

Пояснение для эфемерид больших планет. В эфемеридах планет приводятся: Date (год, месяц, день), Right Asc. – прямое восхождение, Declination – склонение, Distance - геоцентрическое расстояние от Земли до планеты в астрономических единицах, dia – видимый диаметр в секундах дуги, mag - звездная величина, Elong – видимое угловое удаление (элонгация) от Солнца в градусах, I - фазовый угол (угол при центре планеты между направлениями на Солнце и Землю), Фаза - величина освещенной части диска планеты (от 0 до 100%), Limb - позиционный угол средней точки светлого лимба в градусах (отсчитывается от точки севера против часовой стрелки от 0° до 360°), De - угол наклона оси планеты к картинной плоскости перпендикулярной лучу зрения в градусах, причем знак указывает наклон северного «+» или южного «-» полюса планеты к Земле (для Сатурна это также наклон колец), Pr – позиционный угол северного полюса планеты по отношению к полюсу мира в градусах (отсчитывается при центре планеты против часовой стрелки от 0° до 360°). (*Occult v4.0*)

Sun
Equinox of J2000

Date	Right Asc.	Declination	Distance	dia	Po	Bo	Lo	Carrington
year mth d	h m s	o ' "	AU	"	o	o	o	Rotation #
2028 Jan 1	18 42 9.72	-23 4 54.7	0.983357	1951.7	2.29	-2.94	24.33	2332
2028 Jan 6	19 4 11.53	-22 36 56.8	0.983308	1951.8	359.87	-3.51	318.48	2333
2028 Jan 11	19 26 2.10	-21 57 49.6	0.983393	1951.7	357.47	-4.06	252.64	2333
2028 Jan 16	19 47 38.50	-21 8 1.2	0.983638	1951.2	355.11	-4.58	186.80	2333
2028 Jan 21	20 8 58.65	-20 8 4.5	0.984029	1950.4	352.81	-5.06	120.96	2333
2028 Jan 26	20 30 0.60	-18 58 39.8	0.984528	1949.4	350.59	-5.50	55.13	2333
2028 Jan 31	20 50 42.79	-17 40 34.0	0.985117	1948.3	348.46	-5.90	349.30	2334
2028 Feb 5	21 11 4.32	-16 14 37.8	0.985799	1946.9	346.45	-6.25	283.47	2334
2028 Feb 10	21 31 5.21	-14 41 42.8	0.986597	1945.3	344.56	-6.55	217.63	2334
2028 Feb 15	21 50 46.50	-13 2 38.6	0.987532	1943.5	342.80	-6.80	151.80	2334
2028 Feb 20	22 10 9.80	-11 18 14.1	0.988577	1941.4	341.18	-6.99	85.96	2334
2028 Feb 25	22 29 16.65	- 9 29 21.4	0.989693	1939.2	339.70	-7.14	20.11	2334
2028 Mar 1	22 48 8.68	- 7 36 53.9	0.990858	1937.0	338.38	-7.22	314.25	2335
2028 Mar 6	23 6 47.70	- 5 41 44.1	0.992071	1934.6	337.22	-7.25	248.38	2335
2028 Mar 11	23 25 15.96	- 3 44 41.5	0.993355	1932.1	336.21	-7.23	182.50	2335
2028 Mar 16	23 43 36.30	- 1 46 30.5	0.994723	1929.4	335.37	-7.15	116.60	2335
2028 Mar 21	0 1 51.64	0 12 4.5	0.996142	1926.7	334.71	-7.01	50.69	2335
2028 Mar 26	0 20 4.47	2 10 17.1	0.997572	1923.9	334.21	-6.82	344.76	2336
2028 Mar 31	0 38 17.04	4 7 19.8	0.998989	1921.2	333.89	-6.59	278.81	2336
2028 Apr 5	0 56 31.46	6 2 26.4	1.000394	1918.5	333.75	-6.30	212.84	2336
2028 Apr 10	1 14 50.00	7 54 54.1	1.001812	1915.8	333.80	-5.97	146.85	2336
2028 Apr 15	1 33 15.31	9 44 3.3	1.003249	1913.0	334.02	-5.60	80.84	2336
2028 Apr 20	1 51 49.74	11 29 13.1	1.004670	1910.3	334.43	-5.18	14.82	2336
2028 Apr 25	2 10 35.04	13 9 40.6	1.006038	1907.7	335.02	-4.73	308.77	2337
2028 Apr 30	2 29 32.35	14 44 42.4	1.007331	1905.3	335.80	-4.25	242.70	2337
2028 May 5	2 48 42.43	16 13 37.1	1.008554	1903.0	336.75	-3.74	176.61	2337
2028 May 10	3 8 6.06	17 35 46.7	1.009734	1900.8	337.88	-3.20	110.51	2337
2028 May 15	3 27 44.04	18 50 35.7	1.010874	1898.6	339.18	-2.64	44.39	2337
2028 May 20	3 47 36.56	19 57 28.7	1.011942	1896.6	340.65	-2.07	338.25	2338
2028 May 25	4 7 42.90	20 55 51.4	1.012904	1894.8	342.27	-1.48	272.10	2338
2028 May 30	4 28 1.52	21 45 12.7	1.013740	1893.2	344.02	-0.88	205.94	2338
2028 Jun 4	4 48 30.37	22 25 6.8	1.014466	1891.9	345.91	-0.28	139.78	2338
2028 Jun 9	5 9 7.51	22 55 13.6	1.015112	1890.7	347.90	0.32	73.60	2338
2028 Jun 14	5 29 50.99	23 15 17.0	1.015678	1889.6	349.99	0.93	7.42	2338
2028 Jun 19	5 50 38.35	23 25 5.7	1.016138	1888.8	352.15	1.52	301.24	2339
2028 Jun 24	6 11 26.59	23 24 34.2	1.016460	1888.2	354.37	2.10	235.05	2339
2028 Jun 29	6 32 12.27	23 13 44.5	1.016632	1887.9	356.62	2.67	168.87	2339
2028 Jul 4	6 52 52.19	22 52 45.6	1.016680	1887.8	358.89	3.22	102.69	2339
2028 Jul 9	7 13 23.94	22 21 50.7	1.016635	1887.9	1.15	3.75	36.51	2339
2028 Jul 14	7 33 45.64	21 41 17.4	1.016497	1888.1	3.38	4.25	330.35	2340
2028 Jul 19	7 53 55.60	20 51 27.6	1.016247	1888.6	5.58	4.73	264.18	2340
2028 Jul 24	8 13 52.20	19 52 49.1	1.015854	1889.3	7.72	5.17	198.03	2340
2028 Jul 29	8 33 33.97	18 45 55.1	1.015317	1890.3	9.79	5.57	131.89	2340
2028 Aug 3	8 53 0.20	17 31 20.9	1.014670	1891.5	11.77	5.94	65.76	2340
2028 Aug 8	9 12 11.16	16 9 41.2	1.013945	1892.9	13.66	6.27	359.65	2341
2028 Aug 13	9 31 7.71	14 41 30.9	1.013144	1894.4	15.45	6.55	293.54	2341
2028 Aug 18	9 49 50.92	13 7 27.2	1.012250	1896.0	17.12	6.79	227.45	2341
2028 Aug 23	10 8 21.87	11 28 10.2	1.011237	1897.9	18.68	6.98	161.37	2341
2028 Aug 28	10 26 41.64	9 44 23.1	1.010115	1900.0	20.11	7.12	95.31	2341
2028 Sep 2	10 44 51.92	7 56 46.6	1.008923	1902.3	21.40	7.21	29.26	2341
2028 Sep 7	11 2 55.00	6 5 58.8	1.007692	1904.6	22.56	7.25	323.22	2342
2028 Sep 12	11 20 53.46	4 12 37.8	1.006428	1907.0	23.57	7.24	257.20	2342
2028 Sep 17	11 38 49.88	2 17 23.3	1.005114	1909.5	24.42	7.17	191.19	2342
2028 Sep 22	11 56 46.51	0 20 58.9	1.003730	1912.1	25.12	7.05	125.18	2342
2028 Sep 27	12 14 45.40	- 1 35 50.2	1.002292	1914.9	25.66	6.88	59.19	2342

2028	Oct	2	12	32	49.02	- 3	32	21.0	1.000843	1917.6	26.03	6.66	353.21	2343
2028	Oct	7	12	51	0.17	- 5	27	52.0	0.999413	1920.4	26.22	6.39	287.24	2343
2028	Oct	12	13	9	21.67	- 7	21	40.5	0.998010	1923.1	26.23	6.07	221.28	2343
2028	Oct	17	13	27	56.15	- 9	13	0.7	0.996614	1925.8	26.06	5.71	155.32	2343
2028	Oct	22	13	46	45.56	-11	1	2.6	0.995209	1928.5	25.70	5.30	89.37	2343
2028	Oct	27	14	5	51.43	-12	44	55.1	0.993817	1931.2	25.14	4.85	23.43	2343
2028	Nov	1	14	25	15.43	-14	23	49.4	0.992479	1933.8	24.39	4.36	317.50	2344
2028	Nov	6	14	44	59.19	-15	56	56.8	0.991224	1936.3	23.45	3.84	251.57	2344
2028	Nov	11	15	5	4.02	-17	23	28.2	0.990056	1938.5	22.30	3.29	185.65	2344
2028	Nov	16	15	25	30.51	-18	42	33.0	0.988953	1940.7	20.97	2.71	119.73	2344
2028	Nov	21	15	46	18.03	-19	53	20.3	0.987899	1942.8	19.45	2.11	53.82	2344
2028	Nov	26	16	7	25.23	-20	55	3.0	0.986918	1944.7	17.76	1.49	347.92	2345
2028	Dec	1	16	28	50.45	-21	46	59.1	0.986046	1946.4	15.90	0.86	282.02	2345
2028	Dec	6	16	50	31.70	-22	28	31.4	0.985309	1947.9	13.90	0.22	216.13	2345
2028	Dec	11	17	12	26.51	-22	59	7.9	0.984705	1949.1	11.77	-0.42	150.25	2345
2028	Dec	16	17	34	31.46	-23	18	22.9	0.984203	1950.1	9.53	-1.06	84.37	2345
2028	Dec	21	17	56	42.14	-23	25	59.5	0.983790	1950.9	7.21	-1.69	18.50	2345
2028	Dec	26	18	18	53.92	-23	21	51.4	0.983484	1951.5	4.82	-2.31	312.64	2346
2028	Dec	31	18	41	2.53	-23	6	1.1	0.983317	1951.8	2.41	-2.91	246.78	2346

