm	hh:mm	hh:mm	(max.)	at rise	at set	
51	2024	02	20	00:00	6h 45m 0,1s	+27° 50' 34"	Gem 391069	10d 1h 01m	-11,94	1833	81,8	129,5° E	129,3°	14:11	22:13	05:24	77,3°	52,9°	307,9°
52	2024	02	21	00:00	7h 40m 29,2s	+26° 17' 41"	Gem 393862	11d 1h 01m	-12,10	1820	88,7	141,0° E	140,7°	15:14	23:03	06:07	75,8°	56,5°	305,0°
53	2024	02	22	00:00	8h 33m 17,3s	+23° 29' 8"	Cnc 396224	12d 1h 01m	-12,25	1809	94,1	152,3° E	151,9°	16:18	23:49	06:41	72,9°	61,6°	300,5°
54	2024	02	23	00:00	9h 23m 0,9s	+19° 38' 37"	Leo 398183	13d 1h 01m	-12,39	1801	97,8	163,5° E	163,0°	17:21		07:09	64,1°	67,9°	294,7°
55	2024	02	24	00:00	10h 9m 49,6s	+15° 0' 48"	Leo 399756	14d 1h 01m	-12,52	1793	99,7	174,6° E	173,6°	18:23	00:33	07:33	58,8°	75,0°	288,2°
56	2024	02	25	00:00	10h 54m 16,1s	+9° 49' 37"	Leo 400932	15d 1h 01m	-12,52	1788	99,7	174,4° W	173,8°	19:23	01:14	07:53	53,1°	82,5°	281,0°
57	2024	02	26	00:00	11h 37m 6,4s	+4° 17' 47"	Leo 401667	16d 1h 01m	-12,39	1785	97,9	163,5° W	163,4°	20:23	01:53	08:12	47,2°	90,2°	273,6°
58	2024	02	27	00:00	12h 19m 13,4s	-1° 23' 17"	Vir 401882	17d 1h 01m	-12,24	1784	94,4	152,6° W	152,6°	21:23	02:32	08:31	41,4°	97,9°	266,1°
59	2024	02	28	00:00	13h 1m 33,4s	-7° 2' 49"	Vir 401473	18d 1h 01m	-12,09	1786	89,3	141,7° W	141,7°	22:24	03:11	08:50	35,8°	105,5°	258,6°
60	2024	02	29	00:00	13h 45m 4,9s	-12° 30' 9"	Vir 400333	19d 1h 01m	-11,94	1791	82,7	130,7° W	130,7°	23:27	03:52	09:11	30,6°	112,6°	251,4°
61	2024	03	01	00:00	14h 30m 46,5s	-17° 33' 41"	Lib 398368	20d 1h 01m	-11,76	1800	74,8	119,6° W	119,6°		04:35	09:35	26,2°	119,1°	244,7°
62	2024	03	02	00:00	15h 19m 32,8s	-22° 0' 7"	Lib 395528	21d 1h 01m	-11,58	1813	65,8	108,3° W	108,3°	00:32	05:22	10:05	26,2°	119,1°	238,7°
63	2024	03	03	00:00	16h 12m 4,9s	-25° 33' 46"	Sco 391830	22d 1h 01m	-11,36	1830	56,0	96,8° W	96,8°	01:40	06:13	10:42	22,7°	124,4°	234,1°
64	2024	03	04	00:00	17h 8m 34,5s	-27° 57' 1"	Oph 387379	23d 1h 01m	-11,12	1851	45,7	84,9° W	85,0°	02:47	07:09	11:29	20,5°	127,9°	231,4°
65	2024	03	05	00:00	18h 8m 27,0s	-28° 52' 19"	Sgr 382383	24d 1h 01m	-10,83	1875	35,3	72,7° W	72,8°	03:50	08:08	12:28	20,0°	129,1°	231,1°
66	2024	03	06	00:00	19h 10m 17,1s	-28° 6' 18"	Sgr 377156	25d 1h 01m	-10,49	1901	25,3	60,0° W	60,2°	04:45	09:09	13:38	21,5°	127,5°	233,8°
67	2024	03	07	00:00	20h 12m 11,2s	-25° 34' 14"	Cap 372098	26d 1h 01m	-10,08	1927	16,1	47,0° W	47,2°	05:31	10:10	14:56	24,9°	123,1°	239,2°
68	2024	03	08	00:00	21h 12m 29,2s	-21° 22' 36"	Cap 367665	27d 1h 01m	-9,59	1950	8,5	33,5° W	33,8°	06:09	11:08	16:17	30,0°	116,4°	246,9°
69	2024	03	09	00:00	22h 10m 18,5s	-15° 48' 13"	Aqr 364301	28d 1h 01m	-9,01	1968	3,1	19,7° W	20,1°	06:40	12:04	17:38	36,5°	108,1°	256,0°
70	2024	03	10	00:00	23h 5m 40,5s	-9° 14' 59"	Aqr 362369	29d 1h 01m	-8,34	1979	0,3	5,6° W	6,5°	07:08	12:57	18:58	43,9°	98,7°	266,0°
71	2024	03	11	00:00	23h 59m 16,0s	-2° 10' 24"	Psc 362077	0d 14h 59m	-8,49	1980	0,6	8,4° E	8,6°	07:33	13:48	20:17	51,5°	89,0°	276,0°
72	2024	03	12	00:00	0h 52m 6,0s	+4° 57' 24"	Psc 363441	1d 14h 59m	-9,14	1973	3,8	22,3° E	22,4°	07:58	14:39	21:35	58,9°	79,4°	285,6°
73	2024	03	13	00:00	1h 45m 14,5s	+11° 41' 35"	Psc 366277	2d 14h 59m	-9,70	1957	9,6	36,1° E	36,1°	08:25	15:32	22:52	65,5°	70,5°	294,2°
74	2024	03	14	00:00	2h 39m 35,3s	+17° 38' 7"	Ari 370246	3d 14h 59m	-10,16	1936	17,6	49,4° E	49,5°	08:56	16:26		65,5°	62,8°	294,2°
75	2024	03	15	00:00	3h 35m 38,3s	+22° 26' 40"	Tau 374924	4d 14h 59m	-10,55	1912	27,0	62,4° E	62,4°	09:31	17:21	00:08	70,9°	56,7°	301,2°
76	2024	03	16	00:00	4h 33m 17,6s	+25° 51' 44"	Tau 379874	5d 14h 59m	-10,88	1887	37,2	75,0° E	75,0°	10:15	18:18	01:21	74,9°	52,7°	306,1°
77	2024	03	17	00:00	5h 31m 46,7s	+27° 44' 0"	Tau 384704	6d 14h 59m	-11,15	1864	47,7	87,2° E	87,2°	11:05	19:14	02:26	77,1°	51,1°	308,6°
78	2024	03	18	00:00	6h 29m 49,1s	+28° 1' 28"	Aur 389110	7d 14h 59m	-11,39	1843	58,0	99,1° E	99,0°	12:03	20:08	03:22	77,7°	52,0°	308,6°
79	2024	03	19	00:00	7h 26m 3,5s	+26° 49' 27"	Gem 392886	8d 14h 59m	-11,59	1825	67,7	110,6° E	110,6°	13:06	20:59	04:07	76,6°	55,0°	306,3°
80	2024	03	20	00:00	8h 19m 30,7s	+24° 18' 47"	Cnc 395925	9d 14h 59m	-11,78	1811	76,5	122,0° E	121,9°	14:10	21:47	04:44	74,1°	59,7°	302,2°
81	2024	03	21	00:00	9h 9m 47,0s	+20° 43' 11"	Cnc 398205	10d 14h 59m	-11,94	1800	84,2	133,2° E	133,0°	15:13	22:31	05:14	70,4°	65,7°	296,8°
82	2024	03	22	00:00	9h 57m 2,8s	+16° 16' 57"	Leo 399761	11d 14h 59m	-12,10	1793	90,5	144,2° E	144,1°	16:16	23:13	05:38	65,8°	72,5°	290,4°
83	2024	03	23	00:00	10h 41m 51,1s	+11° 13' 31"	Leo 400668	12d 14h 59m	-12,25	1789	95,4	155,2° E	155,1°	17:16	23:53	05:59	60,6°	79,9°	283,5°
84	2024	03	24	00:00	11h 24m 58,1s	+5° 45' 12"	Leo 401010	13d 14h 59m	-12,40	1788	98,5	166,2° E	166,1°	18:16		06:19	49,2°	87,6°	276,1°
85	2024	03	25	00:00	12h 7m 16,0s	+0° 3' 23"	Vir 400863	14d 14h 59m	-12,54	1789	99,9	177,2° E	177,0°	19:16	00:32	06:37	43,3°	95,4°	268,5°
86	2024	03	26	00:00	12h 49m 39,8s	-5° 40' 52"	Vir 400274	15d 14h 59m	-12,49	1791	99,5	171,9° W	171,8°	20:17	01:11	06:56	37,5°	103,1°	261,0°
87	2024	03	27	00:00	13h 33m 5,3s	-11° 16' 15"	Vir 399257	16d 14h 59m	-12,36	1796	97,2	160,8° W	160,7°	21:19	01:51	07:17	32,2°	110,5°	253,6°
88	2024	03	28	00:00	14h 18m 27,5s	-16° 30' 30"	Vir 397794	17d 14h 59m	-12,21	1802	93,1	149,6° W	149,5°	22:24	02:34	07:40	27,4°	117,2°	246,6°
89	2024	03	29	00:00	15h 6m 36,8s	-21° 9' 54"	Lib 395841	18d 14h 59m	-12,06	1811	87,3	138,3° W	138,2°	23:31	03:19	08:07	23,6°	122,9°	240,4°
90	2024	03	30	00:00	15h 58m 10,6s	-24° 59' 1"	Sco 393354	19d 14h 59m	-11,90	1823	80,0	126,9° W	126,8°		04:09	08:41	21,0°	127,1°	235,3°
91	2024	03	31	00:00	16h 53m 19,9s	-27° 41' 16"	Oph 390304	20d 14h 59m	-11,72	1837	71,3	115,2° W	115,1°	00:37	05:02	09:23	21,0°	127,1°	231,9°
