

Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
12/31/2022	18:40:19.378	-23:06:52.65	0.9833615	1951.74
01/01/2023	18:44:44.504	-23:02:23.25	0.9833367	1951.79
01/02/2023	18:49:09.314	-22:57:26.27	0.9833176	1951.83
01/03/2023	18:53:33.779	-22:52:01.86	0.9833042	1951.86
01/04/2023	18:57:57.871	-22:46:10.19	0.9832970	1951.87
01/05/2023	19:02:21.562	-22:39:51.46	0.9832958	1951.87
01/06/2023	19:06:44.827	-22:33:05.86	0.9833010	1951.86
01/07/2023	19:11:07.639	-22:25:53.57	0.9833124	1951.84
01/08/2023	19:15:29.974	-22:18:14.81	0.9833302	1951.80
01/09/2023	19:19:51.809	-22:10:09.80	0.9833543	1951.76
01/10/2023	19:24:13.120	-22:01:38.76	0.9833845	1951.70
01/11/2023	19:28:33.886	-21:52:41.91	0.9834209	1951.62
01/12/2023	19:32:54.087	-21:43:19.51	0.9834632	1951.54
01/13/2023	19:37:13.704	-21:33:31.79	0.9835113	1951.45
01/14/2023	19:41:32.718	-21:23:19.02	0.9835649	1951.34
01/15/2023	19:45:51.111	-21:12:41.47	0.9836239	1951.22
01/16/2023	19:50:08.868	-21:01:39.42	0.9836879	1951.09
01/17/2023	19:54:25.971	-20:50:13.17	0.9837566	1950.96
01/18/2023	19:58:42.402	-20:38:23.03	0.9838297	1950.81
01/19/2023	20:02:58.146	-20:26:09.34	0.9839069	1950.66
01/20/2023	20:07:13.180	-20:13:32.42	0.9839879	1950.50
01/21/2023	20:11:27.486	-20:00:32.65	0.9840723	1950.33
01/22/2023	20:15:41.041	-19:47:10.39	0.9841600	1950.16
01/23/2023	20:19:53.826	-19:33:26.00	0.9842509	1949.98
01/24/2023	20:24:05.824	-19:19:19.85	0.9843450	1949.79
01/25/2023	20:28:17.021	-19:04:52.33	0.9844426	1949.60
01/26/2023	20:32:27.408	-18:50:03.81	0.9845438	1949.40
01/27/2023	20:36:36.977	-18:34:54.68	0.9846490	1949.19
01/28/2023	20:40:45.724	-18:19:25.35	0.9847583	1948.97
01/29/2023	20:44:53.645	-18:03:36.23	0.9848721	1948.75
01/30/2023	20:49:00.738	-17:47:27.71	0.9849906	1948.51
01/31/2023	20:53:07.001	-17:31:00.20	0.9851140	1948.27
02/01/2023	20:57:12.434	-17:14:14.12	0.9852426	1948.02
02/02/2023	21:01:17.039	-16:57:09.87	0.9853764	1947.75
02/03/2023	21:05:20.817	-16:39:47.86	0.9855155	1947.48
02/04/2023	21:09:23.773	-16:22:08.49	0.9856601	1947.19
02/05/2023	21:13:25.910	-16:04:12.16	0.9858102	1946.89
02/06/2023	21:17:27.234	-15:45:59.26	0.9859657	1946.59
02/07/2023	21:21:27.754	-15:27:30.19	0.9861268	1946.27
02/08/2023	21:25:27.478	-15:08:45.34	0.9862932	1945.94
02/09/2023	21:29:26.415	-14:49:45.10	0.9864649	1945.60
02/10/2023	21:33:24.577	-14:30:29.85	0.9866417	1945.25
02/11/2023	21:37:21.975	-14:11:00.00	0.9868234	1944.90
02/12/2023	21:41:18.620	-13:51:15.92	0.9870098	1944.53
02/13/2023	21:45:14.526	-13:31:18.02	0.9872006	1944.15
02/14/2023	21:49:09.704	-13:11:06.69	0.9873954	1943.77
02/15/2023	21:53:04.165	-12:50:42.35	0.9875939	1943.38
02/16/2023	21:56:57.921	-12:30:05.40	0.9877958	1942.98
02/17/2023	22:00:50.978	-12:09:16.28	0.9880006	1942.58
02/18/2023	22:04:43.345	-11:48:15.41	0.9882079	1942.17

## Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
02/19/2023	22:08:35.028	-11:27:03.25	0.9884174	1941.76
02/20/2023	22:12:26.034	-11:05:40.22	0.9886288	1941.34
02/21/2023	22:16:16.373	-10:44:06.76	0.9888421	1940.93
02/22/2023	22:20:06.054	-10:22:23.30	0.9890571	1940.50
02/23/2023	22:23:55.091	-10:00:30.28	0.9892740	1940.08
02/24/2023	22:27:43.499	-9:38:28.12	0.9894929	1939.65
02/25/2023	22:31:31.291	-9:16:17.26	0.9897140	1939.22
02/26/2023	22:35:18.485	-8:53:58.11	0.9899375	1938.78
02/27/2023	22:39:05.095	-8:31:31.10	0.9901637	1938.33
02/28/2023	22:42:51.139	-8:08:56.65	0.9903927	1937.89
03/01/2023	22:46:36.634	-7:46:15.17	0.9906247	1937.43
03/02/2023	22:50:21.599	-7:23:27.05	0.9908599	1936.97
03/03/2023	22:54:06.051	-7:00:32.70	0.9910984	1936.51
03/04/2023	22:57:50.012	-6:37:32.51	0.9913403	1936.03
03/05/2023	23:01:33.500	-6:14:26.85	0.9915857	1935.55
03/06/2023	23:05:16.537	-5:51:16.10	0.9918347	1935.07
03/07/2023	23:08:59.146	-5:28:00.63	0.9920872	1934.58
03/08/2023	23:12:41.349	-5:04:40.79	0.9923433	1934.08
03/09/2023	23:16:23.169	-4:41:16.96	0.9926029	1933.57
03/10/2023	23:20:04.631	-4:17:49.47	0.9928659	1933.06
03/11/2023	23:23:45.760	-3:54:18.68	0.9931322	1932.54
03/12/2023	23:27:26.578	-3:30:44.93	0.9934014	1932.02
03/13/2023	23:31:07.110	-3:07:08.57	0.9936735	1931.49
03/14/2023	23:34:47.378	-2:43:29.96	0.9939480	1930.95
03/15/2023	23:38:27.403	-2:19:49.46	0.9942246	1930.42
03/16/2023	23:42:07.205	-1:56:07.43	0.9945029	1929.88
03/17/2023	23:45:46.803	-1:32:24.26	0.9947824	1929.34
03/18/2023	23:49:26.213	-1:08:40.32	0.9950629	1928.79
03/19/2023	23:53:05.453	-0:44:56.02	0.9953437	1928.25
03/20/2023	23:56:44.538	-0:21:11.74	0.9956247	1927.70
03/21/2023	0:00:23.486	0:02:32.12	0.9959054	1927.16
03/22/2023	0:04:02.314	0:26:15.19	0.9961858	1926.62
03/23/2023	0:07:41.041	0:49:57.06	0.9964657	1926.08
03/24/2023	0:11:19.685	1:13:37.36	0.9967452	1925.54
03/25/2023	0:14:58.262	1:37:15.69	0.9970243	1925.00
03/26/2023	0:18:36.792	2:00:51.68	0.9973032	1924.46
03/27/2023	0:22:15.291	2:24:24.94	0.9975821	1923.92
03/28/2023	0:25:53.777	2:47:55.11	0.9978610	1923.38
03/29/2023	0:29:32.269	3:11:21.81	0.9981403	1922.84
03/30/2023	0:33:10.785	3:34:44.67	0.9984200	1922.31
03/31/2023	0:36:49.344	3:58:03.36	0.9987003	1921.77
04/01/2023	0:40:27.967	4:21:17.52	0.9989814	1921.23
04/02/2023	0:44:06.674	4:44:26.80	0.9992634	1920.68
04/03/2023	0:47:45.485	5:07:30.87	0.9995463	1920.14
04/04/2023	0:51:24.422	5:30:29.39	0.9998303	1919.59
04/05/2023	0:55:03.507	5:53:22.06	1.0001154	1919.05
04/06/2023	0:58:42.763	6:16:08.54	1.0004017	1918.50
04/07/2023	1:02:22.212	6:38:48.53	1.0006891	1917.95
04/08/2023	1:06:01.878	7:01:21.72	1.0009775	1917.39
04/09/2023	1:09:41.783	7:23:47.81	1.0012669	1916.84

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Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
04/10/2023	1:13:21.947	7:46:06.48	1.0015570	1916.29
04/11/2023	1:17:02.391	8:08:17.42	1.0018476	1915.73
04/12/2023	1:20:43.134	8:30:20.31	1.0021383	1915.17
04/13/2023	1:24:24.191	8:52:14.81	1.0024288	1914.62
04/14/2023	1:28:05.578	9:14:00.58	1.0027186	1914.07
04/15/2023	1:31:47.310	9:35:37.28	1.0030074	1913.51
04/16/2023	1:35:29.401	9:57:04.53	1.0032946	1912.97
04/17/2023	1:39:11.865	10:18:22.00	1.0035799	1912.42
04/18/2023	1:42:54.715	10:39:29.31	1.0038630	1911.88
04/19/2023	1:46:37.964	11:00:26.12	1.0041435	1911.35
04/20/2023	1:50:21.624	11:21:12.06	1.0044213	1910.82
04/21/2023	1:54:05.705	11:41:46.79	1.0046963	1910.30
04/22/2023	1:57:50.218	12:02:09.95	1.0049684	1909.78
04/23/2023	2:01:35.169	12:22:21.17	1.0052378	1909.27
04/24/2023	2:05:20.569	12:42:20.12	1.0055044	1908.76
04/25/2023	2:09:06.423	13:02:06.43	1.0057684	1908.26
04/26/2023	2:12:52.741	13:21:39.78	1.0060301	1907.77
04/27/2023	2:16:39.531	13:40:59.81	1.0062894	1907.27
04/28/2023	2:20:26.800	14:00:06.20	1.0065467	1906.79
04/29/2023	2:24:14.559	14:18:58.62	1.0068020	1906.30
04/30/2023	2:28:02.816	14:37:36.74	1.0070555	1905.82
05/01/2023	2:31:51.581	14:56:00.27	1.0073074	1905.35
05/02/2023	2:35:40.863	15:14:08.88	1.0075578	1904.87
05/03/2023	2:39:30.671	15:32:02.28	1.0078069	1904.40
05/04/2023	2:43:21.017	15:49:40.19	1.0080547	1903.93
05/05/2023	2:47:11.910	16:07:02.30	1.0083014	1903.47
05/06/2023	2:51:03.361	16:24:08.36	1.0085470	1903.00
05/07/2023	2:54:55.377	16:40:58.09	1.0087915	1902.54
05/08/2023	2:58:47.967	16:57:31.21	1.0090348	1902.08
05/09/2023	3:02:41.137	17:13:47.44	1.0092768	1901.63
05/10/2023	3:06:34.889	17:29:46.51	1.0095171	1901.18
05/11/2023	3:10:29.229	17:45:28.13	1.0097554	1900.73
05/12/2023	3:14:24.156	18:00:51.98	1.0099914	1900.28
05/13/2023	3:18:19.671	18:15:57.78	1.0102247	1899.84
05/14/2023	3:22:15.774	18:30:45.20	1.0104548	1899.41
05/15/2023	3:26:12.465	18:45:13.97	1.0106814	1898.99
05/16/2023	3:30:09.741	18:59:23.77	1.0109041	1898.57
05/17/2023	3:34:07.597	19:13:14.32	1.0111225	1898.16
05/18/2023	3:38:06.028	19:26:45.33	1.0113365	1897.76
05/19/2023	3:42:05.026	19:39:56.52	1.0115458	1897.36
05/20/2023	3:46:04.581	19:52:47.62	1.0117504	1896.98
05/21/2023	3:50:04.681	20:05:18.35	1.0119501	1896.60
05/22/2023	3:54:05.314	20:17:28.44	1.0121452	1896.24
05/23/2023	3:58:06.466	20:29:17.64	1.0123355	1895.88
05/24/2023	4:02:08.125	20:40:45.68	1.0125212	1895.53
05/25/2023	4:06:10.278	20:51:52.32	1.0127025	1895.20
05/26/2023	4:10:12.912	21:02:37.32	1.0128795	1894.86
05/27/2023	4:14:16.013	21:13:00.45	1.0130524	1894.54
05/28/2023	4:18:19.569	21:23:01.50	1.0132213	1894.23
05/29/2023	4:22:23.568	21:32:40.26	1.0133864	1893.92

## Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
05/30/2023	4:26:27.996	21:41:56.52	1.0135481	1893.61
05/31/2023	4:30:32.843	21:50:50.11	1.0137063	1893.32
06/01/2023	4:34:38.095	21:59:20.85	1.0138614	1893.03
06/02/2023	4:38:43.740	22:07:28.58	1.0140136	1892.75
06/03/2023	4:42:49.766	22:15:13.16	1.0141629	1892.47
06/04/2023	4:46:56.162	22:22:34.44	1.0143096	1892.19
06/05/2023	4:51:02.911	22:29:32.30	1.0144536	1891.92
06/06/2023	4:55:10.000	22:36:06.60	1.0145950	1891.66
06/07/2023	4:59:17.412	22:42:17.21	1.0147336	1891.40
06/08/2023	5:03:25.129	22:48:03.99	1.0148691	1891.15
06/09/2023	5:07:33.135	22:53:26.80	1.0150013	1890.90
06/10/2023	5:11:41.412	22:58:25.52	1.0151298	1890.66
06/11/2023	5:15:49.942	23:03:00.01	1.0152542	1890.43
06/12/2023	5:19:58.705	23:07:10.16	1.0153741	1890.21
06/13/2023	5:24:07.681	23:10:55.87	1.0154892	1889.99
06/14/2023	5:28:16.847	23:14:17.05	1.0155992	1889.79
06/15/2023	5:32:26.178	23:17:13.63	1.0157038	1889.60
06/16/2023	5:36:35.648	23:19:45.54	1.0158028	1889.41
06/17/2023	5:40:45.231	23:21:52.74	1.0158960	1889.24
06/18/2023	5:44:54.896	23:23:35.17	1.0159833	1889.08
06/19/2023	5:49:04.615	23:24:52.80	1.0160648	1888.92
06/20/2023	5:53:14.360	23:25:45.61	1.0161404	1888.78
06/21/2023	5:57:24.102	23:26:13.58	1.0162102	1888.65
06/22/2023	6:01:33.813	23:26:16.71	1.0162742	1888.53
06/23/2023	6:05:43.466	23:25:54.99	1.0163327	1888.43
06/24/2023	6:09:53.036	23:25:08.46	1.0163858	1888.33
06/25/2023	6:14:02.496	23:23:57.14	1.0164336	1888.24
06/26/2023	6:18:11.824	23:22:21.07	1.0164764	1888.16
06/27/2023	6:22:20.997	23:20:20.30	1.0165144	1888.09
06/28/2023	6:26:29.991	23:17:54.91	1.0165478	1888.03
06/29/2023	6:30:38.787	23:15:04.98	1.0165769	1887.97
06/30/2023	6:34:47.363	23:11:50.59	1.0166020	1887.93
07/01/2023	6:38:55.702	23:08:11.86	1.0166233	1887.89
07/02/2023	6:43:03.784	23:04:08.89	1.0166410	1887.85
07/03/2023	6:47:11.590	22:59:41.81	1.0166554	1887.83
07/04/2023	6:51:19.103	22:54:50.75	1.0166666	1887.81
07/05/2023	6:55:26.306	22:49:35.81	1.0166746	1887.79
07/06/2023	6:59:33.180	22:43:57.12	1.0166794	1887.78
07/07/2023	7:03:39.713	22:37:54.78	1.0166806	1887.78
07/08/2023	7:07:45.889	22:31:28.91	1.0166781	1887.78
07/09/2023	7:11:51.695	22:24:39.64	1.0166714	1887.80
07/10/2023	7:15:57.116	22:17:27.12	1.0166604	1887.82
07/11/2023	7:20:02.138	22:09:51.50	1.0166446	1887.85
07/12/2023	7:24:06.744	22:01:52.96	1.0166237	1887.89
07/13/2023	7:28:10.917	21:53:31.69	1.0165975	1887.93
07/14/2023	7:32:14.638	21:44:47.87	1.0165657	1887.99
07/15/2023	7:36:17.890	21:35:41.73	1.0165282	1888.06
07/16/2023	7:40:20.653	21:26:13.47	1.0164848	1888.14
07/17/2023	7:44:22.910	21:16:23.30	1.0164355	1888.24
07/18/2023	7:48:24.644	21:06:11.47	1.0163802	1888.34

Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
07/19/2023	7:52:25.840	20:55:38.19	1.0163190	1888.45
07/20/2023	7:56:26.483	20:44:43.71	1.0162520	1888.58
07/21/2023	8:00:26.560	20:33:28.27	1.0161791	1888.71
07/22/2023	8:04:26.060	20:21:52.11	1.0161006	1888.86
07/23/2023	8:08:24.973	20:09:55.50	1.0160165	1889.01
07/24/2023	8:12:23.290	19:57:38.69	1.0159272	1889.18
07/25/2023	8:16:21.004	19:45:01.95	1.0158328	1889.36
07/26/2023	8:20:18.111	19:32:05.56	1.0157336	1889.54
07/27/2023	8:24:14.605	19:18:49.79	1.0156299	1889.73
07/28/2023	8:28:10.483	19:05:14.93	1.0155219	1889.93
07/29/2023	8:32:05.744	18:51:21.27	1.0154101	1890.14
07/30/2023	8:36:00.387	18:37:09.10	1.0152948	1890.36
07/31/2023	8:39:54.411	18:22:38.71	1.0151762	1890.58
08/01/2023	8:43:47.817	18:07:50.38	1.0150546	1890.80
08/02/2023	8:47:40.608	17:52:44.40	1.0149303	1891.04
08/03/2023	8:51:32.787	17:37:21.00	1.0148033	1891.27
08/04/2023	8:55:24.363	17:21:40.46	1.0146735	1891.51
08/05/2023	8:59:15.344	17:05:43.02	1.0145409	1891.76
08/06/2023	9:03:05.738	16:49:28.93	1.0144051	1892.01
08/07/2023	9:06:55.554	16:32:58.46	1.0142659	1892.27
08/08/2023	9:10:44.799	16:16:11.91	1.0141230	1892.54
08/09/2023	9:14:33.477	15:59:09.56	1.0139761	1892.82
08/10/2023	9:18:21.594	15:41:51.73	1.0138250	1893.10
08/11/2023	9:22:09.152	15:24:18.73	1.0136695	1893.39
08/12/2023	9:25:56.157	15:06:30.87	1.0135093	1893.69
08/13/2023	9:29:42.610	14:48:28.47	1.0133443	1894.00
08/14/2023	9:33:28.517	14:30:11.85	1.0131744	1894.31
08/15/2023	9:37:13.883	14:11:41.35	1.0129996	1894.64
08/16/2023	9:40:58.712	13:52:57.27	1.0128198	1894.98
08/17/2023	9:44:43.012	13:33:59.96	1.0126350	1895.32
08/18/2023	9:48:26.790	13:14:49.74	1.0124453	1895.68
08/19/2023	9:52:10.055	12:55:26.94	1.0122508	1896.04
08/20/2023	9:55:52.816	12:35:51.88	1.0120516	1896.41
08/21/2023	9:59:35.083	12:16:04.90	1.0118478	1896.80
08/22/2023	10:03:16.868	11:56:06.34	1.0116398	1897.19
08/23/2023	10:06:58.183	11:35:56.52	1.0114278	1897.58
08/24/2023	10:10:39.041	11:15:35.78	1.0112119	1897.99
08/25/2023	10:14:19.454	10:55:04.46	1.0109927	1898.40
08/26/2023	10:17:59.436	10:34:22.89	1.0107703	1898.82
08/27/2023	10:21:39.002	10:13:31.41	1.0105453	1899.24
08/28/2023	10:25:18.166	9:52:30.35	1.0103179	1899.67
08/29/2023	10:28:56.943	9:31:20.03	1.0100887	1900.10
08/30/2023	10:32:35.352	9:10:00.75	1.0098578	1900.53
08/31/2023	10:36:13.412	8:48:32.81	1.0096256	1900.97
09/01/2023	10:39:51.146	8:26:56.47	1.0093922	1901.41
09/02/2023	10:43:28.576	8:05:12.00	1.0091575	1901.85
09/03/2023	10:47:05.728	7:43:19.69	1.0089215	1902.30
09/04/2023	10:50:42.624	7:21:19.80	1.0086840	1902.75
09/05/2023	10:54:19.285	6:59:12.64	1.0084448	1903.20
09/06/2023	10:57:55.729	6:36:58.52	1.0082036	1903.65

Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
09/07/2023	11:01:31.974	6:14:37.77	1.0079602	1904.11
09/08/2023	11:05:08.037	5:52:10.70	1.0077143	1904.58
09/09/2023	11:08:43.933	5:29:37.66	1.0074659	1905.05
09/10/2023	11:12:19.680	5:06:58.97	1.0072147	1905.52
09/11/2023	11:15:55.293	4:44:14.99	1.0069606	1906.00
09/12/2023	11:19:30.788	4:21:26.05	1.0067036	1906.49
09/13/2023	11:23:06.183	3:58:32.49	1.0064435	1906.98
09/14/2023	11:26:41.495	3:35:34.67	1.0061803	1907.48
09/15/2023	11:30:16.740	3:12:32.92	1.0059140	1907.99
09/16/2023	11:33:51.937	2:49:27.60	1.0056446	1908.50
09/17/2023	11:37:27.104	2:26:19.06	1.0053724	1909.01
09/18/2023	11:41:02.258	2:03:07.64	1.0050972	1909.54
09/19/2023	11:44:37.419	1:39:53.70	1.0048195	1910.06
09/20/2023	11:48:12.604	1:16:37.60	1.0045392	1910.60
09/21/2023	11:51:47.832	0:53:19.69	1.0042568	1911.13
09/22/2023	11:55:23.121	0:30:00.33	1.0039726	1911.67
09/23/2023	11:58:58.488	0:06:39.88	1.0036868	1912.22
09/24/2023	12:02:33.953	-0:16:41.31	1.0034000	1912.77
09/25/2023	12:06:09.533	-0:40:02.87	1.0031124	1913.31
09/26/2023	12:09:45.249	-1:03:24.47	1.0028246	1913.86
09/27/2023	12:13:21.123	-1:26:45.77	1.0025369	1914.41
09/28/2023	12:16:57.178	-1:50:06.45	1.0022497	1914.96
09/29/2023	12:20:33.441	-2:13:26.22	1.0019633	1915.51
09/30/2023	12:24:09.939	-2:36:44.77	1.0016778	1916.05
10/01/2023	12:27:46.700	-3:00:01.80	1.0013932	1916.60
10/02/2023	12:31:23.750	-3:23:17.02	1.0011096	1917.14
10/03/2023	12:35:01.113	-3:46:30.11	1.0008269	1917.68
10/04/2023	12:38:38.810	-4:09:40.73	1.0005447	1918.22
10/05/2023	12:42:16.863	-4:32:48.53	1.0002630	1918.76
10/06/2023	12:45:55.291	-4:55:53.15	0.9999816	1919.30
10/07/2023	12:49:34.113	-5:18:54.24	0.9997002	1919.84
10/08/2023	12:53:13.348	-5:41:51.42	0.9994187	1920.39
10/09/2023	12:56:53.013	-6:04:44.31	0.9991370	1920.93
10/10/2023	13:00:33.127	-6:27:32.54	0.9988548	1921.47
10/11/2023	13:04:13.708	-6:50:15.73	0.9985722	1922.01
10/12/2023	13:07:54.774	-7:12:53.47	0.9982891	1922.56
10/13/2023	13:11:36.342	-7:35:25.40	0.9980053	1923.10
10/14/2023	13:15:18.429	-7:57:51.11	0.9977208	1923.65
10/15/2023	13:19:01.051	-8:20:10.21	0.9974357	1924.20
10/16/2023	13:22:44.226	-8:42:22.29	0.9971500	1924.75
10/17/2023	13:26:27.968	-9:04:26.97	0.9968638	1925.31
10/18/2023	13:30:12.292	-9:26:23.84	0.9965773	1925.86
10/19/2023	13:33:57.211	-9:48:12.48	0.9962906	1926.41
10/20/2023	13:37:42.738	-10:09:52.49	0.9960040	1926.97
10/21/2023	13:41:28.885	-10:31:23.46	0.9957180	1927.52
10/22/2023	13:45:15.664	-10:52:44.97	0.9954327	1928.07
10/23/2023	13:49:03.089	-11:13:56.62	0.9951487	1928.63
10/24/2023	13:52:51.172	-11:34:58.00	0.9948664	1929.17
10/25/2023	13:56:39.930	-11:55:48.73	0.9945862	1929.72
10/26/2023	14:00:29.380	-12:16:28.43	0.9943084	1930.25

Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
10/27/2023	14:04:19.541	-12:36:56.72	0.9940336	1930.79
10/28/2023	14:08:10.431	-12:57:13.26	0.9937618	1931.32
10/29/2023	14:12:02.070	-13:17:17.69	0.9934934	1931.84
10/30/2023	14:15:54.475	-13:37:09.65	0.9932283	1932.35
10/31/2023	14:19:47.661	-13:56:48.77	0.9929667	1932.86
11/01/2023	14:23:41.642	-14:16:14.68	0.9927083	1933.37
11/02/2023	14:27:36.428	-14:35:26.99	0.9924531	1933.86
11/03/2023	14:31:32.030	-14:54:25.29	0.9922010	1934.35
11/04/2023	14:35:28.457	-15:13:09.18	0.9919517	1934.84
11/05/2023	14:39:25.716	-15:31:38.25	0.9917051	1935.32
11/06/2023	14:43:23.816	-15:49:52.08	0.9914610	1935.80
11/07/2023	14:47:22.761	-16:07:50.26	0.9912192	1936.27
11/08/2023	14:51:22.558	-16:25:32.37	0.9909797	1936.74
11/09/2023	14:55:23.211	-16:42:57.99	0.9907423	1937.20
11/10/2023	14:59:24.723	-17:00:06.71	0.9905068	1937.66
11/11/2023	15:03:27.095	-17:16:58.12	0.9902732	1938.12
11/12/2023	15:07:30.328	-17:33:31.79	0.9900413	1938.57
11/13/2023	15:11:34.420	-17:49:47.32	0.9898111	1939.03
11/14/2023	15:15:39.369	-18:05:44.29	0.9895827	1939.47
11/15/2023	15:19:45.169	-18:21:22.30	0.9893559	1939.92
11/16/2023	15:23:51.811	-18:36:40.95	0.9891310	1940.36
11/17/2023	15:27:59.286	-18:51:39.81	0.9889082	1940.80
11/18/2023	15:32:07.585	-19:06:18.49	0.9886876	1941.23
11/19/2023	15:36:16.696	-19:20:36.59	0.9884697	1941.66
11/20/2023	15:40:26.608	-19:34:33.73	0.9882547	1942.08
11/21/2023	15:44:37.313	-19:48:09.51	0.9880431	1942.49
11/22/2023	15:48:48.801	-20:01:23.59	0.9878353	1942.90
11/23/2023	15:53:01.067	-20:14:15.60	0.9876317	1943.30
11/24/2023	15:57:14.101	-20:26:45.23	0.9874326	1943.70
11/25/2023	16:01:27.898	-20:38:52.15	0.9872384	1944.08
11/26/2023	16:05:42.450	-20:50:36.07	0.9870493	1944.45
11/27/2023	16:09:57.745	-21:01:56.67	0.9868655	1944.81
11/28/2023	16:14:13.773	-21:12:53.67	0.9866870	1945.16
11/29/2023	16:18:30.519	-21:23:26.76	0.9865140	1945.51
11/30/2023	16:22:47.967	-21:33:35.65	0.9863463	1945.84
12/01/2023	16:27:06.101	-21:43:20.03	0.9861839	1946.16
12/02/2023	16:31:24.903	-21:52:39.62	0.9860266	1946.47
12/03/2023	16:35:44.353	-22:01:34.12	0.9858742	1946.77
12/04/2023	16:40:04.431	-22:10:03.25	0.9857267	1947.06
12/05/2023	16:44:25.114	-22:18:06.73	0.9855837	1947.34
12/06/2023	16:48:46.381	-22:25:44.31	0.9854452	1947.62
12/07/2023	16:53:08.206	-22:32:55.74	0.9853109	1947.88
12/08/2023	16:57:30.565	-22:39:40.76	0.9851807	1948.14
12/09/2023	17:01:53.430	-22:45:59.15	0.9850544	1948.39
12/10/2023	17:06:16.773	-22:51:50.71	0.9849317	1948.63
12/11/2023	17:10:40.564	-22:57:15.23	0.9848126	1948.87
12/12/2023	17:15:04.770	-23:02:12.52	0.9846969	1949.10
12/13/2023	17:19:29.355	-23:06:42.43	0.9845844	1949.32
12/14/2023	17:23:54.282	-23:10:44.79	0.9844752	1949.53
12/15/2023	17:28:19.513	-23:14:19.46	0.9843692	1949.74

## Sun - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec
12/16/2023	17:32:45.007	-23:17:26.30	0.9842668	1949.95
12/17/2023	17:37:10.725	-23:20:05.20	0.9841679	1950.14
12/18/2023	17:41:36.630	-23:22:16.05	0.9840730	1950.33
12/19/2023	17:46:02.686	-23:23:58.77	0.9839823	1950.51
12/20/2023	17:50:28.860	-23:25:13.29	0.9838963	1950.68
12/21/2023	17:54:55.119	-23:25:59.58	0.9838153	1950.84
12/22/2023	17:59:21.434	-23:26:17.62	0.9837396	1950.99
12/23/2023	18:03:47.772	-23:26:07.42	0.9836696	1951.13
12/24/2023	18:08:14.105	-23:25:28.98	0.9836055	1951.26
12/25/2023	18:12:40.400	-23:24:22.34	0.9835476	1951.37
12/26/2023	18:17:06.626	-23:22:47.55	0.9834959	1951.48
12/27/2023	18:21:32.753	-23:20:44.64	0.9834506	1951.57
12/28/2023	18:25:58.749	-23:18:13.68	0.9834117	1951.64
12/29/2023	18:30:24.584	-23:15:14.73	0.9833791	1951.71
12/30/2023	18:34:50.227	-23:11:47.86	0.9833528	1951.76
12/31/2023	18:39:15.649	-23:07:53.15	0.9833325	1951.80
01/01/2024	18:43:40.819	-23:03:30.70	0.9833183	1951.83
01/02/2024	18:48:05.710	-22:58:40.63	0.9833098	1951.85



Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
12/31/2022	1:19:29.631	6:24:27.74	384755.024	56.99061	1863.56	60.1
01/01/2023	2:06:36.647	12:02:57.59	389579.972	56.28472	1840.48	69.9
01/02/2023	2:54:33.766	17:04:20.88	393844.376	55.67523	1820.55	78.7
01/03/2023	3:44:01.684	21:17:09.56	397480.791	55.16583	1803.89	86.2
01/04/2023	4:35:17.252	24:30:30.19	400478.319	54.75289	1790.39	92.1
01/05/2023	5:28:07.490	26:34:55.54	402855.383	54.42979	1779.83	96.5
01/06/2023	6:21:49.342	27:23:58.99	404634.531	54.19045	1772.00	99.0
01/07/2023	7:15:19.914	26:55:48.00	405822.636	54.03178	1766.81	99.8
01/08/2023	8:07:35.655	25:13:40.32	406398.800	53.95518	1764.31	98.9
01/09/2023	8:57:51.484	22:25:16.09	406311.189	53.96681	1764.69	96.2
01/10/2023	9:45:50.876	18:40:52.57	405482.913	54.07706	1768.29	91.8
01/11/2023	10:31:45.365	14:11:35.95	403826.022	54.29895	1775.55	86.0
01/12/2023	11:16:08.267	9:08:11.50	401261.924	54.64596	1786.90	78.8
01/13/2023	11:59:47.989	3:40:44.17	397746.058	55.12904	1802.69	70.4
01/14/2023	12:43:43.551	-2:00:55.93	393294.259	55.75311	1823.10	61.1
01/15/2023	13:29:02.277	-7:46:12.32	388007.879	56.51279	1847.93	51.1
01/16/2023	14:16:57.778	-13:22:13.12	382093.818	57.38757	1876.54	40.7
01/17/2023	15:08:44.639	-18:32:08.08	375874.327	58.33724	1907.59	30.3
01/18/2023	16:05:24.251	-22:53:50.18	369779.926	59.29880	1939.02	20.6
01/19/2023	17:07:16.963	-26:00:29.43	364318.449	60.18784	1968.09	12.1
01/20/2023	18:13:27.088	-27:25:03.22	360016.205	60.90716	1991.61	5.4
01/21/2023	19:21:31.380	-26:49:09.11	357335.632	61.36411	2006.55	1.4
01/22/2023	20:28:24.659	-24:11:49.93	356586.547	61.49303	2010.77	0.2
01/23/2023	21:31:40.787	-19:51:00.56	357858.519	61.27444	2003.62	2.2
01/24/2023	22:30:20.906	-14:16:21.73	361000.149	60.74114	1986.18	7.0
01/25/2023	23:24:43.892	-7:59:51.92	365653.881	59.96800	1960.90	14.2
01/26/2023	0:15:51.345	-1:29:35.90	371332.049	59.05091	1930.92	23.1
01/27/2023	1:04:58.499	4:52:13.76	377506.325	58.08502	1899.34	33.1
01/28/2023	1:53:18.191	10:48:38.04	383684.957	57.14957	1868.75	43.5
01/29/2023	2:41:52.958	16:06:16.11	389464.200	56.30145	1841.02	53.8
01/30/2023	3:31:29.632	20:33:56.13	394552.302	55.57533	1817.28	63.7
01/31/2023	4:22:33.596	24:01:45.82	398771.353	54.98728	1798.06	72.8
02/01/2023	5:15:03.190	26:21:17.62	402044.131	54.53963	1783.42	80.9
02/02/2023	6:08:27.978	27:26:24.34	404372.272	54.22560	1773.15	87.7
02/03/2023	7:01:55.333	27:14:36.20	405810.545	54.03339	1766.87	93.2
02/04/2023	7:54:25.902	25:47:52.10	406440.794	53.94960	1764.13	97.0
02/05/2023	8:45:11.763	23:12:28.78	406348.355	53.96187	1764.53	99.3
02/06/2023	9:33:48.710	19:37:51.44	405603.380	54.06099	1767.77	99.8
02/07/2023	10:20:18.949	15:15:02.49	404249.086	54.24212	1773.69	98.5
02/08/2023	11:05:06.882	10:15:27.34	402298.424	54.50515	1782.29	95.4
02/09/2023	11:48:52.866	4:50:16.07	399739.762	54.85406	1793.70	90.7
02/10/2023	12:32:28.219	-0:49:37.91	396551.179	55.29517	1808.12	84.3
02/11/2023	13:16:52.227	-6:33:08.07	392721.824	55.83439	1825.75	76.4
02/12/2023	14:03:10.137	-12:07:59.82	388277.753	56.47350	1846.65	67.3
02/13/2023	14:52:29.755	-17:19:38.29	383308.641	57.20568	1870.59	57.2
02/14/2023	15:45:52.867	-21:49:58.05	377990.616	58.01059	1896.91	46.5
02/15/2023	16:43:57.179	-25:17:02.18	372599.227	58.85007	1924.35	35.7
02/16/2023	17:46:29.119	-27:16:54.35	367505.485	59.66583	1951.02	25.2
02/17/2023	18:52:02.351	-27:28:56.89	363148.287	60.38180	1974.43	15.7
02/18/2023	19:58:10.528	-25:43:23.91	359980.131	60.91327	1991.81	8.1

Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
02/19/2023	21:02:22.919	-22:06:31.50	358391.330	61.18333	2000.64	2.8
02/20/2023	22:03:03.906	-16:59:19.96	358629.475	61.14270	1999.31	0.3
02/21/2023	22:59:52.331	-10:51:06.06	360739.205	60.78508	1987.62	0.9
02/22/2023	23:53:22.765	-4:12:24.37	364544.619	60.15049	1966.87	4.3
02/23/2023	0:44:36.967	2:29:21.76	369681.054	59.31466	1939.54	10.2
02/24/2023	1:34:42.763	8:51:42.59	375663.392	58.37000	1908.66	18.0
02/25/2023	2:24:41.795	14:36:53.82	381966.924	57.40664	1877.16	27.0
02/26/2023	3:15:21.913	19:31:00.49	388098.777	56.49955	1847.50	36.8
02/27/2023	4:07:10.879	23:23:02.27	393647.852	55.70303	1821.46	46.8
02/28/2023	5:00:11.023	26:04:30.80	398311.337	55.05079	1800.13	56.6
03/01/2023	5:53:57.555	27:29:47.77	401901.692	54.55896	1784.05	66.0
03/02/2023	6:47:44.228	27:36:46.18	404339.754	54.22996	1773.29	74.6
03/03/2023	7:40:36.975	26:27:19.43	405638.940	54.05626	1767.61	82.3
03/04/2023	8:31:50.473	24:07:08.46	405884.177	54.02359	1766.55	88.8
03/05/2023	9:21:00.112	20:44:46.89	405208.141	54.11373	1769.49	94.0
03/06/2023	10:08:05.512	16:30:30.58	403766.893	54.30691	1775.81	97.7
03/07/2023	10:53:27.369	11:35:20.83	401716.994	54.58405	1784.87	99.6
03/08/2023	11:37:41.849	6:10:35.08	399196.464	54.92872	1796.14	99.7
03/09/2023	12:21:35.633	0:27:44.34	396312.023	55.32854	1809.21	97.9
03/10/2023	13:06:02.601	-5:21:08.81	393134.812	55.77573	1823.84	94.1
03/11/2023	13:52:01.458	-11:02:57.37	389705.794	56.26654	1839.88	88.5
03/12/2023	14:40:32.449	-16:22:48.16	386050.605	56.79933	1857.30	81.1
03/13/2023	15:32:30.365	-21:03:23.67	382201.741	57.37137	1876.01	72.2
03/14/2023	16:28:30.810	-24:44:57.07	378224.163	57.97477	1895.73	62.1
03/15/2023	17:28:29.822	-27:06:32.66	374238.822	58.59221	1915.92	51.1
03/16/2023	18:31:26.285	-27:49:39.49	370437.533	59.19352	1935.58	39.9
03/17/2023	19:35:26.644	-26:43:27.25	367082.472	59.73459	1953.27	28.9
03/18/2023	20:38:22.318	-23:49:04.36	364485.035	60.16032	1967.19	18.9
03/19/2023	21:38:38.589	-19:20:02.74	362962.935	60.41263	1975.44	10.5
03/20/2023	22:35:40.294	-13:38:48.64	362781.347	60.44288	1976.43	4.4
03/21/2023	23:29:45.454	-7:11:56.17	364091.942	60.22528	1969.32	0.8
03/22/2023	0:21:43.873	-0:26:17.52	366888.193	59.76623	1954.31	0.2
03/23/2023	1:12:37.141	6:13:15.59	370992.201	59.10501	1932.69	2.2
03/24/2023	2:03:24.874	12:24:58.30	376077.392	58.30574	1906.56	6.7
03/25/2023	2:54:55.198	17:50:34.16	381718.606	57.44399	1878.38	13.2
03/26/2023	3:47:36.815	22:15:17.84	387453.628	56.59363	1850.58	21.1
03/27/2023	4:41:32.366	25:28:02.36	392840.768	55.81748	1825.20	30.0
03/28/2023	5:36:15.915	27:21:42.67	397502.986	55.16275	1803.79	39.5
03/29/2023	6:30:58.628	27:53:45.11	401155.659	54.66043	1787.37	49.1
03/30/2023	7:24:43.344	27:06:13.24	403619.471	54.32674	1776.46	58.6
03/31/2023	8:16:42.370	25:05:07.67	404821.597	54.16541	1771.18	67.7
04/01/2023	9:06:30.140	21:59:08.67	404788.262	54.16987	1771.33	76.2
04/02/2023	9:54:06.570	17:58:14.94	403630.928	54.32520	1776.41	83.7
04/03/2023	10:39:53.294	13:12:49.66	401527.524	54.60981	1785.71	90.2
04/04/2023	11:24:27.444	7:53:23.95	398699.837	54.99715	1798.38	95.2
04/05/2023	12:08:36.315	2:10:51.48	395388.357	55.45780	1813.44	98.5
04/06/2023	12:53:13.829	-3:42:58.14	391826.674	55.96196	1829.92	99.9
04/07/2023	13:39:18.038	-9:34:38.26	388218.469	56.48213	1846.93	99.3
04/08/2023	14:27:47.739	-15:08:26.37	384720.846	56.99567	1863.72	96.5
04/09/2023	15:19:35.530	-20:06:01.95	381437.481	57.48633	1879.76	91.5

Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
04/10/2023	16:15:14.555	-24:06:47.27	378423.648	57.94420	1894.74	84.5
04/11/2023	17:14:39.365	-26:49:31.98	375702.513	58.36392	1908.46	75.8
04/12/2023	18:16:50.072	-27:56:10.66	373289.100	58.74130	1920.80	65.6
04/13/2023	19:19:57.658	-27:16:27.48	371215.786	59.06941	1931.52	54.5
04/14/2023	20:21:59.374	-24:51:18.92	369552.032	59.33537	1940.22	43.1
04/15/2023	21:21:24.461	-20:52:36.51	368411.597	59.51907	1946.23	31.9
04/16/2023	22:17:38.618	-15:39:38.37	367942.965	59.59488	1948.71	21.6
04/17/2023	23:10:58.895	-9:35:05.59	368302.856	59.53664	1946.80	12.8
04/18/2023	0:02:14.236	-3:02:16.47	369617.856	59.32480	1939.87	6.1
04/19/2023	0:52:26.881	3:36:12.12	371943.901	58.95376	1927.74	1.8
04/20/2023	1:42:39.305	9:58:56.19	375235.357	58.43659	1910.83	0.0
04/21/2023	2:33:44.767	15:46:05.44	379333.154	57.80526	1890.19	0.8
04/22/2023	3:26:18.546	20:39:54.39	383975.379	57.10634	1867.34	4.0
04/23/2023	4:20:29.159	24:25:34.24	388826.711	56.39376	1844.04	9.1
04/24/2023	5:15:52.645	26:52:25.89	393518.377	55.72136	1822.06	15.8
04/25/2023	6:11:35.708	27:55:13.29	397689.574	55.13687	1802.95	23.7
04/26/2023	7:06:30.823	27:34:35.77	401023.551	54.67844	1787.96	32.5
04/27/2023	7:59:37.963	25:56:25.29	403274.916	54.37316	1777.98	41.7
04/28/2023	8:50:21.769	23:09:58.66	404287.506	54.23697	1773.52	51.2
04/29/2023	9:38:37.080	19:25:56.05	404003.607	54.27508	1774.77	60.6
04/30/2023	10:24:44.675	14:54:55.48	402465.633	54.48251	1781.55	69.6
05/01/2023	11:09:23.429	9:47:02.70	399810.965	54.84429	1793.38	78.1
05/02/2023	11:53:23.573	4:12:08.96	396260.039	55.33580	1809.45	85.6
05/03/2023	12:37:42.502	-1:39:19.80	392097.401	55.92331	1828.66	91.9
05/04/2023	13:23:22.322	-7:35:17.60	387645.704	56.56559	1849.66	96.6
05/05/2023	14:11:27.020	-13:20:51.10	383233.756	57.21686	1870.95	99.4
05/06/2023	15:02:56.152	-18:37:30.04	379161.757	57.83139	1891.05	99.9
05/07/2023	15:58:31.427	-23:03:10.29	375669.123	58.36911	1908.63	98.0
05/08/2023	16:58:15.126	-26:14:02.75	372911.715	58.80075	1922.74	93.7
05/09/2023	18:01:08.996	-27:48:50.39	370954.445	59.11103	1932.89	87.0
05/10/2023	19:05:15.018	-27:34:44.75	369781.714	59.29851	1939.02	78.4
05/11/2023	20:08:13.219	-25:31:49.75	369322.944	59.37218	1941.42	68.2
05/12/2023	21:08:16.405	-21:52:38.44	369485.758	59.34602	1940.57	57.1
05/13/2023	22:04:41.524	-16:57:33.22	370187.245	59.23355	1936.89	45.6
05/14/2023	22:57:44.613	-11:09:27.77	371374.794	59.04412	1930.70	34.4
05/15/2023	23:48:17.996	-4:50:32.66	373031.547	58.78186	1922.12	24.0
05/16/2023	0:37:29.125	1:38:43.44	375166.070	58.44738	1911.19	15.1
05/17/2023	1:26:26.918	7:59:17.87	377790.164	58.04137	1897.91	8.1
05/18/2023	2:16:12.979	13:53:02.33	380891.706	57.56871	1882.46	3.1
05/19/2023	3:07:33.640	19:02:32.76	384410.476	57.04169	1865.23	0.5
05/20/2023	4:00:50.644	23:11:42.24	388223.654	56.48137	1846.91	0.2
05/21/2023	4:55:52.178	26:07:04.69	392144.615	55.91658	1828.44	2.0
05/22/2023	5:51:50.510	27:39:51.98	395934.873	55.38125	1810.94	5.8
05/23/2023	6:47:32.949	27:47:31.90	399325.982	54.91090	1795.56	11.3
05/24/2023	7:41:44.993	26:34:02.08	402046.715	54.53928	1783.41	18.1
05/25/2023	8:33:33.905	24:08:18.23	403851.051	54.29559	1775.44	26.1
05/26/2023	9:22:40.514	20:41:44.49	404543.668	54.20262	1772.40	34.8
05/27/2023	10:09:17.441	16:26:00.70	404001.080	54.27542	1774.78	44.0
05/28/2023	10:54:00.416	11:31:51.31	402187.512	54.52019	1782.78	53.6
05/29/2023	11:37:39.642	6:08:58.47	399165.002	54.93305	1796.28	63.1

## Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
05/30/2023	12:21:14.209	0:26:42.53	395096.958	55.49871	1814.78	72.3
05/31/2023	13:05:49.336	-5:24:47.40	390243.764	56.18897	1837.35	80.8
06/01/2023	13:52:34.517	-11:13:05.48	384948.457	56.96197	1862.62	88.3
06/02/2023	14:42:39.401	-16:41:59.43	379610.515	57.76302	1888.81	94.2
06/03/2023	15:37:02.976	-21:30:31.05	374647.239	58.52833	1913.83	98.2
06/04/2023	16:36:11.909	-25:13:31.33	370445.474	59.19225	1935.54	99.9
06/05/2023	17:39:31.405	-27:25:16.51	367311.183	59.69739	1952.06	98.9
06/06/2023	18:45:09.692	-27:46:26.40	365428.420	60.00500	1962.11	95.2
06/07/2023	19:50:25.646	-26:11:25.56	364839.707	60.10183	1965.28	88.9
06/08/2023	20:52:54.553	-22:50:43.34	365454.521	60.00071	1961.97	80.5
06/09/2023	21:51:21.160	-18:06:19.00	367083.401	59.73444	1953.27	70.4
06/10/2023	22:45:45.365	-12:24:17.85	369486.574	59.34588	1940.56	59.4
06/11/2023	23:36:56.547	-6:09:28.47	372422.601	58.87798	1925.27	48.0
06/12/2023	0:26:05.820	0:16:37.91	375684.974	58.36665	1908.55	36.9
06/13/2023	1:14:28.205	6:35:32.59	379120.502	57.83769	1891.25	26.7
06/14/2023	2:03:12.857	12:30:43.99	382629.355	57.30724	1873.91	17.7
06/15/2023	2:53:16.003	17:46:38.51	386150.940	56.78457	1856.82	10.4
06/16/2023	3:45:12.822	22:08:21.39	389641.882	56.27577	1840.18	5.0
06/17/2023	4:39:07.933	25:22:18.01	393052.732	55.78738	1824.22	1.5
06/18/2023	5:34:28.942	27:17:56.34	396309.087	55.32895	1809.23	0.2
06/19/2023	6:30:10.782	27:49:54.03	399300.980	54.91434	1795.67	0.8
06/20/2023	7:24:54.577	26:59:17.92	401882.189	54.56161	1784.14	3.3
06/21/2023	8:17:33.506	24:53:15.88	403878.995	54.29183	1775.32	7.6
06/22/2023	9:07:31.430	21:42:50.39	405106.408	54.12732	1769.94	13.4
06/23/2023	9:54:46.867	17:40:24.80	405389.132	54.08957	1768.70	20.4
06/24/2023	10:39:46.226	12:57:50.87	404584.591	54.19714	1772.22	28.5
06/25/2023	11:23:14.311	7:45:42.71	402605.706	54.46355	1780.93	37.4
06/26/2023	12:06:07.157	2:13:28.40	399441.636	54.89500	1795.04	46.9
06/27/2023	12:49:28.295	-3:29:38.12	395174.760	55.48778	1814.42	56.7
06/28/2023	13:34:27.186	-9:13:17.94	389991.875	56.22526	1838.53	66.5
06/29/2023	14:22:17.288	-14:44:29.96	384186.706	57.07492	1866.31	75.9
06/30/2023	15:14:09.800	-19:45:52.50	378149.882	57.98616	1896.11	84.4
07/01/2023	16:10:57.708	-23:54:48.69	372342.257	58.89069	1925.68	91.6
07/02/2023	17:12:47.067	-26:44:46.28	367249.124	59.70748	1952.39	96.8
07/03/2023	18:18:26.090	-27:50:35.26	363317.832	60.35362	1973.51	99.5
07/04/2023	19:25:24.318	-26:57:11.90	360889.094	60.75983	1986.79	99.4
07/05/2023	20:30:46.231	-24:06:43.64	360139.679	60.88628	1990.93	96.4
07/06/2023	21:32:26.287	-19:38:01.22	361055.411	60.73184	1985.88	90.7
07/07/2023	22:29:44.230	-13:59:17.08	363444.771	60.33253	1972.82	82.6
07/08/2023	23:23:09.567	-7:39:56.01	366988.290	59.74992	1953.77	72.8
07/09/2023	0:13:48.374	-1:05:52.73	371306.280	59.05501	1931.05	62.1
07/10/2023	1:02:57.730	5:21:36.95	376024.179	58.31399	1906.83	51.0
07/11/2023	1:51:51.557	11:25:06.58	380820.576	57.57946	1882.81	40.1
07/12/2023	2:41:32.538	16:49:36.71	385452.170	56.88752	1860.19	30.0
07/13/2023	3:32:44.913	21:21:32.77	389757.363	56.25910	1839.64	21.0
07/14/2023	4:25:46.057	24:48:34.76	393644.057	55.70357	1821.48	13.3
07/15/2023	5:20:19.163	27:00:32.04	397068.276	55.22315	1805.77	7.3
07/16/2023	6:15:33.343	27:51:06.58	400009.675	54.81704	1792.49	3.1
07/17/2023	7:10:16.670	27:19:30.04	402448.898	54.48477	1781.63	0.7
07/18/2023	8:03:19.226	25:30:47.02	404350.456	54.22852	1773.25	0.2

## Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
07/19/2023	8:53:54.317	22:34:39.81	405653.441	54.05432	1767.55	1.6
07/20/2023	9:41:47.661	18:43:15.80	406270.985	53.97215	1764.86	4.7
07/21/2023	10:27:14.426	14:09:03.64	406098.128	53.99513	1765.62	9.4
07/22/2023	11:10:50.814	9:03:39.24	405026.773	54.13796	1770.29	15.5
07/23/2023	11:53:26.250	3:37:26.71	402965.804	54.41488	1779.34	23.0
07/24/2023	12:35:58.604	-1:59:57.56	399864.191	54.83699	1793.14	31.5
07/25/2023	13:19:32.102	-7:38:50.36	395734.772	55.40925	1811.85	40.9
07/26/2023	14:05:16.169	-13:08:04.41	390676.205	56.12677	1835.31	50.9
07/27/2023	14:54:22.326	-18:13:36.57	384889.901	56.97064	1862.90	61.2
07/28/2023	15:47:54.805	-22:37:03.32	378687.681	57.90380	1893.41	71.3
07/29/2023	16:46:30.049	-25:55:20.24	372484.614	58.86818	1924.95	80.7
07/30/2023	17:49:46.139	-27:43:04.84	366771.102	59.78531	1954.93	88.9
07/31/2023	18:56:00.956	-27:38:59.83	362060.556	60.56322	1980.37	95.1
08/01/2023	20:02:32.094	-25:34:26.19	358815.731	61.11096	1998.27	98.9
08/02/2023	21:06:42.761	-21:38:20.94	357367.457	61.35864	2006.37	99.7
08/03/2023	22:07:03.545	-16:14:33.68	357849.121	61.27605	2003.67	97.5
08/04/2023	23:03:25.261	-9:53:59.98	360170.534	60.88106	1990.76	92.5
08/05/2023	23:56:33.744	-3:07:25.89	364041.789	60.23358	1969.59	85.0
08/06/2023	0:47:39.091	3:38:27.79	369037.687	59.41808	1942.92	75.8
08/07/2023	1:37:54.846	10:02:00.67	374679.182	58.52334	1913.67	65.5
08/08/2023	2:28:26.141	15:45:48.92	380507.552	57.62683	1884.36	54.8
08/09/2023	3:20:01.466	20:35:35.88	386136.365	56.78671	1856.89	44.2
08/10/2023	4:13:04.774	24:19:27.94	391277.519	56.04050	1832.49	34.2
08/11/2023	5:07:28.662	26:48:03.10	395745.089	55.40781	1811.81	25.0
08/12/2023	6:02:33.328	27:55:30.11	399443.536	54.89474	1795.03	17.0
08/13/2023	6:57:16.337	27:40:40.84	402346.730	54.49861	1782.08	10.4
08/14/2023	7:50:32.194	26:07:39.77	404473.096	54.21208	1772.71	5.4
08/15/2023	8:41:32.585	23:24:58.41	405860.974	54.02668	1766.65	2.0
08/16/2023	9:29:57.445	19:43:54.03	406547.378	53.93546	1763.66	0.3
08/17/2023	10:15:54.713	15:16:42.55	406552.623	53.93476	1763.64	0.5
08/18/2023	10:59:53.600	10:15:23.71	405872.529	54.02514	1766.60	2.4
08/19/2023	11:42:37.141	4:51:09.43	404479.078	54.21128	1772.68	6.1
08/20/2023	12:24:56.994	-0:45:31.59	402329.454	54.50095	1782.15	11.4
08/21/2023	13:07:50.761	-6:24:22.58	399382.457	54.90314	1795.30	18.2
08/22/2023	13:52:20.671	-11:54:27.55	395620.470	55.42526	1812.38	26.3
08/23/2023	14:39:31.526	-17:03:05.38	391074.456	56.06961	1833.44	35.6
08/24/2023	15:30:24.878	-21:34:40.67	385848.755	56.82905	1858.27	45.7
08/25/2023	16:25:45.621	-25:10:02.38	380141.460	57.68234	1886.17	56.4
08/26/2023	17:25:39.481	-27:27:13.06	374254.955	58.58969	1915.84	67.0
08/27/2023	18:29:09.817	-28:05:04.18	368589.991	59.49026	1945.28	77.2
08/28/2023	19:34:16.572	-26:49:36.49	363616.726	60.30400	1971.89	86.2
08/29/2023	20:38:35.056	-23:40:07.38	359819.406	60.94048	1992.70	93.4
08/30/2023	21:40:14.232	-18:50:50.19	357619.422	61.31541	2004.96	98.1
08/31/2023	22:38:30.451	-12:47:06.96	357293.097	61.37142	2006.79	99.9
09/01/2023	23:33:41.640	-5:59:19.46	358909.501	61.09499	1997.75	98.6
09/02/2023	0:26:42.105	1:02:22.90	362311.469	60.52127	1978.99	94.5
09/03/2023	1:18:38.891	7:51:05.30	367147.358	59.72403	1952.93	87.9
09/04/2023	2:10:35.746	14:04:15.51	372940.750	58.79617	1922.59	79.5
09/05/2023	3:03:22.089	19:23:42.37	379173.280	57.82964	1890.99	69.9
09/06/2023	3:57:23.808	23:35:13.94	385357.527	56.90150	1860.64	59.7

## Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
09/07/2023	4:52:36.038	26:28:34.53	391087.254	56.06777	1833.38	49.4
09/08/2023	5:48:21.933	27:57:53.55	396062.940	55.36334	1810.35	39.5
09/09/2023	6:43:42.010	28:02:23.06	400096.799	54.80511	1792.10	30.2
09/10/2023	7:37:33.021	26:46:20.35	403103.420	54.39630	1778.73	21.8
09/11/2023	8:29:07.667	24:18:10.74	405081.506	54.13065	1770.05	14.5
09/12/2023	9:18:05.644	20:48:49.61	406090.905	53.99609	1765.65	8.5
09/13/2023	10:04:33.716	16:30:07.21	406228.077	53.97785	1765.05	4.0
09/14/2023	10:48:59.302	11:33:47.05	405602.534	54.06111	1767.77	1.1
09/15/2023	11:32:03.119	6:11:03.43	404316.647	54.23306	1773.40	0.1
09/16/2023	12:14:33.824	0:32:48.45	402451.056	54.48448	1781.62	0.8
09/17/2023	12:57:25.046	-5:10:02.83	400057.661	54.81047	1792.27	3.5
09/18/2023	13:41:33.767	-10:45:56.08	397161.434	55.21020	1805.34	7.9
09/19/2023	14:27:58.313	-16:01:54.41	393771.272	55.68557	1820.89	14.1
09/20/2023	15:17:33.585	-20:42:55.88	389898.755	56.23869	1838.97	21.9
09/21/2023	16:11:00.779	-24:31:31.30	385582.295	56.86832	1859.56	31.1
09/22/2023	17:08:30.489	-27:08:21.99	380912.798	57.56552	1882.35	41.3
09/23/2023	18:09:24.522	-28:14:45.89	376055.700	58.30910	1906.67	52.2
09/24/2023	19:12:11.720	-27:36:58.71	371263.113	59.06188	1931.28	63.3
09/25/2023	20:14:52.473	-25:10:51.86	366869.275	59.76931	1954.41	73.9
09/26/2023	21:15:43.454	-21:04:02.27	363263.557	60.36263	1973.81	83.6
09/27/2023	22:13:51.925	-15:34:22.89	360839.393	60.76820	1987.07	91.4
09/28/2023	23:09:20.569	-9:06:23.67	359925.477	60.92252	1992.11	97.0
09/29/2023	0:02:51.263	-2:07:31.77	360715.222	60.78912	1987.75	99.7
09/30/2023	0:55:24.552	4:54:33.00	363216.455	60.37046	1974.06	99.5
10/01/2023	1:48:03.031	11:33:50.44	367239.351	59.70907	1952.44	96.5
10/02/2023	2:41:38.389	17:27:16.69	372426.861	58.87731	1925.24	91.1
10/03/2023	3:36:39.811	22:15:41.69	378315.913	57.96071	1895.27	83.7
10/04/2023	4:33:04.036	25:44:44.75	384409.135	57.04189	1865.23	75.1
10/05/2023	5:30:11.878	27:45:55.45	390238.825	56.18968	1837.37	65.6
10/06/2023	6:26:57.294	28:17:17.63	395412.984	55.45435	1813.33	55.8
10/07/2023	7:22:08.699	27:23:14.70	399641.383	54.86756	1794.14	46.0
10/08/2023	8:14:52.187	25:12:57.09	402744.564	54.44477	1780.32	36.5
10/09/2023	9:04:44.523	21:58:06.53	404650.160	54.18835	1771.93	27.7
10/10/2023	9:51:52.844	17:50:56.33	405380.483	54.09072	1768.74	19.7
10/11/2023	10:36:46.708	13:03:04.57	405034.279	54.13696	1770.25	12.7
10/12/2023	11:20:09.315	7:45:20.94	403764.693	54.30720	1775.82	7.1
10/13/2023	12:02:51.313	2:08:09.63	401755.148	54.57886	1784.70	2.9
10/14/2023	12:45:47.437	-3:37:50.22	399195.102	54.92891	1796.15	0.6
10/15/2023	13:29:54.745	-9:20:58.37	396258.144	55.33606	1809.46	0.1
10/16/2023	14:16:10.532	-14:47:49.83	393085.372	55.78274	1824.06	1.6
10/17/2023	15:05:27.604	-19:42:42.77	389776.958	56.25627	1839.55	5.2
10/18/2023	15:58:24.432	-23:47:36.39	386393.949	56.74886	1855.65	10.7
10/19/2023	16:55:09.439	-26:43:10.62	382970.676	57.25617	1872.24	18.1
10/20/2023	17:55:04.766	-28:11:20.68	379535.840	57.77439	1889.18	27.1
10/21/2023	18:56:43.414	-27:59:16.58	376138.075	58.29633	1906.25	37.4
10/22/2023	19:58:12.425	-26:03:09.51	372869.970	58.80733	1922.96	48.5
10/23/2023	20:57:54.006	-22:29:28.45	369883.643	59.28217	1938.48	59.8
10/24/2023	21:54:57.358	-17:33:09.78	367391.301	59.68437	1951.63	70.8
10/25/2023	22:49:24.147	-11:34:21.90	365646.378	59.96923	1960.94	80.8
10/26/2023	23:41:54.652	-4:55:45.07	364905.179	60.09105	1964.93	89.2

Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
10/27/2023	0:33:29.523	1:58:56.19	365375.270	60.01373	1962.40	95.4
10/28/2023	1:25:14.760	8:45:36.57	367163.220	59.72145	1952.84	99.0
10/29/2023	2:18:09.541	15:00:30.46	370237.223	59.22555	1936.63	100.0
10/30/2023	3:12:53.971	20:21:17.13	374416.714	58.56437	1915.01	98.3
10/31/2023	4:09:35.885	24:28:43.53	379392.057	57.79629	1889.90	94.2
11/01/2023	5:07:41.416	27:08:59.50	384767.306	56.98879	1863.50	88.2
11/02/2023	6:05:58.698	28:15:45.69	390113.241	56.20777	1837.96	80.7
11/03/2023	7:02:59.687	27:51:01.43	395018.226	55.50977	1815.14	72.2
11/04/2023	7:57:30.619	26:03:42.01	399128.841	54.93803	1796.45	63.0
11/05/2023	8:48:53.075	23:06:38.55	402177.375	54.52156	1782.83	53.6
11/06/2023	9:37:06.962	19:13:34.44	403996.781	54.27600	1774.80	44.1
11/07/2023	10:22:41.173	14:37:10.55	404525.230	54.20509	1772.48	34.9
11/08/2023	11:06:21.867	9:28:31.91	403802.373	54.30213	1775.65	26.2
11/09/2023	11:49:03.999	3:57:32.47	401958.771	54.55121	1783.80	18.2
11/10/2023	12:31:46.866	-1:46:09.41	399199.222	54.92834	1796.13	11.4
11/11/2023	13:15:32.175	-7:32:02.96	395780.481	55.40285	1811.64	5.9
11/12/2023	14:01:22.347	-13:07:36.37	391984.211	55.93946	1829.19	2.1
11/13/2023	14:50:16.345	-18:17:20.42	388087.167	56.50124	1847.56	0.2
11/14/2023	15:42:59.902	-22:42:28.46	384332.147	57.05332	1865.61	0.5
11/15/2023	16:39:48.365	-26:01:53.32	380904.613	57.56676	1882.39	3.0
11/16/2023	17:40:06.750	-27:55:05.74	377920.112	58.02141	1897.26	7.9
11/17/2023	18:42:22.697	-28:07:06.86	375426.006	58.40691	1909.86	14.8
11/18/2023	19:44:29.722	-26:33:11.78	373417.691	58.72107	1920.14	23.6
11/19/2023	20:44:34.600	-23:20:18.75	371865.361	58.96622	1928.15	33.9
11/20/2023	21:41:36.099	-18:44:26.97	370744.132	59.14456	1933.98	45.0
11/21/2023	22:35:32.344	-13:06:04.57	370059.055	59.25407	1937.56	56.4
11/22/2023	23:27:04.830	-6:46:39.51	369857.654	59.28634	1938.62	67.5
11/23/2023	0:17:17.913	-0:07:13.12	370225.700	59.22739	1936.69	77.7
11/24/2023	1:07:23.320	6:31:39.48	371266.312	59.06137	1931.26	86.4
11/25/2023	1:58:29.283	12:49:20.92	373067.166	58.77624	1921.94	93.2
11/26/2023	2:51:30.136	18:25:04.06	375664.444	58.36984	1908.65	97.7
11/27/2023	3:46:53.309	22:58:41.16	379013.650	57.85399	1891.79	99.8
11/28/2023	4:44:25.371	26:12:49.14	382975.618	57.25543	1872.22	99.5
11/29/2023	5:43:06.063	27:55:52.06	387321.351	56.61296	1851.21	96.9
11/30/2023	6:41:21.643	28:04:39.89	391753.761	55.97237	1830.26	92.4
12/01/2023	7:37:36.868	26:44:54.70	395940.289	55.38049	1810.91	86.4
12/02/2023	8:30:47.113	24:08:48.50	399549.169	54.88023	1794.56	79.0
12/03/2023	9:20:31.926	20:31:17.61	402283.351	54.50720	1782.36	70.7
12/04/2023	10:07:09.221	16:06:54.19	403908.483	54.28787	1775.19	61.7
12/05/2023	10:51:21.637	11:08:13.56	404273.619	54.23883	1773.58	52.4
12/06/2023	11:34:04.818	5:45:47.42	403324.591	54.36647	1777.76	43.0
12/07/2023	12:16:20.677	0:08:49.92	401110.396	54.66660	1787.57	33.8
12/08/2023	12:59:14.649	-5:33:29.59	397782.543	55.12398	1802.53	25.0
12/09/2023	13:43:54.556	-11:10:41.28	393586.635	55.71169	1821.74	16.9
12/10/2023	14:31:28.196	-16:29:27.41	388844.947	56.39112	1843.96	10.1
12/11/2023	15:22:55.960	-21:12:32.70	383928.919	57.11325	1867.57	4.7
12/12/2023	16:18:54.664	-24:58:36.52	379221.930	57.82222	1890.75	1.3
12/13/2023	17:19:12.904	-27:24:17.54	375075.569	58.46149	1911.65	0.1
12/14/2023	18:22:31.162	-28:09:21.14	371766.385	58.98192	1928.66	1.5
12/15/2023	19:26:32.248	-27:03:27.33	369462.875	59.34969	1940.69	5.5

## Moon - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance km	Parallax arc min	Diameter arc sec	%Illum.
12/16/2023	20:28:51.495	-24:10:27.28	368212.101	59.55132	1947.28	11.8
12/17/2023	21:27:53.533	-19:46:49.30	367950.567	59.59365	1948.66	20.3
12/18/2023	22:23:14.353	-14:15:50.46	368536.353	59.49892	1945.57	30.3
12/19/2023	23:15:26.984	-8:01:56.99	369792.702	59.29675	1938.96	41.3
12/20/2023	0:05:35.722	-1:27:44.24	371550.405	59.01621	1929.79	52.6
12/21/2023	0:54:56.024	5:06:34.62	373678.306	58.68011	1918.80	63.7
12/22/2023	1:44:42.188	11:22:22.57	376096.088	58.30284	1906.46	74.0
12/23/2023	2:35:58.278	17:01:40.12	378769.024	57.89136	1893.01	82.9
12/24/2023	3:29:27.611	21:46:41.82	381688.674	57.44849	1878.53	90.2
12/25/2023	4:25:19.480	25:20:44.43	384846.229	56.97710	1863.12	95.5
12/26/2023	5:22:58.147	27:30:21.07	388206.014	56.48394	1846.99	98.7
12/27/2023	6:21:05.251	28:08:21.98	391685.765	55.98209	1830.58	99.8
12/28/2023	7:18:02.886	27:15:58.98	395148.034	55.49153	1814.54	98.8
12/29/2023	8:12:27.823	25:02:16.28	398404.013	55.03799	1799.71	95.9
12/30/2023	9:03:35.829	21:41:15.50	401228.250	54.65054	1787.05	91.3
12/31/2023	9:51:25.240	17:28:22.14	403380.916	54.35887	1777.51	85.3
01/01/2024	10:36:26.317	12:37:53.65	404633.750	54.19055	1772.01	78.0
01/02/2024	11:19:28.084	7:21:58.61	404796.305	54.16879	1771.29	69.8



## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	19:43:36.262	-20:44:55.00	0.7699889	8.74	0.9	127.4
01/01/2023	19:41:38.980	-20:30:21.34	0.7491483	8.98	1.4	134.0
01/02/2023	19:38:52.136	-20:17:19.01	0.7301794	9.22	1.9	140.8
01/03/2023	19:35:18.053	-20:05:55.28	0.7134007	9.43	2.5	147.7
01/04/2023	19:31:01.105	-19:56:14.24	0.6991031	9.63	3.2	154.7
01/05/2023	19:26:07.785	-19:48:16.87	0.6875318	9.79	4.0	161.4
01/06/2023	19:20:46.529	-19:42:01.59	0.6788705	9.91	4.9	167.5
01/07/2023	19:15:07.297	-19:37:25.04	0.6732286	10.00	5.4	171.2
01/08/2023	19:09:20.937	-19:34:22.83	0.6706340	10.04	5.2	169.7
01/09/2023	19:03:38.416	-19:32:50.27	0.6710330	10.03	4.5	164.7
01/10/2023	18:58:10.057	-19:32:42.67	0.6742972	9.98	3.8	158.6
01/11/2023	18:53:04.893	-19:33:55.38	0.6802350	9.89	3.1	152.3
01/12/2023	18:48:30.230	-19:36:23.57	0.6886085	9.77	2.5	146.1
01/13/2023	18:44:31.450	-19:40:01.90	0.6991496	9.63	2.0	140.2
01/14/2023	18:41:12.039	-19:44:44.29	0.7115768	9.46	1.6	134.5
01/15/2023	18:38:33.770	-19:50:23.75	0.7256087	9.27	1.2	129.1
01/16/2023	18:36:36.990	-19:56:52.48	0.7409748	9.08	1.0	124.0
01/17/2023	18:35:20.933	-20:04:01.98	0.7574226	8.89	0.7	119.1
01/18/2023	18:34:44.033	-20:11:43.30	0.7747224	8.69	0.5	114.6
01/19/2023	18:34:44.186	-20:19:47.31	0.7926693	8.49	0.4	110.3
01/20/2023	18:35:18.977	-20:28:04.93	0.8110834	8.30	0.3	106.3
01/21/2023	18:36:25.844	-20:36:27.33	0.8298091	8.11	0.2	102.5
01/22/2023	18:38:02.203	-20:44:46.11	0.8487131	7.93	0.1	98.9
01/23/2023	18:40:05.538	-20:52:53.37	0.8676829	7.76	0.1	95.5
01/24/2023	18:42:33.455	-21:00:41.79	0.8866237	7.59	0.0	92.3
01/25/2023	18:45:23.715	-21:08:04.66	0.9054569	7.43	-0.0	89.3
01/26/2023	18:48:34.250	-21:14:55.90	0.9241176	7.28	-0.0	86.4
01/27/2023	18:52:03.162	-21:21:10.03	0.9425527	7.14	-0.1	83.7
01/28/2023	18:55:48.726	-21:26:42.12	0.9607190	7.01	-0.1	81.2
01/29/2023	18:59:49.376	-21:31:27.78	0.9785818	6.88	-0.1	78.8
01/30/2023	19:04:03.694	-21:35:23.09	0.9961134	6.76	-0.1	76.5
01/31/2023	19:08:30.404	-21:38:24.58	1.0132923	6.64	-0.1	74.3
02/01/2023	19:13:08.352	-21:40:29.14	1.0301016	6.53	-0.1	72.2
02/02/2023	19:17:56.501	-21:41:34.04	1.0465288	6.43	-0.1	70.2
02/03/2023	19:22:53.915	-21:41:36.85	1.0625647	6.33	-0.1	68.3
02/04/2023	19:27:59.752	-21:40:35.42	1.0782028	6.24	-0.1	66.5
02/05/2023	19:33:13.254	-21:38:27.84	1.0934389	6.15	-0.1	64.8
02/06/2023	19:38:33.735	-21:35:12.45	1.1082706	6.07	-0.1	63.2
02/07/2023	19:44:00.579	-21:30:47.75	1.1226971	5.99	-0.1	61.6
02/08/2023	19:49:33.230	-21:25:12.42	1.1367183	5.92	-0.1	60.0
02/09/2023	19:55:11.183	-21:18:25.32	1.1503354	5.85	-0.1	58.6
02/10/2023	20:00:53.986	-21:10:25.43	1.1635499	5.78	-0.1	57.2
02/11/2023	20:06:41.227	-21:01:11.85	1.1763638	5.72	-0.1	55.8
02/12/2023	20:12:32.537	-20:50:43.81	1.1887794	5.66	-0.1	54.5
02/13/2023	20:18:27.579	-20:39:00.63	1.2007988	5.60	-0.1	53.2
02/14/2023	20:24:26.051	-20:26:01.72	1.2124245	5.55	-0.1	51.9
02/15/2023	20:30:27.678	-20:11:46.58	1.2236583	5.50	-0.2	50.7
02/16/2023	20:36:32.214	-19:56:14.78	1.2345022	5.45	-0.2	49.4
02/17/2023	20:42:39.434	-19:39:25.97	1.2449575	5.41	-0.2	48.2
02/18/2023	20:48:49.137	-19:21:19.83	1.2550253	5.36	-0.2	47.0

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	20:55:01.144	-19:01:56.12	1.2647060	5.32	-0.2	45.8
02/20/2023	21:01:15.297	-18:41:14.63	1.2739997	5.28	-0.2	44.6
02/21/2023	21:07:31.459	-18:19:15.17	1.2829057	5.25	-0.2	43.4
02/22/2023	21:13:49.514	-17:55:57.61	1.2914225	5.21	-0.3	42.2
02/23/2023	21:20:09.368	-17:31:21.84	1.2995479	5.18	-0.3	40.9
02/24/2023	21:26:30.940	-17:05:27.79	1.3072788	5.15	-0.3	39.7
02/25/2023	21:32:54.169	-16:38:15.43	1.3146107	5.12	-0.4	38.4
02/26/2023	21:39:19.007	-16:09:44.74	1.3215382	5.09	-0.4	37.1
02/27/2023	21:45:45.421	-15:39:55.75	1.3280543	5.07	-0.4	35.7
02/28/2023	21:52:13.391	-15:08:48.52	1.3341508	5.04	-0.5	34.3
03/01/2023	21:58:42.910	-14:36:23.13	1.3398178	5.02	-0.5	32.9
03/02/2023	22:05:13.985	-14:02:39.70	1.3450435	5.00	-0.6	31.5
03/03/2023	22:11:46.633	-13:27:38.40	1.3498146	4.99	-0.6	30.0
03/04/2023	22:18:20.881	-12:51:19.45	1.3541155	4.97	-0.7	28.4
03/05/2023	22:24:56.770	-12:13:43.12	1.3579287	4.96	-0.8	26.8
03/06/2023	22:31:34.345	-11:34:49.75	1.3612343	4.94	-0.8	25.2
03/07/2023	22:38:13.664	-10:54:39.77	1.3640099	4.93	-0.9	23.5
03/08/2023	22:44:54.787	-10:13:13.71	1.3662305	4.93	-1.0	21.7
03/09/2023	22:51:37.782	-9:30:32.23	1.3678686	4.92	-1.1	19.9
03/10/2023	22:58:22.718	-8:46:36.15	1.3688934	4.92	-1.2	18.0
03/11/2023	23:05:09.662	-8:01:26.46	1.3692713	4.92	-1.3	16.1
03/12/2023	23:11:58.679	-7:15:04.38	1.3689656	4.92	-1.4	14.1
03/13/2023	23:18:49.827	-6:27:31.39	1.3679363	4.92	-1.5	12.0
03/14/2023	23:25:43.151	-5:38:49.29	1.3661405	4.93	-1.6	9.9
03/15/2023	23:32:38.678	-4:49:00.25	1.3635320	4.94	-1.8	7.8
03/16/2023	23:39:36.411	-3:58:06.90	1.3600620	4.95	-1.9	5.8
03/17/2023	23:46:36.324	-3:06:12.34	1.3556792	4.96	-2.0	4.4
03/18/2023	23:53:38.353	-2:13:20.29	1.3503303	4.98	-2.0	4.4
03/19/2023	0:00:42.386	-1:19:35.12	1.3439612	5.01	-2.0	5.9
03/20/2023	0:07:48.258	-0:25:01.95	1.3365175	5.04	-2.0	8.4
03/21/2023	0:14:55.736	0:30:13.28	1.3279457	5.07	-1.9	11.2
03/22/2023	0:22:04.513	1:26:03.68	1.3181956	5.11	-1.8	14.4
03/23/2023	0:29:14.190	2:22:21.43	1.3072211	5.15	-1.8	17.7
03/24/2023	0:36:24.270	3:18:57.65	1.2949832	5.20	-1.7	21.3
03/25/2023	0:43:34.147	4:15:42.40	1.2814518	5.25	-1.6	25.0
03/26/2023	0:50:43.098	5:12:24.73	1.2666085	5.31	-1.5	28.9
03/27/2023	0:57:50.279	6:08:52.70	1.2504486	5.38	-1.5	32.9
03/28/2023	1:04:54.728	7:04:53.53	1.2329838	5.46	-1.4	37.1
03/29/2023	1:11:55.366	8:00:13.72	1.2142437	5.54	-1.3	41.4
03/30/2023	1:18:51.013	8:54:39.35	1.1942773	5.64	-1.3	45.8
03/31/2023	1:25:40.398	9:47:56.26	1.1731529	5.74	-1.2	50.2
04/01/2023	1:32:22.182	10:39:50.37	1.1509582	5.85	-1.1	54.7
04/02/2023	1:38:54.981	11:30:07.99	1.1277983	5.97	-1.1	59.2
04/03/2023	1:45:17.389	12:18:36.07	1.1037937	6.10	-1.0	63.7
04/04/2023	1:51:28.005	13:05:02.46	1.0790771	6.24	-0.9	68.3
04/05/2023	1:57:25.454	13:49:16.06	1.0537898	6.39	-0.8	72.7
04/06/2023	2:03:08.409	14:31:07.00	1.0280783	6.55	-0.7	77.2
04/07/2023	2:08:35.603	15:10:26.65	1.0020905	6.72	-0.6	81.6
04/08/2023	2:13:45.847	15:47:07.64	0.9759725	6.90	-0.5	86.0
04/09/2023	2:18:38.033	16:21:03.74	0.9498662	7.09	-0.4	90.3

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	2:23:11.141	16:52:09.83	0.9239066	7.28	-0.2	94.5
04/11/2023	2:27:24.242	17:20:21.68	0.8982209	7.49	-0.1	98.7
04/12/2023	2:31:16.502	17:45:35.90	0.8729273	7.71	0.1	102.8
04/13/2023	2:34:47.184	18:07:49.72	0.8481350	7.94	0.2	106.9
04/14/2023	2:37:55.652	18:27:00.93	0.8239437	8.17	0.4	110.9
04/15/2023	2:40:41.382	18:43:07.75	0.8004445	8.41	0.6	114.8
04/16/2023	2:43:03.967	18:56:08.80	0.7777203	8.65	0.8	118.8
04/17/2023	2:45:03.132	19:06:03.09	0.7558462	8.90	1.0	122.7
04/18/2023	2:46:38.749	19:12:50.03	0.7348908	9.16	1.3	126.6
04/19/2023	2:47:50.852	19:16:29.54	0.7149162	9.41	1.5	130.4
04/20/2023	2:48:39.659	19:17:02.15	0.6959792	9.67	1.8	134.3
04/21/2023	2:49:05.590	19:14:29.18	0.6781312	9.92	2.1	138.1
04/22/2023	2:49:09.283	19:08:52.98	0.6614190	10.18	2.4	141.9
04/23/2023	2:48:51.621	19:00:17.12	0.6458845	10.42	2.8	145.7
04/24/2023	2:48:13.733	18:48:46.69	0.6315650	10.66	3.1	149.5
04/25/2023	2:47:17.012	18:34:28.58	0.6184929	10.88	3.5	153.3
04/26/2023	2:46:03.108	18:17:31.65	0.6066955	11.09	4.0	157.0
04/27/2023	2:44:33.918	17:58:06.97	0.5961946	11.29	4.4	160.8
04/28/2023	2:42:51.563	17:36:27.88	0.5870061	11.46	4.9	164.5
04/29/2023	2:40:58.361	17:12:50.04	0.5791397	11.62	5.4	168.2
04/30/2023	2:38:56.780	16:47:31.27	0.5725985	11.75	5.9	171.9
05/01/2023	2:36:49.388	16:20:51.32	0.5673787	11.86	6.5	175.5
05/02/2023	2:34:38.801	15:53:11.51	0.5634698	11.94	6.9	178.4
05/03/2023	2:32:27.622	15:24:54.27	0.5608543	12.00	6.6	176.6
05/04/2023	2:30:18.384	14:56:22.58	0.5595083	12.03	6.1	173.3
05/05/2023	2:28:13.497	14:27:59.40	0.5594017	12.03	5.6	169.8
05/06/2023	2:26:15.201	14:00:07.05	0.5604988	12.01	5.1	166.4
05/07/2023	2:24:25.531	13:33:06.72	0.5627592	11.96	4.7	163.0
05/08/2023	2:22:46.285	13:07:17.95	0.5661385	11.89	4.3	159.7
05/09/2023	2:21:19.014	12:42:58.28	0.5705895	11.79	3.9	156.5
05/10/2023	2:20:05.013	12:20:22.97	0.5760627	11.68	3.6	153.3
05/11/2023	2:19:05.328	11:59:44.89	0.5825074	11.55	3.3	150.2
05/12/2023	2:18:20.767	11:41:14.45	0.5898728	11.41	3.0	147.2
05/13/2023	2:17:51.918	11:24:59.69	0.5981082	11.25	2.7	144.3
05/14/2023	2:17:39.174	11:11:06.41	0.6071645	11.08	2.5	141.4
05/15/2023	2:17:42.756	10:59:38.33	0.6169938	10.91	2.3	138.6
05/16/2023	2:18:02.739	10:50:37.37	0.6275506	10.72	2.1	135.8
05/17/2023	2:18:39.075	10:44:03.81	0.6387914	10.54	1.9	133.2
05/18/2023	2:19:31.621	10:39:56.58	0.6506756	10.34	1.7	130.5
05/19/2023	2:20:40.158	10:38:13.48	0.6631650	10.15	1.6	128.0
05/20/2023	2:22:04.410	10:38:51.34	0.6762241	9.95	1.4	125.5
05/21/2023	2:23:44.066	10:41:46.28	0.6898200	9.76	1.3	123.0
05/22/2023	2:25:38.791	10:46:53.82	0.7039223	9.56	1.2	120.6
05/23/2023	2:27:48.242	10:54:09.04	0.7185025	9.37	1.0	118.2
05/24/2023	2:30:12.079	11:03:26.72	0.7335347	9.17	0.9	115.9
05/25/2023	2:32:49.971	11:14:41.38	0.7489945	8.99	0.8	113.6
05/26/2023	2:35:41.608	11:27:47.43	0.7648590	8.80	0.7	111.3
05/27/2023	2:38:46.700	11:42:39.16	0.7811070	8.62	0.7	109.0
05/28/2023	2:42:04.989	11:59:10.82	0.7977181	8.44	0.6	106.8
05/29/2023	2:45:36.246	12:17:16.63	0.8146727	8.26	0.5	104.6