Mercury
Equinox of J2000

Date	Right	Asc.	Declination	Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year mth d	h m s	o ' "	o ' "	AU	"		o	o		o	o	o
2028	Jan	1	19 33 13.74	-23 54 6.4	1.320060	5.1	-0.8	11.7e	29	93.6	271.4	-4 354
2028	Jan	4	19 53 50.64	-22 59 53.5	1.276187	5.2	-0.8	13.5e	36	90.7	267.9	-4 352
2028	Jan	7	20 13 49.96	-21 52 22.6	1.224560	5.5	-0.8	15.1e	43	86.6	264.5	-5 349
2028	Jan	10	20 32 48.81	-20 32 50.2	1.164774	5.7	-0.8	16.6e	52	81.0	261.4	-5 347
2028	Jan	13	20 50 14.03	-19 3 44.7	1.096815	6.1	-0.8	17.9e	62	73.5	258.4	-6 345
2028	Jan	16	21 5 18.32	-17 29 22.6	1.021479	6.5	-0.7	18.7e	74	63.7	255.6	-6 344
2028	Jan	19	21 16 57.37	-15 56 26.1	0.940946	7.1	-0.6	18.7e	88	51.4	252.9	-7 343
2028	Jan	22	21 23 52.85	-14 34 18.6	0.859361	7.8	-0.1	17.7e	105	37.3	249.9	-8 342
2028	Jan	25	21 24 48.89	-13 34 4.7	0.782983	8.5	0.7	15.2e	123	22.9	246.2	-9 342
2028	Jan	28	21 19 8.80	-13 5 26.6	0.719374	9.3	2.1	11.2e	142	10.5	239.9	-9 342
2028	Jan	31	21 7 43.04	-13 11 59.5	0.675438	9.9	4.1	6.1e	161	2.7	221.9	-10 343
2028	Feb	3	20 53 9.23	-13 47 56.6	0.655024	10.2	5.1	3.8w	169	1.0	142.3	-11 345
2028	Feb	6	20 39 1.90	-14 40 27.2	0.657584	10.2	3.4	8.8w	155	4.8	99.5	-11 346
2028	Feb	9	20 28 18.53	-15 36 12.9	0.678971	9.8	2.0	14.2w	139	12.3	89.6	-10 348
2028	Feb	12	20 22 24.46	-16 26 7.1	0.713613	9.4	1.1	18.6w	125	21.2	85.2	-10 348
2028	Feb	15	20 21 24.40	-17 5 31.1	0.756374	8.8	0.6	21.9w	113	30.1	82.4	-9 348
2028	Feb	18	20 24 41.08	-17 32 32.0	0.803349	8.3	0.3	24.2w	104	38.3	80.2	-8 348
2028	Feb	21	20 31 25.59	-17 46 35.3	0.851881	7.8	0.1	25.7w	95	45.5	78.1	-8 347
2028	Feb	24	20 40 52.36	-17 47 38.0	0.900288	7.4	0.1	26.6w	88	51.7	76.1	-7 346
2028	Feb	27	20 52 23.93	-17 35 49.3	0.947556	7.0	0.0	26.9w	82	57.1	74.2	-7 345
2028	Mar	1	21 5 31.19	-17 11 22.6	0.993104	6.7	0.0	26.8w	76	61.8	72.2	-6 344
2028	Mar	4	21 19 52.19	-16 34 32.5	1.036621	6.4	0.0	26.3w	71	65.9	70.4	-6 342
2028	Mar	7	21 35 10.67	-15 45 34.1	1.077953	6.2	0.0	25.6w	67	69.6	68.5	-6 341
2028	Mar	10	21 51 14.84	-14 44 41.9	1.117029	6.0	-0.1	24.6w	63	73.0	66.7	-5 340
2028	Mar	13	22 7 56.44	-13 32 10.2	1.153805	5.8	-0.1	23.4w	59	76.1	65.0	-5 338
2028	Mar	16	22 25 9.95	-12 8 13.4	1.188222	5.6	-0.2	22.0w	54	79.0	63.4	-5 337
2028	Mar	19	22 42 52.07	-10 33 6.7	1.220181	5.5	-0.2	20.4w	50	81.9	61.9	-4 336
2028	Mar	22	23 1 1.40	- 8 47 6.0	1.249509	5.3	-0.3	18.6w	46	84.6	60.5	-4 334
2028	Mar	25	23 19 38.21	- 6 50 29.2	1.275932	5.2	-0.5	16.6w	42	87.4	59.2	-4 333
2028	Mar	28	23 38 44.20	- 4 43 37.6	1.299030	5.1	-0.6	14.4w	37	90.1	57.9	-4 333
2028	Mar	31	23 58 22.34	- 2 26 59.3	1.318187	5.1	-0.8	11.9w	31	92.8	56.6	-3 332
2028	Apr	3	0 18 36.48	- 0 1 14.4	1.332545	5.0	-1.1	9.3w	25	95.3	55.2	-3 332
2028	Apr	6	0 39 30.77	2 32 37.0	1.340954	5.0	-1.4	6.4w	18	97.6	52.9	-3 331
2028	Apr	9	1 1 8.66	5 13 1.7	1.341958	5.0	-1.8	3.4w	10	99.3	46.8	-3 332
2028	Apr	12	1 23 31.16	7 57 37.9	1.333862	5.0	-2.3	0.8e	2	100.0	334.5	-2 332
2028	Apr	15	1 46 34.33	10 42 58.6	1.314967	5.1	-2.0	3.4e	11	99.1	253.6	-2 333
2028	Apr	18	2 10 6.50	13 24 26.3	1.284008	5.2	-1.7	6.8e	23	96.2	248.1	-2 334
2028	Apr	21	2 33 46.62	15 56 32.7	1.240728	5.4	-1.4	10.1e	35	90.9	247.3	-2 335
2028	Apr	24	2 57 5.52	18 13 50.0	1.186294	5.6	-1.2	13.3e	48	83.4	247.8	-1 336
2028	Apr	27	3 19 30.14	20 11 54.9	1.123205	5.9	-0.9	16.0e	61	74.5	248.9	-1 338
2028	Apr	30	3 40 28.81	21 48 12.8	1.054705	6.3	-0.7	18.2e	73	64.8	250.2	-1 340
2028	May	3	3 59 34.45	23 1 59.6	0.984046	6.8	-0.4	19.9e	84	55.3	251.8	-1 342

2028	May	6	4	16	25.17	23	53	53.1	0.914001	7.3	-0.1	21.0e	94	46.2	253.3	0	343
2028	May	9	4	30	43.21	24	25	16.6	0.846716	7.9	0.2	21.4e	104	37.7	254.8	0	345
2028	May	12	4	42	13.82	24	37	49.8	0.783794	8.5	0.6	21.1e	114	30.0	256.2	0	346
2028	May	15	4	50	45.00	24	33	12.3	0.726450	9.2	1.1	20.1e	123	23.0	257.6	1	347
2028	May	18	4	56	8.56	24	12	58.7	0.675681	9.9	1.7	18.3e	132	16.7	258.9	2	347
2028	May	21	4	58	22.80	23	38	44.4	0.632377	10.6	2.4	15.9e	141	11.2	260.6	2	348
2028	May	24	4	57	36.35	22	52	22.6	0.597376	11.2	3.3	12.7e	150	6.6	262.9	3	348
2028	May	27	4	54	12.14	21	56	29.5	0.571451	11.7	4.3	8.9e	160	3.1	267.5	4	347
2028	May	30	4	48	49.62	20	54	48.4	0.555241	12.0	5.5	4.9e	169	0.9	280.8	4	347
2028	Jun	2	4	42	22.90	19	52	17.1	0.549145	12.2	6.4	2.4e	175	0.2	348.1	5	346
2028	Jun	5	4	35	53.90	18	54	39.6	0.553230	12.1	5.4	5.3w	168	1.0	46.5	6	345
2028	Jun	8	4	30	22.34	18	7	28.0	0.567197	11.8	4.2	9.4w	159	3.3	58.4	6	345
2028	Jun	11	4	26	36.78	17	34	57.1	0.590437	11.3	3.3	13.1w	150	6.7	63.1	6	344
2028	Jun	14	4	25	10.27	17	19	25.8	0.622154	10.7	2.4	16.3w	141	11.1	66.0	7	344
2028	Jun	17	4	26	21.02	17	21	14.7	0.661484	10.1	1.8	18.8w	133	16.2	68.2	7	344
2028	Jun	20	4	30	16.26	17	39	9.5	0.707582	9.4	1.3	20.6w	124	21.8	70.2	7	345
2028	Jun	23	4	36	56.75	18	10	51.6	0.759654	8.8	0.8	21.7w	116	28.0	72.2	6	345
2028	Jun	26	4	46	20.55	18	53	22.2	0.816923	8.2	0.5	22.2w	108	34.6	74.3	6	346
2028	Jun	29	4	58	25.50	19	43	16.5	0.878565	7.6	0.2	22.1w	99	41.8	76.6	6	348
2028	Jul	2	5	13	10.27	20	36	46.7	0.943581	7.1	-0.1	21.3w	91	49.5	79.3	6	349
2028	Jul	5	5	30	33.85	21	29	39.4	1.010644	6.6	-0.4	20.0w	81	57.9	82.2	6	351
2028	Jul	8	5	50	33.54	22	17	11.1	1.077933	6.2	-0.7	18.2w	71	66.7	85.6	6	354
2028	Jul	11	6	13	1.43	22	54	11.1	1.143025	5.8	-0.9	15.8w	59	75.6	89.5	5	356
2028	Jul	14	6	37	39.98	23	15	21.3	1.202958	5.6	-1.1	13.0w	47	84.0	94.2	5	359
2028	Jul	17	7	3	58.72	23	16	0.6	1.254600	5.3	-1.4	9.9w	35	91.1	100.0	5	2
2028	Jul	20	7	31	15.19	22	53	5.9	1.295312	5.2	-1.7	6.6w	22	96.3	108.4	5	6
2028	Jul	23	7	58	41.81	22	5	58.3	1.323633	5.0	-2.0	3.3w	11	99.1	127.1	5	9
2028	Jul	26	8	25	35.59	20	56	23.6	1.339546	5.0	-2.1	1.7e	5	99.8	211.2	5	12
2028	Jul	29	8	51	25.52	19	27	46.3	1.344206	5.0	-1.7	4.3e	13	98.7	261.3	5	15
2028	Aug	1	9	15	54.25	17	44	9.1	1.339363	5.0	-1.3	7.3e	21	96.6	273.5	5	17
2028	Aug	4	9	38	55.64	15	49	26.8	1.326851	5.0	-1.0	10.2e	29	93.9	279.6	5	19
2028	Aug	7	10	0	30.79	13	47	3.9	1.308287	5.1	-0.8	12.9e	35	90.8	283.6	5	21
2028	Aug	10	10	20	44.65	11	39	48.7	1.284963	5.2	-0.6	15.3e	41	87.7	286.6	6	23
2028	Aug	13	10	39	43.64	9	29	57.6	1.257847	5.3	-0.4	17.5e	46	84.5	288.9	6	24
2028	Aug	16	10	57	34.17	7	19	20.8	1.227630	5.4	-0.3	19.6e	51	81.4	290.8	6	25
2028	Aug	19	11	14	21.82	5	9	30.3	1.194783	5.6	-0.2	21.3e	56	78.2	292.3	6	26
2028	Aug	22	11	30	10.78	3	1	45.5	1.159619	5.8	-0.1	22.9e	60	75.0	293.6	6	27
2028	Aug	25	11	45	3.55	0	57	19.6	1.122342	6.0	0.0	24.3e	64	71.8	294.7	6	28
2028	Aug	28	11	59	0.60	- 1	2	36.2	1.083091	6.2	0.0	25.4e	69	68.3	295.7	6	28
2028	Aug	31	12	12	0.10	- 2	56	47.6	1.041977	6.4	0.0	26.2e	73	64.6	296.5	6	28
2028	Sep	3	12	23	57.42	- 4	43	51.4	0.999120	6.7	0.1	26.8e	78	60.6	297.2	7	29
2028	Sep	6	12	34	44.47	- 6	22	8.6	0.954687	7.0	0.1	27.0e	83	56.2	297.9	7	29
2028	Sep	9	12	44	8.84	- 7	49	35.2	0.908953	7.3	0.2	26.9e	89	51.2	298.6	7	29
2028	Sep	12	12	51	52.93	- 9	3	30.5	0.862385	7.7	0.3	26.3e	95	45.5	299.4	7	29
2028	Sep	15	12	57	33.12	-10	0	23.1	0.815750	8.2	0.4	25.1e	103	39.1	300.4	7	29
2028	Sep	18	13	0	40.02	-10	35	36.7	0.770287	8.7	0.6	23.1e	111	31.9	301.6	7	29
2028	Sep	21	13	0	41.19	-10	43	27.1	0.727923	9.2	1.0	20.3e	121	23.9	303.3	7	29
2028	Sep	24	12	57	9.46	-10	17	37.8	0.691522	9.7	1.7	16.5e	133	15.6	305.9	7	29
2028	Sep	27	12	50	0.19	- 9	13	27.2	0.665025	10.0	2.8	11.6e	147	7.8	310.5	7	29
2028	Sep	30	12	39	55.70	- 7	32	5.1	0.653208	10.2	4.5	6.0e	163	2.2	323.0	7	29
2028	Oct	3	12	28	42.40	- 5	25	33.4	0.660714	10.1	5.8	2.4w	173	0.4	52.2	7	29
2028	Oct	6	12	18	55.23	- 3	17	13.9	0.690397	9.7	3.7	7.3w	157	3.9	104.4	6	29
2028	Oct	9	12	13	3.42	- 1	33	47.3	0.741790	9.0	1.8	12.2w	138	12.9	112.8	5	28
2028	Oct	12	12	12	34.04	- 0	34	3.2	0.810812	8.2	0.5	15.7w	119	25.7	116.0	4	28
2028	Oct	15	12	17	34.53	- 0	23	55.9	0.890914	7.5	-0.2	17.6w	101	40.3	117.7	4	28
2028	Oct	18	12	27	14.80	- 0	58	50.2	0.974953	6.9	-0.6	18.2w	85	54.5	118.8	3	29
2028	Oct	21	12	40	22.03	- 2	8	54.3	1.056860	6.3	-0.8	17.7w	70	66.9	119.4	2	29
2028	Oct	24	12	55	47.31	- 3	43	18.9	1.132516	5.9	-0.9	16.6w	58	76.7	119.7	2	29
2028	Oct	27	13	12	37.83	- 5	32	39.8	1.199759	5.6	-0.9	15.0w	47	84.1	119.7	1	28
2028	Oct	30	13	30	18.24	- 7	29	44.3	1.257877	5.3	-0.9	13.2w	38	89.5	119.3	1	28
2028	Nov	2	13	48	27.22	- 9	29	22.3	1.307021	5.1	-0.9	11.2w	30	93.3	118.7	1	27
2028	Nov	5	14	6	53.09	-11	27	59.5	1.347755	5.0	-1.0	9.3w	23	95.9	117.7	1	27
2028	Nov	8	14	25	30.28	-13	23	8.3	1.380773	4.8	-1.1	7.3w	18	97.6	116.3	0	26
2028	Nov	11	14	44	16.79	-15	13	5.8	1.406747	4.7	-1.1	5.4w	13	98.8	114.3	0	24
2028	Nov	14	15	3	12.60	-16	56	37.1	1.426264	4.7	-1.2	3.6w	8	99.5	111.0	0	23
2028	Nov	17	15	22	18.61	-18	32	44.5	1.439801	4.6	-1.3	1.8w	4	99.9	103.6	-1	22
2028	Nov	20	15	41	36.06	-20	0	41.1	1.447730	4.6	-1.4	0.4w	1	100.0	19.2	-1	20