92	2024	04	01	00:00	17h 51m 35,9s	-29° 0' 37"	Sgr 386708	21d 14h 59m	-11,51	1854	61,5	103,3° W	103,2°	01:41	05:59	10:17	19,9°	129,1°	230,8°
93	2024	04	02	00:00	18h 51m 46,0s	-28° 44' 48"	Sgr 382655	22d 14h 59m	-11,27	1874	51,0	91,0° W	91,0°	02:38	06:58	11:21	20,6°	128,5°	232,3°
94	2024	04	03	00:00	19h 52m 11,0s	-26° 48' 37"	Sgr 378317	23d 14h 59m	-10,99	1895	40,2	78,4° W	78,5°	03:26	07:57	12:34	23,1°	125,3°	236,5°
95	2024	04	04	00:00	20h 51m 20,4s	-23° 15' 48"	Cap 373963	24d 14h 59m	-10,66	1917	29,5	65,5° W	65,6°	04:05	08:54	13:51	27,4°	119,8°	243,0°
96	2024	04	05	00:00	21h 48m 21,9s	-18° 18' 22"	Cap 369938	25d 14h 59m	-10,26	1938	19,6	52,2° W	52,4°	04:38	09:48	15:10	33,2°	112,4°	251,3°
97	2024	04	06	00:00	22h 43m 11,6s	-12° 14' 36"	Aqr 366630	26d 14h 59m	-9,78	1956	11,1	38,7° W	38,8°	05:06	10:41	16:28	40,0°	103,7°	260,7°
98	2024	04	07	00:00	23h 36m 24,2s	-5° 26' 54"	Aqr 364419	27d 14h 59m	-9,21	1967	4,7	24,9° W	25,0°	05:31	11:32	17:46	47,4°	94,2°	270,6°
99	2024	04	08	00:00	0h 28m 57,2s	+1° 39' 46"	Cet 363599	28d 14h 59m	-8,55	1972	0,9	11,0° W	11,1°	05:56	12:23	19:04	55,0°	84,5°	280,6°
100	2024	04	09	00:00	1h 21m 55,5s	+8° 38' 56"	Psc 364324	0d 5h 39m	-8,16	1968	0,1	2,9° E	2,9°	06:22	13:16	20:23	62,1°	75,2°	289,9°

# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

	Date yyyy mm dd	Hour hh:mm	R. A. (2000.0) topocentric	Decl. (2000.0) topocentric	Const.	Dist. E. km	Age days	Magn. mV	Diam. "	Illum. %	Elong. °	Separ. °	Rise hh:mm	Transit hh:mm	Set hh:mm	Elevation (max.)	Azimuth at rise	Azimuth at set
101	2024 04 10	00:00	2h 16m 18,1s	+15° 4' 0"	Ari	366563	1d 5h 39m	-8,84	1956	2,1	16,6° E	16,6°	06:51	14:10	21:42	68,3°	66,6°	297,9°
102	2024 04 11	00:00	3h 12m 43,4s	+20° 29' 57"	Ari	370105	2d 5h 39m	-9,41	1937	6,8	30,0° E	30,1°	07:25	15:06	22:59	73,2°	59,4°	304,1°
103	2024 04 12	00:00	4h 11m 12,9s	+24° 35' 40"	Tau	374598	3d 5h 39m	-9,90	1914	13,6	43,2° E	43,3°	08:06	16:05		73,2°	54,2°	304,1°
104	2024 04 13	00:00	5h 11m 1,6s	+27° 6' 45"	Tau	379610	4d 5h 39m	-10,30	1889	22,1	55,9° E	56,0°	08:55	17:03	00:11	76,4°	51,5°	307,8°
105	2024 04 14	00:00	6h 10m 44,6s	+27° 57' 43"	Gem	384698	5d 5h 39m	-10,64	1864	31,6	68,2° E	68,3°	09:52	18:00	01:13	77,7°	51,3°	308,9°
106	2024 04 15	00:00	7h 8m 44,7s	+27° 12' 37"	Gem	389465	6d 5h 39m	-10,93	1841	41,6	80,1° E	80,1°	10:55	18:54	02:04	77,2°	53,6°	307,4°
107	2024 04 16	00:00	8h 3m 47,0s	+25° 2' 51"	Cnc	393597	7d 5h 39m	-11,18	1822	51,6	91,7° E	91,7°	11:59	19:43	02:44	75,2°	57,9°	303,9°
108	2024 04 17	00:00	8h 55m 18,6s	+21° 43' 32"	Cnc	396881	8d 5h 39m	-11,40	1806	61,4	103,0° E	103,0°	13:04	20:29	03:16	71,8°	63,5°	298,8°
109	2024 04 18	00:00	9h 43m 27,0s	+17° 30' 9"	Leo	399205	9d 5h 39m	-11,60	1796	70,5	114,2° E	114,1°	14:07	21:11	03:43	67,5°	70,1°	292,7°
110	2024 04 19	00:00	10h 28m 47,8s	+12° 36' 42"	Leo	400553	10d 5h 39m	-11,79	1790	78,8	125,2° E	125,1°	15:08	21:52	04:05	62,5°	77,3°	285,9°
111	2024 04 20	00:00	11h 12m 10,9s	+7° 15' 22"	Leo	400985	11d 5h 39m	-11,96	1788	86,1	136,1° E	136,1°	16:08	22:31	04:25	57,0°	84,9°	278,7°
112	2024 04 21	00:00	11h 54m 32,7s	+1° 37' 1"	Vir	400618	12d 5h 39m	-12,13	1790	92,0	147,1° E	147,1°	17:07	23:10	04:43	51,2°	92,7°	271,2°
113	2024 04 22	00:00	12h 36m 51,5s	-4° 7' 58"	Vir	399596	13d 5h 39m	-12,29	1794	96,4	158,1° E	158,1°	18:08	23:50	05:02	45,3°	100,5°	263,6°
114	2024 04 23	00:00	13h 20m 6,2s	-9° 48' 42"	Vir	398073	14d 5h 39m	-12,44	1801	99,1	169,2° E	169,1°	19:10		05:22	33,9°	108,0°	256,1°
115	2024 04 24	00:00	14h 5m 14,2s	-15° 12' 59"	Vir	396187	15d 5h 39m	-12,58	1810	100,0	179,6° W	177,6°	20:15	00:32	05:44	28,9°	115,1°	248,9°
116	2024 04 25	00:00	14h 53m 8,0s	-20° 6' 38"	Lib	394046	16d 5h 39m	-12,46	1819	98,9	168,2° W	167,7°	21:22	01:17	06:10	24,7°	121,2°	242,3°
117	2024 04 26	00:00	15h 44m 26,8s	-24° 13' 25"	Lib	391717	17d 5h 39m	-12,32	1830	95,8	156,6° W	156,2°	22:30	02:05	06:42	21,7°	126,0°	236,8°
118	2024 04 27	00:00	16h 39m 23,0s	-27° 15' 43"	Sco	389228	18d 5h 39m	-12,17	1842	90,7	144,8° W	144,5°	23:35	02:58	07:22	20,1°	128,7°	232,8°
119	2024 04 28	00:00	17h 37m 27,4s	-28° 56' 44"	Oph	386583	19d 5h 39m	-12,01	1855	83,9	132,8° W	132,6°		03:54	08:12	20,2°	128,9°	231,0°
120	2024 04 29	00:00	18h 37m 24,7s	-29° 3' 52"	Sgr	383776	20d 5h 39m	-11,83	1868	75,4	120,6° W	120,4°	00:33	04:52	09:13	20,2°	128,9°	231,6°
121	2024 04 30	00:00	19h 37m 31,7s	-27° 32' 7"	Sgr	380818	21d 5h 39m	-11,62	1883	65,7	108,2° W	108,1°	01:23	05:50	10:22	22,2°	126,5°	234,9°
122	2024 05 01	00:00	20h 36m 13,3s	-24° 25' 28"	Cap	377764	22d 5h 39m	-11,38	1898	55,0	95,6° W	95,5°	02:04	06:47	11:36	25,8°	121,8°	240,6°
123	2024 05 02	00:00	21h 32m 34,3s	-19° 55' 35"	Cap	374731	23d 5h 39m	-11,10	1913	43,8	82,7° W	82,7°	02:38	07:40	12:52	30,9°	115,2°	248,0°
124	2024 05 03	00:00	22h 26m 29,2s	-14° 19' 6"	Aqr	371904	24d 5h 39m	-10,76	1928	32,7	69,6° W	69,7°	03:07	08:32	14:07	37,1°	107,2°	256,7°
125	2024 05 04	00:00	23h 18m 32,9s	-7° 55' 16"	Aqr	369531	25d 5h 39m	-10,37	1940	22,4	56,3° W	56,4°	03:32	09:21	15:23	44,1°	98,4°	266,1°
126	2024 05 05	00:00	0h 9m 44,3s	-1° 4' 59"	Psc	367887	26d 5h 39m	-9,90	1949	13,4	42,8° W	42,9°	03:56	10:11	16:39	51,4°	89,0°	275,9°
127	2024 05 06	00:00	1h 1m 12,6s	+5° 49' 20"	Psc	367234	27d 5h 39m	-9,36	1952	6,4	29,3° W	29,3°	04:21	11:01	17:55	58,6°	79,7°	285,3°
128	2024 05 07	00:00	1h 54m 5,4s	+12° 23' 41"	Ari	367764	28d 5h 39m	-8,74	1949	1,9	15,7° W	15,7°	04:48	11:54	19:14	65,3°	70,8°	294,0°
129	2024 05 08	00:00	2h 49m 15,4s	+18° 13' 7"	Ari	369549	29d 5h 39m	-8,11	1940	0,1	2,2° W	2,9°	05:19	12:49	20:32	70,9°	62,9°	301,2°
130	2024 05 09	00:00	3h 47m 3,5s	+22° 53' 33"	Tau	372516	0d 20h 38m	-8,53	1925	1,0	11,1° E	11,5°	05:57	13:47	21:48	75,0°	56,7°	306,2°
131	2024 05 10	00:00	4h 47m 2,4s	+26° 5' 5"	Tau	376446	1d 20h 38m	-9,11	1905	4,5	24,1° E	24,4°	06:42	14:47	22:56	77,2°	52,6°	308,6°