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	2:49:20.277	12:36:50.83	0.8319516	8.09	0.4	102.4
05/31/2023	2:53:16.925	12:57:47.64	0.8495359	7.92	0.3	100.2
06/01/2023	2:57:26.067	13:20:01.31	0.8674064	7.76	0.3	97.9
06/02/2023	3:01:47.619	13:43:26.05	0.8855434	7.60	0.2	95.7
06/03/2023	3:06:21.536	14:07:56.08	0.9039260	7.45	0.1	93.5
06/04/2023	3:11:07.803	14:33:25.53	0.9225323	7.30	0.0	91.2
06/05/2023	3:16:06.443	14:59:48.49	0.9413382	7.15	-0.0	88.9
06/06/2023	3:21:17.511	15:26:58.89	0.9603176	7.01	-0.1	86.6
06/07/2023	3:26:41.088	15:54:50.52	0.9794415	6.87	-0.2	84.2
06/08/2023	3:32:17.285	16:23:16.96	0.9986776	6.74	-0.2	81.8
06/09/2023	3:38:06.235	16:52:11.54	1.0179901	6.61	-0.3	79.3
06/10/2023	3:44:08.091	17:21:27.31	1.0373386	6.49	-0.4	76.7
06/11/2023	3:50:23.015	17:50:57.00	1.0566781	6.37	-0.4	74.0
06/12/2023	3:56:51.177	18:20:32.94	1.0759581	6.25	-0.5	71.2
06/13/2023	4:03:32.737	18:50:07.03	1.0951225	6.15	-0.6	68.4
06/14/2023	4:10:27.841	19:19:30.71	1.1141088	6.04	-0.7	65.4
06/15/2023	4:17:36.601	19:48:34.90	1.1328478	5.94	-0.7	62.3
06/16/2023	4:24:59.083	20:17:09.97	1.1512636	5.85	-0.8	59.1
06/17/2023	4:32:35.292	20:45:05.76	1.1692735	5.76	-0.9	55.7
06/18/2023	4:40:25.148	21:12:11.55	1.1867885	5.67	-1.0	52.2
06/19/2023	4:48:28.468	21:38:16.16	1.2037136	5.59	-1.1	48.6
06/20/2023	4:56:44.950	22:03:07.97	1.2199492	5.52	-1.1	44.9
06/21/2023	5:05:14.146	22:26:35.08	1.2353923	5.45	-1.2	41.0
06/22/2023	5:13:55.450	22:48:25.48	1.2499389	5.38	-1.3	37.1
06/23/2023	5:22:48.085	23:08:27.25	1.2634863	5.33	-1.4	33.1
06/24/2023	5:31:51.092	23:26:28.79	1.2759359	5.27	-1.5	28.9
06/25/2023	5:41:03.334	23:42:19.14	1.2871964	5.23	-1.6	24.8
06/26/2023	5:50:23.507	23:55:48.27	1.2971869	5.19	-1.8	20.6
06/27/2023	5:59:50.155	24:06:47.34	1.3058400	5.15	-1.9	16.4
06/28/2023	6:09:21.702	24:15:09.03	1.3131041	5.13	-2.0	12.3
06/29/2023	6:18:56.490	24:20:47.68	1.3189453	5.10	-2.2	8.4
06/30/2023	6:28:32.816	24:23:39.49	1.3233487	5.09	-2.3	5.2
07/01/2023	6:38:08.981	24:23:42.59	1.3263180	5.07	-2.3	4.1
07/02/2023	6:47:43.332	24:20:56.97	1.3278751	5.07	-2.2	6.4
07/03/2023	6:57:14.296	24:15:24.46	1.3280581	5.07	-2.0	9.7
07/04/2023	7:06:40.420	24:07:08.51	1.3269190	5.07	-1.9	13.2
07/05/2023	7:16:00.390	23:56:13.99	1.3245213	5.08	-1.7	16.8
07/06/2023	7:25:13.050	23:42:46.94	1.3209371	5.09	-1.5	20.2
07/07/2023	7:34:17.407	23:26:54.37	1.3162438	5.11	-1.4	23.6
07/08/2023	7:43:12.637	23:08:43.95	1.3105224	5.14	-1.3	26.8
07/09/2023	7:51:58.068	22:48:23.86	1.3038546	5.16	-1.2	29.8
07/10/2023	8:00:33.180	22:26:02.55	1.2963210	5.19	-1.1	32.8
07/11/2023	8:08:57.581	22:01:48.57	1.2879999	5.23	-1.0	35.6
07/12/2023	8:17:10.999	21:35:50.46	1.2789661	5.26	-0.9	38.3
07/13/2023	8:25:13.260	21:08:16.61	1.2692899	5.30	-0.8	40.8
07/14/2023	8:33:04.277	20:39:15.21	1.2590368	5.35	-0.7	43.3
07/15/2023	8:40:44.034	20:08:54.15	1.2482673	5.39	-0.7	45.6
07/16/2023	8:48:12.572	19:37:21.02	1.2370369	5.44	-0.6	47.8
07/17/2023	8:55:29.976	19:04:43.07	1.2253956	5.49	-0.5	50.0
07/18/2023	9:02:36.368	18:31:07.21	1.2133891	5.55	-0.5	52.0

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	9:09:31.894	17:56:40.00	1.2010580	5.60	-0.4	54.0
07/20/2023	9:16:16.715	17:21:27.69	1.1884389	5.66	-0.4	55.9
07/21/2023	9:22:51.006	16:45:36.19	1.1755644	5.72	-0.3	57.7
07/22/2023	9:29:14.942	16:09:11.14	1.1624633	5.79	-0.3	59.4
07/23/2023	9:35:28.697	15:32:17.89	1.1491613	5.86	-0.2	61.1
07/24/2023	9:41:32.440	14:55:01.56	1.1356810	5.93	-0.2	62.8
07/25/2023	9:47:26.329	14:17:27.05	1.1220425	6.00	-0.2	64.4
07/26/2023	9:53:10.509	13:39:39.05	1.1082634	6.07	-0.1	66.0
07/27/2023	9:58:45.108	13:01:42.11	1.0943593	6.15	-0.1	67.6
07/28/2023	10:04:10.235	12:23:40.62	1.0803442	6.23	-0.1	69.1
07/29/2023	10:09:25.979	11:45:38.87	1.0662305	6.31	-0.0	70.6
07/30/2023	10:14:32.404	11:07:41.04	1.0520293	6.40	-0.0	72.1
07/31/2023	10:19:29.547	10:29:51.28	1.0377508	6.49	0.0	73.6
08/01/2023	10:24:17.423	9:52:13.67	1.0234042	6.58	0.0	75.2
08/02/2023	10:28:56.014	9:14:52.28	1.0089982	6.67	0.1	76.7
08/03/2023	10:33:25.277	8:37:51.18	0.9945410	6.77	0.1	78.2
08/04/2023	10:37:45.138	8:01:14.47	0.9800403	6.87	0.1	79.8
08/05/2023	10:41:55.490	7:25:06.31	0.9655041	6.97	0.1	81.4
08/06/2023	10:45:56.191	6:49:30.98	0.9509401	7.08	0.2	83.0
08/07/2023	10:49:47.060	6:14:32.89	0.9363566	7.19	0.2	84.7
08/08/2023	10:53:27.875	5:40:16.63	0.9217625	7.30	0.2	86.4
08/09/2023	10:56:58.371	5:06:47.01	0.9071674	7.42	0.2	88.1
08/10/2023	11:00:18.237	4:34:09.07	0.8925823	7.54	0.3	89.9
08/11/2023	11:03:27.119	4:02:28.17	0.8780192	7.66	0.3	91.7
08/12/2023	11:06:24.611	3:31:49.95	0.8634922	7.79	0.3	93.6
08/13/2023	11:09:10.263	3:02:20.43	0.8490172	7.93	0.3	95.5
08/14/2023	11:11:43.576	2:34:06.03	0.8346125	8.06	0.4	97.5
08/15/2023	11:14:04.001	2:07:13.59	0.8202990	8.20	0.4	99.6
08/16/2023	11:16:10.946	1:41:50.43	0.8061007	8.35	0.5	101.7
08/17/2023	11:18:03.775	1:18:04.35	0.7920453	8.50	0.5	103.9
08/18/2023	11:19:41.810	0:56:03.69	0.7781643	8.65	0.6	106.2
08/19/2023	11:21:04.346	0:35:57.32	0.7644939	8.80	0.6	108.5
08/20/2023	11:22:10.653	0:17:54.62	0.7510750	8.96	0.7	111.0
08/21/2023	11:22:59.993	0:02:05.48	0.7379541	9.12	0.8	113.5
08/22/2023	11:23:31.637	-0:11:19.79	0.7251840	9.28	0.9	116.2
08/23/2023	11:23:44.890	-0:22:10.53	0.7128240	9.44	1.0	119.0
08/24/2023	11:23:39.114	-0:30:15.94	0.7009402	9.60	1.1	121.9
08/25/2023	11:23:13.773	-0:35:25.27	0.6896068	9.76	1.3	124.9
08/26/2023	11:22:28.466	-0:37:28.12	0.6789053	9.91	1.4	128.1
08/27/2023	11:21:22.984	-0:36:14.84	0.6689255	10.06	1.6	131.4
08/28/2023	11:19:57.362	-0:31:37.06	0.6597651	10.20	1.9	134.8
08/29/2023	11:18:11.940	-0:23:28.23	0.6515293	10.33	2.1	138.4
08/30/2023	11:16:07.431	-0:11:44.34	0.6443297	10.44	2.4	142.2
08/31/2023	11:13:44.973	0:03:35.38	0.6382836	10.54	2.7	146.1
09/01/2023	11:11:06.190	0:22:27.70	0.6335121	10.62	3.1	150.1
09/02/2023	11:08:13.220	0:44:44.72	0.6301372	10.68	3.5	154.2
09/03/2023	11:05:08.737	1:10:13.30	0.6282801	10.71	4.0	158.3
09/04/2023	11:01:55.936	1:38:34.80	0.6280570	10.72	4.5	162.4
09/05/2023	10:58:38.493	2:09:24.95	0.6295763	10.69	4.9	166.2
09/06/2023	10:55:20.486	2:42:14.25	0.6329344	10.63	5.3	169.0

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	10:52:06.294	3:16:28.58	0.6382123	10.55	5.4	169.8
09/08/2023	10:49:00.457	3:51:30.28	0.6454720	10.43	5.2	168.1
09/09/2023	10:46:07.529	4:26:39.44	0.6547539	10.28	4.7	164.5
09/10/2023	10:43:31.919	5:01:15.36	0.6660741	10.10	4.1	160.0
09/11/2023	10:41:17.739	5:34:38.01	0.6794230	9.91	3.5	154.9
09/12/2023	10:39:28.675	6:06:09.38	0.6947644	9.69	2.9	149.6
09/13/2023	10:38:07.875	6:35:14.63	0.7120357	9.45	2.4	144.1
09/14/2023	10:37:17.873	7:01:22.90	0.7311481	9.20	1.9	138.5
09/15/2023	10:37:00.552	7:24:07.88	0.7519880	8.95	1.4	132.9
09/16/2023	10:37:17.121	7:43:08.08	0.7744184	8.69	1.0	127.1
09/17/2023	10:38:08.138	7:58:06.82	0.7982811	8.43	0.7	121.4
09/18/2023	10:39:33.539	8:08:52.19	0.8233991	8.17	0.4	115.6
09/19/2023	10:41:32.689	8:15:16.74	0.8495796	7.92	0.1	109.9
09/20/2023	10:44:04.451	8:17:17.25	0.8766171	7.68	-0.1	104.2
09/21/2023	10:47:07.252	8:14:54.35	0.9042980	7.44	-0.3	98.5
09/22/2023	10:50:39.162	8:08:12.22	0.9324043	7.22	-0.5	92.9
09/23/2023	10:54:37.978	7:57:18.19	0.9607188	7.01	-0.6	87.5
09/24/2023	10:59:01.299	7:42:22.36	0.9890296	6.80	-0.7	82.1
09/25/2023	11:03:46.612	7:23:37.17	1.0171352	6.62	-0.8	76.9
09/26/2023	11:08:51.363	7:01:16.97	1.0448483	6.44	-0.9	71.8
09/27/2023	11:14:13.029	6:35:37.55	1.0719998	6.28	-0.9	66.9
09/28/2023	11:19:49.176	6:06:55.66	1.0984412	6.13	-1.0	62.2
09/29/2023	11:25:37.507	5:35:28.61	1.1240462	5.99	-1.0	57.6
09/30/2023	11:31:35.897	5:01:33.81	1.1487114	5.86	-1.0	53.3
10/01/2023	11:37:42.418	4:25:28.45	1.1723557	5.74	-1.1	49.2
10/02/2023	11:43:55.348	3:47:29.18	1.1949193	5.63	-1.1	45.3
10/03/2023	11:50:13.178	3:07:51.88	1.2163616	5.53	-1.1	41.6
10/04/2023	11:56:34.604	2:26:51.49	1.2366591	5.44	-1.1	38.0
10/05/2023	12:02:58.518	1:44:41.90	1.2558031	5.36	-1.1	34.7
10/06/2023	12:09:23.995	1:01:35.85	1.2737971	5.28	-1.2	31.6
10/07/2023	12:15:50.276	0:17:45.00	1.2906542	5.21	-1.2	28.6
10/08/2023	12:22:16.748	-0:26:40.14	1.3063956	5.15	-1.2	25.8
10/09/2023	12:28:42.928	-1:11:30.09	1.3210478	5.09	-1.2	23.1
10/10/2023	12:35:08.446	-1:56:36.38	1.3346416	5.04	-1.3	20.6
10/11/2023	12:41:33.027	-2:41:51.46	1.3472104	5.00	-1.3	18.2
10/12/2023	12:47:56.475	-3:27:08.59	1.3587890	4.95	-1.3	16.0
10/13/2023	12:54:18.665	-4:12:21.81	1.3694129	4.91	-1.3	13.9
10/14/2023	13:00:39.527	-4:57:25.82	1.3791174	4.88	-1.4	11.8
10/15/2023	13:06:59.034	-5:42:15.92	1.3879369	4.85	-1.4	9.9
10/16/2023	13:13:17.200	-6:26:47.93	1.3959050	4.82	-1.4	8.1
10/17/2023	13:19:34.067	-7:10:58.14	1.4030537	4.80	-1.5	6.4
10/18/2023	13:25:49.699	-7:54:43.23	1.4094132	4.78	-1.5	4.8
10/19/2023	13:32:04.181	-8:38:00.24	1.4150124	4.76	-1.5	3.3
10/20/2023	13:38:17.607	-9:20:46.50	1.4198780	4.74	-1.6	2.1
10/21/2023	13:44:30.086	-10:02:59.58	1.4240349	4.73	-1.5	1.8
10/22/2023	13:50:41.731	-10:44:37.31	1.4275062	4.71	-1.5	2.5
10/23/2023	13:56:52.660	-11:25:37.67	1.4303132	4.71	-1.4	3.8
10/24/2023	14:03:02.998	-12:05:58.84	1.4324753	4.70	-1.3	5.1
10/25/2023	14:09:12.868	-12:45:39.10	1.4340103	4.69	-1.2	6.4
10/26/2023	14:15:22.398	-13:24:36.89	1.4349340	4.69	-1.2	7.7

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	14:21:31.711	-14:02:50.72	1.4352607	4.69	-1.1	9.0
10/28/2023	14:27:40.932	-14:40:19.19	1.4350031	4.69	-1.0	10.4
10/29/2023	14:33:50.178	-15:17:00.99	1.4341721	4.69	-1.0	11.7
10/30/2023	14:39:59.561	-15:52:54.81	1.4327774	4.70	-0.9	12.9
10/31/2023	14:46:09.184	-16:27:59.39	1.4308269	4.70	-0.8	14.2
11/01/2023	14:52:19.143	-17:02:13.50	1.4283274	4.71	-0.8	15.5
11/02/2023	14:58:29.525	-17:35:35.88	1.4252843	4.72	-0.8	16.7
11/03/2023	15:04:40.406	-18:08:05.31	1.4217016	4.73	-0.7	17.9
11/04/2023	15:10:51.855	-18:39:40.54	1.4175824	4.75	-0.7	19.2
11/05/2023	15:17:03.928	-19:10:20.33	1.4129286	4.76	-0.6	20.4
11/06/2023	15:23:16.670	-19:40:03.41	1.4077409	4.78	-0.6	21.6
11/07/2023	15:29:30.113	-20:08:48.53	1.4020191	4.80	-0.6	22.8
11/08/2023	15:35:44.276	-20:36:34.39	1.3957621	4.82	-0.6	24.0
11/09/2023	15:41:59.160	-21:03:19.69	1.3889677	4.85	-0.5	25.2
11/10/2023	15:48:14.754	-21:29:03.12	1.3816329	4.87	-0.5	26.5
11/11/2023	15:54:31.024	-21:53:43.33	1.3737537	4.90	-0.5	27.7
11/12/2023	16:00:47.918	-22:17:18.96	1.3653253	4.93	-0.5	28.9
11/13/2023	16:07:05.361	-22:39:48.65	1.3563423	4.96	-0.5	30.2
11/14/2023	16:13:23.252	-23:01:11.00	1.3467984	5.00	-0.5	31.5
11/15/2023	16:19:41.462	-23:21:24.61	1.3366867	5.03	-0.5	32.8
11/16/2023	16:25:59.834	-23:40:28.06	1.3259996	5.08	-0.5	34.1
11/17/2023	16:32:18.175	-23:58:19.95	1.3147291	5.12	-0.5	35.5
11/18/2023	16:38:36.256	-24:14:58.84	1.3028668	5.17	-0.5	36.9
11/19/2023	16:44:53.809	-24:30:23.33	1.2904037	5.22	-0.5	38.4
11/20/2023	16:51:10.521	-24:44:32.02	1.2773307	5.27	-0.5	39.9
11/21/2023	16:57:26.033	-24:57:23.54	1.2636388	5.33	-0.5	41.6
11/22/2023	17:03:39.930	-25:08:56.59	1.2493187	5.39	-0.5	43.2
11/23/2023	17:09:51.738	-25:19:09.93	1.2343614	5.45	-0.5	45.0
11/24/2023	17:16:00.915	-25:28:02.38	1.2187587	5.52	-0.5	46.8
11/25/2023	17:22:06.840	-25:35:32.89	1.2025028	5.60	-0.5	48.8
11/26/2023	17:28:08.803	-25:41:40.55	1.1855873	5.68	-0.5	50.9
11/27/2023	17:34:05.997	-25:46:24.57	1.1680072	5.76	-0.5	53.0
11/28/2023	17:39:57.500	-25:49:44.35	1.1497600	5.85	-0.5	55.3
11/29/2023	17:45:42.263	-25:51:39.53	1.1308457	5.95	-0.5	57.8
11/30/2023	17:51:19.097	-25:52:09.96	1.1112684	6.06	-0.5	60.4
12/01/2023	17:56:46.651	-25:51:15.82	1.0910368	6.17	-0.5	63.1
12/02/2023	18:02:03.398	-25:48:57.62	1.0701658	6.29	-0.5	66.0
12/03/2023	18:07:07.611	-25:45:16.26	1.0486776	6.42	-0.5	69.1
12/04/2023	18:11:57.347	-25:40:13.13	1.0266038	6.56	-0.5	72.3
12/05/2023	18:16:30.424	-25:33:50.07	1.0039871	6.70	-0.5	75.8
12/06/2023	18:20:44.403	-25:26:09.49	0.9808839	6.86	-0.5	79.5
12/07/2023	18:24:36.581	-25:17:14.39	0.9573666	7.03	-0.5	83.5
12/08/2023	18:28:03.984	-25:07:08.34	0.9335267	7.21	-0.4	87.7
12/09/2023	18:31:03.377	-24:55:55.50	0.9094776	7.40	-0.3	92.1
12/10/2023	18:33:31.303	-24:43:40.58	0.8853581	7.60	-0.3	96.9
12/11/2023	18:35:24.141	-24:30:28.73	0.8613347	7.81	-0.1	101.9
12/12/2023	18:36:38.213	-24:16:25.43	0.8376049	8.03	0.0	107.2
12/13/2023	18:37:09.946	-24:01:36.36	0.8143979	8.26	0.2	112.9
12/14/2023	18:36:56.091	-23:46:07.17	0.7919755	8.50	0.5	118.8
12/15/2023	18:35:54.019	-23:30:03.40	0.7706291	8.73	0.8	125.1

## Mercury - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	18:34:02.084	-23:13:30.44	0.7506755	8.97	1.2	131.7
12/17/2023	18:31:20.024	-22:56:33.68	0.7324476	9.19	1.7	138.5
12/18/2023	18:27:49.372	-22:39:18.91	0.7162818	9.40	2.3	145.6
12/19/2023	18:23:33.793	-22:21:53.07	0.7025022	9.58	3.0	152.8
12/20/2023	18:18:39.267	-22:04:25.08	0.6914008	9.73	3.8	160.0
12/21/2023	18:13:14.037	-21:47:06.76	0.6832176	9.85	4.7	167.0
12/22/2023	18:07:28.254	-21:30:13.34	0.6781218	9.92	5.5	172.5
12/23/2023	18:01:33.345	-21:14:03.44	0.6761987	9.95	5.5	172.1
12/24/2023	17:55:41.167	-20:58:58.06	0.6774420	9.93	4.7	166.4
12/25/2023	17:50:03.106	-20:45:19.00	0.6817561	9.87	3.8	159.6
12/26/2023	17:44:49.261	-20:33:26.65	0.6889656	9.77	3.0	152.7
12/27/2023	17:40:07.865	-20:23:38.02	0.6988310	9.63	2.4	145.9
12/28/2023	17:36:04.989	-20:16:05.14	0.7110682	9.46	1.8	139.3
12/29/2023	17:32:44.526	-20:10:54.24	0.7253681	9.28	1.4	133.1
12/30/2023	17:30:08.388	-20:08:05.77	0.7414146	9.08	1.0	127.2
12/31/2023	17:28:16.837	-20:07:35.00	0.7588988	8.87	0.7	121.6
01/01/2024	17:27:08.864	-20:09:13.00	0.7775301	8.66	0.5	116.3
01/02/2024	17:26:42.556	-20:12:47.81	0.7970423	8.44	0.3	111.4



Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	19:53:37.433	-22:15:29.21	1.6103980	10.36	-3.9	22.5
01/01/2023	19:58:56.888	-22:02:13.62	1.6075185	10.38	-3.9	22.8
01/02/2023	20:04:15.252	-21:48:18.56	1.6046028	10.40	-3.9	23.2
01/03/2023	20:09:32.490	-21:33:44.61	1.6016511	10.42	-3.9	23.5
01/04/2023	20:14:48.569	-21:18:32.38	1.5986636	10.44	-3.9	23.9
01/05/2023	20:20:03.460	-21:02:42.50	1.5956406	10.46	-3.9	24.2
01/06/2023	20:25:17.137	-20:46:15.59	1.5925820	10.48	-3.9	24.6
01/07/2023	20:30:29.575	-20:29:12.30	1.5894880	10.50	-3.9	25.0
01/08/2023	20:35:40.754	-20:11:33.30	1.5863587	10.52	-3.9	25.3
01/09/2023	20:40:50.657	-19:53:19.26	1.5831940	10.54	-3.9	25.7
01/10/2023	20:45:59.267	-19:34:30.86	1.5799939	10.56	-3.9	26.1
01/11/2023	20:51:06.575	-19:15:08.80	1.5767584	10.58	-3.9	26.5
01/12/2023	20:56:12.570	-18:55:13.78	1.5734873	10.61	-3.9	26.9
01/13/2023	21:01:17.248	-18:34:46.51	1.5701805	10.63	-3.9	27.3
01/14/2023	21:06:20.606	-18:13:47.72	1.5668379	10.65	-3.9	27.7
01/15/2023	21:11:22.643	-17:52:18.13	1.5634591	10.67	-3.9	28.0
01/16/2023	21:16:23.363	-17:30:18.49	1.5600440	10.70	-3.9	28.4
01/17/2023	21:21:22.768	-17:07:49.54	1.5565922	10.72	-3.9	28.8
01/18/2023	21:26:20.866	-16:44:52.04	1.5531034	10.75	-3.9	29.2
01/19/2023	21:31:17.663	-16:21:26.78	1.5495771	10.77	-3.9	29.5
01/20/2023	21:36:13.165	-15:57:34.53	1.5460129	10.79	-3.9	29.9
01/21/2023	21:41:07.380	-15:33:16.11	1.5424105	10.82	-3.9	30.2
01/22/2023	21:46:00.315	-15:08:32.30	1.5387695	10.85	-3.9	30.6
01/23/2023	21:50:51.981	-14:43:23.91	1.5350896	10.87	-3.9	30.9
01/24/2023	21:55:42.389	-14:17:51.76	1.5313707	10.90	-3.9	31.2
01/25/2023	22:00:31.556	-13:51:56.62	1.5276126	10.92	-3.9	31.5
01/26/2023	22:05:19.502	-13:25:39.30	1.5238155	10.95	-3.9	31.8
01/27/2023	22:10:06.249	-12:59:00.61	1.5199794	10.98	-3.9	32.2
01/28/2023	22:14:51.820	-12:32:01.33	1.5161045	11.01	-3.9	32.5
01/29/2023	22:19:36.242	-12:04:42.27	1.5121909	11.04	-3.9	32.8
01/30/2023	22:24:19.541	-11:37:04.23	1.5082388	11.06	-3.9	33.2
01/31/2023	22:29:01.744	-11:09:08.02	1.5042484	11.09	-3.9	33.5
02/01/2023	22:33:42.880	-10:40:54.43	1.5002197	11.12	-3.9	33.8
02/02/2023	22:38:22.979	-10:12:24.25	1.4961530	11.15	-3.9	34.2
02/03/2023	22:43:02.074	-9:43:38.26	1.4920482	11.18	-3.9	34.6
02/04/2023	22:47:40.196	-9:14:37.25	1.4879055	11.22	-3.9	34.9
02/05/2023	22:52:17.379	-8:45:22.00	1.4837249	11.25	-3.9	35.3
02/06/2023	22:56:53.660	-8:15:53.26	1.4795064	11.28	-3.9	35.7
02/07/2023	23:01:29.074	-7:46:11.81	1.4752501	11.31	-3.9	36.1
02/08/2023	23:06:03.659	-7:16:18.39	1.4709559	11.35	-3.9	36.5
02/09/2023	23:10:37.456	-6:46:13.77	1.4666238	11.38	-3.9	36.9
02/10/2023	23:15:10.503	-6:15:58.67	1.4622535	11.41	-3.9	37.3
02/11/2023	23:19:42.843	-5:45:33.84	1.4578451	11.45	-3.9	37.8
02/12/2023	23:24:14.517	-5:15:00.02	1.4533982	11.48	-3.9	38.2
02/13/2023	23:28:45.567	-4:44:17.94	1.4489127	11.52	-3.9	38.6
02/14/2023	23:33:16.035	-4:13:28.34	1.4443882	11.55	-3.9	39.0
02/15/2023	23:37:45.962	-3:42:31.95	1.4398245	11.59	-3.9	39.4
02/16/2023	23:42:15.389	-3:11:29.51	1.4352211	11.63	-3.9	39.8
02/17/2023	23:46:44.356	-2:40:21.78	1.4305776	11.67	-3.9	40.2
02/18/2023	23:51:12.899	-2:09:09.51	1.4258935	11.70	-3.9	40.6

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	23:55:41.056	-1:37:53.45	1.4211685	11.74	-3.9	41.0
02/20/2023	0:00:08.866	-1:06:34.37	1.4164019	11.78	-3.9	41.4
02/21/2023	0:04:36.366	-0:35:13.03	1.4115936	11.82	-3.9	41.8
02/22/2023	0:09:03.596	-0:03:50.18	1.4067433	11.86	-3.9	42.1
02/23/2023	0:13:30.595	0:27:33.44	1.4018507	11.90	-3.9	42.5
02/24/2023	0:17:57.404	0:58:57.07	1.3969160	11.95	-3.9	42.8
02/25/2023	0:22:24.062	1:30:19.98	1.3919390	11.99	-3.9	43.2
02/26/2023	0:26:50.609	2:01:41.41	1.3869200	12.03	-3.9	43.5
02/27/2023	0:31:17.082	2:33:00.62	1.3818590	12.08	-3.9	43.9
02/28/2023	0:35:43.519	3:04:16.87	1.3767562	12.12	-3.9	44.2
03/01/2023	0:40:09.959	3:35:29.41	1.3716117	12.17	-3.9	44.6
03/02/2023	0:44:36.440	4:06:37.50	1.3664257	12.21	-3.9	45.0
03/03/2023	0:49:03.000	4:37:40.42	1.3611983	12.26	-3.9	45.3
03/04/2023	0:53:29.677	5:08:37.43	1.3559298	12.31	-3.9	45.7
03/05/2023	0:57:56.508	5:39:27.81	1.3506202	12.36	-3.9	46.1
03/06/2023	1:02:23.533	6:10:10.84	1.3452697	12.41	-3.9	46.5
03/07/2023	1:06:50.790	6:40:45.79	1.3398784	12.46	-3.9	46.9
03/08/2023	1:11:18.316	7:11:11.96	1.3344465	12.51	-3.9	47.3
03/09/2023	1:15:46.151	7:41:28.63	1.3289741	12.56	-3.9	47.7
03/10/2023	1:20:14.334	8:11:35.11	1.3234612	12.61	-3.9	48.1
03/11/2023	1:24:42.901	8:41:30.70	1.3179080	12.66	-3.9	48.6
03/12/2023	1:29:11.891	9:11:14.70	1.3123144	12.72	-3.9	49.0
03/13/2023	1:33:41.339	9:40:46.41	1.3066803	12.77	-3.9	49.5
03/14/2023	1:38:11.281	10:10:05.13	1.3010057	12.83	-3.9	49.9
03/15/2023	1:42:41.749	10:39:10.16	1.2952905	12.88	-3.9	50.4
03/16/2023	1:47:12.773	11:08:00.80	1.2895345	12.94	-3.9	50.8
03/17/2023	1:51:44.384	11:36:36.32	1.2837373	13.00	-3.9	51.3
03/18/2023	1:56:16.607	12:04:56.00	1.2778988	13.06	-3.9	51.7
03/19/2023	2:00:49.468	12:32:59.11	1.2720185	13.12	-4.0	52.1
03/20/2023	2:05:22.993	13:00:44.91	1.2660963	13.18	-4.0	52.6
03/21/2023	2:09:57.203	13:28:12.67	1.2601317	13.24	-4.0	53.0
03/22/2023	2:14:32.122	13:55:21.65	1.2541246	13.31	-4.0	53.4
03/23/2023	2:19:07.771	14:22:11.14	1.2480749	13.37	-4.0	53.8
03/24/2023	2:23:44.166	14:48:40.40	1.2419825	13.44	-4.0	54.2
03/25/2023	2:28:21.324	15:14:48.71	1.2358475	13.50	-4.0	54.6
03/26/2023	2:32:59.257	15:40:35.35	1.2296700	13.57	-4.0	55.0
03/27/2023	2:37:37.975	16:05:59.60	1.2234502	13.64	-4.0	55.4
03/28/2023	2:42:17.486	16:31:00.74	1.2171884	13.71	-4.0	55.8
03/29/2023	2:46:57.799	16:55:38.06	1.2108849	13.78	-4.0	56.2
03/30/2023	2:51:38.918	17:19:50.86	1.2045400	13.85	-4.0	56.6
03/31/2023	2:56:20.848	17:43:38.44	1.1981541	13.93	-4.0	57.0
04/01/2023	3:01:03.590	18:07:00.11	1.1917275	14.00	-4.0	57.4
04/02/2023	3:05:47.146	18:29:55.20	1.1852607	14.08	-4.0	57.8
04/03/2023	3:10:31.514	18:52:23.02	1.1787539	14.16	-4.0	58.2
04/04/2023	3:15:16.693	19:14:22.94	1.1722077	14.24	-4.0	58.6
04/05/2023	3:20:02.679	19:35:54.30	1.1656224	14.32	-4.0	59.0
04/06/2023	3:24:49.466	19:56:56.48	1.1589986	14.40	-4.0	59.4
04/07/2023	3:29:37.049	20:17:28.86	1.1523365	14.48	-4.0	59.9
04/08/2023	3:34:25.416	20:37:30.85	1.1456367	14.57	-4.0	60.3
04/09/2023	3:39:14.558	20:57:01.86	1.1388995	14.65	-4.0	60.8

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	3:44:04.459	21:16:01.34	1.1321253	14.74	-4.0	61.2
04/11/2023	3:48:55.103	21:34:28.72	1.1253143	14.83	-4.0	61.7
04/12/2023	3:53:46.468	21:52:23.46	1.1184668	14.92	-4.0	62.2
04/13/2023	3:58:38.531	22:09:45.02	1.1115829	15.01	-4.0	62.7
04/14/2023	4:03:31.265	22:26:32.86	1.1046628	15.11	-4.0	63.2
04/15/2023	4:08:24.640	22:42:46.48	1.0977065	15.20	-4.0	63.7
04/16/2023	4:13:18.623	22:58:25.36	1.0907141	15.30	-4.0	64.2
04/17/2023	4:18:13.180	23:13:29.01	1.0836856	15.40	-4.1	64.7
04/18/2023	4:23:08.274	23:27:56.95	1.0766209	15.50	-4.1	65.1
04/19/2023	4:28:03.865	23:41:48.73	1.0695201	15.60	-4.1	65.6
04/20/2023	4:32:59.906	23:55:03.94	1.0623832	15.71	-4.1	66.1
04/21/2023	4:37:56.351	24:07:42.18	1.0552106	15.82	-4.1	66.6
04/22/2023	4:42:53.145	24:19:43.06	1.0480023	15.92	-4.1	67.1
04/23/2023	4:47:50.232	24:31:06.24	1.0407587	16.03	-4.1	67.5
04/24/2023	4:52:47.552	24:41:51.40	1.0334802	16.15	-4.1	68.0
04/25/2023	4:57:45.043	24:51:58.23	1.0261673	16.26	-4.1	68.4
04/26/2023	5:02:42.639	25:01:26.46	1.0188205	16.38	-4.1	68.9
04/27/2023	5:07:40.276	25:10:15.84	1.0114404	16.50	-4.1	69.3
04/28/2023	5:12:37.884	25:18:26.16	1.0040276	16.62	-4.1	69.8
04/29/2023	5:17:35.396	25:25:57.23	0.9965828	16.75	-4.1	70.2
04/30/2023	5:22:32.742	25:32:48.90	0.9891067	16.87	-4.1	70.6
05/01/2023	5:27:29.850	25:39:01.06	0.9815999	17.00	-4.1	71.1
05/02/2023	5:32:26.650	25:44:33.62	0.9740633	17.13	-4.2	71.5
05/03/2023	5:37:23.068	25:49:26.52	0.9664976	17.27	-4.2	72.0
05/04/2023	5:42:19.034	25:53:39.74	0.9589037	17.40	-4.2	72.4
05/05/2023	5:47:14.473	25:57:13.32	0.9512824	17.54	-4.2	72.9
05/06/2023	5:52:09.314	26:00:07.31	0.9436345	17.69	-4.2	73.4
05/07/2023	5:57:03.483	26:02:21.80	0.9359610	17.83	-4.2	73.9
05/08/2023	6:01:56.906	26:03:56.92	0.9282626	17.98	-4.2	74.4
05/09/2023	6:06:49.509	26:04:52.82	0.9205401	18.13	-4.2	74.9
05/10/2023	6:11:41.217	26:05:09.69	0.9127942	18.28	-4.2	75.4
05/11/2023	6:16:31.955	26:04:47.72	0.9050256	18.44	-4.2	76.0
05/12/2023	6:21:21.648	26:03:47.13	0.8972349	18.60	-4.2	76.5
05/13/2023	6:26:10.222	26:02:08.19	0.8894226	18.76	-4.2	77.1
05/14/2023	6:30:57.603	25:59:51.14	0.8815891	18.93	-4.2	77.6
05/15/2023	6:35:43.717	25:56:56.31	0.8737349	19.10	-4.2	78.2
05/16/2023	6:40:28.491	25:53:24.02	0.8658603	19.27	-4.2	78.8
05/17/2023	6:45:11.849	25:49:14.65	0.8579660	19.45	-4.2	79.3
05/18/2023	6:49:53.717	25:44:28.59	0.8500522	19.63	-4.2	79.9
05/19/2023	6:54:34.016	25:39:06.28	0.8421195	19.82	-4.3	80.5
05/20/2023	6:59:12.668	25:33:08.20	0.8341685	20.01	-4.3	81.1
05/21/2023	7:03:49.593	25:26:34.83	0.8261998	20.20	-4.3	81.6
05/22/2023	7:08:24.711	25:19:26.71	0.8182141	20.40	-4.3	82.2
05/23/2023	7:12:57.941	25:11:44.37	0.8102122	20.60	-4.3	82.8
05/24/2023	7:17:29.206	25:03:28.41	0.8021951	20.80	-4.3	83.3
05/25/2023	7:21:58.427	24:54:39.39	0.7941635	21.01	-4.3	83.9
05/26/2023	7:26:25.527	24:45:17.96	0.7861185	21.23	-4.3	84.4
05/27/2023	7:30:50.432	24:35:24.75	0.7780611	21.45	-4.3	85.0
05/28/2023	7:35:13.067	24:25:00.42	0.7699924	21.67	-4.3	85.5
05/29/2023	7:39:33.360	24:14:05.66	0.7619136	21.90	-4.4	86.1

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	7:43:51.239	24:02:41.18	0.7538258	22.14	-4.4	86.7
05/31/2023	7:48:06.635	23:50:47.72	0.7457304	22.38	-4.4	87.2
06/01/2023	7:52:19.479	23:38:26.01	0.7376286	22.62	-4.4	87.8
06/02/2023	7:56:29.705	23:25:36.83	0.7295219	22.88	-4.4	88.4
06/03/2023	8:00:37.245	23:12:20.98	0.7214116	23.13	-4.4	89.0
06/04/2023	8:04:42.036	22:58:39.25	0.7132994	23.40	-4.4	89.5
06/05/2023	8:08:44.012	22:44:32.47	0.7051865	23.67	-4.4	90.2
06/06/2023	8:12:43.110	22:30:01.46	0.6970747	23.94	-4.4	90.8
06/07/2023	8:16:39.267	22:15:07.06	0.6889652	24.22	-4.4	91.4
06/08/2023	8:20:32.421	21:59:50.10	0.6808595	24.51	-4.5	92.1
06/09/2023	8:24:22.510	21:44:11.40	0.6727589	24.81	-4.5	92.7
06/10/2023	8:28:09.474	21:28:11.79	0.6646647	25.11	-4.5	93.4
06/11/2023	8:31:53.251	21:11:52.13	0.6565782	25.42	-4.5	94.1
06/12/2023	8:35:33.779	20:55:13.27	0.6485004	25.73	-4.5	94.9
06/13/2023	8:39:10.992	20:38:16.09	0.6404327	26.06	-4.5	95.6
06/14/2023	8:42:44.823	20:21:01.49	0.6323762	26.39	-4.5	96.3
06/15/2023	8:46:15.197	20:03:30.40	0.6243323	26.73	-4.5	97.1
06/16/2023	8:49:42.039	19:45:43.75	0.6163023	27.08	-4.5	97.9
06/17/2023	8:53:05.268	19:27:42.51	0.6082876	27.44	-4.5	98.6
06/18/2023	8:56:24.797	19:09:27.68	0.6002897	27.80	-4.5	99.4
06/19/2023	8:59:40.538	18:51:00.24	0.5923103	28.18	-4.5	100.2
06/20/2023	9:02:52.398	18:32:21.24	0.5843511	28.56	-4.6	101.0
06/21/2023	9:06:00.279	18:13:31.70	0.5764139	28.95	-4.6	101.8
06/22/2023	9:09:04.082	17:54:32.69	0.5685007	29.36	-4.6	102.6
06/23/2023	9:12:03.703	17:35:25.28	0.5606136	29.77	-4.6	103.5
06/24/2023	9:14:59.033	17:16:10.56	0.5527549	30.19	-4.6	104.3
06/25/2023	9:17:49.963	16:56:49.66	0.5449268	30.62	-4.6	105.1
06/26/2023	9:20:36.375	16:37:23.72	0.5371319	31.07	-4.6	105.9
06/27/2023	9:23:18.151	16:17:53.89	0.5293728	31.52	-4.6	106.8
06/28/2023	9:25:55.166	15:58:21.37	0.5216522	31.99	-4.6	107.6
06/29/2023	9:28:27.291	15:38:47.37	0.5139730	32.47	-4.6	108.5
06/30/2023	9:30:54.393	15:19:13.13	0.5063385	32.96	-4.7	109.4
07/01/2023	9:33:16.333	14:59:39.93	0.4987518	33.46	-4.7	110.3
07/02/2023	9:35:32.971	14:40:09.05	0.4912163	33.97	-4.7	111.2
07/03/2023	9:37:44.159	14:20:41.82	0.4837358	34.50	-4.7	112.1
07/04/2023	9:39:49.748	14:01:19.57	0.4763138	35.04	-4.7	113.1
07/05/2023	9:41:49.584	13:42:03.65	0.4689543	35.59	-4.7	114.1
07/06/2023	9:43:43.512	13:22:55.40	0.4616610	36.15	-4.7	115.1
07/07/2023	9:45:31.375	13:03:56.19	0.4544380	36.72	-4.7	116.1
07/08/2023	9:47:13.013	12:45:07.41	0.4472892	37.31	-4.7	117.2
07/09/2023	9:48:48.259	12:26:30.47	0.4402187	37.91	-4.7	118.3
07/10/2023	9:50:16.944	12:08:06.86	0.4332307	38.52	-4.7	119.5
07/11/2023	9:51:38.891	11:49:58.08	0.4263295	39.14	-4.7	120.6
07/12/2023	9:52:53.917	11:32:05.72	0.4195196	39.78	-4.7	121.8
07/13/2023	9:54:01.834	11:14:31.42	0.4128058	40.43	-4.7	123.1
07/14/2023	9:55:02.451	10:57:16.86	0.4061929	41.08	-4.7	124.3
07/15/2023	9:55:55.572	10:40:23.81	0.3996862	41.75	-4.7	125.7
07/16/2023	9:56:41.002	10:23:54.06	0.3932912	42.43	-4.7	127.0
07/17/2023	9:57:18.546	10:07:49.47	0.3870135	43.12	-4.7	128.3
07/18/2023	9:57:48.014	9:52:11.95	0.3808593	43.82	-4.7	129.7