2028	Nov	23	16	1	6.13	-21 19 45.4	1.450319	4.6	-1.3	1.8e	4	99.9	303.8	-1	18
2028	Nov	26	16	20	49.67	-22 29 19.4	1.447739	4.6	-1.1	3.5e	7	99.6	296.1	-1	16
2028	Nov	29	16	40	46.99	-23 28 46.0	1.440066	4.6	-1.0	5.2e	11	99.1	292.1	-2	14
2028	Dec	2	17	0	57.59	-24 17 28.5	1.427286	4.7	-0.9	6.8e	15	98.4	288.8	-2	12
2028	Dec	5	17	21	19.98	-24 54 50.2	1.409298	4.7	-0.8	8.4e	18	97.4	285.9	-2	10
2028	Dec	8	17	41	51.36	-25 20 15.2	1.385915	4.8	-0.7	10.1e	22	96.2	282.9	-2	7
2028	Dec	11	18	2	27.26	-25 33 9.4	1.356861	4.9	-0.7	11.7e	27	94.6	280.1	-3	5
2028	Dec	14	18	23	0.95	-25 33 3.3	1.321784	5.1	-0.6	13.3e	32	92.5	277.2	-3	3
2028	Dec	17	18	43	22.71	-25 19 35.7	1.280276	5.2	-0.6	14.8e	37	89.7	274.3	-3	0
2028	Dec	20	19	3	18.60	-24 52 40.7	1.231907	5.4	-0.6	16.3e	44	86.1	271.4	-4	358
2028	Dec	23	19	22	28.68	-24 12 37.5	1.176312	5.7	-0.7	17.6e	51	81.3	268.6	-4	355
2028	Dec	26	19	40	24.26	-23 20 26.7	1.113336	6.0	-0.7	18.7e	60	75.0	265.9	-4	353
2028	Dec	29	19	56	24.07	-22 18 14.8	1.043312	6.4	-0.7	19.4e	70	66.7	263.2	-5	351

Venus
Equinox of J2000

Date			Right Asc.			Declination			Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year	mth	d	h	m	s	o	'	"	AU	"		o	o		o	o	o
2028	Jan	1	21	10	35.18	-18	12	32.3	1.263671	13.3	-4.0	35.0e	51	81.5	255.5	2	344
2028	Jan	6	21	34	50.16	-16	16	0.4	1.234757	13.6	-4.0	36.0e	53	80.3	253.7	1	342
2028	Jan	11	21	58	28.69	-14	8	51.2	1.205112	14.0	-4.0	37.0e	55	78.9	252.2	1	341
2028	Jan	16	22	21	32.51	-11	52	43.6	1.174769	14.3	-4.0	37.9e	57	77.5	250.8	1	340
2028	Jan	21	22	44	4.60	- 9	29	13.9	1.143744	14.7	-4.1	38.9e	59	76.1	249.6	1	339
2028	Jan	26	23	6	8.48	- 6	59	57.8	1.112015	15.1	-4.1	39.8e	61	74.6	248.6	0	338
2028	Jan	31	23	27	47.74	- 4	26	31.8	1.079561	15.6	-4.1	40.6e	63	73.0	247.8	0	338
2028	Feb	5	23	49	5.98	- 1	50	31.2	1.046380	16.1	-4.1	41.5e	65	71.3	247.3	0	337
2028	Feb	10	0	10	6.67	0	46	31.0	1.012499	16.6	-4.2	42.3e	67	69.6	246.9	-1	337
2028	Feb	15	0	30	53.41	3	23	6.6	0.977968	17.2	-4.2	43.0e	69	67.7	246.7	-1	337
2028	Feb	20	0	51	29.81	5	57	52.5	0.942817	17.8	-4.2	43.7e	72	65.8	246.8	-2	338
2028	Feb	25	1	11	58.82	8	29	25.3	0.907048	18.5	-4.3	44.3e	74	63.8	247.0	-2	338
2028	Mar	1	1	32	22.25	10	56	21.2	0.870670	19.3	-4.3	44.9e	76	61.7	247.3	-2	339
2028	Mar	6	1	52	40.61	13	17	17.6	0.833711	20.2	-4.3	45.3e	79	59.5	247.9	-3	339
2028	Mar	11	2	12	53.02	15	30	55.0	0.796242	21.1	-4.4	45.7e	82	57.1	248.6	-3	340
2028	Mar	16	2	32	57.44	17	36	1.6	0.758364	22.2	-4.4	46.0e	85	54.7	249.4	-4	342
2028	Mar	21	2	52	50.59	19	31	32.4	0.720164	23.4	-4.5	46.1e	88	52.1	250.4	-4	343
2028	Mar	26	3	12	26.71	21	16	27.5	0.681716	24.7	-4.5	46.1e	91	49.3	251.4	-4	344
2028	Mar	31	3	31	36.91	22	49	53.4	0.643112	26.2	-4.6	45.8e	94	46.3	252.5	-5	346
2028	Apr	5	3	50	8.70	24	11	6.3	0.604488	27.8	-4.6	45.4e	98	43.2	253.7	-5	347
2028	Apr	10	4	7	45.88	25	19	34.9	0.566051	29.7	-4.6	44.7e	102	39.8	254.8	-5	348
2028	Apr	15	4	24	9.23	26	15	1.8	0.528065	31.9	-4.7	43.6e	106	36.2	255.8	-6	350
2028	Apr	20	4	38	56.09	26	57	19.4	0.490823	34.3	-4.7	42.1e	111	32.3	256.7	-6	351
2028	Apr	25	4	51	38.97	27	26	23.3	0.454665	37.0	-4.7	40.2e	116	28.2	257.4	-6	352
2028	Apr	30	5	1	45.27	27	42	4.3	0.420031	40.0	-4.7	37.6e	122	23.8	257.8	-6	353
2028	May	5	5	8	38.27	27	43	55.4	0.387520	43.4	-4.7	34.3e	128	19.1	257.8	-6	354
2028	May	10	5	11	41.85	27	30	56.4	0.357928	47.0	-4.6	30.1e	136	14.3	257.4	-5	354
2028	May	15	5	10	29.77	27	1	25.1	0.332231	50.6	-4.5	25.0e	144	9.6	256.3	-5	354
2028	May	20	5	4	57.12	26	13	19.0	0.311513	54.0	-4.3	18.8e	153	5.4	254.6	-4	354
2028	May	25	4	55	34.10	25	5	32.0	0.296890	56.7	-4.0	11.8e	163	2.1	251.7	-3	353
2028	May	30	4	43	35.28	23	40	5.2	0.289341	58.1	-4.2	4.1e	174	0.2	242.7	-2	352
2028	Jun	4	4	30	52.86	22	3	54.1	0.289487	58.1	-4.2	4.1w	174	0.2	84.2	-1	351
2028	Jun	9	4	19	30.00	20	28	4.8	0.297364	56.6	-4.0	11.8w	163	2.1	75.7	0	350
2028	Jun	14	4	11	4.49	19	4	8.4	0.312360	53.8	-4.3	18.8w	153	5.4	73.7	1	349
2028	Jun	19	4	6	27.82	18	0	0.3	0.333428	50.4	-4.5	24.9w	144	9.6	73.0	2	348
2028	Jun	24	4	5	49.49	17	18	36.1	0.359389	46.8	-4.6	30.0w	136	14.2	73.0	2	348
2028	Jun	29	4	8	53.48	16	58	53.5	0.389170	43.2	-4.7	34.1w	128	18.9	73.5	3	349
2028	Jul	4	4	15	14.33	16	57	38.9	0.421888	39.9	-4.7	37.4w	122	23.5	74.3	3	349
2028	Jul	9	4	24	25.85	17	10	44.4	0.456814	36.8	-4.7	40.0w	116	27.9	75.5	3	350
2028	Jul	14	4	36	3.49	17	33	52.3	0.493340	34.1	-4.7	41.9w	111	31.9	76.8	3	351
2028	Jul	19	4	49	45.30	18	3	0.6	0.530979	31.7	-4.6	43.4w	107	35.7	78.4	3	352
2028	Jul	24	5	5	12.35	18	34	34.0	0.569359	29.5	-4.6	44.4w	102	39.3	80.2	3	354
2028	Jul	29	5	22	8.86	19	5	27.4	0.608223	27.7	-4.5	45.1w	99	42.6	82.2	3	355
2028	Aug	3	5	40	22.48	19	33	0.9	0.647387	26.0	-4.5	45.6w	95	45.7	84.3	3	357
2028	Aug	8	5	59	42.94	19	54	54.9	0.686678	24.5	-4.5	45.8w	92	48.6	86.5	3	359
2028	Aug	13	6	20	0.59	20	9	9.1	0.725930	23.2	-4.4	45.8w	88	51.3	88.9	3	1
2028	Aug	18	6	41	5.99	20	14	4.4	0.764997	22.0	-4.4	45.6w	86	53.9	91.3	2	3
2028	Aug	23	7	2	49.76	20	8	23.8	0.803764	20.9	-4.3	45.3w	83	56.4	93.7	2	5