132	2024 05 11	00:00	5h 47m 51,9s	+27° 35' 54"	Tau	381010	2d 20h 38m	-9,60	1882	10,1	36,8° E	37,0°	07:37	15:47	23:54	77,5°	51,2°	308,2°
133	2024 05 12	00:00	6h 47m 40,7s	+27° 25' 5"	Gem	385814	3d 20h 38m	-10,02	1858	17,5	49,2° E	49,3°	08:39	16:43		77,5°	52,5°	308,2°
134	2024 05 13	00:00	7h 44m 47,7s	+25° 41' 53"	Gem	390458	4d 20h 38m	-10,38	1836	26,0	61,1° E	61,2°	09:45	17:36	00:40	76,1°	56,0°	305,5°
135	2024 05 14	00:00	8h 38m 14,7s	+22° 41' 55"	Cnc	394575	5d 20h 38m	-10,69	1817	35,3	72,7° E	72,8°	10:51	18:24	01:16	73,2°	61,3°	300,9°
136	2024 05 15	00:00	9h 27m 54,0s	+18° 42' 32"	Leo	397876	6d 20h 38m	-10,96	1802	45,0	84,1° E	84,1°	11:55	19:08	01:45	69,2°	67,6°	295,1°
137	2024 05 16	00:00	10h 14m 15,7s	+13° 59' 37"	Leo	400160	7d 20h 38m	-11,21	1792	54,6	95,2° E	95,2°	12:57	19:49	02:08	64,4°	74,7°	288,4°
138	2024 05 17	00:00	10h 58m 10,9s	+8° 46' 28"	Leo	401327	8d 20h 38m	-11,43	1786	64,0	106,1° E	106,1°	13:58	20:28	02:29	59,0°	82,2°	281,3°
139	2024 05 18	00:00	11h 40m 39,7s	+3° 14' 7"	Vir	401376	9d 20h 38m	-11,63	1786	72,9	117,1° E	117,1°	14:57	21:07	02:48	53,3°	89,9°	273,9°
140	2024 05 19	00:00	12h 22m 45,0s	-2° 27' 38"	Vir	400393	10d 20h 38m	-11,83	1791	80,9	128,0° E	128,0°	15:57	21:47	03:07	47,4°	97,6°	266,3°
141	2024 05 20	00:00	13h 5m 30,6s	-8° 9' 1"	Vir	398533	11d 20h 38m	-12,01	1799	87,8	139,1° E	139,1°	16:59	22:28	03:26	41,6°	105,3°	258,8°
142	2024 05 21	00:00	13h 49m 59,8s	-13° 39' 5"	Vir	396004	12d 20h 38m	-12,19	1810	93,4	150,3° E	150,2°	18:03	23:12	03:48	35,9°	112,6°	251,5°
143	2024 05 22	00:00	14h 37m 12,7s	-18° 44' 30"	Lib	393039	13d 20h 38m	-12,36	1824	97,4	161,7° E	161,4°	19:10	23:59	04:12	30,7°	119,1°	244,7°
144	2024 05 23	00:00	15h 27m 58,6s	-23° 9' 7"	Lib	389869	14d 20h 38m	-12,53	1839	99,5	173,4° E	172,2°	20:18		04:42	22,6°	124,4°	238,7°
145	2024 05 24	00:00	16h 22m 41,6s	-26° 34' 12"	Sco	386702	15d 20h 38m	-12,56	1854	99,6	174,7° W	172,7°	21:25	00:52	05:20	20,5°	127,9°	234,1°
146	2024 05 25	00:00	17h 21m 2,6s	-28° 40' 34"	Oph	383696	16d 20h 38m	-12,43	1869	97,5	162,5° W	161,7°	22:27	01:48	06:07	20,1°	129,0°	231,4°
147	2024 05 26	00:00	18h 21m 47,4s	-29° 12' 39"	Sgr	380955	17d 20h 38m	-12,28	1882	93,2	150,1° W	149,6°	23:21	02:46	07:06	21,5°	127,3°	231,3°
148	2024 05 27	00:00	19h 23m 1,2s	-28° 2' 59"	Sgr	378529	18d 20h 38m	-12,11	1894	86,7	137,5° W	137,2°		03:45	08:13	24,7°	123,2°	233,9°
149	2024 05 28	00:00	20h 22m 48,7s	-25° 14' 52"	Cap	376424	19d 20h 38m	-11,92	1905	78,5	124,8° W	124,6°	00:05	04:42	09:27	24,7°	123,2°	238,9°
150	2024 05 29	00:00	21h 19m 55,9s	-21° 0' 54"	Cap	374625	20d 20h 38m	-11,71	1914	68,7	111,9° W	111,8°	00:40	05:37	10:42	29,4°	117,1°	245,8°

# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

	Date	Hour	R. A. (2000.0)	Decl. (2000.0)	Const.	Dist. E.	Age	Magn.	Diam.	Illum.	Elong.	Separ.	Rise	Transit	Set	Elevation	Azimuth	Azimuth
	yyyy mm dd	hh:mm	topocentric	topocentric		km	days	mV	"	%	°	°	hh:mm	hh:mm	hh:mm	(max.)	at rise	at set
151	2024 05 30	00:00	22h 14m 5,9s	-15° 39' 13"	Aqr	373127	21d 20h 38m -11,46	1921	57,9	98,9° W	98,9°	01:10	06:28	11:56	35,2°	109,6°	254,0°	
152	2024 05 31	00:00	23h 5m 49,9s	-9° 29' 50"	Aqr	371953	22d 20h 38m -11,17	1928	46,5	85,8° W	85,9°	01:36	07:17	13:10	41,8°	101,2°	263,1°	
153	2024 06 01	00:00	23h 56m 7,5s	-2° 52' 56"	Psc	371169	23d 20h 38m -10,83	1932	35,3	72,7° W	72,7°	01:59	08:05	14:23	48,9°	92,2°	272,4°	
154	2024 06 02	00:00	0h 46m 11,2s	+3° 51' 25"	Psc	370886	24d 20h 38m -10,44	1933	24,7	59,5° W	59,5°	02:23	08:53	15:37	56,0°	83,1°	281,7°	
155	2024 06 03	00:00	1h 37m 14,5s	+10° 22' 35"	Psc	371234	25d 20h 38m -9,99	1931	15,5	46,3° W	46,3°	02:48	09:43	16:52	62,7°	74,3°	290,5°	
156	2024 06 04	00:00	2h 30m 21,7s	+16° 18' 48"	Ari	372337	26d 20h 38m -9,48	1926	8,1	33,1° W	33,1°	03:16	10:36	18:09	68,6°	66,1°	298,2°	
157	2024 06 05	00:00	3h 26m 13,4s	+21° 17' 40"	Ari	374273	27d 20h 38m -8,90	1916	3,1	19,9° W	20,1°	03:50	11:32	19:25	73,3°	59,3°	304,2°	
158	2024 06 06	00:00	4h 24m 48,4s	+24° 58' 1"	Tau	377038	28d 20h 38m -8,29	1902	0,5	6,9° W	7,7°	04:32	12:31	20:37	76,3°	54,2°	307,7°	
159	2024 06 07	00:00	5h 25m 10,7s	+27° 3' 48"	Tau	380532	0d 11h 22m -8,25	1884	0,4	5,8° E	7,0°	05:23	13:31	21:40	77,5°	51,6°	308,6°	
160	2024 06 08	00:00	6h 25m 36,6s	+27° 28' 5"	Gem	384553	1d 11h 22m -8,79	1864	2,7	18,3° E	18,8°	06:22	14:29	22:31	76,8°	51,8°	306,8°	
161	2024 06 09	00:00	7h 24m 10,0s	+26° 15' 6"	Gem	388821	2d 11h 22m -9,29	1844	7,1	30,5° E	30,8°	07:28	15:25	23:12	74,5°	54,4°	302,9°	
162	2024 06 10	00:00	8h 19m 24,6s	+23° 38' 5"	Cnc	393009	3d 11h 22m -9,72	1824	13,2	42,4° E	42,5°	08:35	16:15	23:44	70,9°	59,1°	297,4°	
163	2024 06 11	00:00	9h 10m 46,3s	+19° 54' 44"	Cnc	396781	4d 11h 22m -10,10	1807	20,7	53,9° E	54,0°	09:41	17:02		70,9°	65,1°	297,4°	
164	2024 06 12	00:00	9h 58m 28,7s	+15° 22' 44"	Leo	399830	5d 11h 22m -10,44	1793	29,2	65,2° E	65,2°	10:45	17:44	00:10	66,3°	72,0°	291,0°	
165	2024 06 13	00:00	10h 43m 15,3s	+10° 17' 18"	Leo	401905	6d 11h 22m -10,74	1784	38,3	76,3° E	76,3°	11:46	18:25	00:32	61,0°	79,4°	284,0°	
166	2024 06 14	00:00	11h 26m 4,4s	+4° 50' 49"	Leo	402836	7d 11h 22m -11,01	1780	47,7	87,2° E	87,2°	12:46	19:04	00:52	55,4°	87,0°	276,6°	
167	2024 06 15	00:00	12h 7m 59,9s	-0° 46' 34"	Vir	402542	8d 11h 22m -11,25	1781	57,2	98,1° E	98,1°	13:46	19:43	01:11	49,6°	94,8°	269,1°	
168	2024 06 16	00:00	12h 50m 7,9s	-6° 25' 42"	Vir	401042	9d 11h 22m -11,48	1788	66,4	109,0° E	109,0°	14:46	20:23	01:30	43,8°	102,4°	261,6°	
169	2024 06 17	00:00	13h 33m 35,3s	-11° 57' 2"	Vir	398450	10d 11h 22m -11,70	1799	75,1	120,1° E	120,1°	15:49	21:05	01:50	38,0°	109,8°	254,3°	
170	2024 06 18	00:00	14h 19m 28,5s	-17° 9' 12"	Vir	394965	11d 11h 22m -11,91	1815	83,1	131,4° E	131,3°	16:55	21:51	02:13	32,6°	116,7°	247,3°	