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	9:58:09.222	9:37:03.44	0.3748348	44.52	-4.7	131.2
07/20/2023	9:58:21.993	9:22:25.93	0.3689466	45.23	-4.6	132.6
07/21/2023	9:58:26.165	9:08:21.44	0.3632016	45.95	-4.6	134.1
07/22/2023	9:58:21.589	8:54:51.99	0.3576072	46.67	-4.6	135.6
07/23/2023	9:58:08.139	8:41:59.66	0.3521707	47.39	-4.6	137.1
07/24/2023	9:57:45.710	8:29:46.48	0.3468999	48.11	-4.6	138.7
07/25/2023	9:57:14.224	8:18:14.50	0.3418027	48.82	-4.6	140.3
07/26/2023	9:56:33.637	8:07:25.73	0.3368876	49.54	-4.5	141.9
07/27/2023	9:55:43.945	7:57:22.12	0.3321628	50.24	-4.5	143.5
07/28/2023	9:54:45.181	7:48:05.56	0.3276370	50.94	-4.5	145.2
07/29/2023	9:53:37.433	7:39:37.84	0.3233190	51.62	-4.5	146.8
07/30/2023	9:52:20.838	7:32:00.60	0.3192174	52.28	-4.4	148.5
07/31/2023	9:50:55.594	7:25:15.35	0.3153411	52.92	-4.4	150.3
08/01/2023	9:49:21.964	7:19:23.33	0.3116987	53.54	-4.4	152.0
08/02/2023	9:47:40.277	7:14:25.59	0.3082986	54.13	-4.3	153.7
08/03/2023	9:45:50.937	7:10:22.84	0.3051489	54.69	-4.3	155.5
08/04/2023	9:43:54.415	7:07:15.53	0.3022570	55.21	-4.2	157.2
08/05/2023	9:41:51.254	7:05:03.76	0.2996301	55.70	-4.2	159.0
08/06/2023	9:39:42.058	7:03:47.35	0.2972745	56.14	-4.1	160.7
08/07/2023	9:37:27.494	7:03:25.77	0.2951960	56.53	-4.1	162.4
08/08/2023	9:35:08.284	7:03:58.20	0.2933996	56.88	-4.1	164.0
08/09/2023	9:32:45.197	7:05:23.48	0.2918897	57.17	-4.1	165.5
08/10/2023	9:30:19.047	7:07:40.13	0.2906698	57.41	-4.1	166.9
08/11/2023	9:27:50.683	7:10:46.34	0.2897426	57.60	-4.1	168.0
08/12/2023	9:25:20.984	7:14:40.00	0.2891102	57.72	-4.1	168.8
08/13/2023	9:22:50.845	7:19:18.70	0.2887735	57.79	-4.1	169.2
08/14/2023	9:20:21.173	7:24:39.75	0.2887328	57.80	-4.1	169.2
08/15/2023	9:17:52.870	7:30:40.22	0.2889874	57.75	-4.1	168.7
08/16/2023	9:15:26.830	7:37:16.98	0.2895357	57.64	-4.1	167.8
08/17/2023	9:13:03.922	7:44:26.72	0.2903752	57.47	-4.1	166.7
08/18/2023	9:10:44.985	7:52:05.99	0.2915028	57.25	-4.1	165.3
08/19/2023	9:08:30.820	8:00:11.28	0.2929145	56.97	-4.1	163.7
08/20/2023	9:06:22.178	8:08:38.99	0.2946054	56.65	-4.1	162.1
08/21/2023	9:04:19.756	8:17:25.54	0.2965703	56.27	-4.2	160.4
08/22/2023	9:02:24.194	8:26:27.37	0.2988032	55.85	-4.2	158.6
08/23/2023	9:00:36.069	8:35:40.97	0.3012975	55.39	-4.3	156.8
08/24/2023	8:58:55.890	8:45:02.91	0.3040462	54.89	-4.3	155.0
08/25/2023	8:57:24.105	8:54:29.89	0.3070421	54.35	-4.4	153.2
08/26/2023	8:56:01.093	9:03:58.71	0.3102775	53.79	-4.4	151.4
08/27/2023	8:54:47.170	9:13:26.31	0.3137445	53.19	-4.4	149.7
08/28/2023	8:53:42.590	9:22:49.77	0.3174350	52.57	-4.5	148.0
08/29/2023	8:52:47.548	9:32:06.33	0.3213405	51.93	-4.5	146.3
08/30/2023	8:52:02.184	9:41:13.34	0.3254528	51.28	-4.6	144.6
08/31/2023	8:51:26.584	9:50:08.30	0.3297631	50.61	-4.6	143.0
09/01/2023	8:51:00.785	9:58:48.90	0.3342629	49.93	-4.6	141.4
09/02/2023	8:50:44.776	10:07:12.96	0.3389434	49.24	-4.6	139.8
09/03/2023	8:50:38.500	10:15:18.51	0.3437959	48.54	-4.7	138.3
09/04/2023	8:50:41.861	10:23:03.78	0.3488121	47.84	-4.7	136.8
09/05/2023	8:50:54.724	10:30:27.14	0.3539835	47.14	-4.7	135.3
09/06/2023	8:51:16.924	10:37:27.19	0.3593021	46.45	-4.7	133.8

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	8:51:48.267	10:44:02.63	0.3647603	45.75	-4.7	132.4
09/08/2023	8:52:28.543	10:50:12.32	0.3703505	45.06	-4.7	131.0
09/09/2023	8:53:17.523	10:55:55.25	0.3760657	44.38	-4.7	129.6
09/10/2023	8:54:14.968	11:01:10.51	0.3818991	43.70	-4.7	128.3
09/11/2023	8:55:20.627	11:05:57.30	0.3878443	43.03	-4.8	126.9
09/12/2023	8:56:34.247	11:10:14.89	0.3938951	42.37	-4.8	125.6
09/13/2023	8:57:55.570	11:14:02.65	0.4000458	41.72	-4.8	124.3
09/14/2023	8:59:24.335	11:17:20.02	0.4062908	41.07	-4.8	123.1
09/15/2023	9:01:00.283	11:20:06.52	0.4126250	40.44	-4.8	121.8
09/16/2023	9:02:43.157	11:22:21.71	0.4190435	39.82	-4.8	120.6
09/17/2023	9:04:32.704	11:24:05.23	0.4255416	39.22	-4.8	119.4
09/18/2023	9:06:28.673	11:25:16.75	0.4321150	38.62	-4.8	118.2
09/19/2023	9:08:30.819	11:25:56.01	0.4387595	38.04	-4.8	117.1
09/20/2023	9:10:38.904	11:26:02.78	0.4454714	37.46	-4.8	116.0
09/21/2023	9:12:52.695	11:25:36.87	0.4522471	36.90	-4.8	114.9
09/22/2023	9:15:11.965	11:24:38.13	0.4590830	36.35	-4.8	113.8
09/23/2023	9:17:36.494	11:23:06.42	0.4659759	35.81	-4.8	112.8
09/24/2023	9:20:06.069	11:21:01.66	0.4729227	35.29	-4.8	111.8
09/25/2023	9:22:40.486	11:18:23.75	0.4799206	34.77	-4.8	110.8
09/26/2023	9:25:19.546	11:15:12.62	0.4869666	34.27	-4.8	109.9
09/27/2023	9:28:03.060	11:11:28.24	0.4940579	33.78	-4.8	108.9
09/28/2023	9:30:50.846	11:07:10.54	0.5011918	33.30	-4.8	108.0
09/29/2023	9:33:42.728	11:02:19.51	0.5083655	32.83	-4.8	107.2
09/30/2023	9:36:38.536	10:56:55.16	0.5155764	32.37	-4.7	106.3
10/01/2023	9:39:38.104	10:50:57.56	0.5228216	31.92	-4.7	105.5
10/02/2023	9:42:41.269	10:44:26.81	0.5300986	31.48	-4.7	104.7
10/03/2023	9:45:47.869	10:37:23.07	0.5374049	31.05	-4.7	103.9
10/04/2023	9:48:57.747	10:29:46.55	0.5447380	30.64	-4.7	103.1
10/05/2023	9:52:10.749	10:21:37.49	0.5520956	30.23	-4.7	102.3
10/06/2023	9:55:26.725	10:12:56.16	0.5594757	29.83	-4.7	101.5
10/07/2023	9:58:45.533	10:03:42.88	0.5668762	29.44	-4.7	100.8
10/08/2023	10:02:07.034	9:53:57.98	0.5742952	29.06	-4.7	100.0
10/09/2023	10:05:31.097	9:43:41.79	0.5817310	28.69	-4.7	99.2
10/10/2023	10:08:57.598	9:32:54.71	0.5891819	28.32	-4.7	98.5
10/11/2023	10:12:26.416	9:21:37.12	0.5966464	27.97	-4.6	97.7
10/12/2023	10:15:57.438	9:09:49.43	0.6041231	27.62	-4.6	97.0
10/13/2023	10:19:30.556	8:57:32.08	0.6116106	27.29	-4.6	96.3
10/14/2023	10:23:05.669	8:44:45.52	0.6191076	26.96	-4.6	95.5
10/15/2023	10:26:42.680	8:31:30.21	0.6266131	26.63	-4.6	94.8
10/16/2023	10:30:21.498	8:17:46.63	0.6341260	26.32	-4.6	94.1
10/17/2023	10:34:02.038	8:03:35.27	0.6416452	26.01	-4.6	93.3
10/18/2023	10:37:44.217	7:48:56.65	0.6491701	25.71	-4.6	92.6
10/19/2023	10:41:27.961	7:33:51.28	0.6566996	25.41	-4.6	91.9
10/20/2023	10:45:13.197	7:18:19.68	0.6642332	25.12	-4.6	91.2
10/21/2023	10:48:59.859	7:02:22.40	0.6717700	24.84	-4.6	90.5
10/22/2023	10:52:47.884	6:45:59.96	0.6793095	24.57	-4.5	89.9
10/23/2023	10:56:37.217	6:29:12.90	0.6868510	24.30	-4.5	89.2
10/24/2023	11:00:27.804	6:12:01.74	0.6943937	24.03	-4.5	88.6
10/25/2023	11:04:19.601	5:54:27.03	0.7019371	23.77	-4.5	87.9
10/26/2023	11:08:12.564	5:36:29.29	0.7094803	23.52	-4.5	87.3

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	11:12:06.658	5:18:09.04	0.7170226	23.27	-4.5	86.7
10/28/2023	11:16:01.849	4:59:26.84	0.7245630	23.03	-4.5	86.1
10/29/2023	11:19:58.105	4:40:23.25	0.7321005	22.80	-4.5	85.6
10/30/2023	11:23:55.394	4:20:58.85	0.7396342	22.56	-4.5	85.0
10/31/2023	11:27:53.686	4:01:14.27	0.7471631	22.34	-4.5	84.5
11/01/2023	11:31:52.950	3:41:10.15	0.7546861	22.11	-4.5	83.9
11/02/2023	11:35:53.159	3:20:47.15	0.7622022	21.89	-4.5	83.4
11/03/2023	11:39:54.283	3:00:05.95	0.7697105	21.68	-4.4	82.9
11/04/2023	11:43:56.299	2:39:07.25	0.7772101	21.47	-4.4	82.3
11/05/2023	11:47:59.184	2:17:51.75	0.7847001	21.27	-4.4	81.8
11/06/2023	11:52:02.919	1:56:20.15	0.7921798	21.07	-4.4	81.3
11/07/2023	11:56:07.486	1:34:33.17	0.7996484	20.87	-4.4	80.8
11/08/2023	12:00:12.870	1:12:31.54	0.8071053	20.68	-4.4	80.3
11/09/2023	12:04:19.059	0:50:16.00	0.8145497	20.49	-4.4	79.7
11/10/2023	12:08:26.043	0:27:47.27	0.8219811	20.30	-4.4	79.2
11/11/2023	12:12:33.814	0:05:06.10	0.8293989	20.12	-4.4	78.7
11/12/2023	12:16:42.365	-0:17:46.77	0.8368027	19.94	-4.4	78.2
11/13/2023	12:20:51.692	-0:40:50.58	0.8441919	19.77	-4.3	77.6
11/14/2023	12:25:01.792	-1:04:04.57	0.8515663	19.60	-4.3	77.1
11/15/2023	12:29:12.662	-1:27:27.99	0.8589255	19.43	-4.3	76.5
11/16/2023	12:33:24.304	-1:51:00.06	0.8662693	19.26	-4.3	76.0
11/17/2023	12:37:36.718	-2:14:40.04	0.8735975	19.10	-4.3	75.5
11/18/2023	12:41:49.906	-2:38:27.14	0.8809100	18.94	-4.3	74.9
11/19/2023	12:46:03.876	-3:02:20.61	0.8882066	18.79	-4.3	74.4
11/20/2023	12:50:18.635	-3:26:19.71	0.8954872	18.64	-4.3	73.9
11/21/2023	12:54:34.193	-3:50:23.68	0.9027518	18.49	-4.3	73.3
11/22/2023	12:58:50.567	-4:14:31.80	0.9100000	18.34	-4.3	72.8
11/23/2023	13:03:07.771	-4:38:43.33	0.9172316	18.19	-4.3	72.3
11/24/2023	13:07:25.825	-5:02:57.55	0.9244465	18.05	-4.3	71.8
11/25/2023	13:11:44.746	-5:27:13.72	0.9316441	17.91	-4.3	71.3
11/26/2023	13:16:04.555	-5:51:31.12	0.9388241	17.78	-4.3	70.9
11/27/2023	13:20:25.269	-6:15:48.98	0.9459859	17.64	-4.2	70.4
11/28/2023	13:24:46.904	-6:40:06.55	0.9531289	17.51	-4.2	70.0
11/29/2023	13:29:09.478	-7:04:23.04	0.9602527	17.38	-4.2	69.5
11/30/2023	13:33:33.005	-7:28:37.66	0.9673564	17.25	-4.2	69.1
12/01/2023	13:37:57.501	-7:52:49.60	0.9744396	17.13	-4.2	68.7
12/02/2023	13:42:22.981	-8:16:58.05	0.9815016	17.00	-4.2	68.3
12/03/2023	13:46:49.461	-8:41:02.19	0.9885419	16.88	-4.2	67.9
12/04/2023	13:51:16.955	-9:05:01.20	0.9955599	16.76	-4.2	67.5
12/05/2023	13:55:45.480	-9:28:54.26	1.0025551	16.65	-4.2	67.1
12/06/2023	14:00:15.051	-9:52:40.53	1.0095270	16.53	-4.2	66.7
12/07/2023	14:04:45.684	-10:16:19.19	1.0164751	16.42	-4.2	66.2
12/08/2023	14:09:17.394	-10:39:49.41	1.0233990	16.31	-4.2	65.8
12/09/2023	14:13:50.195	-11:03:10.36	1.0302984	16.20	-4.2	65.4
12/10/2023	14:18:24.101	-11:26:21.20	1.0371727	16.09	-4.1	65.0
12/11/2023	14:22:59.126	-11:49:21.11	1.0440218	15.98	-4.1	64.6
12/12/2023	14:27:35.279	-12:12:09.24	1.0508454	15.88	-4.1	64.2
12/13/2023	14:32:12.572	-12:34:44.77	1.0576433	15.78	-4.1	63.8
12/14/2023	14:36:51.013	-12:57:06.85	1.0644153	15.68	-4.1	63.3
12/15/2023	14:41:30.609	-13:19:14.66	1.0711616	15.58	-4.1	62.9

Venus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	14:46:11.367	-13:41:07.35	1.0778820	15.48	-4.1	62.4
12/17/2023	14:50:53.296	-14:02:44.10	1.0845767	15.39	-4.1	62.0
12/18/2023	14:55:36.404	-14:24:04.10	1.0912458	15.29	-4.1	61.5
12/19/2023	15:00:20.701	-14:45:06.54	1.0978895	15.20	-4.1	61.1
12/20/2023	15:05:06.199	-15:05:50.63	1.1045077	15.11	-4.1	60.6
12/21/2023	15:09:52.907	-15:26:15.60	1.1111006	15.02	-4.1	60.2
12/22/2023	15:14:40.836	-15:46:20.67	1.1176680	14.93	-4.1	59.8
12/23/2023	15:19:29.994	-16:06:05.07	1.1242101	14.84	-4.1	59.3
12/24/2023	15:24:20.387	-16:25:28.05	1.1307265	14.76	-4.1	58.9
12/25/2023	15:29:12.018	-16:44:28.84	1.1372171	14.67	-4.1	58.5
12/26/2023	15:34:04.888	-17:03:06.68	1.1436816	14.59	-4.1	58.1
12/27/2023	15:38:58.995	-17:21:20.78	1.1501198	14.51	-4.0	57.7
12/28/2023	15:43:54.337	-17:39:10.40	1.1565313	14.43	-4.0	57.3
12/29/2023	15:48:50.906	-17:56:34.75	1.1629156	14.35	-4.0	56.9
12/30/2023	15:53:48.696	-18:13:33.07	1.1692725	14.27	-4.0	56.6
12/31/2023	15:58:47.696	-18:30:04.61	1.1756015	14.20	-4.0	56.2
01/01/2024	16:03:47.896	-18:46:08.63	1.1819023	14.12	-4.0	55.9
01/02/2024	16:08:49.281	-19:01:44.38	1.1881745	14.05	-4.0	55.5



## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	4:28:18.006	24:36:23.73	0.6326548	14.80	-1.2	18.8
01/01/2023	4:27:34.310	24:35:18.02	0.6384140	14.67	-1.2	19.5
01/02/2023	4:26:54.240	24:34:15.77	0.6443240	14.54	-1.2	20.1
01/03/2023	4:26:17.801	24:33:17.27	0.6503811	14.40	-1.2	20.7
01/04/2023	4:25:44.989	24:32:22.81	0.6565819	14.26	-1.1	21.3
01/05/2023	4:25:15.793	24:31:32.63	0.6629228	14.13	-1.1	21.9
01/06/2023	4:24:50.198	24:30:46.94	0.6694006	13.99	-1.1	22.5
01/07/2023	4:24:28.183	24:30:05.93	0.6760119	13.85	-1.0	23.0
01/08/2023	4:24:09.723	24:29:29.75	0.6827534	13.72	-1.0	23.6
01/09/2023	4:23:54.791	24:28:58.53	0.6896221	13.58	-1.0	24.1
01/10/2023	4:23:43.354	24:28:32.38	0.6966146	13.44	-0.9	24.6
01/11/2023	4:23:35.381	24:28:11.38	0.7037282	13.31	-0.9	25.1
01/12/2023	4:23:30.835	24:27:55.61	0.7109596	13.17	-0.9	25.6
01/13/2023	4:23:29.680	24:27:45.10	0.7183059	13.04	-0.8	26.1
01/14/2023	4:23:31.879	24:27:39.89	0.7257643	12.90	-0.8	26.6
01/15/2023	4:23:37.392	24:27:39.99	0.7333318	12.77	-0.8	27.0
01/16/2023	4:23:46.179	24:27:45.42	0.7410057	12.64	-0.7	27.5
01/17/2023	4:23:58.201	24:27:56.17	0.7487830	12.51	-0.7	28.0
01/18/2023	4:24:13.414	24:28:12.21	0.7566610	12.38	-0.7	28.4
01/19/2023	4:24:31.777	24:28:33.51	0.7646368	12.25	-0.6	28.8
01/20/2023	4:24:53.243	24:29:00.02	0.7727075	12.12	-0.6	29.2
01/21/2023	4:25:17.767	24:29:31.68	0.7808701	11.99	-0.6	29.7
01/22/2023	4:25:45.300	24:30:08.37	0.7891215	11.87	-0.5	30.0
01/23/2023	4:26:15.790	24:30:49.98	0.7974585	11.74	-0.5	30.4
01/24/2023	4:26:49.186	24:31:36.34	0.8058781	11.62	-0.5	30.8
01/25/2023	4:27:25.435	24:32:27.30	0.8143771	11.50	-0.5	31.1
01/26/2023	4:28:04.484	24:33:22.68	0.8229523	11.38	-0.4	31.5
01/27/2023	4:28:46.276	24:34:22.30	0.8316009	11.26	-0.4	31.8
01/28/2023	4:29:30.754	24:35:25.98	0.8403200	11.14	-0.4	32.1
01/29/2023	4:30:17.859	24:36:33.51	0.8491070	11.03	-0.3	32.4
01/30/2023	4:31:07.533	24:37:44.69	0.8579592	10.92	-0.3	32.7
01/31/2023	4:31:59.715	24:38:59.32	0.8668742	10.80	-0.3	32.9
02/01/2023	4:32:54.347	24:40:17.18	0.8758498	10.69	-0.3	33.2
02/02/2023	4:33:51.371	24:41:38.04	0.8848838	10.58	-0.2	33.4
02/03/2023	4:34:50.730	24:43:01.67	0.8939739	10.48	-0.2	33.6
02/04/2023	4:35:52.369	24:44:27.85	0.9031183	10.37	-0.2	33.8
02/05/2023	4:36:56.233	24:45:56.35	0.9123150	10.27	-0.1	34.1
02/06/2023	4:38:02.272	24:47:26.93	0.9215621	10.16	-0.1	34.3
02/07/2023	4:39:10.435	24:48:59.37	0.9308579	10.06	-0.1	34.4
02/08/2023	4:40:20.674	24:50:33.43	0.9402008	9.96	-0.1	34.6
02/09/2023	4:41:32.944	24:52:08.89	0.9495889	9.86	-0.0	34.8
02/10/2023	4:42:47.200	24:53:45.54	0.9590209	9.77	-0.0	35.0
02/11/2023	4:44:03.400	24:55:23.15	0.9684950	9.67	0.0	35.2
02/12/2023	4:45:21.505	24:57:01.52	0.9780098	9.58	0.0	35.3
02/13/2023	4:46:41.476	24:58:40.44	0.9875637	9.48	0.1	35.5
02/14/2023	4:48:03.276	25:00:19.73	0.9971553	9.39	0.1	35.7
02/15/2023	4:49:26.868	25:01:59.18	1.0067830	9.30	0.1	35.8
02/16/2023	4:50:52.215	25:03:38.60	1.0164453	9.21	0.1	36.0
02/17/2023	4:52:19.282	25:05:17.80	1.0261405	9.13	0.2	36.2
02/18/2023	4:53:48.032	25:06:56.58	1.0358669	9.04	0.2	36.3

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	4:55:18.430	25:08:34.72	1.0456227	8.96	0.2	36.4
02/20/2023	4:56:50.441	25:10:11.99	1.0554060	8.87	0.2	36.6
02/21/2023	4:58:24.029	25:11:48.19	1.0652149	8.79	0.3	36.7
02/22/2023	4:59:59.162	25:13:23.08	1.0750476	8.71	0.3	36.8
02/23/2023	5:01:35.805	25:14:56.46	1.0849020	8.63	0.3	36.9
02/24/2023	5:03:13.923	25:16:28.11	1.0947764	8.55	0.3	37.0
02/25/2023	5:04:53.480	25:17:57.85	1.1046692	8.48	0.3	37.1
02/26/2023	5:06:34.438	25:19:25.47	1.1145786	8.40	0.4	37.2
02/27/2023	5:08:16.761	25:20:50.77	1.1245033	8.33	0.4	37.2
02/28/2023	5:10:00.411	25:22:13.57	1.1344419	8.26	0.4	37.3
03/01/2023	5:11:45.351	25:23:33.66	1.1443930	8.18	0.4	37.3
03/02/2023	5:13:31.547	25:24:50.87	1.1543555	8.11	0.4	37.4
03/03/2023	5:15:18.963	25:26:05.00	1.1643282	8.04	0.5	37.4
03/04/2023	5:17:07.567	25:27:15.86	1.1743101	7.98	0.5	37.4
03/05/2023	5:18:57.326	25:28:23.27	1.1843001	7.91	0.5	37.5
03/06/2023	5:20:48.210	25:29:27.06	1.1942973	7.84	0.5	37.5
03/07/2023	5:22:40.190	25:30:27.04	1.2043008	7.78	0.5	37.5
03/08/2023	5:24:33.240	25:31:23.06	1.2143096	7.71	0.6	37.5
03/09/2023	5:26:27.332	25:32:14.95	1.2243230	7.65	0.6	37.5
03/10/2023	5:28:22.443	25:33:02.55	1.2343403	7.59	0.6	37.5
03/11/2023	5:30:18.550	25:33:45.72	1.2443605	7.53	0.6	37.5
03/12/2023	5:32:15.631	25:34:24.33	1.2543830	7.47	0.6	37.6
03/13/2023	5:34:13.665	25:34:58.23	1.2644070	7.41	0.7	37.6
03/14/2023	5:36:12.631	25:35:27.31	1.2744318	7.35	0.7	37.6
03/15/2023	5:38:12.509	25:35:51.44	1.2844563	7.29	0.7	37.6
03/16/2023	5:40:13.278	25:36:10.50	1.2944799	7.23	0.7	37.6
03/17/2023	5:42:14.917	25:36:24.36	1.3045014	7.18	0.7	37.6
03/18/2023	5:44:17.405	25:36:32.88	1.3145199	7.12	0.8	37.6
03/19/2023	5:46:20.723	25:36:35.95	1.3245342	7.07	0.8	37.6
03/20/2023	5:48:24.851	25:36:33.40	1.3345431	7.02	0.8	37.7
03/21/2023	5:50:29.771	25:36:25.11	1.3445453	6.97	0.8	37.6
03/22/2023	5:52:35.464	25:36:10.94	1.3545395	6.91	0.8	37.6
03/23/2023	5:54:41.913	25:35:50.76	1.3645244	6.86	0.8	37.6
03/24/2023	5:56:49.096	25:35:24.48	1.3744987	6.81	0.9	37.6
03/25/2023	5:58:56.993	25:34:51.99	1.3844614	6.76	0.9	37.6
03/26/2023	6:01:05.580	25:34:13.18	1.3944112	6.72	0.9	37.5
03/27/2023	6:03:14.834	25:33:27.96	1.4043473	6.67	0.9	37.5
03/28/2023	6:05:24.732	25:32:36.24	1.4142687	6.62	0.9	37.4
03/29/2023	6:07:35.249	25:31:37.91	1.4241745	6.58	0.9	37.4
03/30/2023	6:09:46.363	25:30:32.89	1.4340641	6.53	0.9	37.3
03/31/2023	6:11:58.053	25:29:21.08	1.4439368	6.49	1.0	37.2
04/01/2023	6:14:10.297	25:28:02.39	1.4537918	6.44	1.0	37.2
04/02/2023	6:16:23.076	25:26:36.74	1.4636286	6.40	1.0	37.1
04/03/2023	6:18:36.369	25:25:04.04	1.4734467	6.36	1.0	37.0
04/04/2023	6:20:50.160	25:23:24.20	1.4832454	6.31	1.0	36.9
04/05/2023	6:23:04.431	25:21:37.16	1.4930245	6.27	1.0	36.8
04/06/2023	6:25:19.167	25:19:42.85	1.5027834	6.23	1.0	36.8
04/07/2023	6:27:34.354	25:17:41.20	1.5125217	6.19	1.1	36.7
04/08/2023	6:29:49.977	25:15:32.15	1.5222392	6.15	1.1	36.6
04/09/2023	6:32:06.024	25:13:15.65	1.5319354	6.11	1.1	36.6

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	6:34:22.482	25:10:51.66	1.5416099	6.08	1.1	36.5
04/11/2023	6:36:39.338	25:08:20.14	1.5512624	6.04	1.1	36.4
04/12/2023	6:38:56.579	25:05:41.04	1.5608924	6.00	1.1	36.4
04/13/2023	6:41:14.191	25:02:54.32	1.5704992	5.96	1.1	36.3
04/14/2023	6:43:32.162	24:59:59.94	1.5800824	5.93	1.2	36.2
04/15/2023	6:45:50.479	24:56:57.83	1.5896412	5.89	1.2	36.2
04/16/2023	6:48:09.131	24:53:47.93	1.5991748	5.86	1.2	36.1
04/17/2023	6:50:28.106	24:50:30.20	1.6086823	5.82	1.2	36.0
04/18/2023	6:52:47.395	24:47:04.57	1.6181629	5.79	1.2	36.0
04/19/2023	6:55:06.988	24:43:30.99	1.6276155	5.75	1.2	35.9
04/20/2023	6:57:26.873	24:39:49.44	1.6370392	5.72	1.2	35.8
04/21/2023	6:59:47.038	24:35:59.88	1.6464330	5.69	1.2	35.7
04/22/2023	7:02:07.471	24:32:02.29	1.6557961	5.66	1.3	35.6
04/23/2023	7:04:28.155	24:27:56.66	1.6651277	5.62	1.3	35.5
04/24/2023	7:06:49.076	24:23:42.98	1.6744270	5.59	1.3	35.4
04/25/2023	7:09:10.218	24:19:21.23	1.6836933	5.56	1.3	35.3
04/26/2023	7:11:31.564	24:14:51.40	1.6929260	5.53	1.3	35.2
04/27/2023	7:13:53.099	24:10:13.49	1.7021247	5.50	1.3	35.1
04/28/2023	7:16:14.811	24:05:27.47	1.7112889	5.47	1.3	34.9
04/29/2023	7:18:36.684	24:00:33.34	1.7204180	5.44	1.3	34.8
04/30/2023	7:20:58.706	23:55:31.10	1.7295118	5.41	1.3	34.7
05/01/2023	7:23:20.865	23:50:20.72	1.7385699	5.39	1.3	34.5
05/02/2023	7:25:43.151	23:45:02.21	1.7475920	5.36	1.4	34.4
05/03/2023	7:28:05.553	23:39:35.57	1.7565779	5.33	1.4	34.3
05/04/2023	7:30:28.063	23:34:00.80	1.7655274	5.30	1.4	34.2
05/05/2023	7:32:50.672	23:28:17.91	1.7744404	5.28	1.4	34.0
05/06/2023	7:35:13.372	23:22:26.90	1.7833166	5.25	1.4	33.9
05/07/2023	7:37:36.156	23:16:27.81	1.7921561	5.23	1.4	33.8
05/08/2023	7:39:59.017	23:10:20.64	1.8009587	5.20	1.4	33.7
05/09/2023	7:42:21.948	23:04:05.42	1.8097242	5.17	1.4	33.6
05/10/2023	7:44:44.939	22:57:42.18	1.8184524	5.15	1.4	33.5
05/11/2023	7:47:07.985	22:51:10.93	1.8271430	5.13	1.4	33.4
05/12/2023	7:49:31.078	22:44:31.66	1.8357956	5.10	1.4	33.3
05/13/2023	7:51:54.212	22:37:44.40	1.8444098	5.08	1.5	33.1
05/14/2023	7:54:17.382	22:30:49.12	1.8529849	5.05	1.5	33.0
05/15/2023	7:56:40.585	22:23:45.84	1.8615203	5.03	1.5	32.9
05/16/2023	7:59:03.816	22:16:34.56	1.8700153	5.01	1.5	32.8
05/17/2023	8:01:27.072	22:09:15.29	1.8784692	4.99	1.5	32.7
05/18/2023	8:03:50.348	22:01:48.06	1.8868812	4.96	1.5	32.6
05/19/2023	8:06:13.638	21:54:12.89	1.8952506	4.94	1.5	32.5
05/20/2023	8:08:36.935	21:46:29.83	1.9035767	4.92	1.5	32.3
05/21/2023	8:11:00.230	21:38:38.92	1.9118590	4.90	1.5	32.2
05/22/2023	8:13:23.515	21:30:40.20	1.9200967	4.88	1.5	32.0
05/23/2023	8:15:46.780	21:22:33.71	1.9282893	4.86	1.5	31.9
05/24/2023	8:18:10.016	21:14:19.51	1.9364365	4.84	1.5	31.8
05/25/2023	8:20:33.216	21:05:57.62	1.9445379	4.82	1.5	31.6
05/26/2023	8:22:56.371	20:57:28.10	1.9525930	4.80	1.6	31.4
05/27/2023	8:25:19.475	20:48:50.99	1.9606015	4.78	1.6	31.3
05/28/2023	8:27:42.522	20:40:06.32	1.9685633	4.76	1.6	31.1
05/29/2023	8:30:05.506	20:31:14.14	1.9764782	4.74	1.6	31.0

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	8:32:28.422	20:22:14.49	1.9843459	4.72	1.6	30.8
05/31/2023	8:34:51.266	20:13:07.43	1.9921664	4.70	1.6	30.6
06/01/2023	8:37:14.036	20:03:52.99	1.9999396	4.68	1.6	30.5
06/02/2023	8:39:36.728	19:54:31.23	2.0076656	4.66	1.6	30.3
06/03/2023	8:41:59.340	19:45:02.21	2.0153443	4.65	1.6	30.2
06/04/2023	8:44:21.871	19:35:25.99	2.0229758	4.63	1.6	30.0
06/05/2023	8:46:44.316	19:25:42.62	2.0305603	4.61	1.6	29.9
06/06/2023	8:49:06.674	19:15:52.17	2.0380976	4.60	1.6	29.8
06/07/2023	8:51:28.942	19:05:54.70	2.0455879	4.58	1.6	29.6
06/08/2023	8:53:51.116	18:55:50.25	2.0530310	4.56	1.6	29.5
06/09/2023	8:56:13.197	18:45:38.87	2.0604267	4.55	1.6	29.4
06/10/2023	8:58:35.185	18:35:20.57	2.0677747	4.53	1.6	29.2
06/11/2023	9:00:57.081	18:24:55.39	2.0750745	4.51	1.7	29.1
06/12/2023	9:03:18.887	18:14:23.37	2.0823256	4.50	1.7	29.0
06/13/2023	9:05:40.605	18:03:44.54	2.0895276	4.48	1.7	28.8
06/14/2023	9:08:02.237	17:52:58.95	2.0966799	4.47	1.7	28.7
06/15/2023	9:10:23.782	17:42:06.66	2.1037819	4.45	1.7	28.5
06/16/2023	9:12:45.239	17:31:07.73	2.1108330	4.44	1.7	28.4
06/17/2023	9:15:06.607	17:20:02.23	2.1178326	4.42	1.7	28.2
06/18/2023	9:17:27.882	17:08:50.22	2.1247803	4.41	1.7	28.1
06/19/2023	9:19:49.063	16:57:31.79	2.1316756	4.39	1.7	27.9
06/20/2023	9:22:10.145	16:46:06.99	2.1385181	4.38	1.7	27.8
06/21/2023	9:24:31.125	16:34:35.91	2.1453074	4.37	1.7	27.6
06/22/2023	9:26:52.002	16:22:58.62	2.1520432	4.35	1.7	27.4
06/23/2023	9:29:12.773	16:11:15.17	2.1587253	4.34	1.7	27.2
06/24/2023	9:31:33.436	15:59:25.65	2.1653534	4.33	1.7	27.1
06/25/2023	9:33:53.992	15:47:30.11	2.1719273	4.31	1.7	26.9
06/26/2023	9:36:14.440	15:35:28.63	2.1784470	4.30	1.7	26.7
06/27/2023	9:38:34.780	15:23:21.28	2.1849124	4.29	1.7	26.5
06/28/2023	9:40:55.014	15:11:08.11	2.1913235	4.27	1.7	26.3
06/29/2023	9:43:15.142	14:58:49.21	2.1976803	4.26	1.7	26.2
06/30/2023	9:45:35.166	14:46:24.65	2.2039829	4.25	1.7	26.0
07/01/2023	9:47:55.087	14:33:54.51	2.2102314	4.24	1.7	25.8
07/02/2023	9:50:14.908	14:21:18.85	2.2164260	4.23	1.7	25.7
07/03/2023	9:52:34.629	14:08:37.78	2.2225670	4.21	1.7	25.5
07/04/2023	9:54:54.251	13:55:51.35	2.2286546	4.20	1.7	25.3
07/05/2023	9:57:13.774	13:42:59.66	2.2346888	4.19	1.7	25.2
07/06/2023	9:59:33.201	13:30:02.76	2.2406698	4.18	1.7	25.0
07/07/2023	10:01:52.536	13:17:00.69	2.2465974	4.17	1.7	24.9
07/08/2023	10:04:11.783	13:03:53.51	2.2524716	4.16	1.8	24.7
07/09/2023	10:06:30.949	12:50:41.25	2.2582921	4.15	1.8	24.6
07/10/2023	10:08:50.041	12:37:23.96	2.2640584	4.14	1.8	24.4
07/11/2023	10:11:09.064	12:24:01.70	2.2697702	4.13	1.8	24.3
07/12/2023	10:13:28.023	12:10:34.53	2.2754271	4.12	1.8	24.1
07/13/2023	10:15:46.922	11:57:02.51	2.2810286	4.11	1.8	24.0
07/14/2023	10:18:05.762	11:43:25.74	2.2865742	4.10	1.8	23.8
07/15/2023	10:20:24.546	11:29:44.27	2.2920635	4.09	1.8	23.6
07/16/2023	10:22:43.276	11:15:58.20	2.2974962	4.08	1.8	23.5
07/17/2023	10:25:01.951	11:02:07.62	2.3028717	4.07	1.8	23.3
07/18/2023	10:27:20.574	10:48:12.59	2.3081899	4.06	1.8	23.1

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	10:29:39.146	10:34:13.22	2.3134504	4.05	1.8	22.9
07/20/2023	10:31:57.668	10:20:09.57	2.3186529	4.04	1.8	22.8
07/21/2023	10:34:16.143	10:06:01.73	2.3237974	4.03	1.8	22.6
07/22/2023	10:36:34.573	9:51:49.79	2.3288835	4.02	1.8	22.4
07/23/2023	10:38:52.962	9:37:33.81	2.3339113	4.01	1.8	22.2
07/24/2023	10:41:11.312	9:23:13.89	2.3388806	4.00	1.8	22.0
07/25/2023	10:43:29.628	9:08:50.09	2.3437914	4.00	1.8	21.8
07/26/2023	10:45:47.913	8:54:22.51	2.3486439	3.99	1.8	21.6
07/27/2023	10:48:06.172	8:39:51.22	2.3534380	3.98	1.8	21.4
07/28/2023	10:50:24.409	8:25:16.31	2.3581740	3.97	1.8	21.2
07/29/2023	10:52:42.628	8:10:37.86	2.3628521	3.96	1.8	21.0
07/30/2023	10:55:00.833	7:55:55.96	2.3674725	3.96	1.8	20.9
07/31/2023	10:57:19.025	7:41:10.72	2.3720356	3.95	1.8	20.7
08/01/2023	10:59:37.209	7:26:22.21	2.3765416	3.94	1.8	20.5
08/02/2023	11:01:55.388	7:11:30.52	2.3809910	3.93	1.8	20.3
08/03/2023	11:04:13.566	6:56:35.72	2.3853838	3.93	1.8	20.2
08/04/2023	11:06:31.751	6:41:37.87	2.3897201	3.92	1.8	20.0
08/05/2023	11:08:49.952	6:26:37.02	2.3940001	3.91	1.8	19.9
08/06/2023	11:11:08.178	6:11:33.22	2.3982236	3.91	1.8	19.7
08/07/2023	11:13:26.438	5:56:26.52	2.4023902	3.90	1.8	19.5
08/08/2023	11:15:44.740	5:41:17.00	2.4064999	3.89	1.8	19.4
08/09/2023	11:18:03.090	5:26:04.71	2.4105521	3.89	1.8	19.2
08/10/2023	11:20:21.494	5:10:49.74	2.4145466	3.88	1.8	19.1
08/11/2023	11:22:39.957	4:55:32.17	2.4184830	3.87	1.8	18.9
08/12/2023	11:24:58.482	4:40:12.09	2.4223609	3.87	1.8	18.7
08/13/2023	11:27:17.075	4:24:49.60	2.4261802	3.86	1.8	18.5
08/14/2023	11:29:35.738	4:09:24.79	2.4299405	3.85	1.8	18.3
08/15/2023	11:31:54.476	3:53:57.74	2.4336414	3.85	1.8	18.2
08/16/2023	11:34:13.292	3:38:28.55	2.4372829	3.84	1.8	18.0
08/17/2023	11:36:32.192	3:22:57.32	2.4408648	3.84	1.8	17.8
08/18/2023	11:38:51.180	3:07:24.13	2.4443868	3.83	1.8	17.6
08/19/2023	11:41:10.262	2:51:49.08	2.4478489	3.83	1.8	17.4
08/20/2023	11:43:29.442	2:36:12.25	2.4512510	3.82	1.8	17.2
08/21/2023	11:45:48.726	2:20:33.74	2.4545932	3.82	1.8	17.0
08/22/2023	11:48:08.121	2:04:53.64	2.4578754	3.81	1.8	16.8
08/23/2023	11:50:27.631	1:49:12.04	2.4610979	3.81	1.8	16.6
08/24/2023	11:52:47.263	1:33:29.04	2.4642607	3.80	1.8	16.4
08/25/2023	11:55:07.022	1:17:44.74	2.4673640	3.80	1.8	16.2
08/26/2023	11:57:26.913	1:01:59.23	2.4704082	3.79	1.8	16.0
08/27/2023	11:59:46.940	0:46:12.61	2.4733936	3.79	1.8	15.8
08/28/2023	12:02:07.107	0:30:25.00	2.4763205	3.78	1.8	15.6
08/29/2023	12:04:27.419	0:14:36.50	2.4791895	3.78	1.8	15.4
08/30/2023	12:06:47.880	-0:01:12.81	2.4820008	3.77	1.8	15.2
08/31/2023	12:09:08.498	-0:17:02.82	2.4847549	3.77	1.8	15.1
09/01/2023	12:11:29.283	-0:32:53.47	2.4874521	3.77	1.8	14.9
09/02/2023	12:13:50.244	-0:48:44.69	2.4900924	3.76	1.8	14.7
09/03/2023	12:16:11.393	-1:04:36.42	2.4926760	3.76	1.8	14.6
09/04/2023	12:18:32.739	-1:20:28.59	2.4952028	3.75	1.8	14.4
09/05/2023	12:20:54.292	-1:36:21.12	2.4976726	3.75	1.8	14.2
09/06/2023	12:23:16.059	-1:52:13.94	2.5000851	3.75	1.8	14.1

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	12:25:38.047	-2:08:06.93	2.5024403	3.74	1.8	13.9
09/08/2023	12:28:00.262	-2:24:00.01	2.5047377	3.74	1.8	13.7
09/09/2023	12:30:22.708	-2:39:53.07	2.5069773	3.74	1.7	13.5
09/10/2023	12:32:45.393	-2:55:46.00	2.5091587	3.73	1.7	13.3
09/11/2023	12:35:08.320	-3:11:38.70	2.5112819	3.73	1.7	13.1
09/12/2023	12:37:31.496	-3:27:31.05	2.5133465	3.73	1.7	13.0
09/13/2023	12:39:54.927	-3:43:22.96	2.5153526	3.72	1.7	12.8
09/14/2023	12:42:18.618	-3:59:14.29	2.5172998	3.72	1.7	12.6
09/15/2023	12:44:42.577	-4:15:04.96	2.5191883	3.72	1.7	12.3
09/16/2023	12:47:06.809	-4:30:54.85	2.5210179	3.71	1.7	12.1
09/17/2023	12:49:31.322	-4:46:43.84	2.5227886	3.71	1.7	11.9
09/18/2023	12:51:56.122	-5:02:31.84	2.5245005	3.71	1.7	11.7
09/19/2023	12:54:21.215	-5:18:18.72	2.5261537	3.71	1.7	11.5
09/20/2023	12:56:46.607	-5:34:04.38	2.5277484	3.70	1.7	11.3
09/21/2023	12:59:12.305	-5:49:48.70	2.5292847	3.70	1.7	11.1
09/22/2023	13:01:38.314	-6:05:31.56	2.5307631	3.70	1.7	10.9
09/23/2023	13:04:04.637	-6:21:12.83	2.5321837	3.70	1.7	10.7
09/24/2023	13:06:31.281	-6:36:52.40	2.5335471	3.70	1.7	10.5
09/25/2023	13:08:58.248	-6:52:30.14	2.5348538	3.69	1.7	10.3
09/26/2023	13:11:25.544	-7:08:05.92	2.5361042	3.69	1.7	10.1
09/27/2023	13:13:53.175	-7:23:39.62	2.5372988	3.69	1.7	9.9
09/28/2023	13:16:21.149	-7:39:11.12	2.5384381	3.69	1.7	9.7
09/29/2023	13:18:49.477	-7:54:40.33	2.5395226	3.69	1.7	9.6
09/30/2023	13:21:18.167	-8:10:07.16	2.5405526	3.69	1.7	9.4
10/01/2023	13:23:47.233	-8:25:31.52	2.5415283	3.68	1.7	9.2
10/02/2023	13:26:16.683	-8:40:53.31	2.5424498	3.68	1.7	9.1
10/03/2023	13:28:46.527	-8:56:12.44	2.5433171	3.68	1.7	8.9
10/04/2023	13:31:16.770	-9:11:28.79	2.5441303	3.68	1.7	8.7
10/05/2023	13:33:47.421	-9:26:42.25	2.5448891	3.68	1.7	8.5
10/06/2023	13:36:18.484	-9:41:52.69	2.5455935	3.68	1.7	8.3
10/07/2023	13:38:49.965	-9:56:59.99	2.5462433	3.68	1.7	8.2
10/08/2023	13:41:21.869	-10:12:04.00	2.5468386	3.68	1.7	8.0
10/09/2023	13:43:54.204	-10:27:04.60	2.5473790	3.68	1.6	7.8
10/10/2023	13:46:26.974	-10:42:01.65	2.5478647	3.68	1.6	7.6
10/11/2023	13:49:00.186	-10:56:55.02	2.5482955	3.68	1.6	7.4
10/12/2023	13:51:33.845	-11:11:44.57	2.5486715	3.67	1.6	7.2
10/13/2023	13:54:07.958	-11:26:30.17	2.5489925	3.67	1.6	7.0
10/14/2023	13:56:42.532	-11:41:11.67	2.5492586	3.67	1.6	6.8
10/15/2023	13:59:17.571	-11:55:48.95	2.5494699	3.67	1.6	6.5
10/16/2023	14:01:53.083	-12:10:21.86	2.5496265	3.67	1.6	6.3
10/17/2023	14:04:29.071	-12:24:50.27	2.5497286	3.67	1.6	6.1
10/18/2023	14:07:05.541	-12:39:14.03	2.5497764	3.67	1.6	5.9
10/19/2023	14:09:42.496	-12:53:33.01	2.5497702	3.67	1.6	5.7
10/20/2023	14:12:19.939	-13:07:47.05	2.5497104	3.67	1.6	5.5
10/21/2023	14:14:57.874	-13:21:56.01	2.5495975	3.67	1.6	5.3
10/22/2023	14:17:36.301	-13:35:59.73	2.5494318	3.67	1.6	5.1
10/23/2023	14:20:15.225	-13:49:58.05	2.5492141	3.67	1.6	4.9
10/24/2023	14:22:54.648	-14:03:50.82	2.5489449	3.67	1.6	4.7
10/25/2023	14:25:34.576	-14:17:37.89	2.5486248	3.67	1.6	4.5
10/26/2023	14:28:15.015	-14:31:19.12	2.5482545	3.68	1.6	4.3