2028 Aug 28	7 25 3.18	19 51 10.9	0.842175	20.0	-4.3	44.9w	80	58.8	96.2	2	7
2028 Sep 2	7 47 38.83	19 21 46.0	0.880188	19.1	-4.3	44.4w	77	61.0	98.6	2	9
2028 Sep 7	8 10 30.00	18 39 45.8	0.917741	18.3	-4.2	43.8w	75	63.2	101.0	1	11
2028 Sep 12	8 33 30.49	17 45 5.4	0.954756	17.6	-4.2	43.1w	72	65.2	103.2	1	13
2028 Sep 17	8 56 34.69	16 37 58.4	0.991155	17.0	-4.2	42.4w	70	67.2	105.4	1	15
2028 Sep 22	9 19 37.73	15 18 55.6	1.026881	16.4	-4.1	41.6w	67	69.1	107.4	1	17
2028 Sep 27	9 42 36.13	13 48 40.0	1.061925	15.8	-4.1	40.7w	65	71.0	109.2	0	18
2028 Oct 2	10 5 28.06	12 8 2.3	1.096276	15.3	-4.1	39.8w	63	72.8	110.9	0	19
2028 Oct 7	10 28 12.95	10 18 1.5	1.129901	14.9	-4.1	38.9w	61	74.5	112.3	0	20
2028 Oct 12	10 50 51.18	8 19 45.0	1.162748	14.5	-4.0	37.9w	59	76.1	113.5	0	21
2028 Oct 17	11 13 23.83	6 14 28.3	1.194758	14.1	-4.0	36.9w	56	77.7	114.4	0	22
2028 Oct 22	11 35 52.53	4 3 33.2	1.225898	13.7	-4.0	35.9w	54	79.2	115.1	0	23
2028 Oct 27	11 58 19.79	1 48 23.3	1.256173	13.4	-4.0	34.8w	52	80.7	115.6	0	23
2028 Nov 1	12 20 49.04	- 0 29 37.2	1.285586	13.1	-4.0	33.8w	50	82.0	115.8	0	23
2028 Nov 6	12 43 24.19	- 2 49 1.9	1.314122	12.8	-4.0	32.7w	48	83.4	115.7	-1	23
2028 Nov 11	13 6 9.39	- 5 8 20.6	1.341745	12.5	-3.9	31.6w	46	84.7	115.3	-1	22
2028 Nov 16	13 29 8.63	- 7 25 58.8	1.368411	12.3	-3.9	30.4w	44	85.9	114.6	-1	21
2028 Nov 21	13 52 25.55	- 9 40 18.7	1.394100	12.1	-3.9	29.3w	42	87.0	113.7	-1	21
2028 Nov 26	14 16 3.70	-11 49 42.8	1.418831	11.9	-3.9	28.2w	40	88.1	112.4	0	19
2028 Dec 1	14 40 6.45	-13 52 33.1	1.442623	11.7	-3.9	27.0w	38	89.2	110.9	0	18
2028 Dec 6	15 4 36.64	-15 47 11.1	1.465478	11.5	-3.9	25.9w	37	90.1	109.1	0	16
2028 Dec 11	15 29 36.17	-17 31 57.7	1.487374	11.3	-3.9	24.7w	35	91.1	107.1	0	15
2028 Dec 16	15 55 5.47	-19 5 14.8	1.508277	11.2	-3.9	23.5w	33	92.0	104.7	0	13
2028 Dec 21	16 21 3.37	-20 25 29.4	1.528185	11.0	-3.9	22.4w	31	92.8	102.1	0	10
2028 Dec 26	16 47 27.33	-21 31 17.2	1.547123	10.9	-3.9	21.2w	29	93.5	99.3	0	8
2028 Dec 31	17 14 13.52	-22 21 25.2	1.565120	10.7	-3.9	20.0w	28	94.3	96.3	0	5

Mars
Equinox of J2000

Date	Right Asc.	Declination	Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year mth d	h m s	o ' "	AU	"		o	o		o	o	o
2028 Jan 1	19 59 18.32	-21 44 19.9	2.296294	4.1	1.2	17.9e	13	98.8	262.0	-14	11
2028 Jan 6	20 15 45.09	-20 55 6.9	2.303592	4.1	1.2	16.7e	12	99.0	260.9	-15	9
2028 Jan 11	20 32 3.12	-20 0 3.0	2.310606	4.1	1.2	15.5e	11	99.1	259.8	-17	6
2028 Jan 16	20 48 11.54	-18 59 27.6	2.317394	4.0	1.2	14.4e	10	99.2	258.9	-18	4
2028 Jan 21	21 4 9.88	-17 53 40.8	2.323973	4.0	1.2	13.2e	9	99.3	258.0	-19	1
2028 Jan 26	21 19 57.75	-16 43 5.3	2.330327	4.0	1.2	12.1e	9	99.4	257.4	-20	358
2028 Jan 31	21 35 34.80	-15 28 6.3	2.336449	4.0	1.2	11.0e	8	99.5	256.8	-21	356
2028 Feb 5	21 51 0.92	-14 9 10.0	2.342357	4.0	1.1	9.9e	7	99.6	256.5	-22	353
2028 Feb 10	22 6 16.25	-12 46 42.8	2.348088	4.0	1.1	8.8e	6	99.7	256.3	-23	351
2028 Feb 15	22 21 21.33	-11 21 10.1	2.353678	4.0	1.1	7.7e	5	99.8	256.5	-24	348
2028 Feb 20	22 36 16.93	- 9 52 56.7	2.359117	4.0	1.1	6.6e	5	99.8	256.9	-25	346
2028 Feb 25	22 51 3.77	- 8 22 29.2	2.364371	4.0	1.1	5.5e	4	99.9	257.9	-25	344
2028 Mar 1	23 5 42.53	- 6 50 14.6	2.369419	4.0	1.1	4.4e	3	99.9	259.6	-25	341
2028 Mar 6	23 20 13.95	- 5 16 40.0	2.374262	3.9	1.1	3.4e	2	100.0	262.7	-26	339
2028 Mar 11	23 34 38.92	- 3 42 10.9	2.378922	3.9	1.1	2.3e	2	100.0	268.9	-26	337
2028 Mar 16	23 48 58.60	- 2 7 10.9	2.383409	3.9	1.1	1.4e	1	100.0	284.4	-26	335
2028 Mar 21	0 3 14.19	- 0 32 3.3	2.387687	3.9	1.1	0.8e	1	100.0	334.9	-26	333
2028 Mar 26	0 17 26.68	1 2 47.7	2.391703	3.9	1.1	1.3w	1	100.0	30.3	-25	331
2028 Mar 31	0 31 36.96	2 36 57.7	2.395421	3.9	1.1	2.2w	2	100.0	47.8	-25	329
2028 Apr 5	0 45 45.89	4 10 3.2	2.398829	3.9	1.1	3.3w	2	100.0	54.9	-24	328
2028 Apr 10	0 59 54.38	5 41 42.5	2.401934	3.9	1.2	4.3w	3	99.9	58.9	-24	326
2028 Apr 15	1 14 3.54	7 11 35.6	2.404722	3.9	1.2	5.4w	4	99.9	61.5	-23	325
2028 Apr 20	1 28 14.36	8 39 22.6	2.407133	3.9	1.2	6.5w	5	99.8	63.5	-22	324
2028 Apr 25	1 42 27.55	10 4 42.8	2.409104	3.9	1.2	7.5w	5	99.8	65.2	-21	323
2028 Apr 30	1 56 43.65	11 27 16.0	2.410587	3.9	1.3	8.6w	6	99.7	66.7	-20	322
2028 May 5	2 11 3.08	12 46 43.0	2.411565	3.9	1.3	9.7w	7	99.6	68.1	-19	322
2028 May 10	2 25 26.34	14 2 46.8	2.412035	3.9	1.3	10.9w	8	99.6	69.5	-18	322
2028 May 15	2 39 53.99	15 15 11.6	2.411960	3.9	1.3	12.0w	8	99.5	70.9	-17	321
2028 May 20	2 54 26.35	16 23 41.7	2.411269	3.9	1.3	13.1w	9	99.4	72.2	-15	321
2028 May 25	3 9 3.43	17 28 1.4	2.409893	3.9	1.4	14.3w	10	99.3	73.6	-14	322
2028 May 30	3 23 44.96	18 27 56.2	2.407782	3.9	1.4	15.4w	11	99.1	75.0	-13	322
2028 Jun 4	3 38 30.58	19 23 13.6	2.404923	3.9	1.4	16.6w	11	99.0	76.4	-11	322
2028 Jun 9	3 53 20.03	20 13 43.0	2.401303	3.9	1.4	17.8w	12	98.9	77.9	-10	323
2028 Jun 14	4 8 12.98	20 59 14.9	2.396873	3.9	1.4	19.0w	13	98.7	79.4	-8	324
2028 Jun 19	4 23 8.84	21 39 40.9	2.391560	3.9	1.4	20.3w	14	98.6	80.9	-7	325