171	2024 06 19	00:00	15h 8m 48,3s	-21° 47' 50"	Lib	390858	12d 11h 22m -12,11	1834	89,8	142,9° E	142,7°	18:03	22:42	02:41	27,8°	122,5°	240,9°	
172	2024 06 20	00:00	16h 2m 17,7s	-25° 35' 2"	Sco	386446	13d 11h 22m -12,30	1855	95,1	154,8° E	154,3°	19:11	23:37	03:15	23,9°	126,8°	235,7°	
173	2024 06 21	00:00	17h 0m 2,0s	-28° 10' 24"	Oph	382061	14d 11h 22m -12,48	1877	98,5	167,0° E	165,9°	20:16		03:59	20,1°	128,8°	232,2°	
174	2024 06 22	00:00	18h 1m 8,4s	-29° 14' 31"	Sgr	378018	15d 11h 22m -12,62	1897	99,7	179,5° E	174,2°	21:14	00:36	04:55	20,9°	128,1°	231,1°	
175	2024 06 23	00:00	19h 3m 45,3s	-28° 34' 33"	Sgr	374575	16d 11h 22m -12,54	1914	98,6	167,7° W	166,3°	22:02	01:36	06:01	23,6°	124,7°	232,8°	
176	2024 06 24	00:00	20h 5m 36,7s	-26° 9' 9"	Sgr	371910	17d 11h 22m -12,38	1928	95,0	154,6° W	154,0°	22:41	02:35	07:14	27,9°	119,1°	237,1°	
177	2024 06 25	00:00	21h 4m 56,1s	-22° 9' 17"	Cap	370106	18d 11h 22m -12,21	1937	89,0	141,4° W	141,1°	23:13	03:32	08:31	33,5°	111,8°	243,7°	
178	2024 06 26	00:00	22h 0m 58,6s	-16° 54' 26"	Aqr	369156	19d 11h 22m -12,01	1942	80,9	128,1° W	128,0°	23:40	04:25	09:47	40,0°	103,5°	251,7°	
179	2024 06 27	00:00	22h 53m 59,3s	-10° 47' 33"	Aqr	368986	20d 11h 22m -11,78	1943	71,1	114,8° W	114,8°	05:15	11:01		47,0°	94,6°	260,6°	
180	2024 06 28	00:00	23h 44m 52,0s	-4° 11' 27"	Aqr	369486	21d 11h 22m -11,52	1940	60,2	101,6° W	101,6°	00:04	06:03	12:14	47,0°	94,6°	269,9°	
181	2024 06 29	00:00	0h 34m 48,9s	+2° 32' 31"	Cet	370546	22d 11h 22m -11,22	1935	48,7	88,4° W	88,4°	00:27	06:51	13:27	54,0°	85,6°	279,2°	
182	2024 06 30	00:00	1h 25m 5,8s	+9° 4' 9"	Psc	372079	23d 11h 22m -10,89	1927	37,4	75,3° W	75,3°	00:51	07:39	14:40	60,7°	76,8°	288,0°	
183	2024 07 01	00:00	2h 16m 52,5s	+15° 3' 44"	Ari	374037	24d 11h 22m -10,50	1917	26,9	62,3° W	62,3°	01:18	08:30	15:55	66,8°	68,6°	295,9°	
184	2024 07 02	00:00	3h 11m 0,6s	+20° 11' 25"	Ari	376400	25d 11h 22m -10,07	1905	17,6	49,4° W	49,5°	01:49	09:23	17:10	71,8°	61,4°	302,3°	
185	2024 07 03	00:00	4h 7m 48,6s	+24° 8' 0"	Tau	379167	26d 11h 22m -9,58	1891	10,0	36,7° W	36,8°	02:27	10:20	18:22	75,4°	55,8°	306,7°	
186	2024 07 04	00:00	5h 6m 46,2s	+26° 37' 11"	Tau	382321	27d 11h 22m -9,05	1875	4,5	24,1° W	24,4°	03:13	11:19	19:27	77,3°	52,3°	308,6°	
187	2024 07 05	00:00	6h 6m 32,7s	+27° 29' 13"	Gem	385813	28d 11h 22m -8,47	1858	1,2	11,7° W	12,4°	04:09	12:17	20:23	77,3°	51,4°	307,8°	
188	2024 07 06	00:00	7h 5m 18,8s	+26° 43' 53"	Gem	389541	0d 1h 03m -8,06	1840	0,1	0,5° E	4,2°	05:12	13:14	21:07	75,6°	53,1°	304,6°	
189	2024 07 07	00:00	8h 1m 26,4s	+24° 30' 33"	Cnc	393342	1d 1h 03m -8,46	1823	1,3	12,4° E	13,0°	06:19	14:06	21:43	72,4°	57,1°	299,7°	
190	2024 07 08	00:00	8h 53m 59,8s	+21° 4' 58"	Cnc	397003	2d 1h 03m -8,96	1806	4,4	24,1° E	24,3°	07:26	14:55	22:11	68,1°	62,7°	293,5°	
191	2024 07 09	00:00	9h 42m 52,0s	+16° 44' 56"	Leo	400276	3d 1h 03m -9,41	1791	9,4	35,4° E	35,5°	08:31	15:39	22:35	63,1°	69,3°	286,7°	
192	2024 07 10	00:00	10h 28m 32,5s	+11° 47' 3"	Leo	402901	4d 1h 03m -9,82	1779	15,7	46,6° E	46,6°	09:34	16:20	22:55	57,5°	76,6°	279,4°	
193	2024 07 11	00:00	11h 11m 51,5s	+6° 25' 19"	Leo	404635	5d 1h 03m -10,18	1772	23,3	57,6° E	57,6°	10:35	16:59	23:14	51,8°	84,2°	271,9°	
194	2024 07 12	00:00	11h 53m 48,6s	+0° 51' 5"	Vir	405278	6d 1h 03m -10,51	1769	31,7	68,4° E	68,4°	11:34	17:39	23:33	45,9°	91,9°	264,4°	
195	2024 07 13	00:00	12h 35m 27,2s	-4° 46' 2"	Vir	404693	7d 1h 03m -10,80	1772	40,8	79,3° E	79,3°	12:34	18:18	23:52	40,1°	99,6°	257,0°	
196	2024 07 14	00:00	13h 17m 52,5s	-10° 17' 1"	Vir	402825	8d 1h 03m -11,08	1780	50,2	90,1° E	90,1°	13:35	18:59		40,1°	107,1°	257,0°	
197	2024 07 15	00:00	14h 2m 11,2s	-15° 32' 5"	Vir	399714	9d 1h 03m -11,34	1794	59,8	101,1° E	101,1°	14:39	19:43	00:14	34,6°	114,1°	249,9°	
198	2024 07 16	00:00	14h 49m 28,6s	-20° 19' 16"	Lib	395503	10d 1h 03m -11,58	1813	69,1	112,4° E	112,3°	15:45	20:31	00:39	29,6°	120,3°	243,3°	
199	2024 07 17	00:00	15h 40m 40,8s	-24° 23' 19"	Lib	390435	11d 1h 03m -11,82	1836	77,9	124,0° E	123,8°	16:53	21:23	01:10	25,3°	125,3°	237,6°	
200	2024 07 18	00:00	16h 36m 19,0s	-27° 25' 29"	Sco	384844	12d 1h 03m -12,04	1863	85,8	135,9° E	135,6°	17:59	22:21	01:50	22,1°	128,3°	233,4°	

# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

Date yyyy mm dd hh:mm	Hour hh:mm	R. A. (2000.0) topocentric	Decl. (2000.0) topocentric	Const.	Dist. E. km	Age days	Magn. mV	Diam. "	Illum. %	Elong. °	Separ. °	Rise hh:mm	Transit hh:mm	Set hh:mm	Elevation (max.)	Azimuth at rise	Azimuth at set
201	2024 07 19 00:00	17h 36m 6,1s	-29° 5' 14"	Oph	379132	13d 1h 03m	-12,25	1891	92,3	148,3° E	147,8°	19:01	23:21	02:40	20,3°	128,8°	231,2°
202	2024 07 20 00:00	18h 38m 41,8s	-29° 4' 49"	Sgr	373739	14d 1h 03m	-12,46	1918	97,1	161,0° E	160,2°	19:54		03:42	20,3°	126,5°	231,6°
203	2024 07 21 00:00	19h 41m 56,0s	-27° 15' 24"	Sgr	369086	15d 1h 03m	-12,64	1942	99,5	174,2° E	171,8°	20:38	00:22	04:54	26,0°	121,6°	235,0°
204	2024 07 22 00:00	20h 43m 36,8s	-23° 41' 15"	Cap	365530	16d 1h 03m	-12,64	1961	99,3	172,3° W	170,6°	21:13	01:21	06:12	31,3°	114,7°	240,9°
205	2024 07 23 00:00	21h 42m 21,5s	-18° 38' 54"	Cap	363310	17d 1h 03m	-12,49	1973	96,4	158,7° W	158,2°	21:42	02:17	07:30	37,8°	106,4°	248,7°
206	2024 07 24 00:00	22h 37m 53,5s	-12° 32' 26"	Aqr	362518	18d 1h 03m	-12,30	1978	90,9	144,9° W	144,7°	22:08	03:09	08:48	44,8°	97,4°	257,6°
207	2024 07 25 00:00	23h 30m 48,7s	-5° 48' 20"	Aqr	363096	19d 1h 03m	-12,09	1975	83,0	131,2° W	131,2°	22:31	03:59	10:03	52,0°	88,2°	267,1°
208	2024 07 26 00:00	0h 22m 11,7s	+1° 7' 54"	Psc	364865	20d 1h 03m	-11,85	1965	73,3	117,6° W	117,6°	22:55	04:48	11:17	59,0°	79,1°	276,6°
209	2024 07 27 00:00	1h 13m 16,7s	+7° 52' 55"	Psc	367572	21d 1h 03m	-11,61	1950	62,4	104,2° W	104,2°	23:21	05:37	12:31	65,3°	70,6°	285,7°