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	14:30:55.973	-14:44:54.37	2.5478344	3.68	1.6	4.1
10/28/2023	14:33:37.460	-14:58:23.53	2.5473651	3.68	1.6	3.9
10/29/2023	14:36:19.482	-15:11:46.47	2.5468470	3.68	1.6	3.8
10/30/2023	14:39:02.047	-15:25:03.07	2.5462805	3.68	1.5	3.6
10/31/2023	14:41:45.160	-15:38:13.20	2.5456656	3.68	1.5	3.4
11/01/2023	14:44:28.826	-15:51:16.73	2.5450026	3.68	1.5	3.2
11/02/2023	14:47:13.048	-16:04:13.50	2.5442914	3.68	1.5	3.1
11/03/2023	14:49:57.829	-16:17:03.36	2.5435323	3.68	1.5	2.9
11/04/2023	14:52:43.173	-16:29:46.17	2.5427251	3.68	1.5	2.7
11/05/2023	14:55:29.082	-16:42:21.75	2.5418700	3.68	1.5	2.5
11/06/2023	14:58:15.560	-16:54:49.96	2.5409668	3.69	1.5	2.3
11/07/2023	15:01:02.609	-17:07:10.62	2.5400158	3.69	1.5	2.1
11/08/2023	15:03:50.232	-17:19:23.59	2.5390169	3.69	1.5	1.9
11/09/2023	15:06:38.433	-17:31:28.70	2.5379701	3.69	1.5	1.7
11/10/2023	15:09:27.214	-17:43:25.79	2.5368756	3.69	1.5	1.5
11/11/2023	15:12:16.577	-17:55:14.70	2.5357335	3.69	1.5	1.3
11/12/2023	15:15:06.524	-18:06:55.28	2.5345439	3.70	1.5	1.1
11/13/2023	15:17:57.057	-18:18:27.37	2.5333069	3.70	1.5	0.8
11/14/2023	15:20:48.175	-18:29:50.81	2.5320229	3.70	1.5	0.6
11/15/2023	15:23:39.878	-18:41:05.45	2.5306920	3.70	1.4	0.4
11/16/2023	15:26:32.164	-18:52:11.12	2.5293147	3.70	1.4	0.2
11/17/2023	15:29:25.029	-19:03:07.66	2.5278913	3.70	1.4	0.1
11/18/2023	15:32:18.470	-19:13:54.89	2.5264226	3.71	1.4	0.2
11/19/2023	15:35:12.484	-19:24:32.65	2.5249090	3.71	1.4	0.4
11/20/2023	15:38:07.068	-19:35:00.77	2.5233512	3.71	1.4	0.6
11/21/2023	15:41:02.221	-19:45:19.07	2.5217499	3.71	1.4	0.8
11/22/2023	15:43:57.942	-19:55:27.40	2.5201059	3.72	1.4	1.0
11/23/2023	15:46:54.233	-20:05:25.61	2.5184198	3.72	1.4	1.2
11/24/2023	15:49:51.094	-20:15:13.54	2.5166923	3.72	1.4	1.4
11/25/2023	15:52:48.529	-20:24:51.07	2.5149242	3.72	1.4	1.6
11/26/2023	15:55:46.537	-20:34:18.05	2.5131158	3.73	1.4	1.7
11/27/2023	15:58:45.117	-20:43:34.36	2.5112678	3.73	1.4	1.9
11/28/2023	16:01:44.269	-20:52:39.86	2.5093805	3.73	1.4	2.1
11/29/2023	16:04:43.989	-21:01:34.41	2.5074542	3.73	1.4	2.3
11/30/2023	16:07:44.274	-21:10:17.86	2.5054892	3.74	1.4	2.4
12/01/2023	16:10:45.120	-21:18:50.05	2.5034856	3.74	1.4	2.6
12/02/2023	16:13:46.523	-21:27:10.83	2.5014437	3.74	1.4	2.8
12/03/2023	16:16:48.479	-21:35:20.05	2.4993636	3.75	1.4	3.0
12/04/2023	16:19:50.984	-21:43:17.54	2.4972455	3.75	1.4	3.2
12/05/2023	16:22:54.034	-21:51:03.17	2.4950894	3.75	1.4	3.4
12/06/2023	16:25:57.624	-21:58:36.77	2.4928956	3.76	1.4	3.6
12/07/2023	16:29:01.750	-22:05:58.21	2.4906642	3.76	1.4	3.8
12/08/2023	16:32:06.405	-22:13:07.33	2.4883954	3.76	1.4	4.0
12/09/2023	16:35:11.586	-22:20:03.99	2.4860893	3.77	1.4	4.2
12/10/2023	16:38:17.284	-22:26:48.06	2.4837461	3.77	1.4	4.4
12/11/2023	16:41:23.493	-22:33:19.40	2.4813660	3.77	1.4	4.6
12/12/2023	16:44:30.204	-22:39:37.88	2.4789493	3.78	1.4	4.8
12/13/2023	16:47:37.406	-22:45:43.38	2.4764963	3.78	1.4	5.1
12/14/2023	16:50:45.088	-22:51:35.76	2.4740073	3.79	1.4	5.3
12/15/2023	16:53:53.237	-22:57:14.89	2.4714829	3.79	1.4	5.5

## Mars - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	16:57:01.839	-23:02:40.64	2.4689237	3.79	1.4	5.7
12/17/2023	17:00:10.882	-23:07:52.87	2.4663302	3.80	1.4	5.9
12/18/2023	17:03:20.355	-23:12:51.45	2.4637033	3.80	1.4	6.1
12/19/2023	17:06:30.247	-23:17:36.25	2.4610438	3.81	1.4	6.3
12/20/2023	17:09:40.550	-23:22:07.16	2.4583523	3.81	1.4	6.5
12/21/2023	17:12:51.257	-23:26:24.06	2.4556298	3.81	1.4	6.7
12/22/2023	17:16:02.359	-23:30:26.87	2.4528770	3.82	1.4	6.9
12/23/2023	17:19:13.848	-23:34:15.49	2.4500947	3.82	1.4	7.0
12/24/2023	17:22:25.715	-23:37:49.85	2.4472833	3.83	1.4	7.2
12/25/2023	17:25:37.949	-23:41:09.85	2.4444437	3.83	1.4	7.4
12/26/2023	17:28:50.540	-23:44:15.42	2.4415763	3.84	1.4	7.5
12/27/2023	17:32:03.476	-23:47:06.47	2.4386815	3.84	1.4	7.7
12/28/2023	17:35:16.745	-23:49:42.92	2.4357597	3.84	1.4	7.9
12/29/2023	17:38:30.335	-23:52:04.67	2.4328114	3.85	1.4	8.1
12/30/2023	17:41:44.234	-23:54:11.65	2.4298366	3.85	1.4	8.2
12/31/2023	17:44:58.429	-23:56:03.76	2.4268358	3.86	1.4	8.4
01/01/2024	17:48:12.910	-23:57:40.93	2.4238092	3.86	1.4	8.6
01/02/2024	17:51:27.663	-23:59:03.07	2.4207569	3.87	1.4	8.8



Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	0:05:59.634	-0:45:26.96	4.9946615	39.47	-2.4	11.4
01/01/2023	0:06:25.498	-0:42:22.62	5.0103772	39.35	-2.4	11.3
01/02/2023	0:06:51.955	-0:39:14.57	5.0260535	39.22	-2.4	11.3
01/03/2023	0:07:18.997	-0:36:02.86	5.0416871	39.10	-2.4	11.2
01/04/2023	0:07:46.616	-0:32:47.55	5.0572746	38.98	-2.4	11.2
01/05/2023	0:08:14.804	-0:29:28.68	5.0728127	38.86	-2.3	11.2
01/06/2023	0:08:43.553	-0:26:06.32	5.0882981	38.74	-2.3	11.1
01/07/2023	0:09:12.855	-0:22:40.53	5.1037277	38.63	-2.3	11.1
01/08/2023	0:09:42.702	-0:19:11.35	5.1190984	38.51	-2.3	11.0
01/09/2023	0:10:13.087	-0:15:38.84	5.1344069	38.40	-2.3	11.0
01/10/2023	0:10:44.003	-0:12:03.05	5.1496502	38.28	-2.3	10.9
01/11/2023	0:11:15.443	-0:08:24.03	5.1648252	38.17	-2.3	10.9
01/12/2023	0:11:47.401	-0:04:41.82	5.1799287	38.06	-2.3	10.8
01/13/2023	0:12:19.871	-0:00:56.46	5.1949577	37.95	-2.3	10.8
01/14/2023	0:12:52.848	0:02:52.02	5.2099091	37.84	-2.3	10.7
01/15/2023	0:13:26.328	0:06:43.56	5.2247797	37.73	-2.3	10.7
01/16/2023	0:14:00.304	0:10:38.14	5.2395664	37.63	-2.3	10.6
01/17/2023	0:14:34.772	0:14:35.73	5.2542660	37.52	-2.3	10.6
01/18/2023	0:15:09.726	0:18:36.28	5.2688753	37.42	-2.3	10.5
01/19/2023	0:15:45.161	0:22:39.75	5.2833911	37.31	-2.3	10.4
01/20/2023	0:16:21.068	0:26:46.09	5.2978100	37.21	-2.3	10.4
01/21/2023	0:16:57.438	0:30:55.23	5.3121287	37.11	-2.3	10.3
01/22/2023	0:17:34.261	0:35:07.11	5.3263438	37.01	-2.2	10.2
01/23/2023	0:18:11.529	0:39:21.67	5.3404522	36.92	-2.2	10.1
01/24/2023	0:18:49.233	0:43:38.84	5.3544507	36.82	-2.2	10.0
01/25/2023	0:19:27.366	0:47:58.56	5.3683363	36.72	-2.2	10.0
01/26/2023	0:20:05.922	0:52:20.81	5.3821063	36.63	-2.2	9.9
01/27/2023	0:20:44.897	0:56:45.53	5.3957579	36.54	-2.2	9.8
01/28/2023	0:21:24.284	1:01:12.67	5.4092887	36.45	-2.2	9.7
01/29/2023	0:22:04.076	1:05:42.19	5.4226963	36.36	-2.2	9.6
01/30/2023	0:22:44.266	1:10:14.04	5.4359785	36.27	-2.2	9.5
01/31/2023	0:23:24.848	1:14:48.16	5.4491331	36.18	-2.2	9.4
02/01/2023	0:24:05.813	1:19:24.51	5.4621580	36.09	-2.2	9.3
02/02/2023	0:24:47.154	1:24:03.01	5.4750511	36.01	-2.2	9.2
02/03/2023	0:25:28.864	1:28:43.62	5.4878104	35.92	-2.2	9.1
02/04/2023	0:26:10.934	1:33:26.29	5.5004338	35.84	-2.2	9.0
02/05/2023	0:26:53.359	1:38:10.97	5.5129196	35.76	-2.2	8.9
02/06/2023	0:27:36.132	1:42:57.59	5.5252657	35.68	-2.2	8.8
02/07/2023	0:28:19.247	1:47:46.13	5.5374703	35.60	-2.2	8.7
02/08/2023	0:29:02.698	1:52:36.53	5.5495314	35.52	-2.2	8.6
02/09/2023	0:29:46.480	1:57:28.75	5.5614472	35.45	-2.2	8.5
02/10/2023	0:30:30.589	2:02:22.77	5.5732157	35.37	-2.2	8.4
02/11/2023	0:31:15.020	2:07:18.54	5.5848351	35.30	-2.2	8.3
02/12/2023	0:31:59.770	2:12:16.04	5.5963034	35.23	-2.1	8.2
02/13/2023	0:32:44.834	2:17:15.22	5.6076187	35.16	-2.1	8.1
02/14/2023	0:33:30.208	2:22:16.06	5.6187789	35.09	-2.1	8.0
02/15/2023	0:34:15.887	2:27:18.52	5.6297821	35.02	-2.1	7.8
02/16/2023	0:35:01.864	2:32:22.56	5.6406261	34.95	-2.1	7.7
02/17/2023	0:35:48.132	2:37:28.12	5.6513089	34.88	-2.1	7.6
02/18/2023	0:36:34.683	2:42:35.15	5.6618283	34.82	-2.1	7.5

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	0:37:21.510	2:47:43.58	5.6721823	34.76	-2.1	7.4
02/20/2023	0:38:08.605	2:52:53.36	5.6823688	34.69	-2.1	7.2
02/21/2023	0:38:55.962	2:58:04.43	5.6923858	34.63	-2.1	7.1
02/22/2023	0:39:43.575	3:03:16.76	5.7022316	34.57	-2.1	7.0
02/23/2023	0:40:31.441	3:08:30.30	5.7119045	34.51	-2.1	6.8
02/24/2023	0:41:19.555	3:13:45.02	5.7214031	34.46	-2.1	6.7
02/25/2023	0:42:07.912	3:19:00.87	5.7307262	34.40	-2.1	6.6
02/26/2023	0:42:56.507	3:24:17.82	5.7398724	34.35	-2.1	6.4
02/27/2023	0:43:45.333	3:29:35.81	5.7488408	34.29	-2.1	6.3
02/28/2023	0:44:34.383	3:34:54.80	5.7576303	34.24	-2.1	6.2
03/01/2023	0:45:23.652	3:40:14.73	5.7662398	34.19	-2.1	6.0
03/02/2023	0:46:13.133	3:45:35.57	5.7746686	34.14	-2.1	5.9
03/03/2023	0:47:02.819	3:50:57.25	5.7829157	34.09	-2.1	5.8
03/04/2023	0:47:52.706	3:56:19.73	5.7909803	34.04	-2.1	5.6
03/05/2023	0:48:42.786	4:01:42.98	5.7988614	34.00	-2.1	5.5
03/06/2023	0:49:33.056	4:07:06.94	5.8065584	33.95	-2.1	5.4
03/07/2023	0:50:23.510	4:12:31.58	5.8140703	33.91	-2.1	5.2
03/08/2023	0:51:14.145	4:17:56.86	5.8213964	33.87	-2.1	5.1
03/09/2023	0:52:04.958	4:23:22.75	5.8285360	33.82	-2.1	5.0
03/10/2023	0:52:55.945	4:28:49.23	5.8354881	33.78	-2.1	4.8
03/11/2023	0:53:47.103	4:34:16.26	5.8422519	33.74	-2.1	4.7
03/12/2023	0:54:38.429	4:39:43.82	5.8488265	33.71	-2.1	4.6
03/13/2023	0:55:29.920	4:45:11.89	5.8552111	33.67	-2.1	4.4
03/14/2023	0:56:21.572	4:50:40.43	5.8614046	33.63	-2.1	4.3
03/15/2023	0:57:13.380	4:56:09.41	5.8674060	33.60	-2.1	4.2
03/16/2023	0:58:05.337	5:01:38.79	5.8732143	33.57	-2.1	4.0
03/17/2023	0:58:57.439	5:07:08.51	5.8788285	33.53	-2.1	3.9
03/18/2023	0:59:49.678	5:12:38.54	5.8842475	33.50	-2.1	3.7
03/19/2023	1:00:42.047	5:18:08.82	5.8894701	33.47	-2.1	3.6
03/20/2023	1:01:34.542	5:23:39.29	5.8944955	33.45	-2.1	3.5
03/21/2023	1:02:27.158	5:29:09.93	5.8993227	33.42	-2.1	3.3
03/22/2023	1:03:19.891	5:34:40.68	5.9039510	33.39	-2.1	3.1
03/23/2023	1:04:12.739	5:40:11.54	5.9083797	33.37	-2.1	3.0
03/24/2023	1:05:05.697	5:45:42.45	5.9126085	33.34	-2.1	2.8
03/25/2023	1:05:58.761	5:51:13.39	5.9166370	33.32	-2.1	2.7
03/26/2023	1:06:51.926	5:56:44.32	5.9204649	33.30	-2.1	2.5
03/27/2023	1:07:45.186	6:02:15.20	5.9240923	33.28	-2.1	2.4
03/28/2023	1:08:38.536	6:07:45.99	5.9275189	33.26	-2.1	2.2
03/29/2023	1:09:31.969	6:13:16.64	5.9307449	33.24	-2.1	2.1
03/30/2023	1:10:25.479	6:18:47.11	5.9337702	33.22	-2.1	1.9
03/31/2023	1:11:19.062	6:24:17.36	5.9365949	33.21	-2.1	1.8
04/01/2023	1:12:12.713	6:29:47.34	5.9392191	33.19	-2.1	1.6
04/02/2023	1:13:06.427	6:35:17.03	5.9416428	33.18	-2.1	1.5
04/03/2023	1:14:00.200	6:40:46.39	5.9438662	33.17	-2.1	1.4
04/04/2023	1:14:54.029	6:46:15.39	5.9458893	33.16	-2.1	1.2
04/05/2023	1:15:47.910	6:51:43.99	5.9477124	33.15	-2.1	1.1
04/06/2023	1:16:41.841	6:57:12.18	5.9493354	33.14	-2.1	0.9
04/07/2023	1:17:35.821	7:02:39.94	5.9507585	33.13	-2.1	0.8
04/08/2023	1:18:29.845	7:08:07.25	5.9519817	33.12	-2.1	0.7
04/09/2023	1:19:23.913	7:13:34.09	5.9530049	33.12	-2.1	0.5

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	1:20:18.019	7:19:00.43	5.9538282	33.11	-2.1	0.4
04/11/2023	1:21:12.161	7:24:26.26	5.9544513	33.11	-2.1	0.3
04/12/2023	1:22:06.333	7:29:51.53	5.9548740	33.11	-2.1	0.2
04/13/2023	1:23:00.529	7:35:16.21	5.9550963	33.11	-2.1	0.2
04/14/2023	1:23:54.743	7:40:40.26	5.9551177	33.11	-2.1	0.3
04/15/2023	1:24:48.969	7:46:03.64	5.9549383	33.11	-2.1	0.5
04/16/2023	1:25:43.204	7:51:26.29	5.9545576	33.11	-2.1	0.6
04/17/2023	1:26:37.441	7:56:48.19	5.9539757	33.11	-2.1	0.7
04/18/2023	1:27:31.678	8:02:09.31	5.9531925	33.12	-2.1	0.9
04/19/2023	1:28:25.912	8:07:29.61	5.9522082	33.12	-2.1	1.0
04/20/2023	1:29:20.140	8:12:49.07	5.9510228	33.13	-2.1	1.2
04/21/2023	1:30:14.358	8:18:07.67	5.9496369	33.14	-2.1	1.4
04/22/2023	1:31:08.560	8:23:25.38	5.9480508	33.14	-2.1	1.5
04/23/2023	1:32:02.743	8:28:42.16	5.9462652	33.15	-2.1	1.7
04/24/2023	1:32:56.899	8:33:57.98	5.9442807	33.17	-2.1	1.8
04/25/2023	1:33:51.022	8:39:12.81	5.9420981	33.18	-2.1	2.0
04/26/2023	1:34:45.108	8:44:26.59	5.9397182	33.19	-2.0	2.1
04/27/2023	1:35:39.151	8:49:39.31	5.9371417	33.21	-2.0	2.3
04/28/2023	1:36:33.145	8:54:50.92	5.9343696	33.22	-2.0	2.4
04/29/2023	1:37:27.085	9:00:01.39	5.9314025	33.24	-2.0	2.5
04/30/2023	1:38:20.969	9:05:10.69	5.9282415	33.26	-2.1	2.7
05/01/2023	1:39:14.791	9:10:18.80	5.9248873	33.27	-2.1	2.8
05/02/2023	1:40:08.550	9:15:25.69	5.9213408	33.29	-2.1	3.0
05/03/2023	1:41:02.241	9:20:31.34	5.9176030	33.32	-2.1	3.1
05/04/2023	1:41:55.862	9:25:35.73	5.9136745	33.34	-2.1	3.2
05/05/2023	1:42:49.412	9:30:38.85	5.9095563	33.36	-2.1	3.4
05/06/2023	1:43:42.887	9:35:40.70	5.9052491	33.38	-2.1	3.5
05/07/2023	1:44:36.285	9:40:41.25	5.9007536	33.41	-2.1	3.7
05/08/2023	1:45:29.600	9:45:40.48	5.8960705	33.44	-2.1	3.8
05/09/2023	1:46:22.828	9:50:38.39	5.8912002	33.46	-2.1	3.9
05/10/2023	1:47:15.964	9:55:34.93	5.8861433	33.49	-2.1	4.1
05/11/2023	1:48:09.000	10:00:30.07	5.8809003	33.52	-2.1	4.2
05/12/2023	1:49:01.930	10:05:23.77	5.8754717	33.55	-2.1	4.3
05/13/2023	1:49:54.750	10:10:15.99	5.8698579	33.59	-2.1	4.5
05/14/2023	1:50:47.454	10:15:06.71	5.8640595	33.62	-2.1	4.6
05/15/2023	1:51:40.040	10:19:55.89	5.8580771	33.65	-2.1	4.8
05/16/2023	1:52:32.502	10:24:43.51	5.8519115	33.69	-2.1	4.9
05/17/2023	1:53:24.838	10:29:29.55	5.8455634	33.73	-2.1	5.1
05/18/2023	1:54:17.044	10:34:13.99	5.8390339	33.76	-2.1	5.2
05/19/2023	1:55:09.114	10:38:56.81	5.8323240	33.80	-2.1	5.4
05/20/2023	1:56:01.044	10:43:37.98	5.8254350	33.84	-2.1	5.5
05/21/2023	1:56:52.826	10:48:17.49	5.8183680	33.88	-2.1	5.6
05/22/2023	1:57:44.453	10:52:55.28	5.8111245	33.93	-2.1	5.8
05/23/2023	1:58:35.920	10:57:31.35	5.8037059	33.97	-2.1	5.9
05/24/2023	1:59:27.220	11:02:05.64	5.7961136	34.01	-2.1	6.0
05/25/2023	2:00:18.346	11:06:38.14	5.7883492	34.06	-2.1	6.2
05/26/2023	2:01:09.294	11:11:08.80	5.7804142	34.11	-2.1	6.3
05/27/2023	2:02:00.058	11:15:37.61	5.7723100	34.15	-2.1	6.4
05/28/2023	2:02:50.634	11:20:04.54	5.7640384	34.20	-2.1	6.5
05/29/2023	2:03:41.017	11:24:29.57	5.7556007	34.25	-2.1	6.7

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	2:04:31.204	11:28:52.69	5.7469985	34.30	-2.1	6.8
05/31/2023	2:05:21.191	11:33:13.87	5.7382335	34.36	-2.1	6.9
06/01/2023	2:06:10.975	11:37:33.12	5.7293071	34.41	-2.1	7.0
06/02/2023	2:07:00.552	11:41:50.41	5.7202209	34.46	-2.1	7.1
06/03/2023	2:07:49.920	11:46:05.75	5.7109762	34.52	-2.1	7.3
06/04/2023	2:08:39.073	11:50:19.13	5.7015745	34.58	-2.1	7.4
06/05/2023	2:09:28.005	11:54:30.52	5.6920171	34.64	-2.1	7.5
06/06/2023	2:10:16.711	11:58:39.92	5.6823051	34.69	-2.1	7.6
06/07/2023	2:11:05.182	12:02:47.30	5.6724398	34.75	-2.1	7.7
06/08/2023	2:11:53.412	12:06:52.61	5.6624222	34.82	-2.1	7.8
06/09/2023	2:12:41.394	12:10:55.82	5.6522536	34.88	-2.1	8.0
06/10/2023	2:13:29.121	12:14:56.90	5.6419350	34.94	-2.1	8.1
06/11/2023	2:14:16.591	12:18:55.83	5.6314678	35.01	-2.1	8.2
06/12/2023	2:15:03.797	12:22:52.59	5.6208534	35.07	-2.1	8.3
06/13/2023	2:15:50.735	12:26:47.15	5.6100931	35.14	-2.1	8.4
06/14/2023	2:16:37.401	12:30:39.52	5.5991886	35.21	-2.1	8.5
06/15/2023	2:17:23.787	12:34:29.66	5.5881415	35.28	-2.1	8.6
06/16/2023	2:18:09.889	12:38:17.56	5.5769538	35.35	-2.2	8.8
06/17/2023	2:18:55.697	12:42:03.20	5.5656273	35.42	-2.2	8.9
06/18/2023	2:19:41.205	12:45:46.56	5.5541641	35.50	-2.2	9.0
06/19/2023	2:20:26.403	12:49:27.60	5.5425661	35.57	-2.2	9.1
06/20/2023	2:21:11.286	12:53:06.30	5.5308357	35.64	-2.2	9.2
06/21/2023	2:21:55.844	12:56:42.63	5.5189749	35.72	-2.2	9.3
06/22/2023	2:22:40.071	13:00:16.56	5.5069860	35.80	-2.2	9.4
06/23/2023	2:23:23.961	13:03:48.07	5.4948713	35.88	-2.2	9.5
06/24/2023	2:24:07.507	13:07:17.14	5.4826330	35.96	-2.2	9.6
06/25/2023	2:24:50.704	13:10:43.74	5.4702734	36.04	-2.2	9.7
06/26/2023	2:25:33.546	13:14:07.87	5.4577948	36.12	-2.2	9.7
06/27/2023	2:26:16.028	13:17:29.51	5.4451996	36.21	-2.2	9.8
06/28/2023	2:26:58.147	13:20:48.65	5.4324900	36.29	-2.2	9.9
06/29/2023	2:27:39.896	13:24:05.29	5.4196684	36.38	-2.2	10.0
06/30/2023	2:28:21.272	13:27:19.41	5.4067370	36.46	-2.2	10.1
07/01/2023	2:29:02.269	13:30:31.03	5.3936979	36.55	-2.2	10.1
07/02/2023	2:29:42.881	13:33:40.13	5.3805534	36.64	-2.2	10.2
07/03/2023	2:30:23.100	13:36:46.70	5.3673055	36.73	-2.2	10.3
07/04/2023	2:31:02.918	13:39:50.72	5.3539563	36.82	-2.2	10.4
07/05/2023	2:31:42.326	13:42:52.17	5.3405076	36.92	-2.2	10.4
07/06/2023	2:32:21.316	13:45:51.00	5.3269613	37.01	-2.2	10.5
07/07/2023	2:32:59.879	13:48:47.18	5.3133194	37.10	-2.2	10.6
07/08/2023	2:33:38.011	13:51:40.69	5.2995839	37.20	-2.3	10.7
07/09/2023	2:34:15.706	13:54:31.51	5.2857569	37.30	-2.3	10.7
07/10/2023	2:34:52.958	13:57:19.63	5.2718405	37.40	-2.3	10.8
07/11/2023	2:35:29.760	14:00:05.04	5.2578371	37.50	-2.3	10.9
07/12/2023	2:36:06.105	14:02:47.72	5.2437493	37.60	-2.3	11.0
07/13/2023	2:36:41.986	14:05:27.66	5.2295796	37.70	-2.3	11.0
07/14/2023	2:37:17.394	14:08:04.83	5.2153308	37.80	-2.3	11.1
07/15/2023	2:37:52.319	14:10:39.23	5.2010056	37.91	-2.3	11.1
07/16/2023	2:38:26.753	14:13:10.82	5.1866070	38.01	-2.3	11.2
07/17/2023	2:39:00.686	14:15:39.58	5.1721379	38.12	-2.3	11.3
07/18/2023	2:39:34.110	14:18:05.49	5.1576014	38.22	-2.3	11.3

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	2:40:07.015	14:20:28.52	5.1430007	38.33	-2.3	11.4
07/20/2023	2:40:39.395	14:22:48.64	5.1283387	38.44	-2.3	11.4
07/21/2023	2:41:11.242	14:25:05.83	5.1136188	38.55	-2.3	11.4
07/22/2023	2:41:42.549	14:27:20.09	5.0988441	38.66	-2.3	11.5
07/23/2023	2:42:13.309	14:29:31.39	5.0840178	38.78	-2.3	11.5
07/24/2023	2:42:43.517	14:31:39.72	5.0691431	38.89	-2.3	11.5
07/25/2023	2:43:13.167	14:33:45.08	5.0542234	39.01	-2.3	11.6
07/26/2023	2:43:42.254	14:35:47.45	5.0392618	39.12	-2.4	11.6
07/27/2023	2:44:10.771	14:37:46.85	5.0242616	39.24	-2.4	11.6
07/28/2023	2:44:38.713	14:39:43.26	5.0092260	39.36	-2.4	11.6
07/29/2023	2:45:06.073	14:41:36.69	4.9941581	39.48	-2.4	11.6
07/30/2023	2:45:32.844	14:43:27.12	4.9790610	39.59	-2.4	11.7
07/31/2023	2:45:59.017	14:45:14.56	4.9639379	39.72	-2.4	11.7
08/01/2023	2:46:24.584	14:46:58.97	4.9487916	39.84	-2.4	11.7
08/02/2023	2:46:49.536	14:48:40.32	4.9336250	39.96	-2.4	11.7
08/03/2023	2:47:13.863	14:50:18.60	4.9184411	40.08	-2.4	11.7
08/04/2023	2:47:37.560	14:51:53.76	4.9032427	40.21	-2.4	11.7
08/05/2023	2:48:00.620	14:53:25.79	4.8880329	40.33	-2.4	11.7
08/06/2023	2:48:23.039	14:54:54.67	4.8728147	40.46	-2.4	11.7
08/07/2023	2:48:44.809	14:56:20.40	4.8575916	40.59	-2.4	11.8
08/08/2023	2:49:05.925	14:57:42.97	4.8423668	40.71	-2.4	11.8
08/09/2023	2:49:26.378	14:59:02.37	4.8271440	40.84	-2.4	11.8
08/10/2023	2:49:46.160	15:00:18.58	4.8119269	40.97	-2.5	11.8
08/11/2023	2:50:05.262	15:01:31.59	4.7967193	41.10	-2.5	11.7
08/12/2023	2:50:23.675	15:02:41.38	4.7815251	41.23	-2.5	11.7
08/13/2023	2:50:41.392	15:03:47.93	4.7663483	41.36	-2.5	11.7
08/14/2023	2:50:58.403	15:04:51.21	4.7511929	41.49	-2.5	11.7
08/15/2023	2:51:14.702	15:05:51.20	4.7360630	41.63	-2.5	11.7
08/16/2023	2:51:30.281	15:06:47.89	4.7209629	41.76	-2.5	11.7
08/17/2023	2:51:45.134	15:07:41.26	4.7058967	41.89	-2.5	11.6
08/18/2023	2:51:59.255	15:08:31.30	4.6908686	42.03	-2.5	11.6
08/19/2023	2:52:12.640	15:09:17.98	4.6758830	42.16	-2.5	11.5
08/20/2023	2:52:25.284	15:10:01.32	4.6609440	42.30	-2.5	11.5
08/21/2023	2:52:37.184	15:10:41.30	4.6460560	42.43	-2.5	11.5
08/22/2023	2:52:48.337	15:11:17.93	4.6312232	42.57	-2.5	11.4
08/23/2023	2:52:58.737	15:11:51.21	4.6164499	42.71	-2.5	11.3
08/24/2023	2:53:08.384	15:12:21.15	4.6017404	42.84	-2.6	11.3
08/25/2023	2:53:17.272	15:12:47.74	4.5870988	42.98	-2.6	11.2
08/26/2023	2:53:25.398	15:13:11.01	4.5725292	43.12	-2.6	11.2
08/27/2023	2:53:32.758	15:13:30.94	4.5580358	43.25	-2.6	11.1
08/28/2023	2:53:39.345	15:13:47.53	4.5436226	43.39	-2.6	11.0
08/29/2023	2:53:45.156	15:14:00.76	4.5292934	43.53	-2.6	11.0
08/30/2023	2:53:50.186	15:14:10.63	4.5150522	43.66	-2.6	10.9
08/31/2023	2:53:54.430	15:14:17.09	4.5009029	43.80	-2.6	10.8
09/01/2023	2:53:57.887	15:14:20.15	4.4868492	43.94	-2.6	10.7
09/02/2023	2:54:00.556	15:14:19.79	4.4728952	44.08	-2.6	10.7
09/03/2023	2:54:02.437	15:14:16.03	4.4590450	44.21	-2.6	10.6
09/04/2023	2:54:03.528	15:14:08.86	4.4453027	44.35	-2.6	10.5
09/05/2023	2:54:03.827	15:13:58.29	4.4316728	44.49	-2.6	10.4
09/06/2023	2:54:03.331	15:13:44.33	4.4181597	44.62	-2.6	10.3

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	2:54:02.038	15:13:26.97	4.4047681	44.76	-2.7	10.3
09/08/2023	2:53:59.944	15:13:06.21	4.3915027	44.89	-2.7	10.2
09/09/2023	2:53:57.047	15:12:42.05	4.3783681	45.03	-2.7	10.1
09/10/2023	2:53:53.346	15:12:14.48	4.3653692	45.16	-2.7	9.9
09/11/2023	2:53:48.841	15:11:43.51	4.3525107	45.29	-2.7	9.8
09/12/2023	2:53:43.531	15:11:09.12	4.3397976	45.43	-2.7	9.7
09/13/2023	2:53:37.419	15:10:31.34	4.3272346	45.56	-2.7	9.6
09/14/2023	2:53:30.506	15:09:50.15	4.3148266	45.69	-2.7	9.5
09/15/2023	2:53:22.796	15:09:05.59	4.3025784	45.82	-2.7	9.4
09/16/2023	2:53:14.294	15:08:17.67	4.2904949	45.95	-2.7	9.2
09/17/2023	2:53:05.005	15:07:26.40	4.2785807	46.08	-2.7	9.1
09/18/2023	2:52:54.935	15:06:31.83	4.2668406	46.20	-2.7	8.9
09/19/2023	2:52:44.090	15:05:33.98	4.2552793	46.33	-2.7	8.8
09/20/2023	2:52:32.478	15:04:32.88	4.2439013	46.45	-2.7	8.7
09/21/2023	2:52:20.104	15:03:28.59	4.2327111	46.58	-2.7	8.5
09/22/2023	2:52:06.977	15:02:21.13	4.2217131	46.70	-2.8	8.3
09/23/2023	2:51:53.103	15:01:10.54	4.2109116	46.82	-2.8	8.2
09/24/2023	2:51:38.488	14:59:56.86	4.2003107	46.94	-2.8	8.0
09/25/2023	2:51:23.139	14:58:40.10	4.1899145	47.05	-2.8	7.9
09/26/2023	2:51:07.064	14:57:20.29	4.1797269	47.17	-2.8	7.7
09/27/2023	2:50:50.271	14:55:57.46	4.1697518	47.28	-2.8	7.6
09/28/2023	2:50:32.769	14:54:31.62	4.1599927	47.39	-2.8	7.4
09/29/2023	2:50:14.571	14:53:02.82	4.1504536	47.50	-2.8	7.2
09/30/2023	2:49:55.689	14:51:31.09	4.1411382	47.61	-2.8	7.1
10/01/2023	2:49:36.135	14:49:56.49	4.1320502	47.71	-2.8	6.9
10/02/2023	2:49:15.921	14:48:19.07	4.1231935	47.81	-2.8	6.7
10/03/2023	2:48:55.058	14:46:38.89	4.1145722	47.91	-2.8	6.6
10/04/2023	2:48:33.558	14:44:55.99	4.1061902	48.01	-2.8	6.4
10/05/2023	2:48:11.431	14:43:10.42	4.0980515	48.11	-2.8	6.2
10/06/2023	2:47:48.689	14:41:22.24	4.0901602	48.20	-2.8	6.0
10/07/2023	2:47:25.345	14:39:31.49	4.0825202	48.29	-2.8	5.8
10/08/2023	2:47:01.413	14:37:38.22	4.0751354	48.38	-2.8	5.6
10/09/2023	2:46:36.909	14:35:42.50	4.0680097	48.46	-2.8	5.5
10/10/2023	2:46:11.848	14:33:44.38	4.0611468	48.54	-2.9	5.3
10/11/2023	2:45:46.249	14:31:43.94	4.0545504	48.62	-2.9	5.1
10/12/2023	2:45:20.129	14:29:41.24	4.0482240	48.70	-2.9	4.8
10/13/2023	2:44:53.509	14:27:36.37	4.0421712	48.77	-2.9	4.6
10/14/2023	2:44:26.408	14:25:29.41	4.0363951	48.84	-2.9	4.4
10/15/2023	2:43:58.849	14:23:20.46	4.0308991	48.91	-2.9	4.2
10/16/2023	2:43:30.853	14:21:09.62	4.0256860	48.97	-2.9	4.0
10/17/2023	2:43:02.443	14:18:56.98	4.0207587	49.03	-2.9	3.8
10/18/2023	2:42:33.639	14:16:42.66	4.0161199	49.09	-2.9	3.6
10/19/2023	2:42:04.466	14:14:26.75	4.0117720	49.14	-2.9	3.3
10/20/2023	2:41:34.944	14:12:09.36	4.0077172	49.19	-2.9	3.1
10/21/2023	2:41:05.094	14:09:50.59	4.0039575	49.24	-2.9	2.9
10/22/2023	2:40:34.939	14:07:30.53	4.0004949	49.28	-2.9	2.7
10/23/2023	2:40:04.499	14:05:09.27	3.9973307	49.32	-2.9	2.5
10/24/2023	2:39:33.798	14:02:46.91	3.9944666	49.35	-2.9	2.2
10/25/2023	2:39:02.858	14:00:23.54	3.9919037	49.39	-2.9	2.0
10/26/2023	2:38:31.704	13:57:59.25	3.9896432	49.41	-2.9	1.8

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	2:38:00.361	13:55:34.15	3.9876862	49.44	-2.9	1.6
10/28/2023	2:37:28.854	13:53:08.36	3.9860336	49.46	-2.9	1.4
10/29/2023	2:36:57.208	13:50:42.00	3.9846864	49.48	-2.9	1.2
10/30/2023	2:36:25.447	13:48:15.17	3.9836456	49.49	-2.9	1.0
10/31/2023	2:35:53.594	13:45:47.99	3.9829121	49.50	-2.9	0.8
11/01/2023	2:35:21.671	13:43:20.58	3.9824867	49.50	-2.9	0.6
11/02/2023	2:34:49.699	13:40:53.03	3.9823703	49.50	-2.9	0.4
11/03/2023	2:34:17.701	13:38:25.47	3.9825636	49.50	-2.9	0.3
11/04/2023	2:33:45.702	13:35:57.98	3.9830671	49.50	-2.9	0.3
11/05/2023	2:33:13.723	13:33:30.69	3.9838812	49.49	-2.9	0.5
11/06/2023	2:32:41.791	13:31:03.71	3.9850063	49.47	-2.9	0.7
11/07/2023	2:32:09.930	13:28:37.15	3.9864425	49.45	-2.9	0.9
11/08/2023	2:31:38.166	13:26:11.13	3.9881897	49.43	-2.9	1.1
11/09/2023	2:31:06.524	13:23:45.79	3.9902476	49.41	-2.9	1.4
11/10/2023	2:30:35.031	13:21:21.23	3.9926159	49.38	-2.9	1.6
11/11/2023	2:30:03.713	13:18:57.61	3.9952940	49.34	-2.9	1.8
11/12/2023	2:29:32.597	13:16:35.04	3.9982811	49.31	-2.9	2.0
11/13/2023	2:29:01.708	13:14:13.67	4.0015761	49.27	-2.9	2.3
11/14/2023	2:28:31.071	13:11:53.63	4.0051778	49.22	-2.9	2.5
11/15/2023	2:28:00.712	13:09:35.05	4.0090848	49.17	-2.9	2.7
11/16/2023	2:27:30.653	13:07:18.06	4.0132954	49.12	-2.9	2.9
11/17/2023	2:27:00.916	13:05:02.77	4.0178076	49.07	-2.9	3.2
11/18/2023	2:26:31.522	13:02:49.29	4.0226192	49.01	-2.9	3.4
11/19/2023	2:26:02.492	13:00:37.73	4.0277279	48.95	-2.9	3.6
11/20/2023	2:25:33.848	12:58:28.18	4.0331312	48.88	-2.9	3.8
11/21/2023	2:25:05.609	12:56:20.75	4.0388263	48.81	-2.9	4.0
11/22/2023	2:24:37.797	12:54:15.52	4.0448104	48.74	-2.9	4.2
11/23/2023	2:24:10.432	12:52:12.60	4.0510807	48.66	-2.9	4.4
11/24/2023	2:23:43.537	12:50:12.10	4.0576343	48.59	-2.9	4.6
11/25/2023	2:23:17.129	12:48:14.12	4.0644681	48.50	-2.9	4.8
11/26/2023	2:22:51.229	12:46:18.76	4.0715793	48.42	-2.8	5.0
11/27/2023	2:22:25.852	12:44:26.11	4.0789649	48.33	-2.8	5.2
11/28/2023	2:22:01.015	12:42:36.27	4.0866218	48.24	-2.8	5.4
11/29/2023	2:21:36.731	12:40:49.32	4.0945471	48.15	-2.8	5.6
11/30/2023	2:21:13.016	12:39:05.33	4.1027378	48.05	-2.8	5.8
12/01/2023	2:20:49.882	12:37:24.38	4.1111908	47.95	-2.8	5.9
12/02/2023	2:20:27.344	12:35:46.54	4.1199027	47.85	-2.8	6.1
12/03/2023	2:20:05.417	12:34:11.88	4.1288705	47.75	-2.8	6.3
12/04/2023	2:19:44.115	12:32:40.47	4.1380905	47.64	-2.8	6.5
12/05/2023	2:19:23.452	12:31:12.39	4.1475594	47.53	-2.8	6.7
12/06/2023	2:19:03.443	12:29:47.71	4.1572735	47.42	-2.8	6.8
12/07/2023	2:18:44.101	12:28:26.50	4.1672291	47.31	-2.8	7.0
12/08/2023	2:18:25.441	12:27:08.84	4.1774223	47.19	-2.8	7.2
12/09/2023	2:18:07.476	12:25:54.80	4.1878492	47.08	-2.8	7.4
12/10/2023	2:17:50.219	12:24:44.45	4.1985056	46.96	-2.8	7.5
12/11/2023	2:17:33.682	12:23:37.86	4.2093874	46.83	-2.8	7.7
12/12/2023	2:17:17.876	12:22:35.10	4.2204901	46.71	-2.7	7.9
12/13/2023	2:17:02.810	12:21:36.23	4.2318094	46.59	-2.7	8.0
12/14/2023	2:16:48.492	12:20:41.30	4.2433403	46.46	-2.7	8.2
12/15/2023	2:16:34.930	12:19:50.33	4.2550783	46.33	-2.7	8.3