2028	Jun	24	4	38	6.71	22	14	53.8	2.385295	3.9	1.5	21.5w	15	98.4	82.4	-5	326
2028	Jun	29	4	53	5.45	22	44	48.6	2.378037	3.9	1.5	22.8w	15	98.2	83.9	-4	327
2028	Jul	4	5	8	3.93	23	9	22.4	2.369781	3.9	1.5	24.1w	16	98.0	85.4	-2	328
2028	Jul	9	5	23	1.25	23	28	34.1	2.360510	4.0	1.5	25.4w	17	97.9	87.0	-1	330
2028	Jul	14	5	37	56.42	23	42	24.3	2.350170	4.0	1.5	26.7w	18	97.7	88.5	1	331
2028	Jul	19	5	52	48.30	23	50	54.9	2.338693	4.0	1.5	28.1w	18	97.5	90.1	2	333
2028	Jul	24	6	7	35.55	23	54	10.0	2.326019	4.0	1.5	29.5w	19	97.2	91.6	4	334
2028	Jul	29	6	22	16.74	23	52	16.1	2.312125	4.0	1.5	30.9w	20	97.0	93.1	5	336
2028	Aug	3	6	36	50.75	23	45	20.9	2.297017	4.1	1.6	32.4w	21	96.8	94.6	6	338
2028	Aug	8	6	51	16.70	23	33	33.4	2.280677	4.1	1.6	33.9w	21	96.5	96.0	8	340
2028	Aug	13	7	5	33.76	23	17	3.3	2.263057	4.1	1.6	35.4w	22	96.3	97.4	9	342
2028	Aug	18	7	19	41.05	22	56	2.3	2.244101	4.2	1.6	36.9w	23	96.0	98.8	10	343
2028	Aug	23	7	33	37.56	22	30	43.8	2.223766	4.2	1.6	38.5w	24	95.8	100.1	12	345
2028	Aug	28	7	47	22.41	22	1	22.4	2.202055	4.3	1.6	40.1w	24	95.5	101.4	13	347
2028	Sep	2	8	0	55.11	21	28	12.4	2.178989	4.3	1.6	41.7w	25	95.2	102.6	14	349
2028	Sep	7	8	14	15.39	20	51	28.2	2.154554	4.3	1.6	43.4w	26	95.0	103.7	15	351
2028	Sep	12	8	27	23.03	20	11	24.7	2.128720	4.4	1.6	45.1w	27	94.7	104.8	16	353
2028	Sep	17	8	40	17.72	19	28	18.2	2.101446	4.5	1.5	46.9w	27	94.4	105.9	17	355
2028	Sep	22	8	52	59.03	18	42	26.3	2.072721	4.5	1.5	48.7w	28	94.1	106.8	18	357
2028	Sep	27	9	5	26.69	17	54	6.2	2.042582	4.6	1.5	50.5w	29	93.8	107.7	19	359
2028	Oct	2	9	17	40.79	17	3	33.7	2.011063	4.7	1.5	52.4w	30	93.5	108.5	20	1
2028	Oct	7	9	29	41.50	16	11	4.2	1.978171	4.7	1.5	54.3w	30	93.2	109.3	21	3
2028	Oct	12	9	41	28.96	15	16	53.7	1.943896	4.8	1.5	56.2w	31	92.9	110.0	22	5
2028	Oct	17	9	53	3.06	14	21	19.8	1.908229	4.9	1.4	58.3w	31	92.6	110.7	22	7
2028	Oct	22	10	4	23.55	13	24	40.7	1.871200	5.0	1.4	60.3w	32	92.4	111.2	23	9
2028	Oct	27	10	15	30.33	12	27	13.1	1.832885	5.1	1.4	62.4w	33	92.1	111.7	23	11
2028	Nov	1	10	26	23.55	11	29	12.2	1.793340	5.2	1.3	64.6w	33	91.8	112.2	24	12
2028	Nov	6	10	37	3.28	10	30	53.1	1.752602	5.3	1.3	66.8w	34	91.6	112.6	24	14
2028	Nov	11	10	47	29.41	9	32	32.0	1.710692	5.5	1.3	69.1w	34	91.3	112.9	24	16
2028	Nov	16	10	57	41.46	8	34	27.1	1.667645	5.6	1.2	71.4w	35	91.1	113.1	24	17
2028	Nov	21	11	7	38.75	7	36	57.0	1.623549	5.8	1.2	73.8w	35	90.9	113.3	25	19
2028	Nov	26	11	17	20.74	6	40	17.7	1.578518	5.9	1.1	76.3w	35	90.7	113.5	25	20
2028	Dec	1	11	26	46.94	5	44	44.2	1.532647	6.1	1.1	78.8w	36	90.6	113.6	25	22
2028	Dec	6	11	35	56.68	4	50	32.6	1.486012	6.3	1.0	81.4w	36	90.4	113.6	25	23
2028	Dec	11	11	44	48.87	3	58	1.0	1.438681	6.5	0.9	84.1w	36	90.3	113.6	25	24
2028	Dec	16	11	53	21.81	3	7	29.8	1.390755	6.7	0.9	86.9w	36	90.3	113.6	24	26
2028	Dec	21	12	1	33.63	2	19	18.6	1.342393	7.0	0.8	89.8w	36	90.3	113.5	24	27
2028	Dec	26	12	9	22.48	1	33	45.0	1.293765	7.2	0.7	92.8w	36	90.3	113.3	24	28
2028	Dec	31	12	16	46.35	0	51	6.5	1.245024	7.5	0.6	95.9w	36	90.5	113.1	24	29

Jupiter
Equinox of J2000

Date	Right	Asc.	Declination	Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year mth d	h m s		o ' "	AU	"		o	o		o	o	o
2028	Jan	1	11 50 40.25	2 23 18.2	5.120052	38.5	-2.0	102.8w	10	99.2	113.1	-2 26
2028	Jan	6	11 51 13.28	2 21 15.1	5.042868	39.1	-2.0	107.7w	10	99.2	113.0	-2 26
2028	Jan	11	11 51 28.90	2 21 5.2	4.967814	39.6	-2.0	112.8w	10	99.3	112.9	-2 26
2028	Jan	16	11 51 26.94	2 22 49.1	4.895467	40.2	-2.1	117.9w	9	99.4	112.7	-2 26
2028	Jan	21	11 51 7.29	2 26 26.9	4.826413	40.8	-2.1	123.1w	9	99.4	112.5	-2 26
2028	Jan	26	11 50 30.02	2 31 57.1	4.761287	41.4	-2.1	128.3w	8	99.5	112.3	-2 26
2028	Jan	31	11 49 35.55	2 39 15.6	4.700730	41.9	-2.2	133.7w	8	99.6	112.1	-2 26
2028	Feb	5	11 48 24.66	2 48 16.3	4.645342	42.4	-2.2	139.1w	7	99.6	111.8	-2 26
2028	Feb	10	11 46 58.44	2 58 50.6	4.595657	42.9	-2.2	144.5w	6	99.7	111.4	-2 26
2028	Feb	15	11 45 18.15	3 10 49.5	4.552138	43.3	-2.3	150.0w	5	99.8	110.9	-2 26
2028	Feb	20	11 43 25.25	3 24 2.2	4.515237	43.6	-2.3	155.6w	4	99.9	110.1	-2 26
2028	Feb	25	11 41 21.55	3 38 15.7	4.485381	43.9	-2.3	161.2w	3	99.9	109.0	-2 25
2028	Mar	1	11 39 9.23	3 53 14.6	4.462919	44.1	-2.3	166.8w	2	100.0	106.9	-2 25
2028	Mar	6	11 36 50.69	4 8 42.3	4.448083	44.3	-2.3	172.4w	1	100.0	102.0	-2 25
2028	Mar	11	11 34 28.46	4 24 21.9	4.440984	44.3	-2.3	177.6w	0	100.0	74.0	-2 25
2028	Mar	16	11 32 5.01	4 39 57.3	4.441648	44.3	-2.3	175.9e	1	100.0	315.1	-2 25
2028	Mar	21	11 29 42.81	4 55 12.5	4.450065	44.3	-2.3	170.5e	2	100.0	302.3	-2 25
2028	Mar	26	11 27 24.41	5 9 51.1	4.466148	44.1	-2.3	164.9e	3	99.9	298.8	-2 25
2028	Mar	31	11 25 12.31	5 23 37.3	4.489693	43.9	-2.3	159.4e	4	99.9	297.2	-2 25
2028	Apr	5	11 23 8.84	5 36 17.2	4.520383	43.6	-2.3	153.9e	5	99.8	296.2	-2 25
2028	Apr	10	11 21 15.96	5 47 39.6	4.557814	43.2	-2.3	148.5e	6	99.8	295.5	-2 25
2028	Apr	15	11 19 35.31	5 57 35.5	4.601565	42.8	-2.2	143.2e	6	99.7	295.0	-2 25
2028	Apr	20	11 18 8.30	6 5 57.0	4.651205	42.3	-2.2	137.9e	7	99.6	294.7	-2 25

2028	Apr	25	11	16	56.19	6	12	37.4	4.706244	41.8	-2.2	132.7e	8	99.5	294.4	-2	25
2028	Apr	30	11	15	59.97	6	17	32.0	4.766131	41.3	-2.1	127.6e	8	99.5	294.1	-2	25
2028	May	5	11	15	20.25	6	20	38.2	4.830268	40.8	-2.1	122.6e	9	99.4	293.9	-2	25
2028	May	10	11	14	57.31	6	21	55.7	4.898064	40.2	-2.1	117.7e	9	99.3	293.7	-2	25
2028	May	15	11	14	51.19	6	21	25.3	4.968980	39.6	-2.0	112.8e	10	99.3	293.5	-2	25
2028	May	20	11	15	1.85	6	19	7.7	5.042487	39.1	-2.0	108.1e	10	99.2	293.4	-2	25
2028	May	25	11	15	29.14	6	15	4.5	5.118037	38.5	-2.0	103.4e	10	99.2	293.3	-2	25
2028	May	30	11	16	12.74	6	9	18.3	5.195060	37.9	-1.9	98.8e	11	99.1	293.2	-2	25
2028	Jun	4	11	17	12.11	6	1	53.0	5.272996	37.3	-1.9	94.3e	11	99.1	293.1	-2	25
2028	Jun	9	11	18	26.57	5	52	52.9	5.351353	36.8	-1.9	89.8e	11	99.1	293.0	-2	25
2028	Jun	14	11	19	55.46	5	42	22.4	5.429689	36.3	-1.8	85.5e	11	99.1	293.0	-2	25
2028	Jun	19	11	21	38.15	5	30	24.9	5.507570	35.8	-1.8	81.2e	11	99.1	292.9	-2	25
2028	Jun	24	11	23	34.01	5	17	4.6	5.584550	35.3	-1.8	76.9e	10	99.2	292.8	-2	25
2028	Jun	29	11	25	42.29	5	2	25.9	5.660178	34.8	-1.8	72.7e	10	99.2	292.8	-2	25
2028	Jul	4	11	28	2.19	4	46	34.1	5.734047	34.3	-1.7	68.6e	10	99.2	292.7	-2	25
2028	Jul	9	11	30	32.89	4	29	34.1	5.805824	33.9	-1.7	64.5e	10	99.3	292.7	-2	25
2028	Jul	14	11	33	13.71	4	11	29.9	5.875200	33.5	-1.7	60.5e	9	99.3	292.6	-2	25
2028	Jul	19	11	36	3.99	3	52	25.7	5.941859	33.1	-1.7	56.5e	9	99.4	292.5	-2	25
2028	Jul	24	11	39	3.10	3	32	25.3	6.005473	32.8	-1.6	52.6e	9	99.4	292.4	-2	25
2028	Jul	29	11	42	10.33	3	11	33.8	6.065724	32.5	-1.6	48.6e	8	99.5	292.3	-2	25
2028	Aug	3	11	45	24.93	2	49	55.9	6.122358	32.2	-1.6	44.7e	8	99.6	292.2	-2	26
2028	Aug	8	11	48	46.26	2	27	35.9	6.175172	31.9	-1.6	40.9e	7	99.6	292.1	-2	26
2028	Aug	13	11	52	13.75	2	4	37.5	6.223963	31.6	-1.6	37.0e	6	99.7	291.9	-2	26
2028	Aug	18	11	55	46.88	1	41	4.6	6.268518	31.4	-1.6	33.2e	6	99.7	291.7	-2	26
2028	Aug	23	11	59	25.08	1	17	1.1	6.308611	31.2	-1.5	29.4e	5	99.8	291.5	-2	26
2028	Aug	28	12	3	7.73	0	52	32.0	6.344049	31.0	-1.5	25.6e	5	99.8	291.1	-2	25
2028	Sep	2	12	6	54.20	0	27	41.6	6.374709	30.9	-1.5	21.8e	4	99.9	290.6	-2	25
2028	Sep	7	12	10	43.98	0	2	33.7	6.400490	30.8	-1.5	18.0e	3	99.9	290.0	-2	25
2028	Sep	12	12	14	36.60	-	0	22 48.0	6.421283	30.7	-1.5	14.2e	3	99.9	289.0	-2	25
2028	Sep	17	12	18	31.59	-	0	48 19.8	6.436966	30.6	-1.5	10.4e	2	100.0	287.3	-2	25
2028	Sep	22	12	22	28.38	-	1	13 57.3	6.447417	30.5	-1.5	6.6e	1	100.0	283.8	-2	25
2028	Sep	27	12	26	26.38	-	1	39 35.7	6.452575	30.5	-1.5	2.9e	1	100.0	271.2	-2	25
2028	Oct	2	12	30	25.03	-	2	5 10.9	6.452436	30.5	-1.5	1.6w	0	100.0	157.6	-2	25
2028	Oct	7	12	34	23.82	-	2	30 39.2	6.447000	30.5	-1.5	5.1w	1	100.0	125.6	-2	25
2028	Oct	12	12	38	22.27	-	2	55 56.9	6.436255	30.6	-1.5	8.9w	2	100.0	120.2	-2	25
2028	Oct	17	12	42	19.86	-	3	20 59.7	6.420184	30.7	-1.5	12.8w	2	100.0	117.9	-2	25
2028	Oct	22	12	46	15.94	-	3	45 43.0	6.398798	30.8	-1.5	16.7w	3	99.9	116.7	-2	25
2028	Oct	27	12	50	9.84	-	4	10 2.2	6.372181	30.9	-1.5	20.6w	4	99.9	115.8	-2	25
2028	Nov	1	12	54	0.96	-	4	33 53.2	6.340455	31.1	-1.5	24.5w	4	99.9	115.2	-2	25
2028	Nov	6	12	57	48.72	-	4	57 12.1	6.303738	31.2	-1.5	28.5w	5	99.8	114.7	-2	24
2028	Nov	11	13	1	32.51	-	5	19 55.0	6.262141	31.4	-1.6	32.5w	6	99.8	114.3	-3	24
2028	Nov	16	13	5	11.64	-	5	41 57.4	6.215783	31.7	-1.6	36.6w	6	99.7	114.0	-3	24
2028	Nov	21	13	8	45.29	-	6	3 14.3	6.164842	31.9	-1.6	40.7w	7	99.7	113.7	-3	24
2028	Nov	26	13	12	12.69	-	6	23 41.3	6.109567	32.2	-1.6	44.8w	7	99.6	113.4	-3	24
2028	Dec	1	13	15	33.09	-	6	43 14.5	6.050224	32.6	-1.6	49.0w	8	99.5	113.1	-3	24
2028	Dec	6	13	18	45.77	-	7	1 49.9	5.987076	32.9	-1.6	53.2w	8	99.5	112.9	-3	24
2028	Dec	11	13	21	49.94	-	7	19 23.4	5.920383	33.3	-1.7	57.4w	9	99.4	112.6	-3	23
2028	Dec	16	13	24	44.69	-	7	35 50.2	5.850438	33.7	-1.7	61.7w	9	99.4	112.4	-3	23
2028	Dec	21	13	27	29.06	-	7	51 5.8	5.777616	34.1	-1.7	66.1w	9	99.3	112.2	-3	23
2028	Dec	26	13	30	2.18	-	8	5 6.1	5.702335	34.5	-1.7	70.5w	10	99.3	112.0	-3	23
2028	Dec	31	13	32	23.21	-	8	17 47.6	5.625024	35.0	-1.8	75.0w	10	99.2	111.8	-3	23