210	2024 07 28 00:00	2h 5m 14,3s	+14° 5' 32"	Ari	370943	22d 1h 03m	-11,28	1933	51,1	91,1° W	91,1°	23:50	06:27	13:46	70,7°	63,1°	293,9°
211	2024 07 29 00:00	2h 58m 59,9s	+19° 26' 12"	Ari	374729	23d 1h 03m	-10,94	1913	39,8	78,1° W	78,1°		07:19	15:00	74,6°	57,1°	300,8°
212	2024 07 30 00:00	3h 55m 0,7s	+23° 37' 6"	Tau	378731	24d 1h 03m	-10,57	1893	29,3	65,4° W	65,5°	00:26	08:14	16:13	74,6°	57,1°	305,8°
213	2024 07 31 00:00	4h 53m 1,6s	+26° 23' 20"	Tau	382807	25d 1h 03m	-10,16	1873	20,0	52,9° W	53,0°	01:09	09:12	17:19	77,0°	53,0°	308,4°
214	2024 08 01 00:00	5h 52m 0,5s	+27° 35' 22"	Tau	386863	26d 1h 03m	-9,70	1853	12,2	40,7° W	40,9°	02:01	10:10	18:17	77,6°	51,2°	308,5°
215	2024 08 02 00:00	6h 50m 23,4s	+27° 11' 33"	Gem	390833	27d 1h 03m	-9,20	1834	6,3	28,6° W	28,9°	03:01	11:06	19:05	76,4°	52,1°	306,1°
216	2024 08 03 00:00	7h 46m 36,5s	+25° 18' 46"	Gem	394655	28d 1h 03m	-8,67	1817	2,3	16,8° W	17,3°	04:06	11:59	19:42	73,8°	55,3°	301,7°
217	2024 08 04 00:00	8h 39m 37,6s	+22° 10' 30"	Cnc	398252	29d 1h 03m	-8,12	1800	0,3	5,2° W	6,4°	05:13	12:49	20:13	69,8°	60,4°	295,9°
218	2024 08 05 00:00	9h 29m 7,6s	+18° 3' 19"	Leo	401519	0d 12h 47m	-8,12	1786	0,4	6,1° E	6,8°	06:19	13:34	20:38	65,0°	66,8°	289,2°
219	2024 08 06 00:00	10h 15m 24,5s	+13° 13' 47"	Leo	404314	1d 12h 47m	-8,61	1773	2,3	17,3° E	17,4°	07:23	14:17	20:59	59,6°	73,9°	282,0°
220	2024 08 07 00:00	10h 59m 9,5s	+7° 56' 41"	Leo	406473	2d 12h 47m	-9,09	1764	6,0	28,3° E	28,3°	08:24	14:57	21:19	53,8°	81,5°	274,6°
221	2024 08 08 00:00	11h 41m 15,0s	+2° 24' 30"	Vir	407813	3d 12h 47m	-9,52	1758	11,3	39,1° E	39,1°	09:24	15:36	21:37	48,0°	89,2°	267,0°
222	2024 08 09 00:00	12h 22m 38,8s	-3° 12' 11"	Vir	408156	4d 12h 47m	-9,92	1757	17,9	49,9° E	49,9°	10:24	16:14	21:56	42,1°	96,9°	259,6°
223	2024 08 10 00:00	13h 4m 21,1s	-8° 43' 55"	Vir	407353	5d 12h 47m	-10,27	1760	25,6	60,6° E	60,7°	11:24	16:54	22:16	36,5°	104,5°	252,4°
224	2024 08 11 00:00	13h 47m 23,3s	-14° 1' 18"	Vir	405302	6d 12h 47m	-10,61	1769	34,2	71,4° E	71,5°	12:26	17:37	22:39	31,4°	111,6°	245,6°
225	2024 08 12 00:00	14h 32m 47,4s	-18° 53' 51"	Lib	401974	7d 12h 47m	-10,91	1784	43,5	82,4° E	82,4°	13:30	18:22	23:07	26,8°	118,1°	239,6°
226	2024 08 13 00:00	15h 21m 30,9s	-23° 8' 51"	Lib	397428	8d 12h 47m	-11,20	1804	53,2	93,6° E	93,6°	14:36	19:12	23:42	23,2°	123,6°	234,8°
227	2024 08 14 00:00	16h 14m 16,8s	-26° 30' 36"	Scor	391833	9d 12h 47m	-11,48	1830	63,1	105,1° E	105,0°	15:42	20:06		23,2°	127,5°	234,8°
228	2024 08 15 00:00	17h 11m 15,9s	-28° 40' 46"	Oph	385468	10d 12h 47m	-11,74	1860	72,6	116,9° E	116,8°	16:46	21:04	00:26	20,7°	129,2°	231,6°
229	2024 08 16 00:00	18h 11m 47,6s	-29° 20' 55"	Sgr	378724	11d 12h 47m	-11,98	1893	81,6	129,3° E	129,0°	17:42	22:04	01:22	19,9°	128,2°	230,9°
230	2024 08 17 00:00	19h 14m 16,1s	-28° 17' 10"	Sgr	372080	12d 12h 47m	-12,21	1927	89,3	142,1° E	141,7°	18:30	23:04	02:29	20,9°	124,4°	232,9°
231	2024 08 18 00:00	20h 16m 38,0s	-25° 25' 29"	Cap	366068	13d 12h 47m	-12,43	1959	95,3	155,4° E	154,8°	19:09		03:45	23,9°	118,3°	237,6°
232	2024 08 19 00:00	21h 17m 9,0s	-20° 54' 17"	Cap	361205	14d 12h 47m	-12,64	1985	98,9	169,1° E	168,1°	19:41	00:02	05:04	34,7°	110,4°	244,7°
233	2024 08 20 00:00	22h 14m 59,3s	-15° 2' 48"	Aqr	357925	15d 12h 47m	-12,75	2003	99,8	176,9° W	175,0°	20:08	00:57	06:24	41,7°	101,4°	253,4°
234	2024 08 21 00:00	23h 10m 17,1s	-8° 17' 10"	Aqr	356497	16d 12h 47m	-12,59	2011	97,7	162,8° W	162,5°	20:33	01:49	07:43	49,2°	91,9°	263,1°
235	2024 08 22 00:00	0h 3m 50,2s	-1° 6' 3"	Psc	356986	17d 12h 47m	-12,39	2008	92,7	148,6° W	148,6°	20:58	02:40	08:59	56,6°	82,4°	273,0°
236	2024 08 23 00:00	0h 56m 45,3s	+6° 2' 16"	Psc	359248	18d 12h 47m	-12,17	1996	85,2	134,6° W	134,6°	21:23	03:30	10:17	63,4°	73,3°	282,6°
237	2024 08 24 00:00	1h 50m 10,8s	+12° 41' 38"	Ari	362968	19d 12h 47m	-11,92	1975	75,8	120,9° W	120,9°	21:52	04:21	11:34	69,3°	65,2°	291,5°
238	2024 08 25 00:00	2h 45m 2,3s	+18° 28' 49"	Ari	367737	20d 12h 47m	-11,65	1950	65,1	107,5° W	107,5°	22:26	05:14	12:50	73,8°	58,5°	299,1°
239	2024 08 26 00:00	3h 41m 48,7s	+23° 4' 5"	Tau	373124	21d 12h 47m	-11,35	1921	54,0	94,4° W	94,4°	23:06	06:10	14:05	76,7°	53,7°	304,8°
240	2024 08 27 00:00	4h 40m 18,5s	+26° 12' 12"	Tau	378742	22d 12h 47m	-11,02	1893	42,9	81,7° W	81,7°	23:56	07:07	15:14	77,8°	51,3°	308,2°
241	2024 08 28 00:00	5h 39m 35,5s	+27° 44' 11"	Tau	384280	23d 12h 47m	-10,67	1866	32,6	69,4° W	69,4°		08:05	16:14	77,1°	51,4°	309,0°
242	2024 08 29 00:00	6h 38m 12,4s	+27° 38' 53"	Gem	389513	24d 12h 47m	-10,28	1841	23,2	57,3° W	57,4°	00:54	09:01	17:04	77,1°	51,4°	307,2°
243	2024 08 30 00:00	7h 34m 40,6s	+26° 3' 13"	Gem	394303	25d 12h 47m	-9,86	1818	15,2	45,6° W	45,7°	01:57	09:55	17:44	74,9°	53,9°	303,4°
244	2024 08 31 00:00	8h 27m 59,9s	+23° 10' 6"	Cnc	398566	26d 12h 47m	-9,40	1799	8,7	34,1° W	34,3°	03:03	10:45	18:16	71,3°	58,5°	298,0°
245	2024 09 01 00:00	9h 17m 50,1s	+19° 15' 20"	Cnc	402259	27d 12h 47m	-8,90	1782	4,0	22,8° W	23,0°	04:09	11:32	18:42	66,7°	64,4°	291,6°
246	2024 09 02 00:00	10h 4m 26,6s	+14° 34' 56"	Leo	405348	28d 12h 47m	-8,37	1769	1,1	11,7° W	11,9°	05:13	12:15	19:04	61,5°	71,3°	284,6°
247	2024 09 03 00:00	10h 48m 26,7s	+9° 23' 31"	Leo	407792	29d 12h 47m	-7,85	1758	0,0	0,7° W	1,8°	06:15	12:55	19:24	55,8°	78,8°	277,1°
248	2024 09 04 00:00	11h 30m 39,6s	+3° 53' 52"	Leo	409528	0d 22h 05m	-8,24	1751	0,8	10,1° E	10,1°	07:16	13:34	19:43	50,0°	86,5°	269,6°
249	2024 09 05 00:00	12h 11m 58,6s	-1° 42' 53"	Vir	410470	1d 22h 05m	-8,75	1747	3,3	20,8° E	20,8°	08:15	14:13	20:01	44,1°	94,3°	262,0°
250	2024 09 06 00:00	12h 53m 19,1s	-7° 16' 36"	Vir	410511	2d 22h 05m	-9,22	1746	7,4	31,5° E	31,6°	09:15	14:52	20:21	38,4°	102,0°	254,7°



# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

	Date	Hour	R. A. (2000.0)	Decl. (2000.0)	Const.	Dist. E.	Age	Magn.	Diam.	Illum.	Elong.	Separ.	Rise	Transit	Set	Elevation	Azimuth	Azimuth
	yyyy	mm dd hh:mm	topocentric	topocentric		km	days	mV	"	%	°	°	hh:mm	hh:mm	hh:mm	(max.)	at rise	at set
251	2024	09 07 00:00	13h 35m 37,0s	-12° 37' 31"	Vir	409540	3d 22h 05m	-9,65	1751	13,1	42,2° E	42,3°	10:16	15:33	20:42	33,0°	109,3°	247,8°
252	2024	09 08 00:00	14h 19m 47,5s	-17° 35' 22"	Vir	407456	4d 22h 05m	-10,05	1760	20,0	53,0° E	53,1°	11:19	16:17	21:08	28,3°	116,0°	241,5°
253	2024	09 09 00:00	15h 6m 42,9s	-21° 58' 33"	Lib	404193	5d 22h 05m	-10,41	1774	28,2	63,9° E	64,0°	12:24	17:04	21:39	24,3°	121,9°	236,3°
254	2024	09 10 00:00	15h 57m 4,9s	-25° 33' 32"	Sco	399744	6d 22h 05m	-10,76	1794	37,2	75,0° E	75,1°	13:29	17:55	22:18	21,4°	126,4°	232,5°
255	2024	09 11 00:00	16h 51m 12,8s	-28° 4' 48"	Sco	394187	7d 22h 05m	-11,08	1819	47,0	86,4° E	86,4°	14:32	18:50	23:08	19,9°	128,9°	230,7°
256	2024	09 12 00:00	17h 48m 48,6s	-29° 16' 10"	Sgr	387704	8d 22h 05m	-11,38	1849	57,2	98,2° E	98,1°	15:30	19:48		19,9°	129,1°	230,7°
257	2024	09 13 00:00	18h 48m 49,2s	-28° 53' 38"	Sgr	380598	9d 22h 05m	-11,66	1884	67,4	110,4° E	110,3°	16:20	20:47	00:08	20,1°	126,7°	231,4°
258	2024	09 14 00:00	19h 49m 39,1s	-26° 49' 18"	Sgr	373292	10d 22h 05m	-11,92	1921	77,2	123,1° E	122,9°	17:02	21:45	01:18	22,1°	121,7°	234,8°
259	2024	09 15 00:00	20h 49m 42,7s	-23° 4' 21"	Cap	366316	11d 22h 05m	-12,17	1957	86,0	136,2° E	136,0°	17:37	22:40	02:35	25,9°	114,7°	240,8°
260	2024	09 16 00:00	21h 47m 58,9s	-17° 49' 53"	Cap	360255	12d 22h 05m	-12,41	1990	93,2	149,9° E	149,6°	18:06	23:34	03:54	31,3°	106,3°	248,7°
261	2024	09 17 00:00	22h 44m 15,6s	-11° 25' 25"	Aqr	355682	13d 22h 05m	-12,62	2016	98,0	164,0° E	163,7°	18:32		05:14	45,4°	96,9°	257,9°
262	2024	09 18 00:00	23h 39m 3,6s	-4° 16' 27"	Aqr	353056	14d 22h 05m	-12,82	2031	100,0	178,3° E	177,5°	18:57	00:26	06:33	53,0°	87,1°	267,9°
263	2024	09 19 00:00	0h 33m 19,7s	+3° 7' 54"	Psc	352640	15d 22h 05m	-12,68	2033	98,8	167,3° W	167,3°	19:23	01:17	07:52	60,4°	77,4°	278,1°
264	2024	09 20 00:00	1h 28m 9,5s	+10° 17' 16"	Psc	354441	16d 22h 05m	-12,48	2023	94,6	153,0° W	153,0°	19:51	02:09	09:11	67,0°	68,5°	287,7°
265	2024	09 21 00:00	2h 24m 30,4s	+16° 42' 19"	Ari	358216	17d 22h 05m	-12,25	2001	87,7	138,9° W	138,8°	20:23	03:04	10:31	72,3°	60,9°	296,2°
266	2024	09 22 00:00	3h 22m 54,0s	+21° 57' 8"	Ari	363529	18d 22h 05m	-12,00	1972	78,8	125,2° W	125,1°	21:02	03:59	11:49	75,9°	55,1°	303,0°
267	2024	09 23 00:00	4h 23m 9,2s	+25° 41' 35"	Tau	369845	19d 22h 05m	-11,74	1939	68,7	111,9° W	111,8°	21:50	04:59	13:03	77,7°	51,7°	307,4°
268	2024	09 24 00:00	5h 24m 15,0s	+27° 43' 53"	Tau	376624	20d 22h 05m	-11,45	1904	57,9	99,0° W	99,0°	22:46	05:58	14:08	77,6°	50,9°	309,1°
269	2024	09 25 00:00	6h 24m 34,7s	+28° 2' 20"	Aur	383386	21d 22h 05m	-11,14	1870	47,2	86,6° W	86,6°	23:49	06:56	15:03	75,8°	52,8°	308,1°
270	2024	09 26 00:00	7h 22m 30,4s	+26° 44' 47"	Gem	389756	22d 22h 05m	-10,80	1839	36,9	74,7° W	74,7°		07:52	15:46	72,6°	56,8°	304,9°
271	2024	09 27 00:00	8h 16m 57,0s	+24° 5' 38"	Cnc	395472	23d 22h 05m	-10,44	1813	27,5	63,0° W	63,1°	00:55	08:43	16:20	72,6°	56,8°	299,9°
272	2024	09 28 00:00	9h 7m 34,9s	+20° 21' 56"	Cnc	400377	24d 22h 05m	-10,06	1791	19,2	51,7° W	51,8°	02:01	09:30	16:47	68,3°	62,4°	293,8°
273	2024	09 29 00:00	9h 54m 42,4s	+15° 50' 13"	Leo	404398	25d 22h 05m	-9,64	1773	12,2	40,6° W	40,7°	03:06	10:14	17:10	63,3°	69,0°	286,9°
274	2024	09 30 00:00	10h 39m 1,0s	+10° 45' 8"	Leo	407521	26d 22h 05m	-9,19	1759	6,6	29,7° W	29,8°	04:08	10:55	17:30	57,7°	76,3°	279,6°
275	2024	10 01 00:00	11h 21m 22,3s	+5° 19' 17"	Leo	409763	27d 22h 05m	-8,70	1750	2,7	18,9° W	19,0°	05:08	11:34	17:49	51,9°	84,0°	272,1°
276	2024	10 02 00:00	12h 2m 41,1s	-0° 16' 22"	Vir	411150	28d 22h 05m	-8,17	1744	0,5	8,2° W	8,2°	06:08	12:13	18:08	46,0°	91,8°	264,5°
277	2024	10 03 00:00	12h 43m 52,4s	-5° 51' 38"	Vir	411696	0d 5h 11m	-7,85	1741	0,1	2,4° E	2,7°	07:08	12:52	18:27	40,2°	99,5°	257,1°
278	2024	10 04 00:00	13h 25m 49,8s	-11° 16' 30"	Vir	411397	1d 5h 11m	-8,41	1743	1,3	13,1° E	13,3°	08:08	13:32	18:48	34,7°	107,0°	250,0°
279	2024	10 05 00:00	14h 9m 25,2s	-16° 20' 25"	Vir	410222	2d 5h 11m	-8,92	1748	4,3	23,8° E	24,0°	09:11	14:15	19:12	29,7°	113,9°	243,5°
280	2024	10 06 00:00	14h 55m 25,9s	-20° 51' 48"	Lib	408127	3d 5h 11m	-9,39	1757	9,0	34,6° E	34,8°	10:15	15:01	19:41	25,5°	120,1°	237,9°
281	2024	10 07 00:00	15h 44m 28,6s	-24° 37' 38"	Lib	405063	4d 5h 11m	-9,83	1770	15,2	45,6° E	45,8°	11:20	15:50	20:16	22,2°	125,1°	233,6°
282	2024	10 08 00:00	16h 36m 50,4s	-27° 23' 44"	Sco	401002	5d 5h 11m	-10,23	1788	22,8	56,7° E	56,8°	12:23	16:43	21:01	20,3°	128,3°	231,1°
283	2024	10 09 00:00	17h 32m 17,0s	-28° 55' 49"	Oph	395957	6d 5h 11m	-10,61	1811	31,5	68,1° E	68,2°	13:22	17:39	21:56	19,8°	129,4°	230,8°
284	2024	10 10 00:00	18h 29m 57,7s	-29° 1' 41"	Sgr	390016	7d 5h 11m	-10,95	1838	41,3	79,7° E	79,8°	14:14	18:35	23:01	21,1°	128,0°	233,1°
285	2024	10 11 00:00	19h 28m 34,0s	-27° 33' 48"	Sgr	383362	8d 5h 11m	-11,28	1870	51,7	91,8° E	91,8°	14:57	19:32		21,1°	124,1°	233,1°
286	2024	10 12 00:00	20h 26m 45,0s	-24° 31' 24"	Cap	376293	9d 5h 11m	-11,58	1905	62,4	104,3° E	104,2°	15:33	20:26	00:13	24,0°	118,2°	237,9°
287	2024	10 13 00:00	21h 23m 34,9s	-20° 1' 3"	Cap	369232	10d 5h 11m	-11,86	1942	72,9	117,2° E	117,1°	16:04	21:19	01:28	28,6°	110,6°	244,7°
288	2024	10 14 00:00	22h 18m 48,6s	-14° 15' 46"	Aqr	362699	11d 5h 11m	-12,12	1977	82,5	130,6° E	130,5°	16:30	22:10	02:45	34,5°	101,9°	253,1°
289	2024	10 15 00:00	23h 12m 50,3s	-7° 34' 4"	Aqr	357275	12d 5h 11m	-12,36	2007	90,7	144,4° E	144,4°	16:55	23:01	04:02	41,4°	92,4°	262,6°
290	2024	10 16 00:00	0h 6m 32,3s	-0° 19' 15"	Psc	353511	13d 5h 11m	-12,58	2028	96,6	158,6° E	158,6°	17:20	23:53	05:20	48,9°	82,6°	272,6°