Saturn
Equinox of J2000

Date	Right Asc.	Declination	Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year mth d	h m s	o ' "	AU	"		o	o		o	o	o
2028	Jan	1	1 20 16.00	5 42 45.9	9.062686	18.4	0.5	101.0e	6	99.7	247.5 -12 2
2028	Jan	6	1 20 35.46	5 46 14.9	9.144719	18.2	0.6	96.0e	6	99.7	247.8 -12 2
2028	Jan	11	1 21 5.11	5 50 44.1	9.227472	18.1	0.6	91.0e	6	99.7	248.0 -12 2
2028	Jan	16	1 21 44.69	5 56 11.3	9.310347	17.9	0.6	86.1e	6	99.7	248.3 -12 2
2028	Jan	21	1 22 33.98	6 2 34.4	9.392781	17.7	0.6	81.3e	6	99.7	248.5 -12 2
2028	Jan	26	1 23 32.69	6 9 50.9	9.474185	17.6	0.6	76.5e	6	99.7	248.8 -12 2
2028	Jan	31	1 24 40.49	6 17 57.8	9.553964	17.4	0.6	71.7e	6	99.7	249.0 -12 2
2028	Feb	5	1 25 56.92	6 26 51.6	9.631554	17.3	0.6	67.0e	6	99.8	249.3 -13 2
2028	Feb	10	1 27 21.50	6 36 28.6	9.706454	17.2	0.6	62.3e	5	99.8	249.6 -13 2
2028	Feb	15	1 28 53.73	6 46 45.1	9.778230	17.0	0.6	57.7e	5	99.8	249.9 -13 2

2028 Feb 20	1 30 33.17	6 57 37.9	9.846469	16.9	0.6	53.1e	5	99.8	250.2	-13	2
2028 Feb 25	1 32 19.34	7 9 3.5	9.910740	16.8	0.6	48.5e	5	99.8	250.6	-13	2
2028 Mar 1	1 34 11.72	7 20 58.0	9.970638	16.7	0.6	44.0e	4	99.9	251.0	-14	2
2028 Mar 6	1 36 9.75	7 33 17.3	10.025814	16.6	0.6	39.5e	4	99.9	251.5	-14	2
2028 Mar 11	1 38 12.85	7 45 57.7	10.075990	16.5	0.6	35.1e	4	99.9	252.0	-14	2
2028 Mar 16	1 40 20.50	7 58 55.6	10.120947	16.5	0.6	30.7e	3	99.9	252.7	-14	2
2028 Mar 21	1 42 32.22	8 12 7.7	10.160454	16.4	0.5	26.3e	3	99.9	253.5	-14	2
2028 Mar 26	1 44 47.49	8 25 30.6	10.194283	16.3	0.5	22.0e	2	100.0	254.7	-15	2
2028 Mar 31	1 47 5.77	8 39 0.5	10.222249	16.3	0.5	17.7e	2	100.0	256.2	-15	2
2028 Apr 5	1 49 26.48	8 52 33.9	10.244230	16.3	0.5	13.4e	1	100.0	258.7	-15	2
2028 Apr 10	1 51 49.08	9 6 7.4	10.260170	16.2	0.5	9.2e	1	100.0	263.3	-15	1
2028 Apr 15	1 54 13.08	9 19 38.2	10.270038	16.2	0.4	5.2e	1	100.0	274.9	-16	1
2028 Apr 20	1 56 38.01	9 33 3.5	10.273780	16.2	0.4	2.3e	0	100.0	328.7	-16	1
2028 Apr 25	1 59 3.35	9 46 20.0	10.271366	16.2	0.4	4.4w	0	100.0	39.5	-16	1
2028 Apr 30	2 1 28.55	9 59 24.7	10.262810	16.2	0.4	8.3w	1	100.0	54.5	-16	1
2028 May 5	2 3 53.06	10 12 14.7	10.248198	16.3	0.4	12.5w	1	100.0	59.9	-17	1
2028 May 10	2 6 16.37	10 24 47.5	10.227659	16.3	0.4	16.6w	2	100.0	62.7	-17	1
2028 May 15	2 8 38.03	10 37 0.8	10.201312	16.3	0.4	20.8w	2	100.0	64.4	-17	1
2028 May 20	2 10 57.55	10 48 52.1	10.169268	16.4	0.4	25.0w	3	99.9	65.6	-17	1
2028 May 25	2 13 14.39	11 0 18.8	10.131669	16.4	0.4	29.2w	3	99.9	66.5	-17	1
2028 May 30	2 15 28.00	11 11 18.5	10.088716	16.5	0.5	33.4w	3	99.9	67.3	-18	1
2028 Jun 4	2 17 37.84	11 21 49.0	10.040671	16.6	0.5	37.6w	4	99.9	67.9	-18	1
2028 Jun 9	2 19 43.45	11 31 48.4	9.987809	16.7	0.5	41.9w	4	99.9	68.4	-18	1
2028 Jun 14	2 21 44.35	11 41 14.9	9.930384	16.8	0.4	46.1w	5	99.8	68.9	-18	1
2028 Jun 19	2 23 40.03	11 50 6.4	9.868662	16.9	0.4	50.4w	5	99.8	69.3	-18	1
2028 Jun 24	2 25 29.95	11 58 21.0	9.802949	17.0	0.4	54.7w	5	99.8	69.7	-18	1
2028 Jun 29	2 27 13.55	12 5 56.6	9.733620	17.1	0.4	59.0w	5	99.8	70.0	-19	0
2028 Jul 4	2 28 50.34	12 12 51.9	9.661089	17.3	0.4	63.4w	6	99.8	70.3	-19	0
2028 Jul 9	2 30 19.91	12 19 5.7	9.585758	17.4	0.4	67.7w	6	99.7	70.6	-19	0
2028 Jul 14	2 31 41.80	12 24 36.4	9.508013	17.5	0.4	72.2w	6	99.7	70.9	-19	0
2028 Jul 19	2 32 55.53	12 29 22.6	9.428272	17.7	0.4	76.6w	6	99.7	71.2	-19	0
2028 Jul 24	2 34 0.62	12 33 23.0	9.347004	17.8	0.4	81.1w	6	99.7	71.5	-19	0
2028 Jul 29	2 34 56.63	12 36 36.5	9.264739	18.0	0.3	85.7w	6	99.7	71.7	-19	0
2028 Aug 3	2 35 43.26	12 39 2.6	9.182013	18.2	0.3	90.2w	6	99.7	72.0	-19	0
2028 Aug 8	2 36 20.23	12 40 41.0	9.099333	18.3	0.3	94.9w	6	99.7	72.2	-19	0
2028 Aug 13	2 36 47.28	12 41 31.0	9.017208	18.5	0.3	99.6w	6	99.7	72.5	-19	0
2028 Aug 18	2 37 4.14	12 41 32.2	8.936180	18.7	0.3	104.3w	6	99.7	72.7	-19	0
2028 Aug 23	2 37 10.65	12 40 44.8	8.856843	18.8	0.2	109.1w	6	99.7	72.9	-19	0
2028 Aug 28	2 37 6.76	12 39 9.5	8.779818	19.0	0.2	113.9w	6	99.7	73.2	-19	0
2028 Sep 2	2 36 52.58	12 36 47.3	8.705683	19.1	0.2	118.8w	5	99.8	73.5	-19	0
2028 Sep 7	2 36 28.28	12 33 39.7	8.634982	19.3	0.1	123.8w	5	99.8	73.7	-19	0
2028 Sep 12	2 35 54.09	12 29 48.1	8.568256	19.5	0.1	128.8w	5	99.8	74.1	-19	0
2028 Sep 17	2 35 10.31	12 25 14.6	8.506066	19.6	0.1	133.8w	5	99.8	74.5	-19	0
2028 Sep 22	2 34 17.42	12 20 1.9	8.448989	19.7	0.1	138.9w	4	99.9	74.9	-19	0
2028 Sep 27	2 33 16.09	12 14 13.8	8.397557	19.8	0.0	144.1w	4	99.9	75.5	-19	0
2028 Oct 2	2 32 7.12	12 7 54.3	8.352218	20.0	0.0	149.3w	3	99.9	76.2	-19	0
2028 Oct 7	2 30 51.36	12 1 7.6	8.313367	20.0	0.0	154.5w	3	99.9	77.3	-18	0
2028 Oct 12	2 29 29.74	11 53 58.4	8.281370	20.1	-0.1	159.7w	2	100.0	78.9	-18	0
2028 Oct 17	2 28 3.28	11 46 32.0	8.256576	20.2	-0.1	165.0w	2	100.0	81.6	-18	0
2028 Oct 22	2 26 33.19	11 38 54.7	8.239285	20.2	-0.1	170.2w	1	100.0	87.3	-18	0
2028 Oct 27	2 25 0.76	11 31 12.7	8.229683	20.3	-0.1	175.2w	1	100.0	105.2	-18	1
2028 Nov 1	2 23 27.31	11 23 32.7	8.227845	20.3	-0.1	177.0e	0	100.0	188.3	-18	1
2028 Nov 6	2 21 54.10	11 16 0.8	8.233787	20.2	-0.1	172.7e	1	100.0	229.5	-18	1
2028 Nov 11	2 20 22.39	11 8 43.5	8.247478	20.2	-0.1	167.5e	1	100.0	238.7	-18	1
2028 Nov 16	2 18 53.44	11 1 47.3	8.268842	20.2	-0.1	162.2e	2	100.0	242.5	-17	1
2028 Nov 21	2 17 28.56	10 55 18.7	8.297705	20.1	0.0	156.8e	2	100.0	244.6	-17	1
2028 Nov 26	2 16 8.98	10 49 23.7	8.333766	20.0	0.0	151.5e	3	99.9	245.8	-17	1
2028 Dec 1	2 14 55.75	10 44 7.5	8.376652	19.9	0.0	146.1e	3	99.9	246.7	-17	1
2028 Dec 6	2 13 49.80	10 39 34.5	8.425955	19.8	0.1	140.8e	4	99.9	247.4	-17	1
2028 Dec 11	2 12 51.96	10 35 48.8	8.481247	19.7	0.1	135.5e	4	99.9	247.9	-17	1
2028 Dec 16	2 12 3.01	10 32 54.2	8.542055	19.5	0.2	130.2e	5	99.8	248.3	-17	1
2028 Dec 21	2 11 23.62	10 30 53.6	8.607818	19.4	0.2	124.9e	5	99.8	248.7	-17	1
2028 Dec 26	2 10 54.29	10 29 48.9	8.677911	19.2	0.2	119.7e	5	99.8	249.0	-17	1
2028 Dec 31	2 10 35.34	10 29 41.1	8.751701	19.0	0.2	114.6e	6	99.8	249.3	-17	1