291	2024	10 17 00:00	1h 1m 1,1s	+7° 1' 7"	Psc	351837	14d 5h 11m	-12,78	2038	99,6	173,0° E	173,0°	17:47		06:40	63,6°	73,2°	282,6°
292	2024	10 18 00:00	1h 57m 22,3s	+13° 56' 20"	Ari	352466	15d 5h 11m	-12,76	2034	99,6	172,6° W	172,4°	18:18	00:46	08:01	69,8°	64,6°	292,0°
293	2024	10 19 00:00	2h 56m 21,7s	+19° 55' 1"	Ari	355343	16d 5h 11m	-12,56	2018	96,4	158,3° W	158,1°	18:55	01:43	09:23	74,4°	57,7°	299,9°
294	2024	10 20 00:00	3h 58m 1,8s	+24° 28' 55"	Tau	360156	17d 5h 11m	-12,33	1991	90,6	144,3° W	144,1°	19:40	02:43	10:42	77,1°	52,9°	305,7°
295	2024	10 21 00:00	5h 1m 24,5s	+27° 17' 52"	Tau	366405	18d 5h 11m	-12,10	1957	82,6	130,8° W	130,6°	20:35	03:44	11:54	77,8°	51,0°	308,7°
296	2024	10 22 00:00	6h 4m 36,9s	+28° 14' 11"	Aur	373499	19d 5h 11m	-11,84	1920	73,3	117,7° W	117,6°	21:37	04:45	12:55	76,6°	51,9°	308,7°
297	2024	10 23 00:00	7h 5m 31,6s	+27° 23' 38"	Gem	380855	20d 5h 11m	-11,57	1882	63,2	105,2° W	105,1°	22:44	05:44	13:43	73,8°	55,3°	306,2°
298	2024	10 24 00:00	8h 2m 35,8s	+25° 2' 1"	Cnc	387958	21d 5h 11m	-11,28	1848	52,8	93,1° W	93,1°	23:52	06:38	14:21	69,8°	60,4°	301,7°
299	2024	10 25 00:00	8h 55m 15,7s	+21° 29' 20"	Cnc	394411	22d 5h 11m	-10,97	1818	42,8	81,5° W	81,5°		07:27	14:51	65,0°	66,8°	295,9°
300	2024	10 26 00:00	9h 43m 47,8s	+17° 4' 51"	Leo	399937	23d 5h 11m	-10,65	1793	33,2	70,2° W	70,3°	00:57	08:12	15:15	65,0°	66,8°	289,2°

# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

	Date	Hour	R. A. (2000.0)	Decl. (2000.0)	Const.	Dist. E.	Age	Magn.	Diam.	Illum.	Elong.	Separ.	Rise	Transit	Set	Elevation	Azimuth	Azimuth
	yyyy	mm dd hh:mm	topocentric	topocentric		km	days	mV	"	%	°	°	hh:mm	hh:mm	hh:mm	(max.)	at rise	at set
301	2024	10 27 00:00	10h 28m 59,1s	+12° 4' 54"	Leo	404379	24d 5h 11m	-10,30	1773	24,5	59,2° W	59,3°	02:00	08:54	15:36	59,6°	73,9°	282,0°
302	2024	10 28 00:00	11h 11m 48,5s	+6° 42' 38"	Leo	407679	25d 5h 11m	-9,92	1759	16,9	48,4° W	48,4°	03:01	09:34	15:55	53,8°	81,5°	274,6°
303	2024	10 29 00:00	11h 53m 17,5s	+1° 8' 55"	Vir	409855	26d 5h 11m	-9,52	1749	10,5	37,7° W	37,7°	04:01	10:12	16:14	48,0°	89,2°	267,0°
304	2024	10 30 00:00	12h 34m 26,2s	-4° 26' 33"	Vir	410973	27d 5h 11m	-9,08	1745	5,5	27,1° W	27,1°	05:00	10:51	16:33	42,1°	96,9°	259,5°
305	2024	10 31 00:00	13h 16m 11,7s	-9° 54' 13"	Vir	411124	28d 5h 11m	-8,60	1744	2,1	16,4° W	16,5°	06:01	11:31	16:53	36,5°	104,5°	252,3°
306	2024	11 01 00:00	13h 59m 28,0s	-15° 3' 47"	Vir	410401	29d 5h 11m	-8,08	1747	0,3	5,7° W	6,3°	07:03	12:13	17:16	31,3°	111,7°	245,5°
307	2024	11 02 00:00	14h 45m 3,3s	-19° 43' 38"	Lib	408884	0d 11h 13m	-8,08	1753	0,3	5,1° E	6,3°	08:07	12:58	17:44	26,8°	118,2°	239,6°
308	2024	11 03 00:00	15h 33m 34,2s	-23° 40' 31"	Lib	406626	1d 11h 13m	-8,62	1763	2,1	16,1° E	16,6°	09:12	13:47	18:17	23,2°	123,6°	234,8°
309	2024	11 04 00:00	16h 25m 16,6s	-26° 40' 4"	Sco	403656	2d 11h 13m	-9,14	1776	5,7	27,2° E	27,6°	10:16	14:39	18:59	20,8°	127,4°	231,7°
310	2024	11 05 00:00	17h 19m 54,7s	-28° 28' 5"	Oph	399985	3d 11h 13m	-9,62	1792	11,1	38,4° E	38,8°	11:16	15:34	19:51	19,9°	129,1°	230,8°
311	2024	11 06 00:00	18h 16m 36,4s	-28° 52' 54"	Sgr	395625	4d 11h 13m	-10,06	1812	18,0	49,9° E	50,2°	12:10	16:30	20:52	20,6°	128,5°	232,3°
312	2024	11 07 00:00	19h 14m 3,0s	-27° 47' 53"	Sgr	390609	5d 11h 13m	-10,47	1835	26,5	61,7° E	61,8°	12:55	17:25	22:00	23,0°	125,5°	236,2°
313	2024	11 08 00:00	20h 10m 53,8s	-25° 13' 2"	Cap	385021	6d 11h 13m	-10,84	1862	36,1	73,7° E	73,7°	13:33	18:19	23:13	26,9°	120,4°	242,1°
314	2024	11 09 00:00	21h 6m 13,5s	-21° 14' 48"	Cap	379026	7d 11h 13m	-11,19	1892	46,7	86,0° E	86,0°	14:04	19:10	23:59	26,9°	113,6°	242,1°
315	2024	11 10 00:00	21h 59m 46,7s	-16° 4' 32"	Aqr	372881	8d 11h 13m	-11,50	1923	57,7	98,7° E	98,7°	14:31	19:59	00:26	32,1°	105,6°	249,7°
316	2024	11 11 00:00	22h 51m 56,5s	-9° 57' 2"	Aqr	366951	9d 11h 13m	-11,79	1954	68,6	111,8° E	111,8°	14:55	20:49	01:40	38,4°	96,7°	258,4°
317	2024	11 12 00:00	23h 43m 34,9s	-3° 10' 1"	Psc	361686	10d 11h 13m	-12,06	1982	78,9	125,2° E	125,2°	15:19	21:38	02:55	45,4°	87,4°	267,9°
318	2024	11 13 00:00	0h 35m 50,9s	+3° 55' 29"	Psc	357575	11d 11h 13m	-12,29	2005	87,8	139,0° E	139,0°	15:44	22:30	04:11	52,7°	78,0°	277,6°
319	2024	11 14 00:00	1h 29m 59,5s	+10° 54' 24"	Psc	355079	12d 11h 13m	-12,51	2019	94,6	153,1° E	153,1°	16:12	23:24	05:29	60,0°	69,0°	287,1°
320	2024	11 15 00:00	2h 27m 6,8s	+17° 17' 40"	Ari	354538	13d 11h 13m	-12,69	2022	98,7	167,3° E	167,0°	16:46		06:50	66,6°	61,2°	295,8°
321	2024	11 16 00:00	3h 27m 47,1s	+22° 34' 15"	Ari	356091	14d 11h 13m	-12,80	2013	99,9	178,5° W	176,1°	17:27	00:22	08:12	75,9°	55,2°	302,8°
322	2024	11 17 00:00	4h 31m 34,7s	+26° 15' 55"	Tau	359644	15d 11h 13m	-12,62	1993	98,1	164,6° W	164,0°	18:18	01:24	09:29	77,6°	51,8°	307,3°
323	2024	11 18 00:00	5h 36m 48,5s	+28° 4' 4"	Tau	364874	16d 11h 13m	-12,41	1965	93,6	150,9° W	150,6°	19:19	02:27	10:38	77,2°	51,3°	308,8°
324	2024	11 19 00:00	6h 40m 57,0s	+27° 55' 28"	Gem	371296	17d 11h 13m	-12,19	1931	86,9	137,7° W	137,5°	20:27	03:29	11:34	75,0°	53,7°	307,4°
325	2024	11 20 00:00	7h 41m 40,2s	+26° 2' 10"	Gem	378344	18d 11h 13m	-11,96	1895	78,7	125,0° W	124,9°	21:37	04:27	12:17	71,4°	58,3°	303,6°
326	2024	11 21 00:00	8h 37m 41,2s	+22° 45' 32"	Cnc	385456	19d 11h 13m	-11,71	1860	69,5	112,9° W	112,8°	22:45	05:20	12:51	66,7°	64,4°	298,1°
327	2024	11 22 00:00	9h 28m 53,7s	+18° 28' 40"	Leo	392135	20d 11h 13m	-11,45	1828	59,8	101,1° W	101,1°	23:50	06:07	13:18	61,4°	71,4°	291,6°
328	2024	11 23 00:00	10h 15m 59,4s	+13° 31' 43"	Leo	397988	21d 11h 13m	-11,17	1801	50,0	89,8° W	89,8°	06:51	06:51	13:40	55,8°	78,9°	284,5°
329	2024	11 24 00:00	11h 0m 1,6s	+8° 10' 25"	Leo	402741	22d 11h 13m	-10,88	1780	40,4	78,8° W	78,8°	00:52	07:32	14:00	55,8°	78,9°	277,1°
330	2024	11 25 00:00	11h 42m 9,3s	+2° 36' 49"	Vir	406241	23d 11h 13m	-10,57	1765	31,4	68,0° W	68,0°	01:52	08:11	14:19	49,9°	86,6°	269,6°
331	2024	11 26 00:00	12h 23m 29,9s	-2° 59' 22"	Vir	408440	24d 11h 13m	-10,24	1755	23,1	57,3° W	57,3°	02:52	08:49	14:38	44,1°	94,3°	262,1°
332	2024	11 27 00:00	13h 5m 7,3s	-8° 29' 12"	Vir	409380	25d 11h 13m	-9,87	1751	15,8	46,6° W	46,6°	03:51	09:29	14:57	38,4°	102,0°	254,8°
333	2024	11 28 00:00	13h 48m 1,8s	-13° 43' 21"	Vir	409171	26d 11h 13m	-9,47	1752	9,6	35,9° W	36,0°	04:53	10:10	15:20	33,1°	109,3°	247,8°
334	2024	11 29 00:00	14h 33m 8,0s	-18° 31' 0"	Lib	407965	27d 11h 13m	-9,03	1757	4,8	25,1° W	25,3°	05:56	10:54	15:46	28,3°	116,0°	241,6°
335	2024	11 30 00:00	15h 21m 9,8s	-22° 39' 19"	Lib	405934	28d 11h 13m	-8,55	1766	1,7	14,2° W	14,7°	07:01	11:42	16:18	24,3°	121,8°	236,4°
336	2024	12 01 00:00	16h 12m 30,6s	-25° 53' 37"	Sco	403247	29d 11h 13m	-8,09	1778	0,2	3,0° W	5,6°	08:07	12:34	16:57	21,5°	126,2°	232,7°
337	2024	12 02 00:00	17h 7m 0,9s	-27° 58' 39"	Oph	400050	0d 17h 39m	-8,33	1792	0,7	8,3° E	9,7°	09:09	13:29	17:47	20,1°	128,7°	231,0°
338	2024	12 03 00:00	18h 3m 49,7s	-28° 41' 19"	Sgr	396458	1d 17h 39m	-8,88	1808	3,2	19,9° E	20,5°	10:06	14:25	18:46	20,4°	128,8°	231,8°
339	2024	12 04 00:00	19h 1m 32,3s	-27° 53' 51"	Sgr	392551	2d 17h 39m	-9,40	1826	7,6	31,6° E	32,0°	10:54	15:21	19:53	22,3°	126,4°	235,1°
340	2024	12 05 00:00	19h 58m 36,0s	-25° 36' 3"	Sgr	388387	3d 17h 39m	-9,89	1846	14,0	43,6° E	43,8°	11:34	16:15	21:04	25,8°	121,8°	240,4°
341	2024	12 06 00:00	20h 53m 52,4s	-21° 55' 14"	Cap	384011	4d 17h 39m	-10,33	1867	22,1	55,8° E	55,9°	12:06	17:07	22:17	30,6°	115,5°	247,5°
342	2024	12 07 00:00	21h 46m 55,8s	-17° 3' 58"	Cap	379492	5d 17h 39m	-10,73	1889	31,6	68,2° E	68,2°	12:34	17:56	23:29	36,5°	107,9°	255,7°
343	2024	12 08 00:00	22h 38m 3,4s	-11° 17' 38"	Aqr	374940	6d 17h 39m	-11,09	1912	42,1	80,8° E	80,8°	12:58	18:44		36,5°	99,5°	255,7°
344	2024	12 09 00:00	23h 28m 3,8s	-4° 52' 55"	Aqr	370531	7d 17h 39m	-11,42	1935	53,3	93,7° E	93,7°	13:22	19:31	00:41	43,1°	90,6°	264,7°
345	2024	12 10 00:00	0h 18m 5,3s	+1° 52' 22"	Psc	366513	8d 17h 39m	-11,71	1956	64,6	106,8° E	106,8°	13:45	20:20	01:54	50,1°	81,6°	274,0°
346	2024	12 11 00:00	1h 9m 25,2s	+8° 38' 19"	Psc	363197	9d 17h 39m	-11,97	1974	75,2	120,2° E	120,2°	14:11	21:11	03:08	57,2°	72,7°	283,3°
347	2024	12 12 00:00	2h 3m 20,5s	+15° 1' 55"	Ari	360923	10d 17h 39m	-12,20	1986	84,6	133,8° E	133,8°	14:41	22:05	04:25	63,8°	64,6°	292,1°
348	2024	12 13 00:00	3h 0m 50,9s	+20° 36' 41"	Ari	360001	11d 17h 39m	-12,41	1992	92,2	147,5° E	147,4°	15:17	23:04	05:44	69,7°	57,9°	299,7°
349	2024	12 14 00:00	4h 2m 13,8s	+24° 54' 34"	Tau	360650	12d 17h 39m	-12,58	1988	97,3	161,3° E	160,9°	16:03	07:02	07:02	74,2°	53,2°	305,4°
350	2024	12 15 00:00	5h 6m 36,0s	+27° 30' 56"	Tau	362942	13d 17h 39m	-12,73	1975	99,6	175,0° E	173,2°	16:59	00:06	08:15	77,6°	51,3°	308,4°

# Topocentric ephemeris of the Moon (following)

Times are given in UT for Aveiro (8° 38' 55" W, 40° 38' 20" N, zone Z).

Date yyyy mm dd hh:mm	Hour mm dd hh:mm	R. A. (2000.0) topocentric	Decl. (2000.0) topocentric	Const.	Dist. E. km	Age days	Magn. mV	Diam. "	Illum. %	Elong. °	Separ. °	Rise hh:mm	Transit hh:mm	Set hh:mm	Elevation (max.)	Azimuth at rise	Azimuth at set
351	2024 12 16 00:00	6h 11m 48,2s	+28° 11' 51"	Aur	366771	14d 17h 39m-12,67	1955	99,3	171,6° W	170,3°	18:05	01:09	09:18	76,2°	52,4°	308,3°	
352	2024 12 17 00:00	7h 15m 8,2s	+26° 59' 19"	Gem	371859	15d 17h 39m-12,49	1928	96,4	158,5° W	158,0°	19:15	02:10	10:08	73,1°	56,1°	305,5°	
353	2024 12 18 00:00	8h 14m 28,3s	+24° 9' 41"	Cnc	377799	16d 17h 39m-12,28	1898	91,3	145,8° W	145,5°	20:26	03:07	10:47	68,7°	61,8°	300,6°	
354	2024 12 19 00:00	9h 8m 55,2s	+20° 6' 43"	Cnc	384112	17d 17h 39m-12,07	1867	84,4	133,5° W	133,4°	21:34	03:58	11:17	63,6°	68,6°	294,3°	
355	2024 12 20 00:00	9h 58m 43,2s	+15° 14' 9"	Leo	390313	18d 17h 39m-11,85	1837	76,4	121,7° W	121,7°	22:39	04:44	11:42	57,9°	76,0°	287,3°	
356	2024 12 21 00:00	10h 44m 45,9s	+9° 51' 47"	Leo	395957	19d 17h 39m-11,62	1811	67,5	110,3° W	110,3°	23:41	05:27	12:03	52,1°	83,8°	279,8°	
357	2024 12 22 00:00	11h 28m 12,3s	+4° 14' 43"	Leo	400684	20d 17h 39m-11,38	1789	58,2	99,2° W	99,2°		06:07	12:23	46,2°	91,6°	272,3°	
358	2024 12 23 00:00	12h 10m 13,5s	-1° 25' 37"	Vir	404233	21d 17h 39m-11,12	1774	48,7	88,4° W	88,4°	00:41	06:46	12:41	46,2°	91,6°	264,7°	
359	2024 12 24 00:00	12h 51m 58,4s	-6° 59' 56"	Vir	406453	22d 17h 39m-10,84	1764	39,4	77,6° W	77,6°	01:40	07:25	13:00	40,4°	99,3°	257,3°	
360	2024 12 25 00:00	13h 34m 32,5s	-12° 19' 30"	Vir	407303	23d 17h 39m-10,55	1760	30,5	66,9° W	66,9°	02:41	08:05	13:22	34,9°	106,7°	250,3°	
361	2024 12 26 00:00	14h 18m 56,8s	-17° 14' 47"	Vir	406838	24d 17h 39m-10,22	1762	22,3	56,2° W	56,2°	03:43	08:48	13:46	30,0°	113,6°	243,8°	
362	2024 12 27 00:00	15h 6m 4,6s	-21° 34' 22"	Lib	405201	25d 17h 39m-9,86	1769	15,0	45,3° W	45,4°	04:48	09:35	14:15	25,7°	119,8°	238,1°	
363	2024 12 28 00:00	15h 56m 32,7s	-25° 4' 30"	Sco	402597	26d 17h 39m-9,45	1781	8,8	34,2° W	34,4°	05:53	10:25	14:52	22,4°	124,8°	233,8°	
364	2024 12 29 00:00	16h 50m 28,5s	-27° 29' 45"	Sco	399274	27d 17h 39m-8,99	1796	4,1	22,8° W	23,3°	06:57	11:19	15:38	20,5°	128,0°	231,4°	
365	2024 12 30 00:00	17h 47m 16,8s	-28° 35' 11"	Sgr	395494	28d 17h 39m-8,49	1813	1,2	11,2° W	12,4°	07:57	12:16	16:35	20,1°	129,0°	231,3°	
366	2024 12 31 00:00	18h 45m 38,7s	-28° 10' 0"	Sgr	391505	0d 1h 33m	-8,14	1831	0,2	0,6° E	5,2°	08:49	13:13	17:41	21,5°	127,4°	233,8°
367	2025 01 01 00:00	19h 43m 52,6s	-26° 11' 1"	Sgr	387518	1d 1h 33m	-8,61	1850	1,4	12,8° E	13,6°	09:33	14:09	18:53	24,6°	123,4°	238,6°
368	2025 01 02 00:00	20h 40m 30,1s	-22° 43' 59"	Cap	383693	2d 1h 33m	-9,18	1869	4,9	25,1° E	25,4°	10:08	15:03	20:07	29,1°	117,5°	245,4°