Uranus
Equinox of J2000

Date	Right	Asc.	Declination	Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year mth d	h m s		o ' "	AU	"		o	o		o	o	o
2028 Jan 1	4 17 45.67		21 16 28.1	18.528711	3.7	5.6	146.6e	2	100.0	260.0	76	294
2028 Jan 6	4 17 5.46		21 14 53.7	18.578662	3.7	5.6	141.4e	2	100.0	260.0	76	294
2028 Jan 11	4 16 29.23		21 13 28.5	18.634665	3.7	5.6	136.1e	2	100.0	259.9	76	294
2028 Jan 16	4 15 57.34		21 12 13.6	18.696225	3.7	5.6	130.9e	2	100.0	259.9	76	293
2028 Jan 21	4 15 30.11		21 11 9.9	18.762854	3.7	5.6	125.7e	2	100.0	259.9	76	293
2028 Jan 26	4 15 7.86		21 10 18.5	18.834008	3.6	5.6	120.5e	3	100.0	259.8	76	293
2028 Jan 31	4 14 50.85		21 9 40.1	18.909073	3.6	5.6	115.4e	3	99.9	259.8	76	293
2028 Feb 5	4 14 39.26		21 9 15.1	18.987388	3.6	5.6	110.3e	3	99.9	259.8	76	293
2028 Feb 10	4 14 33.21		21 9 3.9	19.068288	3.6	5.7	105.2e	3	99.9	259.8	76	293
2028 Feb 15	4 14 32.73		21 9 6.7	19.151140	3.6	5.7	100.1e	3	99.9	259.8	76	293
2028 Feb 20	4 14 37.86		21 9 23.6	19.235334	3.6	5.7	95.1e	3	99.9	259.8	76	293
2028 Feb 25	4 14 48.62		21 9 54.6	19.320217	3.5	5.7	90.1e	3	99.9	259.9	76	293
2028 Mar 1	4 15 4.96		21 10 39.5	19.405113	3.5	5.7	85.1e	3	99.9	259.9	76	293
2028 Mar 6	4 15 26.76		21 11 37.7	19.489355	3.5	5.7	80.2e	3	99.9	259.9	76	293
2028 Mar 11	4 15 53.86		21 12 48.9	19.572322	3.5	5.7	75.3e	3	99.9	260.0	76	293
2028 Mar 16	4 16 26.06		21 14 12.3	19.653461	3.5	5.7	70.4e	3	99.9	260.0	76	294
2028 Mar 21	4 17 3.20		21 15 47.4	19.732230	3.5	5.7	65.6e	3	99.9	260.1	76	294
2028 Mar 26	4 17 45.06		21 17 33.3	19.808071	3.5	5.7	60.8e	3	99.9	260.2	76	294
2028 Mar 31	4 18 31.40		21 19 29.3	19.880437	3.4	5.7	56.1e	2	100.0	260.2	76	295
2028 Apr 5	4 19 21.91		21 21 34.4	19.948833	3.4	5.7	51.3e	2	100.0	260.3	77	296
2028 Apr 10	4 20 16.28		21 23 47.6	20.012839	3.4	5.8	46.6e	2	100.0	260.4	77	296
2028 Apr 15	4 21 14.21		21 26 8.0	20.072096	3.4	5.8	42.0e	2	100.0	260.5	77	297
2028 Apr 20	4 22 15.42		21 28 34.6	20.126240	3.4	5.8	37.3e	2	100.0	260.6	77	298
2028 Apr 25	4 23 19.58		21 31 6.4	20.174911	3.4	5.8	32.7e	2	100.0	260.7	77	298
2028 Apr 30	4 24 26.35		21 33 42.4	20.217791	3.4	5.8	28.1e	1	100.0	260.8	77	299
2028 May 5	4 25 35.35		21 36 21.7	20.254631	3.4	5.8	23.5e	1	100.0	261.0	78	300
2028 May 10	4 26 46.22		21 39 3.1	20.285260	3.4	5.8	18.9e	1	100.0	261.1	78	301
2028 May 15	4 27 58.64		21 41 46.0	20.309537	3.4	5.8	14.4e	1	100.0	261.3	78	302
2028 May 20	4 29 12.28		21 44 29.3	20.327312	3.4	5.8	9.9e	1	100.0	261.5	78	303
2028 May 25	4 30 26.77		21 47 12.2	20.338458	3.4	5.8	5.4e	0	100.0	261.9	79	304
2028 May 30	4 31 41.73		21 49 53.8	20.342901	3.4	5.8	0.9e	0	100.0	264.9	79	305
2028 Jun 4	4 32 56.78		21 52 33.4	20.340653	3.4	5.8	3.6w	0	100.0	80.7	79	306
2028 Jun 9	4 34 11.57		21 55 10.1	20.331777	3.4	5.8	8.1w	0	100.0	81.3	79	308
2028 Jun 14	4 35 25.78		21 57 43.5	20.316335	3.4	5.8	12.6w	1	100.0	81.5	79	309
2028 Jun 19	4 36 39.06		22 0 12.7	20.294392	3.4	5.8	17.1w	1	100.0	81.7	80	310
2028 Jun 24	4 37 51.06		22 2 37.2	20.266051	3.4	5.8	21.6w	1	100.0	81.9	80	311
2028 Jun 29	4 39 1.38		22 4 56.4	20.231482	3.4	5.8	26.1w	1	100.0	82.0	80	313
2028 Jul 4	4 40 9.69		22 7 9.7	20.190931	3.4	5.8	30.6w	2	100.0	82.1	80	314
2028 Jul 9	4 41 15.67		22 9 16.9	20.144661	3.4	5.8	35.1w	2	100.0	82.2	80	315
2028 Jul 14	4 42 19.01		22 11 17.3	20.092926	3.4	5.8	39.6w	2	100.0	82.3	80	316
2028 Jul 19	4 43 19.40		22 13 10.7	20.035997	3.4	5.8	44.2w	2	100.0	82.4	81	318
2028 Jul 24	4 44 16.49		22 14 56.7	19.974194	3.4	5.7	48.7w	2	100.0	82.5	81	319
2028 Jul 29	4 45 9.96		22 16 34.9	19.907915	3.4	5.7	53.3w	2	100.0	82.6	81	320
2028 Aug 3	4 45 59.53		22 18 5.2	19.837603	3.5	5.7	57.9w	3	100.0	82.7	81	321
2028 Aug 8	4 46 44.95		22 19 27.2	19.763689	3.5	5.7	62.5w	3	99.9	82.8	81	322
2028 Aug 13	4 47 25.98		22 20 40.7	19.686602	3.5	5.7	67.1w	3	99.9	82.9	81	323
2028 Aug 18	4 48 2.38		22 21 45.6	19.606800	3.5	5.7	71.8w	3	99.9	82.9	81	324
2028 Aug 23	4 48 33.88		22 22 41.6	19.524797	3.5	5.7	76.5w	3	99.9	83.0	81	325
2028 Aug 28	4 49 0.29		22 23 28.7	19.441174	3.5	5.7	81.2w	3	99.9	83.0	81	325
2028 Sep 2	4 49 21.48		22 24 6.7	19.356510	3.5	5.7	85.9w	3	99.9	83.1	81	326
2028 Sep 7	4 49 37.33		22 24 35.6	19.271361	3.6	5.7	90.7w	3	99.9	83.1	81	326
2028 Sep 12	4 49 47.74		22 24 55.2	19.186282	3.6	5.7	95.5w	3	99.9	83.1	81	326
2028 Sep 17	4 49 52.62		22 25 5.6	19.101859	3.6	5.7	100.4w	3	99.9	83.1	81	326
2028 Sep 22	4 49 51.93		22 25 6.7	19.018730	3.6	5.6	105.3w	3	99.9	83.1	81	326
2028 Sep 27	4 49 45.70		22 24 58.6	18.937552	3.6	5.6	110.2w	3	99.9	83.1	81	326
2028 Oct 2	4 49 34.02		22 24 41.3	18.858933	3.6	5.6	115.2w	3	99.9	83.1	81	326
2028 Oct 7	4 49 17.02		22 24 15.1	18.783449	3.7	5.6	120.2w	3	99.9	83.1	81	326
2028 Oct 12	4 48 54.86		22 23 40.0	18.711666	3.7	5.6	125.2w	2	100.0	83.1	81	325
2028 Oct 17	4 48 27.70		22 22 56.2	18.644165	3.7	5.6	130.2w	2	100.0	83.0	81	324
2028 Oct 22	4 47 55.82		22 22 4.2	18.581545	3.7	5.6	135.3w	2	100.0	83.0	81	324
2028 Oct 27	4 47 19.57		22 21 4.2	18.524352	3.7	5.6	140.5w	2	100.0	82.9	81	323
2028 Nov 1	4 46 39.33		22 19 56.7	18.473049	3.7	5.6	145.6w	2	100.0	82.9	81	322
2028 Nov 6	4 45 55.53		22 18 42.3	18.428048	3.7	5.6	150.8w	1	100.0	82.8	81	321
2028 Nov 11	4 45 8.59		22 17 21.7	18.389734	3.7	5.6	156.0w	1	100.0	82.7	81	320
2028 Nov 16	4 44 18.99		22 15 55.4	18.358482	3.7	5.6	161.2w	1	100.0	82.7	81	319

2028	Nov	21	4	43	27.29	22	14	24.4	18.334618	3.7	5.6	166.5w	1	100.0	82.6	81	318
2028	Nov	26	4	42	34.08	22	12	49.6	18.318360	3.7	5.6	171.7w	0	100.0	82.6	80	317
2028	Dec	1	4	41	39.98	22	11	12.1	18.309829	3.7	5.6	177.0w	0	100.0	82.9	80	316
2028	Dec	6	4	40	45.56	22	9	32.8	18.309084	3.7	5.6	177.7e	0	100.0	261.6	80	315
2028	Dec	11	4	39	51.39	22	7	52.8	18.316155	3.7	5.6	172.4e	0	100.0	262.0	80	314
2028	Dec	16	4	38	58.09	22	6	13.5	18.331027	3.7	5.6	167.1e	1	100.0	262.0	80	313
2028	Dec	21	4	38	6.29	22	4	36.0	18.353592	3.7	5.6	161.8e	1	100.0	261.9	80	312
2028	Dec	26	4	37	16.58	22	3	1.6	18.383623	3.7	5.6	156.6e	1	100.0	261.9	80	311
2028	Dec	31	4	36	29.51	22	1	31.4	18.420820	3.7	5.6	151.3e	1	100.0	261.8	80	310

Neptune
Equinox of J2000

Date	Right	Asc.	Declination	Distance	dia	mag	Elong	I	%Ill	Limb	De	Pp
year mth d	h m s		o ' "	AU	"		o			o	o	o
2028	Jan	1	0 15 14.64	0 6 7.9	29.957198	2.4	7.9	83.9e	2	100.0	246.8	-18 316
2028	Jan	6	0 15 26.50	0 7 38.7	30.042990	2.4	7.9	78.8e	2	100.0	246.9	-18 316
2028	Jan	11	0 15 41.44	0 9 29.0	30.127294	2.4	7.9	73.8e	2	100.0	247.0	-18 316
2028	Jan	16	0 15 59.36	0 11 38.1	30.209510	2.4	7.9	68.8e	2	100.0	247.2	-18 316
2028	Jan	21	0 16 20.15	0 14 5.4	30.289064	2.4	7.9	63.8e	2	100.0	247.3	-18 316
2028	Jan	26	0 16 43.71	0 16 50.0	30.365358	2.4	7.9	58.8e	2	100.0	247.5	-18 316
2028	Jan	31	0 17 9.89	0 19 50.7	30.437801	2.4	7.9	53.9e	2	100.0	247.7	-18 316
2028	Feb	5	0 17 38.52	0 23 6.5	30.505855	2.4	7.9	48.9e	1	100.0	247.9	-18 316
2028	Feb	10	0 18 9.41	0 26 35.9	30.569054	2.4	7.9	44.0e	1	100.0	248.1	-18 316
2028	Feb	15	0 18 42.35	0 30 17.6	30.627004	2.4	7.9	39.1e	1	100.0	248.4	-18 316
2028	Feb	20	0 19 17.17	0 34 10.4	30.679322	2.4	7.9	34.2e	1	100.0	248.7	-18 316
2028	Feb	25	0 19 53.67	0 38 12.9	30.725626	2.4	7.9	29.3e	1	100.0	249.1	-18 315
2028	Mar	1	0 20 31.62	0 42 23.7	30.765583	2.4	7.9	24.5e	1	100.0	249.7	-18 315
2028	Mar	6	0 21 10.79	0 46 40.9	30.798937	2.4	7.9	19.7e	1	100.0	250.6	-18 315
2028	Mar	11	0 21 50.92	0 51 3.2	30.825516	2.4	8.0	14.9e	0	100.0	251.9	-18 315
2028	Mar	16	0 22 31.81	0 55 29.1	30.845204	2.4	8.0	10.1e	0	100.0	254.5	-18 315
2028	Mar	21	0 23 13.23	0 59 57.0	30.857876	2.4	8.0	5.4e	0	100.0	261.5	-18 315
2028	Mar	26	0 23 54.95	1 4 25.6	30.863442	2.4	8.0	1.5e	0	100.0	318.8	-18 315
2028	Mar	31	0 24 36.72	1 8 53.1	30.861875	2.4	8.0	4.5w	0	100.0	48.9	-18 315
2028	Apr	5	0 25 18.30	1 13 18.0	30.853231	2.4	8.0	9.2w	0	100.0	58.1	-18 315
2028	Apr	10	0 25 59.46	1 17 38.8	30.837641	2.4	8.0	13.8w	0	100.0	61.1	-17 315
2028	Apr	15	0 26 39.98	1 21 54.3	30.815247	2.4	7.9	18.5w	1	100.0	62.6	-17 315
2028	Apr	20	0 27 19.67	1 26 3.1	30.786191	2.4	7.9	23.2w	1	100.0	63.5	-17 315
2028	Apr	25	0 27 58.29	1 30 3.7	30.750659	2.4	7.9	27.9w	1	100.0	64.1	-17 315
2028	Apr	30	0 28 35.62	1 33 54.7	30.708911	2.4	7.9	32.6w	1	100.0	64.6	-17 315
2028	May	5	0 29 11.46	1 37 34.9	30.661276	2.4	7.9	37.3w	1	100.0	64.9	-17 315
2028	May	10	0 29 45.62	1 41 3.3	30.608123	2.4	7.9	42.0w	1	100.0	65.2	-17 315
2028	May	15	0 30 17.94	1 44 18.7	30.549801	2.4	7.9	46.7w	1	100.0	65.4	-17 315
2028	May	20	0 30 48.23	1 47 20.1	30.486674	2.4	7.9	51.4w	2	100.0	65.7	-17 315
2028	May	25	0 31 16.34	1 50 6.5	30.419153	2.4	7.9	56.0w	2	100.0	65.8	-17 315
2028	May	30	0 31 42.09	1 52 36.9	30.347717	2.4	7.9	60.7w	2	100.0	66.0	-17 315
2028	Jun	4	0 32 5.35	1 54 50.6	30.272891	2.4	7.9	65.4w	2	100.0	66.1	-17 315
2028	Jun	9	0 32 26.01	1 56 46.9	30.195191	2.4	7.9	70.1w	2	100.0	66.3	-17 315
2028	Jun	14	0 32 43.97	1 58 25.4	30.115107	2.4	7.9	74.8w	2	100.0	66.4	-17 315
2028	Jun	19	0 32 59.14	1 59 45.4	30.033154	2.4	7.9	79.5w	2	100.0	66.5	-17 315
2028	Jun	24	0 33 11.41	2 0 46.4	29.949891	2.4	7.9	84.2w	2	100.0	66.7	-17 315
2028	Jun	29	0 33 20.72	2 1 28.2	29.865927	2.4	7.9	88.9w	2	100.0	66.8	-17 315
2028	Jul	4	0 33 27.05	2 1 50.8	29.781871	2.5	7.9	93.7w	2	100.0	66.9	-17 315
2028	Jul	9	0 33 30.38	2 1 54.1	29.698289	2.5	7.9	98.4w	2	100.0	67.0	-17 315
2028	Jul	14	0 33 30.72	2 1 38.3	29.615729	2.5	7.9	103.2w	2	100.0	67.2	-17 315
2028	Jul	19	0 33 28.06	2 1 3.5	29.534761	2.5	7.9	108.0w	2	100.0	67.3	-17 315
2028	Jul	24	0 33 22.45	2 0 10.0	29.455985	2.5	7.9	112.8w	2	100.0	67.4	-17 315
2028	Jul	29	0 33 13.93	1 58 58.3	29.380016	2.5	7.8	117.6w	2	100.0	67.6	-17 315
2028	Aug	3	0 33 2.62	1 57 29.3	29.307415	2.5	7.8	122.4w	2	100.0	67.8	-17 315
2028	Aug	8	0 32 48.63	1 55 43.8	29.238685	2.5	7.8	127.3w	2	100.0	67.9	-17 315
2028	Aug	13	0 32 32.09	1 53 42.6	29.174316	2.5	7.8	132.1w	1	100.0	68.1	-17 315
2028	Aug	18	0 32 13.12	1 51 26.7	29.114805	2.5	7.8	137.0w	1	100.0	68.4	-17 315
2028	Aug	23	0 31 51.90	1 48 57.3	29.060653	2.5	7.8	141.9w	1	100.0	68.7	-17 315
2028	Aug	28	0 31 28.63	1 46 15.9	29.012319	2.5	7.8	146.9w	1	100.0	69.1	-17 315
2028	Sep	2	0 31 3.55	1 43 24.0	28.970169	2.5	7.8	151.8w	1	100.0	69.6	-17 315
2028	Sep	7	0 30 36.89	1 40 23.2	28.934515	2.5	7.8	156.8w	1	100.0	70.3	-17 315
2028	Sep	12	0 30 8.88	1 37 14.9	28.905647	2.5	7.8	161.7w	1	100.0	71.3	-17 315

2028 Sep 17	0 29 39.77	1 34 1.0	28.883842	2.5	7.8 166.7w	0 100.0 73.1 -17 315
2028 Sep 22	0 29 9.86	1 30 43.2	28.869343	2.5	7.8 171.7w	0 100.0 77.1 -17 315
2028 Sep 27	0 28 39.44	1 27 23.7	28.862295	2.5	7.8 176.5w	0 100.0 92.4 -17 315
2028 Oct 2	0 28 8.81	1 24 4.4	28.862747	2.5	7.8 177.6e	0 100.0 208.6 -17 315
2028 Oct 7	0 27 38.28	1 20 47.0	28.870702	2.5	7.8 172.9e	0 100.0 234.6 -17 315
2028 Oct 12	0 27 8.11	1 17 33.5	28.886134	2.5	7.8 167.9e	0 100.0 239.7 -17 315
2028 Oct 17	0 26 38.62	1 14 25.8	28.908989	2.5	7.8 162.8e	1 100.0 241.9 -17 315
2028 Oct 22	0 26 10.10	1 11 25.8	28.939138	2.5	7.8 157.7e	1 100.0 243.0 -17 315
2028 Oct 27	0 25 42.86	1 8 35.5	28.976337	2.5	7.8 152.6e	1 100.0 243.8 -17 315
2028 Nov 1	0 25 17.17	1 5 56.5	29.020276	2.5	7.8 147.5e	1 100.0 244.4 -17 315
2028 Nov 6	0 24 53.29	1 3 30.3	29.070614	2.5	7.8 142.4e	1 100.0 244.8 -17 315
2028 Nov 11	0 24 31.43	1 1 18.4	29.126993	2.5	7.8 137.3e	1 100.0 245.1 -18 315
2028 Nov 16	0 24 11.85	0 59 22.2	29.189016	2.5	7.8 132.2e	1 100.0 245.3 -18 315
2028 Nov 21	0 23 54.75	0 57 43.1	29.256196	2.5	7.8 127.1e	2 100.0 245.6 -18 315
2028 Nov 26	0 23 40.33	0 56 22.1	29.327966	2.5	7.8 121.9e	2 100.0 245.8 -18 315
2028 Dec 1	0 23 28.73	0 55 20.1	29.403738	2.5	7.8 116.8e	2 100.0 245.9 -18 315
2028 Dec 6	0 23 20.08	0 54 37.7	29.482930	2.5	7.9 111.7e	2 100.0 246.1 -18 315
2028 Dec 11	0 23 14.46	0 54 15.4	29.564958	2.5	7.9 106.6e	2 100.0 246.2 -18 315
2028 Dec 16	0 23 11.98	0 54 13.8	29.649200	2.5	7.9 101.5e	2 100.0 246.4 -18 315
2028 Dec 21	0 23 12.69	0 54 33.0	29.734969	2.5	7.9 96.4e	2 100.0 246.5 -18 315
2028 Dec 26	0 23 16.63	0 55 13.1	29.821562	2.5	7.9 91.4e	2 100.0 246.6 -18 315
2028 Dec 31	0 23 23.76	0 56 13.9	29.908304	2.4	7.9 86.3e	2 100.0 246.8 -18 315