Jupiter - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	2:16:22.128	12:19:03.37	4.2670183	46.20	-2.7	8.5
12/17/2023	2:16:10.093	12:18:20.43	4.2791552	46.07	-2.7	8.6
12/18/2023	2:15:58.830	12:17:41.53	4.2914841	45.94	-2.7	8.8
12/19/2023	2:15:48.346	12:17:06.69	4.3039998	45.81	-2.7	8.9
12/20/2023	2:15:38.646	12:16:35.93	4.3166972	45.67	-2.7	9.0
12/21/2023	2:15:29.736	12:16:09.28	4.3295714	45.53	-2.7	9.1
12/22/2023	2:15:21.621	12:15:46.75	4.3426175	45.40	-2.7	9.3
12/23/2023	2:15:14.304	12:15:28.38	4.3558305	45.26	-2.7	9.4
12/24/2023	2:15:07.789	12:15:14.17	4.3692056	45.12	-2.7	9.5
12/25/2023	2:15:02.076	12:15:04.13	4.3827383	44.98	-2.7	9.6
12/26/2023	2:14:57.165	12:14:58.26	4.3964237	44.84	-2.7	9.7
12/27/2023	2:14:53.056	12:14:56.57	4.4102575	44.70	-2.6	9.8
12/28/2023	2:14:49.748	12:14:59.03	4.4242350	44.56	-2.6	9.9
12/29/2023	2:14:47.240	12:15:05.65	4.4383516	44.42	-2.6	10.0
12/30/2023	2:14:45.533	12:15:16.41	4.4526029	44.28	-2.6	10.1
12/31/2023	2:14:44.626	12:15:31.29	4.4669843	44.13	-2.6	10.2
01/01/2024	2:14:44.520	12:15:50.30	4.4814913	43.99	-2.6	10.3
01/02/2024	2:14:45.215	12:16:13.42	4.4961192	43.85	-2.6	10.4



## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	21:40:23.088	-15:14:51.14	10.5312757	15.78	0.8	3.9
01/01/2023	21:40:46.407	-15:12:53.48	10.5424747	15.76	0.8	3.8
01/02/2023	21:41:09.934	-15:10:54.68	10.5534752	15.75	0.8	3.7
01/03/2023	21:41:33.665	-15:08:54.78	10.5642748	15.73	0.8	3.7
01/04/2023	21:41:57.595	-15:06:53.80	10.5748713	15.72	0.8	3.6
01/05/2023	21:42:21.720	-15:04:51.76	10.5852625	15.70	0.8	3.5
01/06/2023	21:42:46.033	-15:02:48.69	10.5954462	15.69	0.8	3.5
01/07/2023	21:43:10.530	-15:00:44.62	10.6054201	15.67	0.8	3.4
01/08/2023	21:43:35.205	-14:58:39.57	10.6151821	15.66	0.8	3.3
01/09/2023	21:44:00.052	-14:56:33.56	10.6247300	15.64	0.8	3.2
01/10/2023	21:44:25.067	-14:54:26.60	10.6340617	15.63	0.8	3.2
01/11/2023	21:44:50.246	-14:52:18.72	10.6431750	15.62	0.8	3.1
01/12/2023	21:45:15.585	-14:50:09.92	10.6520678	15.60	0.8	3.0
01/13/2023	21:45:41.079	-14:48:00.22	10.6607380	15.59	0.8	2.9
01/14/2023	21:46:06.726	-14:45:49.62	10.6691834	15.58	0.8	2.9
01/15/2023	21:46:32.523	-14:43:38.15	10.6774018	15.57	0.8	2.8
01/16/2023	21:46:58.466	-14:41:25.81	10.6853912	15.55	0.8	2.7
01/17/2023	21:47:24.553	-14:39:12.62	10.6931495	15.54	0.8	2.6
01/18/2023	21:47:50.779	-14:36:58.61	10.7006744	15.53	0.8	2.6
01/19/2023	21:48:17.141	-14:34:43.79	10.7079638	15.52	0.8	2.5
01/20/2023	21:48:43.633	-14:32:28.22	10.7150158	15.51	0.8	2.4
01/21/2023	21:49:10.247	-14:30:11.92	10.7218282	15.50	0.8	2.3
01/22/2023	21:49:36.975	-14:27:54.93	10.7283992	15.49	0.8	2.2
01/23/2023	21:50:03.811	-14:25:37.28	10.7347271	15.48	0.8	2.1
01/24/2023	21:50:30.746	-14:23:19.00	10.7408104	15.47	0.8	2.0
01/25/2023	21:50:57.779	-14:21:00.09	10.7466478	15.46	0.8	2.0
01/26/2023	21:51:24.904	-14:18:40.56	10.7522382	15.46	0.8	1.9
01/27/2023	21:51:52.119	-14:16:20.43	10.7575806	15.45	0.8	1.8
01/28/2023	21:52:19.422	-14:13:59.71	10.7626742	15.44	0.8	1.7
01/29/2023	21:52:46.807	-14:11:38.43	10.7675183	15.43	0.8	1.6
01/30/2023	21:53:14.272	-14:09:16.62	10.7721121	15.43	0.8	1.5
01/31/2023	21:53:41.812	-14:06:54.32	10.7764550	15.42	0.8	1.4
02/01/2023	21:54:09.420	-14:04:31.54	10.7805465	15.42	0.8	1.4
02/02/2023	21:54:37.092	-14:02:08.32	10.7843859	15.41	0.8	1.3
02/03/2023	21:55:04.823	-13:59:44.68	10.7879728	15.41	0.8	1.2
02/04/2023	21:55:32.606	-13:57:20.67	10.7913066	15.40	0.8	1.1
02/05/2023	21:56:00.438	-13:54:56.29	10.7943868	15.40	0.8	1.0
02/06/2023	21:56:28.313	-13:52:31.57	10.7972130	15.39	0.8	0.9
02/07/2023	21:56:56.227	-13:50:06.52	10.7997846	15.39	0.8	0.8
02/08/2023	21:57:24.175	-13:47:41.18	10.8021012	15.39	0.8	0.8
02/09/2023	21:57:52.155	-13:45:15.54	10.8041624	15.38	0.8	0.7
02/10/2023	21:58:20.163	-13:42:49.63	10.8059676	15.38	0.8	0.6
02/11/2023	21:58:48.196	-13:40:23.46	10.8075164	15.38	0.8	0.5
02/12/2023	21:59:16.252	-13:37:57.05	10.8088084	15.38	0.8	0.4
02/13/2023	21:59:44.326	-13:35:30.41	10.8098431	15.37	0.8	0.3
02/14/2023	22:00:12.417	-13:33:03.57	10.8106200	15.37	0.8	0.3
02/15/2023	22:00:40.520	-13:30:36.55	10.8111387	15.37	0.8	0.2
02/16/2023	22:01:08.629	-13:28:09.40	10.8113987	15.37	0.8	0.1
02/17/2023	22:01:36.739	-13:25:42.14	10.8113999	15.37	0.8	0.1
02/18/2023	22:02:04.843	-13:23:14.83	10.8111418	15.37	0.8	0.2

## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	22:02:32.933	-13:20:47.48	10.8106243	15.37	0.8	0.3
02/20/2023	22:03:01.003	-13:18:20.14	10.8098475	15.37	0.8	0.3
02/21/2023	22:03:29.048	-13:15:52.82	10.8088115	15.38	0.8	0.4
02/22/2023	22:03:57.064	-13:13:25.53	10.8075168	15.38	0.8	0.5
02/23/2023	22:04:25.048	-13:10:58.29	10.8059640	15.38	0.8	0.6
02/24/2023	22:04:52.998	-13:08:31.11	10.8041538	15.38	0.9	0.7
02/25/2023	22:05:20.911	-13:06:04.03	10.8020871	15.39	0.9	0.8
02/26/2023	22:05:48.784	-13:03:37.06	10.7997649	15.39	0.9	0.9
02/27/2023	22:06:16.611	-13:01:10.24	10.7971881	15.39	0.9	1.0
02/28/2023	22:06:44.388	-12:58:43.61	10.7943577	15.40	0.9	1.1
03/01/2023	22:07:12.109	-12:56:17.19	10.7912749	15.40	0.9	1.1
03/02/2023	22:07:39.770	-12:53:51.02	10.7879407	15.41	0.9	1.2
03/03/2023	22:08:07.366	-12:51:25.13	10.7843561	15.41	0.9	1.3
03/04/2023	22:08:34.892	-12:48:59.54	10.7805224	15.42	0.9	1.4
03/05/2023	22:09:02.342	-12:46:34.28	10.7764405	15.42	0.9	1.5
03/06/2023	22:09:29.714	-12:44:09.37	10.7721116	15.43	0.9	1.6
03/07/2023	22:09:57.004	-12:41:44.83	10.7675369	15.43	0.9	1.6
03/08/2023	22:10:24.207	-12:39:20.67	10.7627175	15.44	0.9	1.7
03/09/2023	22:10:51.321	-12:36:56.92	10.7576544	15.45	0.9	1.8
03/10/2023	22:11:18.344	-12:34:33.58	10.7523488	15.46	0.9	1.9
03/11/2023	22:11:45.272	-12:32:10.67	10.7468018	15.46	0.9	2.0
03/12/2023	22:12:12.104	-12:29:48.22	10.7410144	15.47	0.9	2.1
03/13/2023	22:12:38.837	-12:27:26.24	10.7349878	15.48	0.9	2.1
03/14/2023	22:13:05.466	-12:25:04.76	10.7287231	15.49	0.9	2.2
03/15/2023	22:13:31.988	-12:22:43.82	10.7222213	15.50	0.9	2.3
03/16/2023	22:13:58.396	-12:20:23.46	10.7154836	15.51	0.9	2.4
03/17/2023	22:14:24.686	-12:18:03.70	10.7085114	15.52	0.9	2.5
03/18/2023	22:14:50.849	-12:15:44.60	10.7013058	15.53	0.9	2.6
03/19/2023	22:15:16.881	-12:13:26.18	10.6938683	15.54	1.0	2.7
03/20/2023	22:15:42.775	-12:11:08.47	10.6862006	15.55	1.0	2.7
03/21/2023	22:16:08.528	-12:08:51.47	10.6783044	15.56	1.0	2.8
03/22/2023	22:16:34.137	-12:06:35.22	10.6701816	15.58	1.0	2.9
03/23/2023	22:16:59.600	-12:04:19.72	10.6618345	15.59	1.0	3.0
03/24/2023	22:17:24.915	-12:02:05.00	10.6532652	15.60	1.0	3.1
03/25/2023	22:17:50.078	-11:59:51.07	10.6444762	15.61	1.0	3.1
03/26/2023	22:18:15.085	-11:57:37.98	10.6354698	15.63	1.0	3.2
03/27/2023	22:18:39.932	-11:55:25.76	10.6262486	15.64	1.0	3.3
03/28/2023	22:19:04.615	-11:53:14.44	10.6168150	15.65	1.0	3.4
03/29/2023	22:19:29.129	-11:51:04.05	10.6071715	15.67	1.0	3.4
03/30/2023	22:19:53.467	-11:48:54.63	10.5973207	15.68	1.0	3.5
03/31/2023	22:20:17.628	-11:46:46.19	10.5872649	15.70	1.0	3.6
04/01/2023	22:20:41.605	-11:44:38.78	10.5770069	15.71	1.0	3.7
04/02/2023	22:21:05.395	-11:42:32.40	10.5665489	15.73	1.0	3.7
04/03/2023	22:21:28.995	-11:40:27.07	10.5558937	15.74	1.0	3.8
04/04/2023	22:21:52.402	-11:38:22.83	10.5450436	15.76	1.0	3.9
04/05/2023	22:22:15.612	-11:36:19.67	10.5340012	15.78	1.0	3.9
04/06/2023	22:22:38.625	-11:34:17.62	10.5227688	15.79	1.0	4.0
04/07/2023	22:23:01.436	-11:32:16.68	10.5113491	15.81	1.0	4.1
04/08/2023	22:23:24.046	-11:30:16.88	10.4997443	15.83	1.0	4.1
04/09/2023	22:23:46.451	-11:28:18.24	10.4879569	15.85	1.0	4.2

## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	22:24:08.648	-11:26:20.77	10.4759892	15.86	1.0	4.2
04/11/2023	22:24:30.634	-11:24:24.52	10.4638437	15.88	1.0	4.3
04/12/2023	22:24:52.403	-11:22:29.52	10.4515228	15.90	1.0	4.4
04/13/2023	22:25:13.950	-11:20:35.80	10.4390289	15.92	1.0	4.4
04/14/2023	22:25:35.269	-11:18:43.40	10.4263647	15.94	1.0	4.5
04/15/2023	22:25:56.354	-11:16:52.35	10.4135328	15.96	1.0	4.6
04/16/2023	22:26:17.200	-11:15:02.68	10.4005360	15.98	1.0	4.6
04/17/2023	22:26:37.804	-11:13:14.40	10.3873772	16.00	1.0	4.7
04/18/2023	22:26:58.163	-11:11:27.53	10.3740596	16.02	1.0	4.7
04/19/2023	22:27:18.275	-11:09:42.08	10.3605864	16.04	1.0	4.8
04/20/2023	22:27:38.138	-11:07:58.07	10.3469611	16.06	1.0	4.9
04/21/2023	22:27:57.749	-11:06:15.53	10.3331870	16.08	1.0	4.9
04/22/2023	22:28:17.105	-11:04:34.46	10.3192679	16.11	1.0	5.0
04/23/2023	22:28:36.204	-11:02:54.92	10.3052073	16.13	1.0	5.0
04/24/2023	22:28:55.040	-11:01:16.93	10.2910090	16.15	1.0	5.1
04/25/2023	22:29:13.610	-10:59:40.51	10.2766766	16.17	1.0	5.1
04/26/2023	22:29:31.908	-10:58:05.71	10.2622137	16.19	1.0	5.2
04/27/2023	22:29:49.931	-10:56:32.53	10.2476241	16.22	1.0	5.2
04/28/2023	22:30:07.675	-10:55:01.02	10.2329115	16.24	1.0	5.3
04/29/2023	22:30:25.137	-10:53:31.18	10.2180794	16.26	1.0	5.3
04/30/2023	22:30:42.313	-10:52:03.03	10.2031315	16.29	1.0	5.3
05/01/2023	22:30:59.202	-10:50:36.58	10.1880714	16.31	1.0	5.4
05/02/2023	22:31:15.800	-10:49:11.85	10.1729027	16.34	1.0	5.4
05/03/2023	22:31:32.107	-10:47:48.85	10.1576290	16.36	1.0	5.4
05/04/2023	22:31:48.121	-10:46:27.59	10.1422537	16.39	1.0	5.5
05/05/2023	22:32:03.840	-10:45:08.07	10.1267805	16.41	1.0	5.5
05/06/2023	22:32:19.264	-10:43:50.31	10.1112128	16.44	1.0	5.5
05/07/2023	22:32:34.390	-10:42:34.33	10.0955540	16.46	1.0	5.6
05/08/2023	22:32:49.215	-10:41:20.14	10.0798074	16.49	1.0	5.6
05/09/2023	22:33:03.736	-10:40:07.79	10.0639765	16.51	1.0	5.6
05/10/2023	22:33:17.948	-10:38:57.30	10.0480648	16.54	1.0	5.7
05/11/2023	22:33:31.844	-10:37:48.71	10.0320757	16.57	1.0	5.7
05/12/2023	22:33:45.422	-10:36:42.03	10.0160129	16.59	1.0	5.7
05/13/2023	22:33:58.675	-10:35:37.29	9.9998801	16.62	1.0	5.8
05/14/2023	22:34:11.602	-10:34:34.51	9.9836811	16.65	1.0	5.8
05/15/2023	22:34:24.200	-10:33:33.69	9.9674200	16.67	1.0	5.8
05/16/2023	22:34:36.467	-10:32:34.83	9.9511008	16.70	1.0	5.8
05/17/2023	22:34:48.404	-10:31:37.96	9.9347279	16.73	1.0	5.9
05/18/2023	22:35:00.007	-10:30:43.08	9.9183056	16.76	1.0	5.9
05/19/2023	22:35:11.277	-10:29:50.20	9.9018384	16.78	1.0	5.9
05/20/2023	22:35:22.210	-10:28:59.35	9.8853307	16.81	1.0	5.9
05/21/2023	22:35:32.803	-10:28:10.55	9.8687870	16.84	1.0	5.9
05/22/2023	22:35:43.053	-10:27:23.82	9.8522120	16.87	1.0	5.9
05/23/2023	22:35:52.956	-10:26:39.18	9.8356101	16.90	1.0	6.0
05/24/2023	22:36:02.511	-10:25:56.66	9.8189858	16.93	1.0	6.0
05/25/2023	22:36:11.713	-10:25:16.26	9.8023437	16.95	1.0	6.0
05/26/2023	22:36:20.561	-10:24:37.99	9.7856881	16.98	1.0	6.0
05/27/2023	22:36:29.054	-10:24:01.87	9.7690235	17.01	1.0	6.0
05/28/2023	22:36:37.189	-10:23:27.89	9.7523544	17.04	1.0	6.0
05/29/2023	22:36:44.965	-10:22:56.06	9.7356849	17.07	1.0	6.0

Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	22:36:52.383	-10:22:26.38	9.7190196	17.10	1.0	6.0
05/31/2023	22:36:59.442	-10:21:58.85	9.7023625	17.13	1.0	6.0
06/01/2023	22:37:06.143	-10:21:33.45	9.6857181	17.16	1.0	5.9
06/02/2023	22:37:12.486	-10:21:10.20	9.6690903	17.19	1.0	5.9
06/03/2023	22:37:18.470	-10:20:49.10	9.6524834	17.22	1.0	5.9
06/04/2023	22:37:24.095	-10:20:30.14	9.6359013	17.25	0.9	5.9
06/05/2023	22:37:29.360	-10:20:13.35	9.6193481	17.28	0.9	5.9
06/06/2023	22:37:34.261	-10:19:58.75	9.6028278	17.31	0.9	5.9
06/07/2023	22:37:38.794	-10:19:46.36	9.5863444	17.34	0.9	5.9
06/08/2023	22:37:42.956	-10:19:36.19	9.5699020	17.37	0.9	5.9
06/09/2023	22:37:46.745	-10:19:28.24	9.5535049	17.40	0.9	5.9
06/10/2023	22:37:50.159	-10:19:22.53	9.5371574	17.43	0.9	5.9
06/11/2023	22:37:53.197	-10:19:19.04	9.5208639	17.46	0.9	5.8
06/12/2023	22:37:55.861	-10:19:17.77	9.5046290	17.49	0.9	5.8
06/13/2023	22:37:58.150	-10:19:18.70	9.4884574	17.52	0.9	5.8
06/14/2023	22:38:00.067	-10:19:21.84	9.4723540	17.55	0.9	5.8
06/15/2023	22:38:01.612	-10:19:27.19	9.4563234	17.57	0.9	5.8
06/16/2023	22:38:02.784	-10:19:34.74	9.4403705	17.60	0.9	5.7
06/17/2023	22:38:03.582	-10:19:44.50	9.4245003	17.63	0.9	5.7
06/18/2023	22:38:04.008	-10:19:56.48	9.4087175	17.66	0.9	5.7
06/19/2023	22:38:04.058	-10:20:10.67	9.3930271	17.69	0.9	5.6
06/20/2023	22:38:03.733	-10:20:27.09	9.3774337	17.72	0.9	5.6
06/21/2023	22:38:03.033	-10:20:45.72	9.3619422	17.75	0.9	5.6
06/22/2023	22:38:01.957	-10:21:06.55	9.3465572	17.78	0.9	5.5
06/23/2023	22:38:00.506	-10:21:29.59	9.3312833	17.81	0.9	5.5
06/24/2023	22:37:58.682	-10:21:54.80	9.3161252	17.84	0.9	5.4
06/25/2023	22:37:56.487	-10:22:22.19	9.3010872	17.87	0.8	5.4
06/26/2023	22:37:53.921	-10:22:51.71	9.2861739	17.90	0.8	5.3
06/27/2023	22:37:50.989	-10:23:23.36	9.2713896	17.93	0.8	5.3
06/28/2023	22:37:47.694	-10:23:57.10	9.2567386	17.95	0.8	5.2
06/29/2023	22:37:44.038	-10:24:32.92	9.2422250	17.98	0.8	5.2
06/30/2023	22:37:40.024	-10:25:10.80	9.2278530	18.01	0.8	5.1
07/01/2023	22:37:35.656	-10:25:50.71	9.2136265	18.04	0.8	5.1
07/02/2023	22:37:30.935	-10:26:32.65	9.1995496	18.07	0.8	5.0
07/03/2023	22:37:25.862	-10:27:16.61	9.1856260	18.09	0.8	5.0
07/04/2023	22:37:20.438	-10:28:02.59	9.1718596	18.12	0.8	4.9
07/05/2023	22:37:14.660	-10:28:50.58	9.1582542	18.15	0.8	4.9
07/06/2023	22:37:08.531	-10:29:40.58	9.1448137	18.17	0.8	4.8
07/07/2023	22:37:02.050	-10:30:32.56	9.1315421	18.20	0.8	4.7
07/08/2023	22:36:55.220	-10:31:26.49	9.1184436	18.23	0.8	4.7
07/09/2023	22:36:48.046	-10:32:22.34	9.1055222	18.25	0.8	4.6
07/10/2023	22:36:40.533	-10:33:20.09	9.0927823	18.28	0.8	4.6
07/11/2023	22:36:32.684	-10:34:19.69	9.0802282	18.30	0.8	4.5
07/12/2023	22:36:24.505	-10:35:21.13	9.0678642	18.33	0.7	4.4
07/13/2023	22:36:15.998	-10:36:24.37	9.0556946	18.35	0.7	4.4
07/14/2023	22:36:07.168	-10:37:29.41	9.0437237	18.38	0.7	4.3
07/15/2023	22:35:58.017	-10:38:36.21	9.0319557	18.40	0.7	4.2
07/16/2023	22:35:48.548	-10:39:44.76	9.0203949	18.42	0.7	4.1
07/17/2023	22:35:38.765	-10:40:55.02	9.0090452	18.45	0.7	4.1
07/18/2023	22:35:28.671	-10:42:06.98	8.9979108	18.47	0.7	4.0

## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	22:35:18.271	-10:43:20.61	8.9869954	18.49	0.7	3.9
07/20/2023	22:35:07.568	-10:44:35.85	8.9763029	18.51	0.7	3.8
07/21/2023	22:34:56.568	-10:45:52.68	8.9658370	18.54	0.7	3.7
07/22/2023	22:34:45.277	-10:47:11.05	8.9556012	18.56	0.7	3.6
07/23/2023	22:34:33.701	-10:48:30.91	8.9455989	18.58	0.7	3.6
07/24/2023	22:34:21.847	-10:49:52.22	8.9358336	18.60	0.7	3.5
07/25/2023	22:34:09.721	-10:51:14.93	8.9263083	18.62	0.7	3.4
07/26/2023	22:33:57.331	-10:52:38.99	8.9170262	18.64	0.7	3.3
07/27/2023	22:33:44.685	-10:54:04.35	8.9079902	18.66	0.6	3.2
07/28/2023	22:33:31.789	-10:55:30.97	8.8992032	18.68	0.6	3.1
07/29/2023	22:33:18.649	-10:56:58.81	8.8906677	18.69	0.6	3.0
07/30/2023	22:33:05.272	-10:58:27.84	8.8823865	18.71	0.6	2.9
07/31/2023	22:32:51.662	-10:59:58.02	8.8743618	18.73	0.6	2.8
08/01/2023	22:32:37.823	-11:01:29.33	8.8665962	18.74	0.6	2.7
08/02/2023	22:32:23.759	-11:03:01.73	8.8590920	18.76	0.6	2.7
08/03/2023	22:32:09.473	-11:04:35.19	8.8518515	18.78	0.6	2.6
08/04/2023	22:31:54.974	-11:06:09.66	8.8448773	18.79	0.6	2.5
08/05/2023	22:31:40.267	-11:07:45.09	8.8381718	18.80	0.6	2.4
08/06/2023	22:31:25.362	-11:09:21.40	8.8317377	18.82	0.6	2.3
08/07/2023	22:31:10.269	-11:10:58.55	8.8255775	18.83	0.6	2.2
08/08/2023	22:30:54.995	-11:12:36.49	8.8196938	18.84	0.6	2.1
08/09/2023	22:30:39.548	-11:14:15.17	8.8140890	18.86	0.6	2.0
08/10/2023	22:30:23.936	-11:15:54.56	8.8087658	18.87	0.5	1.9
08/11/2023	22:30:08.166	-11:17:34.60	8.8037263	18.88	0.5	1.8
08/12/2023	22:29:52.245	-11:19:15.27	8.7989728	18.89	0.5	1.7
08/13/2023	22:29:36.179	-11:20:56.50	8.7945074	18.90	0.5	1.6
08/14/2023	22:29:19.976	-11:22:38.26	8.7903320	18.91	0.5	1.5
08/15/2023	22:29:03.644	-11:24:20.50	8.7864483	18.91	0.5	1.4
08/16/2023	22:28:47.191	-11:26:03.15	8.7828582	18.92	0.5	1.3
08/17/2023	22:28:30.626	-11:27:46.17	8.7795630	18.93	0.5	1.2
08/18/2023	22:28:13.957	-11:29:29.49	8.7765640	18.94	0.5	1.0
08/19/2023	22:27:57.194	-11:31:13.05	8.7738625	18.94	0.5	0.9
08/20/2023	22:27:40.348	-11:32:56.79	8.7714595	18.95	0.5	0.8
08/21/2023	22:27:23.428	-11:34:40.65	8.7693558	18.95	0.5	0.7
08/22/2023	22:27:06.445	-11:36:24.56	8.7675521	18.96	0.5	0.6
08/23/2023	22:26:49.409	-11:38:08.46	8.7660489	18.96	0.5	0.5
08/24/2023	22:26:32.329	-11:39:52.31	8.7648466	18.96	0.5	0.4
08/25/2023	22:26:15.216	-11:41:36.03	8.7639454	18.96	0.5	0.3
08/26/2023	22:25:58.079	-11:43:19.59	8.7633453	18.96	0.4	0.2
08/27/2023	22:25:40.924	-11:45:02.95	8.7630462	18.97	0.4	0.2
08/28/2023	22:25:23.760	-11:46:46.07	8.7630480	18.97	0.4	0.2
08/29/2023	22:25:06.591	-11:48:28.91	8.7633504	18.96	0.4	0.2
08/30/2023	22:24:49.425	-11:50:11.42	8.7639531	18.96	0.4	0.3
08/31/2023	22:24:32.270	-11:51:53.55	8.7648557	18.96	0.4	0.4
09/01/2023	22:24:15.134	-11:53:35.25	8.7660580	18.96	0.4	0.5
09/02/2023	22:23:58.027	-11:55:16.45	8.7675598	18.96	0.4	0.6
09/03/2023	22:23:40.961	-11:56:57.09	8.7693609	18.95	0.4	0.7
09/04/2023	22:23:23.945	-11:58:37.11	8.7714611	18.95	0.4	0.8
09/05/2023	22:23:06.991	-12:00:16.47	8.7738600	18.94	0.4	0.9
09/06/2023	22:22:50.106	-12:01:55.12	8.7765575	18.94	0.4	1.0

## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	22:22:33.299	-12:03:33.03	8.7795529	18.93	0.4	1.1
09/08/2023	22:22:16.578	-12:05:10.16	8.7828456	18.92	0.4	1.2
09/09/2023	22:21:59.951	-12:06:46.45	8.7864349	18.91	0.4	1.3
09/10/2023	22:21:43.425	-12:08:21.87	8.7903198	18.91	0.4	1.4
09/11/2023	22:21:27.009	-12:09:56.38	8.7944992	18.90	0.4	1.5
09/12/2023	22:21:10.712	-12:11:29.91	8.7989720	18.89	0.4	1.6
09/13/2023	22:20:54.542	-12:13:02.43	8.8037366	18.88	0.4	1.7
09/14/2023	22:20:38.508	-12:14:33.87	8.8087915	18.87	0.4	1.8
09/15/2023	22:20:22.620	-12:16:04.19	8.8141350	18.86	0.4	1.9
09/16/2023	22:20:06.888	-12:17:33.33	8.8197652	18.84	0.4	2.0
09/17/2023	22:19:51.321	-12:19:01.23	8.8256801	18.83	0.4	2.2
09/18/2023	22:19:35.930	-12:20:27.85	8.8318773	18.82	0.4	2.3
09/19/2023	22:19:20.723	-12:21:53.13	8.8383546	18.80	0.5	2.4
09/20/2023	22:19:05.711	-12:23:17.03	8.8451095	18.79	0.5	2.4
09/21/2023	22:18:50.901	-12:24:39.52	8.8521392	18.77	0.5	2.5
09/22/2023	22:18:36.302	-12:26:00.55	8.8594409	18.76	0.5	2.6
09/23/2023	22:18:21.920	-12:27:20.09	8.8670119	18.74	0.5	2.7
09/24/2023	22:18:07.761	-12:28:38.13	8.8748489	18.73	0.5	2.8
09/25/2023	22:17:53.831	-12:29:54.64	8.8829491	18.71	0.5	2.9
09/26/2023	22:17:40.134	-12:31:09.59	8.8913092	18.69	0.5	3.0
09/27/2023	22:17:26.675	-12:32:22.94	8.8999262	18.67	0.5	3.1
09/28/2023	22:17:13.462	-12:33:34.67	8.9087970	18.66	0.5	3.2
09/29/2023	22:17:00.500	-12:34:44.73	8.9179186	18.64	0.5	3.3
09/30/2023	22:16:47.800	-12:35:53.07	8.9272879	18.62	0.5	3.3
10/01/2023	22:16:35.369	-12:36:59.66	8.9369021	18.60	0.5	3.4
10/02/2023	22:16:23.215	-12:38:04.46	8.9467583	18.58	0.5	3.5
10/03/2023	22:16:11.345	-12:39:07.45	8.9568534	18.56	0.5	3.6
10/04/2023	22:15:59.765	-12:40:08.62	8.9671845	18.53	0.5	3.7
10/05/2023	22:15:48.479	-12:41:07.94	8.9777483	18.51	0.5	3.7
10/06/2023	22:15:37.492	-12:42:05.41	8.9885417	18.49	0.5	3.8
10/07/2023	22:15:26.808	-12:43:00.98	8.9995611	18.47	0.5	3.9
10/08/2023	22:15:16.434	-12:43:54.66	9.0108030	18.44	0.5	4.0
10/09/2023	22:15:06.373	-12:44:46.40	9.0222639	18.42	0.5	4.1
10/10/2023	22:14:56.632	-12:45:36.18	9.0339399	18.40	0.6	4.1
10/11/2023	22:14:47.215	-12:46:23.97	9.0458271	18.37	0.6	4.2
10/12/2023	22:14:38.128	-12:47:09.75	9.0579215	18.35	0.6	4.3
10/13/2023	22:14:29.378	-12:47:53.48	9.0702190	18.32	0.6	4.4
10/14/2023	22:14:20.970	-12:48:35.13	9.0827153	18.30	0.6	4.4
10/15/2023	22:14:12.910	-12:49:14.68	9.0954060	18.27	0.6	4.5
10/16/2023	22:14:05.204	-12:49:52.10	9.1082867	18.25	0.6	4.6
10/17/2023	22:13:57.858	-12:50:27.37	9.1213528	18.22	0.6	4.6
10/18/2023	22:13:50.875	-12:51:00.48	9.1345996	18.19	0.6	4.7
10/19/2023	22:13:44.260	-12:51:31.42	9.1480223	18.17	0.6	4.8
10/20/2023	22:13:38.015	-12:52:00.18	9.1616162	18.14	0.6	4.8
10/21/2023	22:13:32.142	-12:52:26.76	9.1753763	18.11	0.6	4.9
10/22/2023	22:13:26.641	-12:52:51.17	9.1892977	18.09	0.6	4.9
10/23/2023	22:13:21.514	-12:53:13.40	9.2033756	18.06	0.6	5.0
10/24/2023	22:13:16.762	-12:53:33.44	9.2176052	18.03	0.6	5.0
10/25/2023	22:13:12.386	-12:53:51.29	9.2319817	18.00	0.6	5.1
10/26/2023	22:13:08.388	-12:54:06.93	9.2465004	17.97	0.6	5.1

## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	22:13:04.773	-12:54:20.34	9.2611568	17.95	0.6	5.2
10/28/2023	22:13:01.543	-12:54:31.51	9.2759462	17.92	0.6	5.2
10/29/2023	22:12:58.704	-12:54:40.42	9.2908644	17.89	0.6	5.2
10/30/2023	22:12:56.256	-12:54:47.07	9.3059069	17.86	0.7	5.3
10/31/2023	22:12:54.203	-12:54:51.48	9.3210693	17.83	0.7	5.3
11/01/2023	22:12:52.543	-12:54:53.64	9.3363471	17.80	0.7	5.4
11/02/2023	22:12:51.278	-12:54:53.57	9.3517360	17.77	0.7	5.4
11/03/2023	22:12:50.406	-12:54:51.26	9.3672313	17.74	0.7	5.4
11/04/2023	22:12:49.929	-12:54:46.73	9.3828283	17.71	0.7	5.5
11/05/2023	22:12:49.847	-12:54:39.97	9.3985224	17.68	0.7	5.5
11/06/2023	22:12:50.159	-12:54:30.98	9.4143088	17.65	0.7	5.5
11/07/2023	22:12:50.868	-12:54:19.74	9.4301826	17.62	0.7	5.6
11/08/2023	22:12:51.973	-12:54:06.27	9.4461389	17.59	0.7	5.6
11/09/2023	22:12:53.477	-12:53:50.54	9.4621727	17.56	0.7	5.6
11/10/2023	22:12:55.381	-12:53:32.55	9.4782789	17.53	0.7	5.6
11/11/2023	22:12:57.687	-12:53:12.29	9.4944525	17.50	0.7	5.7
11/12/2023	22:13:00.394	-12:52:49.77	9.5106882	17.47	0.7	5.7
11/13/2023	22:13:03.506	-12:52:24.98	9.5269809	17.44	0.7	5.7
11/14/2023	22:13:07.022	-12:51:57.92	9.5433252	17.41	0.7	5.7
11/15/2023	22:13:10.941	-12:51:28.60	9.5597158	17.38	0.7	5.7
11/16/2023	22:13:15.263	-12:50:57.05	9.5761474	17.36	0.7	5.8
11/17/2023	22:13:19.984	-12:50:23.28	9.5926147	17.33	0.7	5.8
11/18/2023	22:13:25.102	-12:49:47.30	9.6091124	17.30	0.7	5.8
11/19/2023	22:13:30.612	-12:49:09.15	9.6256352	17.27	0.7	5.8
11/20/2023	22:13:36.513	-12:48:28.82	9.6421779	17.24	0.8	5.8
11/21/2023	22:13:42.802	-12:47:46.34	9.6587357	17.21	0.8	5.8
11/22/2023	22:13:49.476	-12:47:01.70	9.6753034	17.18	0.8	5.8
11/23/2023	22:13:56.535	-12:46:14.90	9.6918765	17.15	0.8	5.8
11/24/2023	22:14:03.980	-12:45:25.95	9.7084501	17.12	0.8	5.8
11/25/2023	22:14:11.809	-12:44:34.85	9.7250197	17.09	0.8	5.8
11/26/2023	22:14:20.023	-12:43:41.61	9.7415809	17.06	0.8	5.8
11/27/2023	22:14:28.618	-12:42:46.25	9.7581293	17.03	0.8	5.8
11/28/2023	22:14:37.593	-12:41:48.80	9.7746605	17.00	0.8	5.7
11/29/2023	22:14:46.944	-12:40:49.27	9.7911702	16.97	0.8	5.7
11/30/2023	22:14:56.667	-12:39:47.70	9.8076539	16.95	0.8	5.7
12/01/2023	22:15:06.758	-12:38:44.09	9.8241072	16.92	0.8	5.7
12/02/2023	22:15:17.215	-12:37:38.47	9.8405257	16.89	0.8	5.7
12/03/2023	22:15:28.035	-12:36:30.84	9.8569049	16.86	0.8	5.7
12/04/2023	22:15:39.215	-12:35:21.21	9.8732403	16.83	0.8	5.7
12/05/2023	22:15:50.752	-12:34:09.60	9.8895273	16.81	0.8	5.7
12/06/2023	22:16:02.646	-12:32:56.00	9.9057614	16.78	0.8	5.6
12/07/2023	22:16:14.894	-12:31:40.43	9.9219380	16.75	0.8	5.6
12/08/2023	22:16:27.494	-12:30:22.90	9.9380524	16.72	0.8	5.6
12/09/2023	22:16:40.446	-12:29:03.40	9.9541001	16.70	0.8	5.6
12/10/2023	22:16:53.747	-12:27:41.95	9.9700763	16.67	0.8	5.6
12/11/2023	22:17:07.395	-12:26:18.56	9.9859765	16.64	0.8	5.5
12/12/2023	22:17:21.388	-12:24:53.26	10.0017959	16.62	0.8	5.5
12/13/2023	22:17:35.722	-12:23:26.06	10.0175298	16.59	0.8	5.5
12/14/2023	22:17:50.392	-12:21:57.00	10.0331737	16.56	0.8	5.4
12/15/2023	22:18:05.393	-12:20:26.11	10.0487228	16.54	0.8	5.4

## Saturn - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	22:18:20.718	-12:18:53.41	10.0641727	16.51	0.9	5.4
12/17/2023	22:18:36.362	-12:17:18.95	10.0795190	16.49	0.9	5.3
12/18/2023	22:18:52.319	-12:15:42.72	10.0947573	16.46	0.9	5.3
12/19/2023	22:19:08.587	-12:14:04.76	10.1098837	16.44	0.9	5.2
12/20/2023	22:19:25.161	-12:12:25.06	10.1248941	16.41	0.9	5.2
12/21/2023	22:19:42.040	-12:10:43.64	10.1397849	16.39	0.9	5.1
12/22/2023	22:19:59.222	-12:09:00.51	10.1545523	16.37	0.9	5.1
12/23/2023	22:20:16.702	-12:07:15.69	10.1691927	16.34	0.9	5.1
12/24/2023	22:20:34.479	-12:05:29.21	10.1837029	16.32	0.9	5.0
12/25/2023	22:20:52.548	-12:03:41.09	10.1980793	16.30	0.9	5.0
12/26/2023	22:21:10.904	-12:01:51.37	10.2123186	16.27	0.9	4.9
12/27/2023	22:21:29.541	-12:00:00.07	10.2264176	16.25	0.9	4.9
12/28/2023	22:21:48.454	-11:58:07.22	10.2403729	16.23	0.9	4.8
12/29/2023	22:22:07.639	-11:56:12.85	10.2541812	16.21	0.9	4.8
12/30/2023	22:22:27.090	-11:54:16.98	10.2678392	16.19	0.9	4.7
12/31/2023	22:22:46.803	-11:52:19.62	10.2813436	16.16	0.9	4.7
01/01/2024	22:23:06.775	-11:50:20.80	10.2946910	16.14	0.9	4.6
01/02/2024	22:23:27.002	-11:48:20.52	10.3078781	16.12	0.9	4.6



## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	2:51:14.565	16:02:32.29	19.0774063	3.69	5.7	2.3
01/01/2023	2:51:10.023	16:02:13.80	19.0913745	3.69	5.7	2.4
01/02/2023	2:51:05.669	16:01:56.15	19.1055173	3.69	5.7	2.4
01/03/2023	2:51:01.507	16:01:39.35	19.1198299	3.69	5.7	2.4
01/04/2023	2:50:57.537	16:01:23.40	19.1343075	3.68	5.7	2.5
01/05/2023	2:50:53.760	16:01:08.31	19.1489456	3.68	5.7	2.5
01/06/2023	2:50:50.175	16:00:54.09	19.1637393	3.68	5.7	2.5
01/07/2023	2:50:46.785	16:00:40.74	19.1786841	3.67	5.7	2.5
01/08/2023	2:50:43.588	16:00:28.26	19.1937752	3.67	5.7	2.6
01/09/2023	2:50:40.585	16:00:16.65	19.2090079	3.67	5.7	2.6
01/10/2023	2:50:37.779	16:00:05.91	19.2243775	3.67	5.7	2.6
01/11/2023	2:50:35.168	15:59:56.03	19.2398792	3.66	5.7	2.6
01/12/2023	2:50:32.757	15:59:47.03	19.2555083	3.66	5.7	2.6
01/13/2023	2:50:30.545	15:59:38.91	19.2712599	3.66	5.7	2.7
01/14/2023	2:50:28.537	15:59:31.67	19.2871291	3.65	5.7	2.7
01/15/2023	2:50:26.734	15:59:25.32	19.3031110	3.65	5.7	2.7
01/16/2023	2:50:25.138	15:59:19.88	19.3192006	3.65	5.7	2.7
01/17/2023	2:50:23.753	15:59:15.36	19.3353928	3.65	5.7	2.7
01/18/2023	2:50:22.578	15:59:11.78	19.3516824	3.64	5.7	2.8
01/19/2023	2:50:21.616	15:59:09.15	19.3680642	3.64	5.7	2.8
01/20/2023	2:50:20.866	15:59:07.48	19.3845327	3.64	5.7	2.8
01/21/2023	2:50:20.325	15:59:06.76	19.4010824	3.63	5.7	2.8
01/22/2023	2:50:19.992	15:59:06.98	19.4177075	3.63	5.7	2.8
01/23/2023	2:50:19.864	15:59:08.13	19.4344022	3.63	5.7	2.8
01/24/2023	2:50:19.942	15:59:10.20	19.4511609	3.62	5.7	2.8
01/25/2023	2:50:20.228	15:59:13.16	19.4679776	3.62	5.7	2.8
01/26/2023	2:50:20.723	15:59:17.04	19.4848466	3.62	5.7	2.9
01/27/2023	2:50:21.430	15:59:21.82	19.5017624	3.61	5.7	2.9
01/28/2023	2:50:22.349	15:59:27.54	19.5187194	3.61	5.7	2.9
01/29/2023	2:50:23.483	15:59:34.18	19.5357122	3.61	5.7	2.9
01/30/2023	2:50:24.829	15:59:41.77	19.5527355	3.60	5.7	2.9
01/31/2023	2:50:26.387	15:59:50.29	19.5697841	3.60	5.7	2.9
02/01/2023	2:50:28.157	15:59:59.75	19.5868528	3.60	5.7	2.9
02/02/2023	2:50:30.135	16:00:10.15	19.6039366	3.60	5.7	2.9
02/03/2023	2:50:32.321	16:00:21.47	19.6210303	3.59	5.7	2.9
02/04/2023	2:50:34.714	16:00:33.70	19.6381289	3.59	5.7	2.9
02/05/2023	2:50:37.311	16:00:46.85	19.6552276	3.59	5.8	2.9
02/06/2023	2:50:40.111	16:01:00.88	19.6723215	3.58	5.8	2.9
02/07/2023	2:50:43.115	16:01:15.81	19.6894055	3.58	5.8	2.9
02/08/2023	2:50:46.321	16:01:31.61	19.7064749	3.58	5.8	2.9
02/09/2023	2:50:49.729	16:01:48.29	19.7235247	3.57	5.8	2.9
02/10/2023	2:50:53.341	16:02:05.83	19.7405502	3.57	5.8	2.9
02/11/2023	2:50:57.156	16:02:24.25	19.7575466	3.57	5.8	2.9
02/12/2023	2:51:01.175	16:02:43.54	19.7745088	3.56	5.8	2.9
02/13/2023	2:51:05.398	16:03:03.71	19.7914321	3.56	5.8	2.9
02/14/2023	2:51:09.826	16:03:24.77	19.8083114	3.56	5.8	2.9
02/15/2023	2:51:14.457	16:03:46.71	19.8251419	3.56	5.8	2.8
02/16/2023	2:51:19.290	16:04:09.54	19.8419184	3.55	5.8	2.8
02/17/2023	2:51:24.321	16:04:33.25	19.8586359	3.55	5.8	2.8
02/18/2023	2:51:29.547	16:04:57.82	19.8752891	3.55	5.8	2.8

## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	2:51:34.965	16:05:23.24	19.8918729	3.54	5.8	2.8
02/20/2023	2:51:40.572	16:05:49.48	19.9083819	3.54	5.8	2.8
02/21/2023	2:51:46.367	16:06:16.52	19.9248108	3.54	5.8	2.8
02/22/2023	2:51:52.350	16:06:44.35	19.9411546	3.53	5.8	2.8
02/23/2023	2:51:58.522	16:07:12.96	19.9574081	3.53	5.8	2.8
02/24/2023	2:52:04.884	16:07:42.36	19.9735665	3.53	5.8	2.7
02/25/2023	2:52:11.434	16:08:12.55	19.9896250	3.53	5.8	2.7
02/26/2023	2:52:18.172	16:08:43.53	20.0055791	3.52	5.8	2.7
02/27/2023	2:52:25.095	16:09:15.30	20.0214243	3.52	5.8	2.7
02/28/2023	2:52:32.199	16:09:47.84	20.0371564	3.52	5.8	2.7
03/01/2023	2:52:39.483	16:10:21.15	20.0527710	3.51	5.8	2.6
03/02/2023	2:52:46.943	16:10:55.21	20.0682641	3.51	5.8	2.6
03/03/2023	2:52:54.575	16:11:30.01	20.0836316	3.51	5.8	2.6
03/04/2023	2:53:02.378	16:12:05.53	20.0988696	3.51	5.8	2.6
03/05/2023	2:53:10.349	16:12:41.75	20.1139742	3.50	5.8	2.6
03/06/2023	2:53:18.485	16:13:18.66	20.1289415	3.50	5.8	2.5
03/07/2023	2:53:26.785	16:13:56.24	20.1437677	3.50	5.8	2.5
03/08/2023	2:53:35.248	16:14:34.49	20.1584493	3.50	5.8	2.5
03/09/2023	2:53:43.872	16:15:13.38	20.1729824	3.49	5.8	2.5
03/10/2023	2:53:52.658	16:15:52.92	20.1873634	3.49	5.8	2.4
03/11/2023	2:54:01.605	16:16:33.10	20.2015887	3.49	5.8	2.4
03/12/2023	2:54:10.711	16:17:13.92	20.2156547	3.49	5.8	2.4
03/13/2023	2:54:19.975	16:17:55.39	20.2295578	3.48	5.8	2.4
03/14/2023	2:54:29.397	16:18:37.49	20.2432942	3.48	5.8	2.3
03/15/2023	2:54:38.972	16:19:20.23	20.2568603	3.48	5.8	2.3
03/16/2023	2:54:48.698	16:20:03.60	20.2702523	3.48	5.8	2.3
03/17/2023	2:54:58.571	16:20:47.57	20.2834666	3.47	5.8	2.2
03/18/2023	2:55:08.585	16:21:32.13	20.2964992	3.47	5.8	2.2
03/19/2023	2:55:18.738	16:22:17.25	20.3093465	3.47	5.8	2.2
03/20/2023	2:55:29.026	16:23:02.91	20.3220047	3.47	5.8	2.2
03/21/2023	2:55:39.449	16:23:49.08	20.3344700	3.47	5.8	2.1
03/22/2023	2:55:50.005	16:24:35.75	20.3467390	3.46	5.8	2.1
03/23/2023	2:56:00.696	16:25:22.92	20.3588080	3.46	5.8	2.1
03/24/2023	2:56:11.519	16:26:10.59	20.3706739	3.46	5.8	2.0
03/25/2023	2:56:22.474	16:26:58.75	20.3823336	3.46	5.8	2.0
03/26/2023	2:56:33.557	16:27:47.41	20.3937842	3.46	5.8	1.9
03/27/2023	2:56:44.764	16:28:36.56	20.4050228	3.45	5.8	1.9
03/28/2023	2:56:56.093	16:29:26.17	20.4160469	3.45	5.8	1.9
03/29/2023	2:57:07.538	16:30:16.24	20.4268540	3.45	5.8	1.8
03/30/2023	2:57:19.097	16:31:06.74	20.4374416	3.45	5.8	1.8
03/31/2023	2:57:30.765	16:31:57.66	20.4478074	3.45	5.8	1.8
04/01/2023	2:57:42.539	16:32:48.97	20.4579492	3.45	5.8	1.7
04/02/2023	2:57:54.418	16:33:40.66	20.4678648	3.44	5.8	1.7
04/03/2023	2:58:06.397	16:34:32.71	20.4775520	3.44	5.8	1.6
04/04/2023	2:58:18.476	16:35:25.11	20.4870090	3.44	5.8	1.6
04/05/2023	2:58:30.652	16:36:17.84	20.4962337	3.44	5.8	1.6
04/06/2023	2:58:42.924	16:37:10.89	20.5052243	3.44	5.8	1.5
04/07/2023	2:58:55.293	16:38:04.27	20.5139788	3.44	5.8	1.5
04/08/2023	2:59:07.755	16:38:57.95	20.5224953	3.43	5.8	1.4
04/09/2023	2:59:20.310	16:39:51.96	20.5307720	3.43	5.8	1.4

## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	2:59:32.956	16:40:46.28	20.5388070	3.43	5.8	1.4
04/11/2023	2:59:45.689	16:41:40.90	20.5465985	3.43	5.8	1.3
04/12/2023	2:59:58.506	16:42:35.82	20.5541443	3.43	5.8	1.3
04/13/2023	3:00:11.402	16:43:31.03	20.5614427	3.43	5.8	1.2
04/14/2023	3:00:24.372	16:44:26.49	20.5684916	3.43	5.8	1.2
04/15/2023	3:00:37.413	16:45:22.19	20.5752890	3.43	5.8	1.2
04/16/2023	3:00:50.521	16:46:18.09	20.5818330	3.42	5.8	1.1
04/17/2023	3:01:03.694	16:47:14.19	20.5881217	3.42	5.8	1.1
04/18/2023	3:01:16.932	16:48:10.45	20.5941533	3.42	5.8	1.0
04/19/2023	3:01:30.232	16:49:06.88	20.5999261	3.42	5.8	1.0
04/20/2023	3:01:43.595	16:50:03.47	20.6054386	3.42	5.8	0.9
04/21/2023	3:01:57.019	16:51:00.23	20.6106894	3.42	5.8	0.9
04/22/2023	3:02:10.502	16:51:57.14	20.6156775	3.42	5.8	0.8
04/23/2023	3:02:24.039	16:52:54.20	20.6204016	3.42	5.8	0.8
04/24/2023	3:02:37.626	16:53:51.40	20.6248611	3.42	5.8	0.7
04/25/2023	3:02:51.260	16:54:48.73	20.6290551	3.42	5.8	0.7
04/26/2023	3:03:04.936	16:55:46.16	20.6329831	3.42	5.9	0.7
04/27/2023	3:03:18.650	16:56:43.68	20.6366444	3.42	5.9	0.6
04/28/2023	3:03:32.399	16:57:41.26	20.6400387	3.41	5.9	0.6
04/29/2023	3:03:46.179	16:58:38.90	20.6431656	3.41	5.9	0.5
04/30/2023	3:03:59.988	16:59:36.57	20.6460248	3.41	5.9	0.5
05/01/2023	3:04:13.824	17:00:34.25	20.6486160	3.41	5.9	0.4
05/02/2023	3:04:27.685	17:01:31.94	20.6509392	3.41	5.9	0.4
05/03/2023	3:04:41.569	17:02:29.63	20.6529942	3.41	5.9	0.3
05/04/2023	3:04:55.475	17:03:27.30	20.6547808	3.41	5.9	0.3
05/05/2023	3:05:09.402	17:04:24.96	20.6562992	3.41	5.9	0.2
05/06/2023	3:05:23.348	17:05:22.60	20.6575492	3.41	5.9	0.2
05/07/2023	3:05:37.313	17:06:20.23	20.6585307	3.41	5.9	0.2
05/08/2023	3:05:51.291	17:07:17.84	20.6592438	3.41	5.9	0.1
05/09/2023	3:06:05.281	17:08:15.43	20.6596882	3.41	5.9	0.1
05/10/2023	3:06:19.277	17:09:12.98	20.6598637	3.41	5.9	0.0
05/11/2023	3:06:33.274	17:10:10.48	20.6597702	3.41	5.9	0.0
05/12/2023	3:06:47.269	17:11:07.89	20.6594075	3.41	5.9	0.1
05/13/2023	3:07:01.257	17:12:05.19	20.6587754	3.41	5.9	0.1
05/14/2023	3:07:15.236	17:13:02.37	20.6578737	3.41	5.9	0.2
05/15/2023	3:07:29.206	17:13:59.41	20.6567024	3.41	5.9	0.2
05/16/2023	3:07:43.165	17:14:56.30	20.6552616	3.41	5.9	0.3
05/17/2023	3:07:57.113	17:15:53.04	20.6535515	3.41	5.9	0.3
05/18/2023	3:08:11.047	17:16:49.62	20.6515724	3.41	5.9	0.4
05/19/2023	3:08:24.967	17:17:46.05	20.6493249	3.41	5.9	0.4
05/20/2023	3:08:38.868	17:18:42.32	20.6468095	3.41	5.9	0.5
05/21/2023	3:08:52.746	17:19:38.42	20.6440272	3.41	5.9	0.5
05/22/2023	3:09:06.599	17:20:34.35	20.6409788	3.41	5.9	0.6
05/23/2023	3:09:20.420	17:21:30.09	20.6376654	3.42	5.9	0.6
05/24/2023	3:09:34.207	17:22:25.61	20.6340881	3.42	5.8	0.6
05/25/2023	3:09:47.956	17:23:20.91	20.6302482	3.42	5.8	0.7
05/26/2023	3:10:01.662	17:24:15.96	20.6261471	3.42	5.8	0.7
05/27/2023	3:10:15.325	17:25:10.76	20.6217861	3.42	5.8	0.8
05/28/2023	3:10:28.941	17:26:05.28	20.6171666	3.42	5.8	0.8
05/29/2023	3:10:42.508	17:26:59.51	20.6122902	3.42	5.8	0.9

Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	3:10:56.025	17:27:53.44	20.6071585	3.42	5.8	0.9
05/31/2023	3:11:09.491	17:28:47.08	20.6017729	3.42	5.8	1.0
06/01/2023	3:11:22.905	17:29:40.41	20.5961352	3.42	5.8	1.0
06/02/2023	3:11:36.265	17:30:33.44	20.5902470	3.42	5.8	1.0
06/03/2023	3:11:49.570	17:31:26.16	20.5841099	3.42	5.8	1.1
06/04/2023	3:12:02.818	17:32:18.59	20.5777255	3.43	5.8	1.1
06/05/2023	3:12:16.006	17:33:10.72	20.5710953	3.43	5.8	1.2
06/06/2023	3:12:29.128	17:34:02.54	20.5642208	3.43	5.8	1.2
06/07/2023	3:12:42.181	17:34:54.03	20.5571035	3.43	5.8	1.3
06/08/2023	3:12:55.158	17:35:45.18	20.5497448	3.43	5.8	1.3
06/09/2023	3:13:08.058	17:36:35.95	20.5421460	3.43	5.8	1.3
06/10/2023	3:13:20.878	17:37:26.33	20.5343086	3.43	5.8	1.4
06/11/2023	3:13:33.616	17:38:16.30	20.5262342	3.43	5.8	1.4
06/12/2023	3:13:46.272	17:39:05.86	20.5179243	3.44	5.8	1.5
06/13/2023	3:13:58.845	17:39:55.00	20.5093806	3.44	5.8	1.5
06/14/2023	3:14:11.334	17:40:43.73	20.5006052	3.44	5.8	1.5
06/15/2023	3:14:23.738	17:41:32.05	20.4915999	3.44	5.8	1.6
06/16/2023	3:14:36.053	17:42:19.95	20.4823671	3.44	5.8	1.6
06/17/2023	3:14:48.276	17:43:07.43	20.4729089	3.44	5.8	1.7
06/18/2023	3:15:00.404	17:43:54.49	20.4632279	3.44	5.8	1.7
06/19/2023	3:15:12.431	17:44:41.11	20.4533265	3.45	5.8	1.7
06/20/2023	3:15:24.356	17:45:27.28	20.4432075	3.45	5.8	1.8
06/21/2023	3:15:36.173	17:46:12.98	20.4328735	3.45	5.8	1.8
06/22/2023	3:15:47.880	17:46:58.19	20.4223275	3.45	5.8	1.9
06/23/2023	3:15:59.474	17:47:42.91	20.4115722	3.45	5.8	1.9
06/24/2023	3:16:10.953	17:48:27.13	20.4006106	3.45	5.8	1.9
06/25/2023	3:16:22.316	17:49:10.82	20.3894457	3.46	5.8	2.0
06/26/2023	3:16:33.560	17:49:53.98	20.3780805	3.46	5.8	2.0
06/27/2023	3:16:44.685	17:50:36.62	20.3665180	3.46	5.8	2.0
06/28/2023	3:16:55.691	17:51:18.72	20.3547614	3.46	5.8	2.1
06/29/2023	3:17:06.575	17:52:00.28	20.3428138	3.46	5.8	2.1
06/30/2023	3:17:17.338	17:52:41.32	20.3306781	3.47	5.8	2.1
07/01/2023	3:17:27.978	17:53:21.83	20.3183576	3.47	5.8	2.2
07/02/2023	3:17:38.492	17:54:01.83	20.3058552	3.47	5.8	2.2
07/03/2023	3:17:48.877	17:54:41.30	20.2931740	3.47	5.8	2.2
07/04/2023	3:17:59.128	17:55:20.24	20.2803167	3.48	5.8	2.2
07/05/2023	3:18:09.241	17:55:58.63	20.2672862	3.48	5.8	2.3
07/06/2023	3:18:19.212	17:56:36.44	20.2540853	3.48	5.8	2.3
07/07/2023	3:18:29.038	17:57:13.66	20.2407167	3.48	5.8	2.3
07/08/2023	3:18:38.719	17:57:50.27	20.2271834	3.48	5.8	2.4
07/09/2023	3:18:48.254	17:58:26.25	20.2134883	3.49	5.8	2.4
07/10/2023	3:18:57.644	17:59:01.62	20.1996343	3.49	5.8	2.4
07/11/2023	3:19:06.888	17:59:36.38	20.1856248	3.49	5.8	2.5
07/12/2023	3:19:15.985	18:00:10.53	20.1714630	3.49	5.8	2.5
07/13/2023	3:19:24.933	18:00:44.07	20.1571524	3.50	5.8	2.5
07/14/2023	3:19:33.728	18:01:17.01	20.1426966	3.50	5.8	2.5
07/15/2023	3:19:42.368	18:01:49.33	20.1280993	3.50	5.8	2.6
07/16/2023	3:19:50.850	18:02:21.04	20.1133644	3.50	5.8	2.6
07/17/2023	3:19:59.169	18:02:52.11	20.0984957	3.51	5.8	2.6
07/18/2023	3:20:07.324	18:03:22.54	20.0834972	3.51	5.8	2.6

## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	3:20:15.310	18:03:52.31	20.0683730	3.51	5.8	2.7
07/20/2023	3:20:23.127	18:04:21.42	20.0531273	3.51	5.8	2.7
07/21/2023	3:20:30.772	18:04:49.84	20.0377641	3.52	5.8	2.7
07/22/2023	3:20:38.245	18:05:17.58	20.0222877	3.52	5.8	2.7
07/23/2023	3:20:45.543	18:05:44.63	20.0067023	3.52	5.8	2.7
07/24/2023	3:20:52.668	18:06:10.98	19.9910122	3.53	5.8	2.7
07/25/2023	3:20:59.618	18:06:36.64	19.9752216	3.53	5.8	2.8
07/26/2023	3:21:06.394	18:07:01.60	19.9593348	3.53	5.8	2.8
07/27/2023	3:21:12.994	18:07:25.88	19.9433561	3.53	5.8	2.8
07/28/2023	3:21:19.420	18:07:49.47	19.9272897	3.54	5.8	2.8
07/29/2023	3:21:25.668	18:08:12.39	19.9111399	3.54	5.8	2.8
07/30/2023	3:21:31.738	18:08:34.65	19.8949107	3.54	5.8	2.8
07/31/2023	3:21:37.625	18:08:56.22	19.8786063	3.55	5.8	2.8
08/01/2023	3:21:43.326	18:09:17.12	19.8622306	3.55	5.8	2.8
08/02/2023	3:21:48.838	18:09:37.31	19.8457874	3.55	5.8	2.9
08/03/2023	3:21:54.158	18:09:56.78	19.8292808	3.55	5.8	2.9
08/04/2023	3:21:59.286	18:10:15.50	19.8127144	3.56	5.8	2.9
08/05/2023	3:22:04.222	18:10:33.48	19.7960923	3.56	5.8	2.9
08/06/2023	3:22:08.967	18:10:50.70	19.7794184	3.56	5.8	2.9
08/07/2023	3:22:13.522	18:11:07.19	19.7626968	3.57	5.8	2.9
08/08/2023	3:22:17.887	18:11:22.95	19.7459319	3.57	5.8	2.9
08/09/2023	3:22:22.061	18:11:37.98	19.7291279	3.57	5.8	2.9
08/10/2023	3:22:26.043	18:11:52.29	19.7122896	3.58	5.8	2.9
08/11/2023	3:22:29.830	18:12:05.88	19.6954214	3.58	5.8	2.9
08/12/2023	3:22:33.419	18:12:18.74	19.6785281	3.58	5.8	2.9
08/13/2023	3:22:36.809	18:12:30.87	19.6616144	3.58	5.7	2.9
08/14/2023	3:22:39.997	18:12:42.26	19.6446853	3.59	5.7	2.9
08/15/2023	3:22:42.982	18:12:52.90	19.6277455	3.59	5.7	2.9
08/16/2023	3:22:45.762	18:13:02.77	19.6108001	3.59	5.7	2.9
08/17/2023	3:22:48.337	18:13:11.88	19.5938541	3.60	5.7	2.9
08/18/2023	3:22:50.706	18:13:20.22	19.5769123	3.60	5.7	2.9
08/19/2023	3:22:52.870	18:13:27.78	19.5599798	3.60	5.7	2.9
08/20/2023	3:22:54.830	18:13:34.57	19.5430617	3.61	5.7	2.9
08/21/2023	3:22:56.586	18:13:40.58	19.5261628	3.61	5.7	2.9
08/22/2023	3:22:58.139	18:13:45.83	19.5092882	3.61	5.7	2.9
08/23/2023	3:22:59.491	18:13:50.32	19.4924427	3.62	5.7	2.9
08/24/2023	3:23:00.641	18:13:54.06	19.4756314	3.62	5.7	2.9
08/25/2023	3:23:01.591	18:13:57.06	19.4588590	3.62	5.7	2.9
08/26/2023	3:23:02.339	18:13:59.33	19.4421303	3.63	5.7	2.9
08/27/2023	3:23:02.884	18:14:00.88	19.4254501	3.63	5.7	2.9
08/28/2023	3:23:03.225	18:14:01.69	19.4088227	3.63	5.7	2.9
08/29/2023	3:23:03.359	18:14:01.77	19.3922528	3.63	5.7	2.9
08/30/2023	3:23:03.285	18:14:01.09	19.3757448	3.64	5.7	2.8
08/31/2023	3:23:03.002	18:13:59.64	19.3593029	3.64	5.7	2.8
09/01/2023	3:23:02.513	18:13:57.41	19.3429314	3.64	5.7	2.8
09/02/2023	3:23:01.818	18:13:54.40	19.3266347	3.65	5.7	2.8
09/03/2023	3:23:00.923	18:13:50.62	19.3104173	3.65	5.7	2.8
09/04/2023	3:22:59.828	18:13:46.09	19.2942835	3.65	5.7	2.8
09/05/2023	3:22:58.534	18:13:40.81	19.2782382	3.66	5.7	2.8
09/06/2023	3:22:57.041	18:13:34.81	19.2622860	3.66	5.7	2.7

## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	3:22:55.349	18:13:28.08	19.2464319	3.66	5.7	2.7
09/08/2023	3:22:53.457	18:13:20.63	19.2306806	3.67	5.7	2.7
09/09/2023	3:22:51.363	18:13:12.46	19.2150372	3.67	5.7	2.7
09/10/2023	3:22:49.068	18:13:03.55	19.1995066	3.67	5.7	2.7
09/11/2023	3:22:46.571	18:12:53.91	19.1840939	3.67	5.7	2.7
09/12/2023	3:22:43.873	18:12:43.53	19.1688040	3.68	5.7	2.6
09/13/2023	3:22:40.974	18:12:32.41	19.1536419	3.68	5.7	2.6
09/14/2023	3:22:37.877	18:12:20.55	19.1386126	3.68	5.7	2.6
09/15/2023	3:22:34.583	18:12:07.95	19.1237210	3.69	5.7	2.6
09/16/2023	3:22:31.093	18:11:54.62	19.1089721	3.69	5.7	2.5
09/17/2023	3:22:27.412	18:11:40.56	19.0943707	3.69	5.7	2.5
09/18/2023	3:22:23.542	18:11:25.78	19.0799217	3.69	5.7	2.5
09/19/2023	3:22:19.485	18:11:10.30	19.0656298	3.70	5.7	2.4
09/20/2023	3:22:15.245	18:10:54.14	19.0514996	3.70	5.7	2.4
09/21/2023	3:22:10.822	18:10:37.30	19.0375357	3.70	5.7	2.4
09/22/2023	3:22:06.219	18:10:19.80	19.0237425	3.70	5.7	2.4
09/23/2023	3:22:01.437	18:10:01.66	19.0101245	3.71	5.7	2.3
09/24/2023	3:21:56.476	18:09:42.88	18.9966857	3.71	5.7	2.3
09/25/2023	3:21:51.335	18:09:23.45	18.9834302	3.71	5.7	2.3
09/26/2023	3:21:46.016	18:09:03.38	18.9703620	3.72	5.7	2.2
09/27/2023	3:21:40.520	18:08:42.65	18.9574850	3.72	5.7	2.2
09/28/2023	3:21:34.848	18:08:21.25	18.9448027	3.72	5.7	2.2
09/29/2023	3:21:29.006	18:07:59.19	18.9323190	3.72	5.7	2.1
09/30/2023	3:21:22.997	18:07:36.49	18.9200375	3.73	5.7	2.1
10/01/2023	3:21:16.827	18:07:13.16	18.9079620	3.73	5.7	2.1
10/02/2023	3:21:10.499	18:06:49.21	18.8960962	3.73	5.7	2.0
10/03/2023	3:21:04.015	18:06:24.69	18.8844441	3.73	5.7	2.0
10/04/2023	3:20:57.377	18:05:59.58	18.8730096	3.73	5.7	1.9
10/05/2023	3:20:50.585	18:05:33.92	18.8617967	3.74	5.7	1.9
10/06/2023	3:20:43.641	18:05:07.69	18.8508093	3.74	5.7	1.9
10/07/2023	3:20:36.545	18:04:40.91	18.8400514	3.74	5.7	1.8
10/08/2023	3:20:29.300	18:04:13.57	18.8295270	3.74	5.7	1.8
10/09/2023	3:20:21.908	18:03:45.68	18.8192400	3.75	5.6	1.7
10/10/2023	3:20:14.371	18:03:17.23	18.8091941	3.75	5.6	1.7
10/11/2023	3:20:06.693	18:02:48.25	18.7993932	3.75	5.6	1.7
10/12/2023	3:19:58.878	18:02:18.73	18.7898410	3.75	5.6	1.6
10/13/2023	3:19:50.930	18:01:48.69	18.7805410	3.75	5.6	1.6
10/14/2023	3:19:42.854	18:01:18.14	18.7714969	3.75	5.6	1.5
10/15/2023	3:19:34.653	18:00:47.09	18.7627120	3.76	5.6	1.5
10/16/2023	3:19:26.334	18:00:15.58	18.7541897	3.76	5.6	1.4
10/17/2023	3:19:17.900	17:59:43.61	18.7459331	3.76	5.6	1.4
10/18/2023	3:19:09.356	17:59:11.22	18.7379453	3.76	5.6	1.3
10/19/2023	3:19:00.705	17:58:38.42	18.7302290	3.76	5.6	1.3
10/20/2023	3:18:51.950	17:58:05.23	18.7227871	3.76	5.6	1.2
10/21/2023	3:18:43.093	17:57:31.67	18.7156220	3.77	5.6	1.2
10/22/2023	3:18:34.136	17:56:57.74	18.7087360	3.77	5.6	1.1
10/23/2023	3:18:25.081	17:56:23.44	18.7021315	3.77	5.6	1.1
10/24/2023	3:18:15.932	17:55:48.78	18.6958103	3.77	5.6	1.0
10/25/2023	3:18:06.692	17:55:13.76	18.6897743	3.77	5.6	1.0
10/26/2023	3:17:57.366	17:54:38.38	18.6840255	3.77	5.6	0.9

## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	3:17:47.961	17:54:02.65	18.6785654	3.77	5.6	0.9
10/28/2023	3:17:38.483	17:53:26.61	18.6733958	3.77	5.6	0.9
10/29/2023	3:17:28.936	17:52:50.28	18.6685185	3.78	5.6	0.8
10/30/2023	3:17:19.327	17:52:13.68	18.6639350	3.78	5.6	0.8
10/31/2023	3:17:09.658	17:51:36.85	18.6596471	3.78	5.6	0.7
11/01/2023	3:16:59.932	17:50:59.79	18.6556567	3.78	5.6	0.7
11/02/2023	3:16:50.151	17:50:22.52	18.6519654	3.78	5.6	0.6
11/03/2023	3:16:40.317	17:49:45.05	18.6485750	3.78	5.6	0.6
11/04/2023	3:16:30.434	17:49:07.38	18.6454870	3.78	5.6	0.5
11/05/2023	3:16:20.505	17:48:29.53	18.6427030	3.78	5.6	0.5
11/06/2023	3:16:10.534	17:47:51.51	18.6402245	3.78	5.6	0.4
11/07/2023	3:16:00.525	17:47:13.32	18.6380527	3.78	5.6	0.3
11/08/2023	3:15:50.484	17:46:34.97	18.6361890	3.78	5.6	0.3
11/09/2023	3:15:40.415	17:45:56.49	18.6346345	3.78	5.6	0.2
11/10/2023	3:15:30.325	17:45:17.90	18.6333901	3.78	5.6	0.2
11/11/2023	3:15:20.219	17:44:39.20	18.6324567	3.78	5.6	0.1
11/12/2023	3:15:10.103	17:44:00.44	18.6318351	3.78	5.6	0.1
11/13/2023	3:14:59.983	17:43:21.64	18.6315257	3.78	5.6	0.0
11/14/2023	3:14:49.863	17:42:42.81	18.6315290	3.78	5.6	0.0
11/15/2023	3:14:39.750	17:42:04.00	18.6318451	3.78	5.6	0.1
11/16/2023	3:14:29.646	17:41:25.23	18.6324741	3.78	5.6	0.1
11/17/2023	3:14:19.554	17:40:46.51	18.6334156	3.78	5.6	0.2
11/18/2023	3:14:09.477	17:40:07.85	18.6346693	3.78	5.6	0.2
11/19/2023	3:13:59.418	17:39:29.27	18.6362346	3.78	5.6	0.3
11/20/2023	3:13:49.380	17:38:50.76	18.6381106	3.78	5.6	0.4
11/21/2023	3:13:39.368	17:38:12.33	18.6402964	3.78	5.6	0.4
11/22/2023	3:13:29.387	17:37:34.00	18.6427911	3.78	5.6	0.5
11/23/2023	3:13:19.443	17:36:55.77	18.6455933	3.78	5.6	0.5
11/24/2023	3:13:09.543	17:36:17.68	18.6487019	3.78	5.6	0.6
11/25/2023	3:12:59.692	17:35:39.74	18.6521158	3.78	5.6	0.6
11/26/2023	3:12:49.897	17:35:01.99	18.6558336	3.78	5.6	0.7
11/27/2023	3:12:40.161	17:34:24.47	18.6598542	3.78	5.6	0.7
11/28/2023	3:12:30.487	17:33:47.18	18.6641762	3.78	5.6	0.8
11/29/2023	3:12:20.878	17:33:10.14	18.6687985	3.78	5.6	0.8
11/30/2023	3:12:11.336	17:32:33.37	18.6737197	3.77	5.6	0.9
12/01/2023	3:12:01.864	17:31:56.88	18.6789385	3.77	5.6	0.9
12/02/2023	3:11:52.464	17:31:20.67	18.6844534	3.77	5.6	1.0
12/03/2023	3:11:43.140	17:30:44.75	18.6902630	3.77	5.6	1.0
12/04/2023	3:11:33.898	17:30:09.14	18.6963656	3.77	5.6	1.1
12/05/2023	3:11:24.740	17:29:33.85	18.7027595	3.77	5.6	1.1
12/06/2023	3:11:15.672	17:28:58.88	18.7094428	3.77	5.6	1.2
12/07/2023	3:11:06.699	17:28:24.27	18.7164136	3.77	5.6	1.2
12/08/2023	3:10:57.827	17:27:50.03	18.7236697	3.76	5.6	1.2
12/09/2023	3:10:49.061	17:27:16.18	18.7312089	3.76	5.6	1.3
12/10/2023	3:10:40.405	17:26:42.75	18.7390288	3.76	5.6	1.3
12/11/2023	3:10:31.865	17:26:09.77	18.7471270	3.76	5.6	1.4
12/12/2023	3:10:23.445	17:25:37.26	18.7555006	3.76	5.6	1.4
12/13/2023	3:10:15.149	17:25:05.24	18.7641469	3.76	5.6	1.5
12/14/2023	3:10:06.978	17:24:33.74	18.7730626	3.75	5.6	1.5
12/15/2023	3:09:58.935	17:24:02.77	18.7822446	3.75	5.6	1.6

## Uranus - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	3:09:51.020	17:23:32.32	18.7916893	3.75	5.6	1.6
12/17/2023	3:09:43.236	17:23:02.41	18.8013931	3.75	5.6	1.7
12/18/2023	3:09:35.587	17:22:33.02	18.8113523	3.75	5.6	1.7
12/19/2023	3:09:28.076	17:22:04.17	18.8215630	3.74	5.6	1.8
12/20/2023	3:09:20.708	17:21:35.87	18.8320213	3.74	5.7	1.8
12/21/2023	3:09:13.488	17:21:08.14	18.8427232	3.74	5.7	1.8
12/22/2023	3:09:06.422	17:20:41.00	18.8536648	3.74	5.7	1.9
12/23/2023	3:08:59.513	17:20:14.47	18.8648423	3.74	5.7	1.9
12/24/2023	3:08:52.765	17:19:48.58	18.8762517	3.73	5.7	1.9
12/25/2023	3:08:46.179	17:19:23.35	18.8878891	3.73	5.7	2.0
12/26/2023	3:08:39.757	17:18:58.79	18.8997507	3.73	5.7	2.0
12/27/2023	3:08:33.500	17:18:34.90	18.9118326	3.73	5.7	2.1
12/28/2023	3:08:27.409	17:18:11.69	18.9241310	3.72	5.7	2.1
12/29/2023	3:08:21.485	17:17:49.17	18.9366419	3.72	5.7	2.1
12/30/2023	3:08:15.729	17:17:27.34	18.9493614	3.72	5.7	2.2
12/31/2023	3:08:10.145	17:17:06.19	18.9622855	3.72	5.7	2.2
01/01/2024	3:08:04.735	17:16:45.74	18.9754101	3.71	5.7	2.2
01/02/2024	3:07:59.501	17:16:26.00	18.9887312	3.71	5.7	2.3



## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	23:35:38.248	-3:55:34.94	30.1754908	2.26	7.9	1.8
01/01/2023	23:35:41.655	-3:55:10.94	30.1920899	2.26	7.9	1.8
01/02/2023	23:35:45.183	-3:54:46.18	30.2085981	2.26	7.9	1.8
01/03/2023	23:35:48.831	-3:54:20.65	30.2250109	2.26	7.9	1.8
01/04/2023	23:35:52.598	-3:53:54.37	30.2413237	2.26	7.9	1.8
01/05/2023	23:35:56.483	-3:53:27.36	30.2575319	2.26	7.9	1.7
01/06/2023	23:36:00.483	-3:52:59.62	30.2736310	2.26	7.9	1.7
01/07/2023	23:36:04.597	-3:52:31.17	30.2896165	2.25	7.9	1.7
01/08/2023	23:36:08.823	-3:52:02.02	30.3054840	2.25	7.9	1.7
01/09/2023	23:36:13.158	-3:51:32.19	30.3212291	2.25	7.9	1.7
01/10/2023	23:36:17.602	-3:51:01.68	30.3368473	2.25	7.9	1.7
01/11/2023	23:36:22.154	-3:50:30.49	30.3523342	2.25	7.9	1.7
01/12/2023	23:36:26.812	-3:49:58.64	30.3676855	2.25	7.9	1.7
01/13/2023	23:36:31.577	-3:49:26.12	30.3828967	2.25	7.9	1.6
01/14/2023	23:36:36.448	-3:48:52.93	30.3979634	2.25	7.9	1.6
01/15/2023	23:36:41.425	-3:48:19.08	30.4128812	2.25	7.9	1.6
01/16/2023	23:36:46.510	-3:47:44.57	30.4276456	2.24	7.9	1.6
01/17/2023	23:36:51.700	-3:47:09.38	30.4422521	2.24	7.9	1.6
01/18/2023	23:36:56.998	-3:46:33.53	30.4566964	2.24	7.9	1.6
01/19/2023	23:37:02.400	-3:45:57.03	30.4709738	2.24	7.9	1.5
01/20/2023	23:37:07.905	-3:45:19.90	30.4850798	2.24	7.9	1.5
01/21/2023	23:37:13.509	-3:44:42.16	30.4990098	2.24	7.9	1.5
01/22/2023	23:37:19.208	-3:44:03.83	30.5127595	2.24	7.9	1.5
01/23/2023	23:37:24.998	-3:43:24.95	30.5263244	2.24	7.9	1.5
01/24/2023	23:37:30.877	-3:42:45.51	30.5397003	2.24	7.9	1.4
01/25/2023	23:37:36.845	-3:42:05.53	30.5528833	2.24	7.9	1.4
01/26/2023	23:37:42.901	-3:41:25.00	30.5658695	2.23	7.9	1.4
01/27/2023	23:37:49.046	-3:40:43.92	30.5786553	2.23	7.9	1.4
01/28/2023	23:37:55.280	-3:40:02.30	30.5912374	2.23	7.9	1.3
01/29/2023	23:38:01.602	-3:39:20.13	30.6036124	2.23	7.9	1.3
01/30/2023	23:38:08.010	-3:38:37.43	30.6157770	2.23	7.9	1.3
01/31/2023	23:38:14.504	-3:37:54.22	30.6277283	2.23	7.9	1.3
02/01/2023	23:38:21.080	-3:37:10.50	30.6394632	2.23	7.9	1.3
02/02/2023	23:38:27.736	-3:36:26.31	30.6509788	2.23	7.9	1.2
02/03/2023	23:38:34.469	-3:35:41.64	30.6622721	2.23	7.9	1.2
02/04/2023	23:38:41.277	-3:34:56.53	30.6733404	2.23	7.9	1.2
02/05/2023	23:38:48.158	-3:34:10.99	30.6841809	2.23	7.9	1.2
02/06/2023	23:38:55.108	-3:33:25.03	30.6947908	2.22	7.9	1.1
02/07/2023	23:39:02.127	-3:32:38.65	30.7051676	2.22	7.9	1.1
02/08/2023	23:39:09.214	-3:31:51.88	30.7153084	2.22	7.9	1.1
02/09/2023	23:39:16.366	-3:31:04.71	30.7252107	2.22	7.9	1.1
02/10/2023	23:39:23.584	-3:30:17.15	30.7348718	2.22	7.9	1.0
02/11/2023	23:39:30.867	-3:29:29.20	30.7442891	2.22	7.9	1.0
02/12/2023	23:39:38.214	-3:28:40.87	30.7534602	2.22	7.9	1.0
02/13/2023	23:39:45.626	-3:27:52.15	30.7623822	2.22	7.9	0.9
02/14/2023	23:39:53.101	-3:27:03.06	30.7710527	2.22	7.9	0.9
02/15/2023	23:40:00.637	-3:26:13.61	30.7794691	2.22	7.9	0.9
02/16/2023	23:40:08.233	-3:25:23.81	30.7876288	2.22	8.0	0.9
02/17/2023	23:40:15.884	-3:24:33.69	30.7955293	2.22	8.0	0.8
02/18/2023	23:40:23.588	-3:23:43.27	30.8031680	2.22	8.0	0.8

## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	23:40:31.339	-3:22:52.58	30.8105426	2.22	8.0	0.8
02/20/2023	23:40:39.134	-3:22:01.63	30.8176507	2.22	8.0	0.7
02/21/2023	23:40:46.971	-3:21:10.46	30.8244904	2.22	8.0	0.7
02/22/2023	23:40:54.850	-3:20:19.04	30.8310597	2.21	8.0	0.7
02/23/2023	23:41:02.770	-3:19:27.39	30.8373569	2.21	8.0	0.7
02/24/2023	23:41:10.732	-3:18:35.50	30.8433807	2.21	8.0	0.6
02/25/2023	23:41:18.736	-3:17:43.38	30.8491298	2.21	8.0	0.6
02/26/2023	23:41:26.778	-3:16:51.05	30.8546031	2.21	8.0	0.6
02/27/2023	23:41:34.859	-3:15:58.50	30.8597995	2.21	8.0	0.5
02/28/2023	23:41:42.974	-3:15:05.78	30.8647181	2.21	8.0	0.5
03/01/2023	23:41:51.121	-3:14:12.88	30.8693582	2.21	8.0	0.5
03/02/2023	23:41:59.296	-3:13:19.84	30.8737189	2.21	8.0	0.4
03/03/2023	23:42:07.499	-3:12:26.67	30.8777996	2.21	8.0	0.4
03/04/2023	23:42:15.724	-3:11:33.39	30.8815996	2.21	8.0	0.4
03/05/2023	23:42:23.971	-3:10:40.01	30.8851183	2.21	8.0	0.3
03/06/2023	23:42:32.237	-3:09:46.55	30.8883552	2.21	8.0	0.3
03/07/2023	23:42:40.520	-3:08:53.01	30.8913098	2.21	8.0	0.3
03/08/2023	23:42:48.819	-3:07:59.41	30.8939817	2.21	8.0	0.3
03/09/2023	23:42:57.133	-3:07:05.75	30.8963703	2.21	8.0	0.2
03/10/2023	23:43:05.462	-3:06:12.03	30.8984753	2.21	8.0	0.2
03/11/2023	23:43:13.805	-3:05:18.25	30.9002963	2.21	8.0	0.2
03/12/2023	23:43:22.161	-3:04:24.42	30.9018327	2.21	8.0	0.1
03/13/2023	23:43:30.530	-3:03:30.56	30.9030843	2.21	8.0	0.1
03/14/2023	23:43:38.909	-3:02:36.66	30.9040507	2.21	8.0	0.1
03/15/2023	23:43:47.297	-3:01:42.74	30.9047313	2.21	8.0	0.1
03/16/2023	23:43:55.690	-3:00:48.84	30.9051260	2.21	8.0	0.0
03/17/2023	23:44:04.085	-2:59:54.96	30.9052344	2.21	8.0	0.0
03/18/2023	23:44:12.478	-2:59:01.13	30.9050563	2.21	8.0	0.1
03/19/2023	23:44:20.865	-2:58:07.39	30.9045916	2.21	8.0	0.1
03/20/2023	23:44:29.243	-2:57:13.74	30.9038403	2.21	8.0	0.1
03/21/2023	23:44:37.611	-2:56:20.18	30.9028027	2.21	8.0	0.2
03/22/2023	23:44:45.969	-2:55:26.73	30.9014791	2.21	8.0	0.2
03/23/2023	23:44:54.317	-2:54:33.38	30.8998703	2.21	8.0	0.2
03/24/2023	23:45:02.654	-2:53:40.14	30.8979770	2.21	8.0	0.3
03/25/2023	23:45:10.981	-2:52:47.00	30.8958002	2.21	8.0	0.3
03/26/2023	23:45:19.294	-2:51:53.99	30.8933410	2.21	8.0	0.3
03/27/2023	23:45:27.591	-2:51:01.12	30.8906008	2.21	8.0	0.4
03/28/2023	23:45:35.870	-2:50:08.41	30.8875807	2.21	8.0	0.4
03/29/2023	23:45:44.128	-2:49:15.89	30.8842822	2.21	8.0	0.4
03/30/2023	23:45:52.361	-2:48:23.56	30.8807067	2.21	8.0	0.5
03/31/2023	23:46:00.567	-2:47:31.44	30.8768557	2.21	8.0	0.5
04/01/2023	23:46:08.743	-2:46:39.56	30.8727307	2.21	8.0	0.5
04/02/2023	23:46:16.888	-2:45:47.92	30.8683332	2.21	8.0	0.5
04/03/2023	23:46:25.000	-2:44:56.53	30.8636648	2.21	8.0	0.6
04/04/2023	23:46:33.078	-2:44:05.41	30.8587272	2.21	8.0	0.6
04/05/2023	23:46:41.120	-2:43:14.55	30.8535219	2.21	8.0	0.6
04/06/2023	23:46:49.127	-2:42:23.96	30.8480507	2.21	8.0	0.7
04/07/2023	23:46:57.097	-2:41:33.63	30.8423151	2.21	8.0	0.7
04/08/2023	23:47:05.032	-2:40:43.59	30.8363169	2.21	8.0	0.7
04/09/2023	23:47:12.928	-2:39:53.81	30.8300575	2.22	8.0	0.7

## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	23:47:20.787	-2:39:04.33	30.8235387	2.22	8.0	0.8
04/11/2023	23:47:28.605	-2:38:15.14	30.8167620	2.22	8.0	0.8
04/12/2023	23:47:36.380	-2:37:26.27	30.8097290	2.22	8.0	0.8
04/13/2023	23:47:44.108	-2:36:37.75	30.8024415	2.22	8.0	0.9
04/14/2023	23:47:51.785	-2:35:49.58	30.7949012	2.22	8.0	0.9
04/15/2023	23:47:59.409	-2:35:01.81	30.7871099	2.22	8.0	0.9
04/16/2023	23:48:06.976	-2:34:14.43	30.7790695	2.22	7.9	0.9
04/17/2023	23:48:14.486	-2:33:27.46	30.7707821	2.22	7.9	1.0
04/18/2023	23:48:21.938	-2:32:40.90	30.7622501	2.22	7.9	1.0
04/19/2023	23:48:29.331	-2:31:54.75	30.7534758	2.22	7.9	1.0
04/20/2023	23:48:36.667	-2:31:09.00	30.7444618	2.22	7.9	1.1
04/21/2023	23:48:43.944	-2:30:23.67	30.7352110	2.22	7.9	1.1
04/22/2023	23:48:51.163	-2:29:38.76	30.7257263	2.22	7.9	1.1
04/23/2023	23:48:58.319	-2:28:54.28	30.7160106	2.22	7.9	1.1
04/24/2023	23:49:05.412	-2:28:10.26	30.7060672	2.22	7.9	1.2
04/25/2023	23:49:12.438	-2:27:26.70	30.6958991	2.22	7.9	1.2
04/26/2023	23:49:19.395	-2:26:43.62	30.6855095	2.23	7.9	1.2
04/27/2023	23:49:26.280	-2:26:01.05	30.6749018	2.23	7.9	1.2
04/28/2023	23:49:33.092	-2:25:18.99	30.6640791	2.23	7.9	1.3
04/29/2023	23:49:39.827	-2:24:37.45	30.6530447	2.23	7.9	1.3
04/30/2023	23:49:46.485	-2:23:56.45	30.6418019	2.23	7.9	1.3
05/01/2023	23:49:53.066	-2:23:15.99	30.6303540	2.23	7.9	1.3
05/02/2023	23:49:59.567	-2:22:36.07	30.6187044	2.23	7.9	1.4
05/03/2023	23:50:05.989	-2:21:56.69	30.6068563	2.23	7.9	1.4
05/04/2023	23:50:12.333	-2:21:17.86	30.5948130	2.23	7.9	1.4
05/05/2023	23:50:18.597	-2:20:39.57	30.5825778	2.23	7.9	1.4
05/06/2023	23:50:24.782	-2:20:01.82	30.5701539	2.23	7.9	1.4
05/07/2023	23:50:30.888	-2:19:24.61	30.5575445	2.23	7.9	1.5
05/08/2023	23:50:36.913	-2:18:47.96	30.5447527	2.24	7.9	1.5
05/09/2023	23:50:42.855	-2:18:11.88	30.5317817	2.24	7.9	1.5
05/10/2023	23:50:48.710	-2:17:36.39	30.5186347	2.24	7.9	1.5
05/11/2023	23:50:54.475	-2:17:01.51	30.5053148	2.24	7.9	1.5
05/12/2023	23:51:00.148	-2:16:27.26	30.4918253	2.24	7.9	1.6
05/13/2023	23:51:05.726	-2:15:53.65	30.4781696	2.24	7.9	1.6
05/14/2023	23:51:11.207	-2:15:20.69	30.4643512	2.24	7.9	1.6
05/15/2023	23:51:16.593	-2:14:48.38	30.4503737	2.24	7.9	1.6
05/16/2023	23:51:21.882	-2:14:16.71	30.4362409	2.24	7.9	1.6
05/17/2023	23:51:27.077	-2:13:45.69	30.4219568	2.24	7.9	1.7
05/18/2023	23:51:32.176	-2:13:15.30	30.4075253	2.25	7.9	1.7
05/19/2023	23:51:37.181	-2:12:45.56	30.3929508	2.25	7.9	1.7
05/20/2023	23:51:42.088	-2:12:16.47	30.3782375	2.25	7.9	1.7
05/21/2023	23:51:46.897	-2:11:48.04	30.3633897	2.25	7.9	1.7
05/22/2023	23:51:51.606	-2:11:20.29	30.3484118	2.25	7.9	1.7
05/23/2023	23:51:56.212	-2:10:53.23	30.3333084	2.25	7.9	1.8
05/24/2023	23:52:00.713	-2:10:26.88	30.3180838	2.25	7.9	1.8
05/25/2023	23:52:05.107	-2:10:01.24	30.3027426	2.25	7.9	1.8
05/26/2023	23:52:09.394	-2:09:36.32	30.2872891	2.25	7.9	1.8
05/27/2023	23:52:13.571	-2:09:12.13	30.2717278	2.26	7.9	1.8
05/28/2023	23:52:17.640	-2:08:48.67	30.2560632	2.26	7.9	1.8
05/29/2023	23:52:21.598	-2:08:25.94	30.2402996	2.26	7.9	1.8

## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	23:52:25.447	-2:08:03.94	30.2244415	2.26	7.9	1.8
05/31/2023	23:52:29.187	-2:07:42.67	30.2084932	2.26	7.9	1.8
06/01/2023	23:52:32.819	-2:07:22.11	30.1924590	2.26	7.9	1.9
06/02/2023	23:52:36.343	-2:07:02.27	30.1763433	2.26	7.9	1.9
06/03/2023	23:52:39.759	-2:06:43.14	30.1601501	2.26	7.9	1.9
06/04/2023	23:52:43.069	-2:06:24.73	30.1438837	2.27	7.9	1.9
06/05/2023	23:52:46.269	-2:06:07.03	30.1275481	2.27	7.9	1.9
06/06/2023	23:52:49.358	-2:05:50.08	30.1111475	2.27	7.9	1.9
06/07/2023	23:52:52.332	-2:05:33.88	30.0946857	2.27	7.9	1.9
06/08/2023	23:52:55.189	-2:05:18.45	30.0781669	2.27	7.9	1.9
06/09/2023	23:52:57.928	-2:05:03.80	30.0615954	2.27	7.9	1.9
06/10/2023	23:53:00.547	-2:04:49.94	30.0449752	2.27	7.9	1.9
06/11/2023	23:53:03.047	-2:04:36.87	30.0283110	2.27	7.9	1.9
06/12/2023	23:53:05.429	-2:04:24.57	30.0116071	2.28	7.9	1.9
06/13/2023	23:53:07.694	-2:04:13.03	29.9948682	2.28	7.9	1.9
06/14/2023	23:53:09.844	-2:04:02.25	29.9780990	2.28	7.9	1.9
06/15/2023	23:53:11.878	-2:03:52.23	29.9613045	2.28	7.9	1.9
06/16/2023	23:53:13.796	-2:03:42.97	29.9444895	2.28	7.9	2.0
06/17/2023	23:53:15.598	-2:03:34.47	29.9276590	2.28	7.9	2.0
06/18/2023	23:53:17.282	-2:03:26.75	29.9108181	2.28	7.9	2.0
06/19/2023	23:53:18.847	-2:03:19.80	29.8939716	2.28	7.9	2.0
06/20/2023	23:53:20.291	-2:03:13.65	29.8771247	2.29	7.9	2.0
06/21/2023	23:53:21.613	-2:03:08.29	29.8602823	2.29	7.9	2.0
06/22/2023	23:53:22.813	-2:03:03.73	29.8434493	2.29	7.9	2.0
06/23/2023	23:53:23.889	-2:02:59.98	29.8266308	2.29	7.9	2.0
06/24/2023	23:53:24.844	-2:02:57.02	29.8098315	2.29	7.9	1.9
06/25/2023	23:53:25.675	-2:02:54.85	29.7930564	2.29	7.9	1.9
06/26/2023	23:53:26.386	-2:02:53.48	29.7763102	2.29	7.9	1.9
06/27/2023	23:53:26.976	-2:02:52.88	29.7595977	2.29	7.9	1.9
06/28/2023	23:53:27.447	-2:02:53.06	29.7429236	2.30	7.9	1.9
06/29/2023	23:53:27.800	-2:02:53.99	29.7262923	2.30	7.9	1.9
06/30/2023	23:53:28.038	-2:02:55.67	29.7097086	2.30	7.9	1.9
07/01/2023	23:53:28.160	-2:02:58.10	29.6931767	2.30	7.9	1.9
07/02/2023	23:53:28.167	-2:03:01.27	29.6767011	2.30	7.9	1.9
07/03/2023	23:53:28.057	-2:03:05.19	29.6602860	2.30	7.9	1.9
07/04/2023	23:53:27.829	-2:03:09.88	29.6439356	2.30	7.9	1.9
07/05/2023	23:53:27.481	-2:03:15.34	29.6276540	2.30	7.9	1.9
07/06/2023	23:53:27.011	-2:03:21.58	29.6114455	2.31	7.9	1.9
07/07/2023	23:53:26.418	-2:03:28.61	29.5953144	2.31	7.9	1.9
07/08/2023	23:53:25.703	-2:03:36.42	29.5792650	2.31	7.9	1.9
07/09/2023	23:53:24.869	-2:03:44.99	29.5633018	2.31	7.9	1.8
07/10/2023	23:53:23.918	-2:03:54.31	29.5474294	2.31	7.9	1.8
07/11/2023	23:53:22.852	-2:04:04.36	29.5316526	2.31	7.9	1.8
07/12/2023	23:53:21.672	-2:04:15.14	29.5159761	2.31	7.9	1.8
07/13/2023	23:53:20.379	-2:04:26.64	29.5004046	2.31	7.9	1.8
07/14/2023	23:53:18.972	-2:04:38.86	29.4849430	2.32	7.9	1.8
07/15/2023	23:53:17.453	-2:04:51.80	29.4695961	2.32	7.9	1.8
07/16/2023	23:53:15.820	-2:05:05.46	29.4543687	2.32	7.9	1.8
07/17/2023	23:53:14.073	-2:05:19.86	29.4392655	2.32	7.9	1.8
07/18/2023	23:53:12.211	-2:05:34.97	29.4242914	2.32	7.9	1.7

## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	23:53:10.235	-2:05:50.82	29.4094508	2.32	7.9	1.7
07/20/2023	23:53:08.145	-2:06:07.38	29.3947486	2.32	7.8	1.7
07/21/2023	23:53:05.942	-2:06:24.66	29.3801890	2.32	7.8	1.7
07/22/2023	23:53:03.628	-2:06:42.64	29.3657767	2.33	7.8	1.7
07/23/2023	23:53:01.203	-2:07:01.32	29.3515160	2.33	7.8	1.6
07/24/2023	23:52:58.671	-2:07:20.67	29.3374111	2.33	7.8	1.6
07/25/2023	23:52:56.032	-2:07:40.69	29.3234662	2.33	7.8	1.6
07/26/2023	23:52:53.291	-2:08:01.35	29.3096855	2.33	7.8	1.6
07/27/2023	23:52:50.448	-2:08:22.64	29.2960728	2.33	7.8	1.6
07/28/2023	23:52:47.505	-2:08:44.55	29.2826322	2.33	7.8	1.6
07/29/2023	23:52:44.465	-2:09:07.07	29.2693672	2.33	7.8	1.5
07/30/2023	23:52:41.328	-2:09:30.20	29.2562816	2.33	7.8	1.5
07/31/2023	23:52:38.092	-2:09:53.93	29.2433788	2.34	7.8	1.5
08/01/2023	23:52:34.758	-2:10:18.28	29.2306624	2.34	7.8	1.5
08/02/2023	23:52:31.323	-2:10:43.25	29.2181356	2.34	7.8	1.4
08/03/2023	23:52:27.788	-2:11:08.84	29.2058019	2.34	7.8	1.4
08/04/2023	23:52:24.154	-2:11:35.04	29.1936649	2.34	7.8	1.4
08/05/2023	23:52:20.424	-2:12:01.83	29.1817279	2.34	7.8	1.4
08/06/2023	23:52:16.600	-2:12:29.19	29.1699947	2.34	7.8	1.4
08/07/2023	23:52:12.687	-2:12:57.09	29.1584689	2.34	7.8	1.3
08/08/2023	23:52:08.687	-2:13:25.53	29.1471545	2.34	7.8	1.3
08/09/2023	23:52:04.602	-2:13:54.49	29.1360550	2.34	7.8	1.3
08/10/2023	23:52:00.432	-2:14:23.95	29.1251744	2.34	7.8	1.3
08/11/2023	23:51:56.180	-2:14:53.93	29.1145163	2.35	7.8	1.2
08/12/2023	23:51:51.844	-2:15:24.40	29.1040844	2.35	7.8	1.2
08/13/2023	23:51:47.425	-2:15:55.38	29.0938823	2.35	7.8	1.2
08/14/2023	23:51:42.925	-2:16:26.86	29.0839136	2.35	7.8	1.2
08/15/2023	23:51:38.344	-2:16:58.82	29.0741817	2.35	7.8	1.1
08/16/2023	23:51:33.683	-2:17:31.26	29.0646899	2.35	7.8	1.1
08/17/2023	23:51:28.944	-2:18:04.16	29.0554415	2.35	7.8	1.1
08/18/2023	23:51:24.129	-2:18:37.52	29.0464395	2.35	7.8	1.0
08/19/2023	23:51:19.241	-2:19:11.31	29.0376871	2.35	7.8	1.0
08/20/2023	23:51:14.283	-2:19:45.51	29.0291871	2.35	7.8	1.0
08/21/2023	23:51:09.257	-2:20:20.11	29.0209423	2.35	7.8	1.0
08/22/2023	23:51:04.168	-2:20:55.08	29.0129552	2.35	7.8	0.9
08/23/2023	23:50:59.016	-2:21:30.41	29.0052285	2.35	7.8	0.9
08/24/2023	23:50:53.807	-2:22:06.07	28.9977644	2.35	7.8	0.9
08/25/2023	23:50:48.541	-2:22:42.04	28.9905651	2.36	7.8	0.8
08/26/2023	23:50:43.221	-2:23:18.33	28.9836328	2.36	7.8	0.8
08/27/2023	23:50:37.847	-2:23:54.91	28.9769693	2.36	7.8	0.8
08/28/2023	23:50:32.420	-2:24:31.80	28.9705765	2.36	7.8	0.7
08/29/2023	23:50:26.940	-2:25:08.98	28.9644560	2.36	7.8	0.7
08/30/2023	23:50:21.406	-2:25:46.47	28.9586097	2.36	7.8	0.7
08/31/2023	23:50:15.819	-2:26:24.25	28.9530390	2.36	7.8	0.6
09/01/2023	23:50:10.184	-2:27:02.29	28.9477457	2.36	7.8	0.6
09/02/2023	23:50:04.503	-2:27:40.58	28.9427315	2.36	7.8	0.6
09/03/2023	23:49:58.781	-2:28:19.09	28.9379983	2.36	7.8	0.6
09/04/2023	23:49:53.021	-2:28:57.78	28.9335479	2.36	7.8	0.5
09/05/2023	23:49:47.228	-2:29:36.65	28.9293821	2.36	7.8	0.5
09/06/2023	23:49:41.402	-2:30:15.67	28.9255029	2.36	7.8	0.5

Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	23:49:35.545	-2:30:54.85	28.9219120	2.36	7.8	0.4
09/08/2023	23:49:29.657	-2:31:34.18	28.9186111	2.36	7.8	0.4
09/09/2023	23:49:23.741	-2:32:13.65	28.9156018	2.36	7.8	0.4
09/10/2023	23:49:17.797	-2:32:53.24	28.9128855	2.36	7.8	0.3
09/11/2023	23:49:11.827	-2:33:32.96	28.9104637	2.36	7.8	0.3
09/12/2023	23:49:05.833	-2:34:12.78	28.9083376	2.36	7.8	0.3
09/13/2023	23:48:59.816	-2:34:52.70	28.9065083	2.36	7.8	0.2
09/14/2023	23:48:53.780	-2:35:32.69	28.9049768	2.36	7.8	0.2
09/15/2023	23:48:47.728	-2:36:12.73	28.9037438	2.36	7.8	0.2
09/16/2023	23:48:41.662	-2:36:52.81	28.9028103	2.36	7.8	0.1
09/17/2023	23:48:35.586	-2:37:32.89	28.9021765	2.36	7.8	0.1
09/18/2023	23:48:29.504	-2:38:12.96	28.9018430	2.36	7.8	0.1
09/19/2023	23:48:23.420	-2:38:52.99	28.9018100	2.36	7.8	0.0
09/20/2023	23:48:17.337	-2:39:32.97	28.9020775	2.36	7.8	0.0
09/21/2023	23:48:11.257	-2:40:12.86	28.9026454	2.36	7.8	0.1
09/22/2023	23:48:05.182	-2:40:52.67	28.9035135	2.36	7.8	0.1
09/23/2023	23:47:59.115	-2:41:32.38	28.9046814	2.36	7.8	0.1
09/24/2023	23:47:53.056	-2:42:11.98	28.9061486	2.36	7.8	0.2
09/25/2023	23:47:47.006	-2:42:51.47	28.9079145	2.36	7.8	0.2
09/26/2023	23:47:40.965	-2:43:30.85	28.9099782	2.36	7.8	0.2
09/27/2023	23:47:34.934	-2:44:10.11	28.9123391	2.36	7.8	0.3
09/28/2023	23:47:28.915	-2:44:49.23	28.9149963	2.36	7.8	0.3
09/29/2023	23:47:22.913	-2:45:28.20	28.9179491	2.36	7.8	0.3
09/30/2023	23:47:16.931	-2:46:06.97	28.9211967	2.36	7.8	0.3
10/01/2023	23:47:10.974	-2:46:45.53	28.9247385	2.36	7.8	0.4
10/02/2023	23:47:05.046	-2:47:23.84	28.9285737	2.36	7.8	0.4
10/03/2023	23:46:59.150	-2:48:01.91	28.9327018	2.36	7.8	0.4
10/04/2023	23:46:53.286	-2:48:39.71	28.9371221	2.36	7.8	0.5
10/05/2023	23:46:47.455	-2:49:17.24	28.9418336	2.36	7.8	0.5
10/06/2023	23:46:41.660	-2:49:54.49	28.9468356	2.36	7.8	0.5
10/07/2023	23:46:35.901	-2:50:31.46	28.9521270	2.36	7.8	0.6
10/08/2023	23:46:30.179	-2:51:08.14	28.9577066	2.36	7.8	0.6
10/09/2023	23:46:24.496	-2:51:44.52	28.9635731	2.36	7.8	0.6
10/10/2023	23:46:18.855	-2:52:20.58	28.9697251	2.36	7.8	0.7
10/11/2023	23:46:13.257	-2:52:56.31	28.9761611	2.36	7.8	0.7
10/12/2023	23:46:07.706	-2:53:31.69	28.9828794	2.36	7.8	0.7
10/13/2023	23:46:02.204	-2:54:06.69	28.9898780	2.36	7.8	0.8
10/14/2023	23:45:56.756	-2:54:41.30	28.9971550	2.36	7.8	0.8
10/15/2023	23:45:51.364	-2:55:15.49	29.0047083	2.35	7.8	0.8
10/16/2023	23:45:46.033	-2:55:49.24	29.0125355	2.35	7.8	0.9
10/17/2023	23:45:40.764	-2:56:22.54	29.0206341	2.35	7.8	0.9
10/18/2023	23:45:35.562	-2:56:55.36	29.0290015	2.35	7.8	0.9
10/19/2023	23:45:30.427	-2:57:27.69	29.0376350	2.35	7.8	1.0
10/20/2023	23:45:25.361	-2:57:59.53	29.0465316	2.35	7.8	1.0
10/21/2023	23:45:20.366	-2:58:30.88	29.0556883	2.35	7.8	1.0
10/22/2023	23:45:15.440	-2:59:01.72	29.0651019	2.35	7.8	1.0
10/23/2023	23:45:10.585	-2:59:32.07	29.0747692	2.35	7.8	1.1
10/24/2023	23:45:05.801	-3:00:01.91	29.0846870	2.35	7.8	1.1
10/25/2023	23:45:01.089	-3:00:31.23	29.0948520	2.35	7.8	1.1
10/26/2023	23:44:56.454	-3:01:00.02	29.1052608	2.35	7.8	1.1

## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	23:44:51.897	-3:01:28.25	29.1159104	2.35	7.8	1.2
10/28/2023	23:44:47.422	-3:01:55.91	29.1267974	2.34	7.8	1.2
10/29/2023	23:44:43.035	-3:02:22.96	29.1379188	2.34	7.8	1.2
10/30/2023	23:44:38.736	-3:02:49.40	29.1492714	2.34	7.8	1.2
10/31/2023	23:44:34.527	-3:03:15.21	29.1608522	2.34	7.8	1.3
11/01/2023	23:44:30.410	-3:03:40.39	29.1726578	2.34	7.8	1.3
11/02/2023	23:44:26.384	-3:04:04.95	29.1846852	2.34	7.8	1.3
11/03/2023	23:44:22.449	-3:04:28.89	29.1969310	2.34	7.8	1.3
11/04/2023	23:44:18.607	-3:04:52.19	29.2093917	2.34	7.8	1.4
11/05/2023	23:44:14.858	-3:05:14.85	29.2220638	2.34	7.8	1.4
11/06/2023	23:44:11.203	-3:05:36.88	29.2349436	2.34	7.8	1.4
11/07/2023	23:44:07.644	-3:05:58.24	29.2480273	2.33	7.8	1.4
11/08/2023	23:44:04.183	-3:06:18.94	29.2613110	2.33	7.8	1.5
11/09/2023	23:44:00.823	-3:06:38.95	29.2747907	2.33	7.8	1.5
11/10/2023	23:43:57.566	-3:06:58.26	29.2884623	2.33	7.8	1.5
11/11/2023	23:43:54.414	-3:07:16.86	29.3023214	2.33	7.8	1.5
11/12/2023	23:43:51.371	-3:07:34.73	29.3163638	2.33	7.8	1.5
11/13/2023	23:43:48.438	-3:07:51.84	29.3305848	2.33	7.8	1.6
11/14/2023	23:43:45.619	-3:08:08.20	29.3449799	2.33	7.8	1.6
11/15/2023	23:43:42.913	-3:08:23.79	29.3595442	2.33	7.8	1.6
11/16/2023	23:43:40.322	-3:08:38.61	29.3742729	2.32	7.8	1.6
11/17/2023	23:43:37.846	-3:08:52.67	29.3891610	2.32	7.8	1.6
11/18/2023	23:43:35.483	-3:09:05.97	29.4042035	2.32	7.9	1.6
11/19/2023	23:43:33.234	-3:09:18.51	29.4193952	2.32	7.9	1.7
11/20/2023	23:43:31.097	-3:09:30.30	29.4347312	2.32	7.9	1.7
11/21/2023	23:43:29.073	-3:09:41.33	29.4502062	2.32	7.9	1.7
11/22/2023	23:43:27.165	-3:09:51.60	29.4658153	2.32	7.9	1.7
11/23/2023	23:43:25.373	-3:10:01.08	29.4815536	2.32	7.9	1.7
11/24/2023	23:43:23.701	-3:10:09.77	29.4974161	2.32	7.9	1.7
11/25/2023	23:43:22.151	-3:10:17.65	29.5133981	2.31	7.9	1.7
11/26/2023	23:43:20.726	-3:10:24.70	29.5294948	2.31	7.9	1.8
11/27/2023	23:43:19.425	-3:10:30.93	29.5457014	2.31	7.9	1.8
11/28/2023	23:43:18.250	-3:10:36.34	29.5620133	2.31	7.9	1.8
11/29/2023	23:43:17.198	-3:10:40.93	29.5784259	2.31	7.9	1.8
11/30/2023	23:43:16.271	-3:10:44.70	29.5949343	2.31	7.9	1.8
12/01/2023	23:43:15.466	-3:10:47.68	29.6115338	2.31	7.9	1.8
12/02/2023	23:43:14.783	-3:10:49.85	29.6282195	2.30	7.9	1.8
12/03/2023	23:43:14.223	-3:10:51.23	29.6449865	2.30	7.9	1.8
12/04/2023	23:43:13.785	-3:10:51.79	29.6618298	2.30	7.9	1.8
12/05/2023	23:43:13.471	-3:10:51.55	29.6787444	2.30	7.9	1.8
12/06/2023	23:43:13.282	-3:10:50.49	29.6957250	2.30	7.9	1.8
12/07/2023	23:43:13.219	-3:10:48.61	29.7127664	2.30	7.9	1.9
12/08/2023	23:43:13.284	-3:10:45.89	29.7298634	2.30	7.9	1.9
12/09/2023	23:43:13.477	-3:10:42.33	29.7470107	2.30	7.9	1.9
12/10/2023	23:43:13.801	-3:10:37.92	29.7642027	2.29	7.9	1.9
12/11/2023	23:43:14.257	-3:10:32.65	29.7814339	2.29	7.9	1.9
12/12/2023	23:43:14.845	-3:10:26.52	29.7986989	2.29	7.9	1.9
12/13/2023	23:43:15.564	-3:10:19.54	29.8159918	2.29	7.9	1.9
12/14/2023	23:43:16.415	-3:10:11.71	29.8333070	2.29	7.9	1.9
12/15/2023	23:43:17.394	-3:10:03.05	29.8506387	2.29	7.9	1.9

## Neptune - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	23:43:18.500	-3:09:53.57	29.8679812	2.29	7.9	1.9
12/17/2023	23:43:19.730	-3:09:43.29	29.8853287	2.29	7.9	1.9
12/18/2023	23:43:21.085	-3:09:32.20	29.9026755	2.28	7.9	1.9
12/19/2023	23:43:22.563	-3:09:20.31	29.9200162	2.28	7.9	1.9
12/20/2023	23:43:24.168	-3:09:07.61	29.9373453	2.28	7.9	1.9
12/21/2023	23:43:25.898	-3:08:54.09	29.9546575	2.28	7.9	1.9
12/22/2023	23:43:27.757	-3:08:39.75	29.9719477	2.28	7.9	1.9
12/23/2023	23:43:29.745	-3:08:24.58	29.9892107	2.28	7.9	1.9
12/24/2023	23:43:31.862	-3:08:08.57	30.0064416	2.28	7.9	1.9
12/25/2023	23:43:34.107	-3:07:51.75	30.0236355	2.27	7.9	1.9
12/26/2023	23:43:36.478	-3:07:34.12	30.0407874	2.27	7.9	1.9
12/27/2023	23:43:38.975	-3:07:15.70	30.0578926	2.27	7.9	1.8
12/28/2023	23:43:41.594	-3:06:56.49	30.0749462	2.27	7.9	1.8
12/29/2023	23:43:44.334	-3:06:36.52	30.0919434	2.27	7.9	1.8
12/30/2023	23:43:47.193	-3:06:15.78	30.1088793	2.27	7.9	1.8
12/31/2023	23:43:50.172	-3:05:54.29	30.1257491	2.27	7.9	1.8
01/01/2024	23:43:53.270	-3:05:32.04	30.1425478	2.27	7.9	1.8
01/02/2024	23:43:56.486	-3:05:09.03	30.1592705	2.26	7.9	1.8



## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/31/2022	20:00:44.015	-22:50:27.48	35.6078360	0.09	14.5	0.5
01/01/2023	20:00:52.098	-22:50:08.59	35.6138177	0.09	14.5	0.5
01/02/2023	20:01:00.219	-22:49:49.63	35.6195183	0.09	14.5	0.4
01/03/2023	20:01:08.375	-22:49:30.61	35.6249367	0.09	14.5	0.4
01/04/2023	20:01:16.566	-22:49:11.53	35.6300718	0.09	14.5	0.4
01/05/2023	20:01:24.788	-22:48:52.42	35.6349225	0.09	14.5	0.4
01/06/2023	20:01:33.038	-22:48:33.29	35.6394879	0.09	14.5	0.3
01/07/2023	20:01:41.313	-22:48:14.14	35.6437669	0.09	14.5	0.3
01/08/2023	20:01:49.611	-22:47:54.99	35.6477588	0.09	14.5	0.3
01/09/2023	20:01:57.928	-22:47:35.83	35.6514625	0.09	14.5	0.3
01/10/2023	20:02:06.263	-22:47:16.67	35.6548772	0.09	14.5	0.2
01/11/2023	20:02:14.612	-22:46:57.50	35.6580020	0.09	14.5	0.2
01/12/2023	20:02:22.975	-22:46:38.33	35.6608362	0.09	14.5	0.2
01/13/2023	20:02:31.350	-22:46:19.16	35.6633789	0.09	14.5	0.2
01/14/2023	20:02:39.737	-22:45:59.97	35.6656295	0.09	14.5	0.1
01/15/2023	20:02:48.135	-22:45:40.78	35.6675871	0.09	14.5	0.1
01/16/2023	20:02:56.543	-22:45:21.58	35.6692513	0.09	14.5	0.1
01/17/2023	20:03:04.961	-22:45:02.38	35.6706214	0.09	14.5	0.1
01/18/2023	20:03:13.388	-22:44:43.20	35.6716969	0.09	14.5	0.1
01/19/2023	20:03:21.822	-22:44:24.06	35.6724772	0.09	14.5	0.1
01/20/2023	20:03:30.259	-22:44:04.97	35.6729622	0.09	14.5	0.1
01/21/2023	20:03:38.696	-22:43:45.95	35.6731516	0.09	14.5	0.1
01/22/2023	20:03:47.126	-22:43:27.02	35.6730454	0.09	14.5	0.1
01/23/2023	20:03:55.545	-22:43:08.19	35.6726440	0.09	14.5	0.2
01/24/2023	20:04:03.949	-22:42:49.43	35.6719478	0.09	14.5	0.2
01/25/2023	20:04:12.338	-22:42:30.74	35.6709576	0.09	14.5	0.2
01/26/2023	20:04:20.711	-22:42:12.12	35.6696743	0.09	14.5	0.2
01/27/2023	20:04:29.069	-22:41:53.56	35.6680989	0.09	14.5	0.3
01/28/2023	20:04:37.411	-22:41:35.07	35.6662325	0.09	14.5	0.3
01/29/2023	20:04:45.737	-22:41:16.65	35.6640765	0.09	14.5	0.3
01/30/2023	20:04:54.046	-22:40:58.33	35.6616319	0.09	14.5	0.3
01/31/2023	20:05:02.334	-22:40:40.12	35.6589002	0.09	14.5	0.4
02/01/2023	20:05:10.600	-22:40:22.02	35.6558826	0.09	14.5	0.4
02/02/2023	20:05:18.840	-22:40:04.06	35.6525805	0.09	14.5	0.4
02/03/2023	20:05:27.052	-22:39:46.25	35.6489953	0.09	14.5	0.4
02/04/2023	20:05:35.233	-22:39:28.58	35.6451284	0.09	14.5	0.5
02/05/2023	20:05:43.380	-22:39:11.07	35.6409813	0.09	14.5	0.5
02/06/2023	20:05:51.490	-22:38:53.72	35.6365554	0.09	14.5	0.5
02/07/2023	20:05:59.561	-22:38:36.52	35.6318523	0.09	14.5	0.5
02/08/2023	20:06:07.593	-22:38:19.48	35.6268734	0.09	14.5	0.6
02/09/2023	20:06:15.583	-22:38:02.59	35.6216203	0.09	14.5	0.6
02/10/2023	20:06:23.532	-22:37:45.85	35.6160947	0.09	14.5	0.6
02/11/2023	20:06:31.437	-22:37:29.27	35.6102981	0.09	14.5	0.6
02/12/2023	20:06:39.300	-22:37:12.83	35.6042321	0.09	14.5	0.7
02/13/2023	20:06:47.120	-22:36:56.56	35.5978985	0.09	14.5	0.7
02/14/2023	20:06:54.895	-22:36:40.46	35.5912991	0.09	14.5	0.7
02/15/2023	20:07:02.625	-22:36:24.54	35.5844357	0.09	14.5	0.8
02/16/2023	20:07:10.307	-22:36:08.83	35.5773101	0.09	14.5	0.8
02/17/2023	20:07:17.937	-22:35:53.34	35.5699245	0.09	14.5	0.8
02/18/2023	20:07:25.510	-22:35:38.08	35.5622811	0.09	14.5	0.8

## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
02/19/2023	20:07:33.023	-22:35:23.07	35.5543823	0.09	14.5	0.9
02/20/2023	20:07:40.471	-22:35:08.31	35.5462306	0.09	14.5	0.9
02/21/2023	20:07:47.851	-22:34:53.77	35.5378289	0.09	14.5	0.9
02/22/2023	20:07:55.165	-22:34:39.46	35.5291802	0.09	14.5	0.9
02/23/2023	20:08:02.412	-22:34:25.36	35.5202876	0.09	14.5	0.9
02/24/2023	20:08:09.593	-22:34:11.47	35.5111546	0.09	14.5	1.0
02/25/2023	20:08:16.708	-22:33:57.81	35.5017843	0.09	14.5	1.0
02/26/2023	20:08:23.757	-22:33:44.39	35.4921803	0.09	14.5	1.0
02/27/2023	20:08:30.737	-22:33:31.21	35.4823459	0.09	14.5	1.0
02/28/2023	20:08:37.646	-22:33:18.31	35.4722845	0.09	14.5	1.1
03/01/2023	20:08:44.481	-22:33:05.67	35.4619996	0.09	14.5	1.1
03/02/2023	20:08:51.241	-22:32:53.33	35.4514945	0.09	14.5	1.1
03/03/2023	20:08:57.923	-22:32:41.28	35.4407727	0.09	14.5	1.1
03/04/2023	20:09:04.523	-22:32:29.53	35.4298376	0.09	14.5	1.1
03/05/2023	20:09:11.041	-22:32:18.07	35.4186928	0.09	14.5	1.2
03/06/2023	20:09:17.474	-22:32:06.91	35.4073415	0.09	14.5	1.2
03/07/2023	20:09:23.822	-22:31:56.05	35.3957873	0.09	14.5	1.2
03/08/2023	20:09:30.082	-22:31:45.47	35.3840336	0.09	14.5	1.2
03/09/2023	20:09:36.256	-22:31:35.19	35.3720839	0.09	14.5	1.2
03/10/2023	20:09:42.343	-22:31:25.18	35.3599416	0.09	14.5	1.3
03/11/2023	20:09:48.342	-22:31:15.47	35.3476102	0.09	14.5	1.3
03/12/2023	20:09:54.255	-22:31:06.04	35.3350932	0.09	14.5	1.3
03/13/2023	20:10:00.081	-22:30:56.90	35.3223940	0.09	14.5	1.3
03/14/2023	20:10:05.819	-22:30:48.08	35.3095164	0.09	14.5	1.3
03/15/2023	20:10:11.467	-22:30:39.58	35.2964638	0.09	14.5	1.3
03/16/2023	20:10:17.023	-22:30:31.43	35.2832401	0.09	14.5	1.4
03/17/2023	20:10:22.482	-22:30:23.62	35.2698490	0.09	14.5	1.4
03/18/2023	20:10:27.842	-22:30:16.18	35.2562946	0.09	14.5	1.4
03/19/2023	20:10:33.098	-22:30:09.10	35.2425810	0.09	14.5	1.4
03/20/2023	20:10:38.250	-22:30:02.37	35.2287125	0.09	14.5	1.4
03/21/2023	20:10:43.295	-22:29:55.98	35.2146936	0.09	14.5	1.4
03/22/2023	20:10:48.235	-22:29:49.92	35.2005288	0.09	14.5	1.5
03/23/2023	20:10:53.071	-22:29:44.19	35.1862231	0.09	14.5	1.5
03/24/2023	20:10:57.804	-22:29:38.78	35.1717810	0.09	14.5	1.5
03/25/2023	20:11:02.435	-22:29:33.70	35.1572075	0.09	14.5	1.5
03/26/2023	20:11:06.962	-22:29:28.98	35.1425075	0.09	14.5	1.5
03/27/2023	20:11:11.385	-22:29:24.61	35.1276856	0.09	14.5	1.5
03/28/2023	20:11:15.700	-22:29:20.62	35.1127468	0.09	14.5	1.5
03/29/2023	20:11:19.907	-22:29:17.01	35.0976957	0.09	14.5	1.5
03/30/2023	20:11:24.004	-22:29:13.79	35.0825370	0.09	14.5	1.6
03/31/2023	20:11:27.988	-22:29:10.95	35.0672754	0.09	14.5	1.6
04/01/2023	20:11:31.858	-22:29:08.50	35.0519156	0.09	14.5	1.6
04/02/2023	20:11:35.612	-22:29:06.43	35.0364622	0.09	14.5	1.6
04/03/2023	20:11:39.252	-22:29:04.74	35.0209198	0.09	14.5	1.6
04/04/2023	20:11:42.775	-22:29:03.43	35.0052929	0.09	14.5	1.6
04/05/2023	20:11:46.183	-22:29:02.47	34.9895861	0.09	14.5	1.6
04/06/2023	20:11:49.476	-22:29:01.88	34.9738038	0.09	14.5	1.6
04/07/2023	20:11:52.654	-22:29:01.64	34.9579506	0.09	14.5	1.6
04/08/2023	20:11:55.720	-22:29:01.76	34.9420309	0.09	14.5	1.6
04/09/2023	20:11:58.673	-22:29:02.24	34.9260490	0.09	14.5	1.6

## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
04/10/2023	20:12:01.514	-22:29:03.09	34.9100096	0.09	14.5	1.6
04/11/2023	20:12:04.241	-22:29:04.32	34.8939170	0.09	14.5	1.6
04/12/2023	20:12:06.853	-22:29:05.94	34.8777757	0.09	14.5	1.6
04/13/2023	20:12:09.346	-22:29:07.97	34.8615905	0.09	14.5	1.7
04/14/2023	20:12:11.720	-22:29:10.41	34.8453660	0.09	14.5	1.7
04/15/2023	20:12:13.970	-22:29:13.26	34.8291070	0.09	14.5	1.7
04/16/2023	20:12:16.095	-22:29:16.51	34.8128186	0.09	14.5	1.7
04/17/2023	20:12:18.095	-22:29:20.15	34.7965057	0.09	14.5	1.7
04/18/2023	20:12:19.972	-22:29:24.16	34.7801735	0.09	14.5	1.7
04/19/2023	20:12:21.726	-22:29:28.53	34.7638274	0.09	14.5	1.7
04/20/2023	20:12:23.360	-22:29:33.26	34.7474726	0.09	14.5	1.7
04/21/2023	20:12:24.875	-22:29:38.35	34.7311145	0.09	14.5	1.7
04/22/2023	20:12:26.273	-22:29:43.81	34.7147584	0.09	14.5	1.7
04/23/2023	20:12:27.551	-22:29:49.65	34.6984096	0.09	14.5	1.7
04/24/2023	20:12:28.711	-22:29:55.87	34.6820732	0.09	14.5	1.7
04/25/2023	20:12:29.749	-22:30:02.50	34.6657545	0.09	14.5	1.7
04/26/2023	20:12:30.666	-22:30:09.52	34.6494584	0.09	14.5	1.7
04/27/2023	20:12:31.460	-22:30:16.93	34.6331900	0.09	14.5	1.7
04/28/2023	20:12:32.131	-22:30:24.75	34.6169543	0.09	14.5	1.7
04/29/2023	20:12:32.677	-22:30:32.95	34.6007559	0.09	14.5	1.7
04/30/2023	20:12:33.100	-22:30:41.53	34.5845998	0.09	14.5	1.7
05/01/2023	20:12:33.399	-22:30:50.48	34.5684907	0.09	14.5	1.6
05/02/2023	20:12:33.577	-22:30:59.79	34.5524332	0.09	14.4	1.6
05/03/2023	20:12:33.633	-22:31:09.45	34.5364319	0.09	14.4	1.6
05/04/2023	20:12:33.571	-22:31:19.45	34.5204914	0.09	14.4	1.6
05/05/2023	20:12:33.391	-22:31:29.80	34.5046161	0.09	14.4	1.6
05/06/2023	20:12:33.096	-22:31:40.47	34.4888103	0.10	14.4	1.6
05/07/2023	20:12:32.687	-22:31:51.49	34.4730785	0.10	14.4	1.6
05/08/2023	20:12:32.164	-22:32:02.86	34.4574250	0.10	14.4	1.6
05/09/2023	20:12:31.526	-22:32:14.59	34.4418542	0.10	14.4	1.6
05/10/2023	20:12:30.772	-22:32:26.68	34.4263705	0.10	14.4	1.6
05/11/2023	20:12:29.900	-22:32:39.15	34.4109783	0.10	14.4	1.6
05/12/2023	20:12:28.907	-22:32:51.99	34.3956823	0.10	14.4	1.6
05/13/2023	20:12:27.794	-22:33:05.19	34.3804870	0.10	14.4	1.6
05/14/2023	20:12:26.560	-22:33:18.73	34.3653973	0.10	14.4	1.6
05/15/2023	20:12:25.207	-22:33:32.59	34.3504178	0.10	14.4	1.5
05/16/2023	20:12:23.738	-22:33:46.77	34.3355535	0.10	14.4	1.5
05/17/2023	20:12:22.156	-22:34:01.24	34.3208092	0.10	14.4	1.5
05/18/2023	20:12:20.463	-22:34:16.02	34.3061898	0.10	14.4	1.5
05/19/2023	20:12:18.661	-22:34:31.09	34.2917001	0.10	14.4	1.5
05/20/2023	20:12:16.750	-22:34:46.47	34.2773448	0.10	14.4	1.5
05/21/2023	20:12:14.732	-22:35:02.16	34.2631287	0.10	14.4	1.5
05/22/2023	20:12:12.605	-22:35:18.17	34.2490562	0.10	14.4	1.5
05/23/2023	20:12:10.370	-22:35:34.50	34.2351318	0.10	14.4	1.4
05/24/2023	20:12:08.026	-22:35:51.15	34.2213599	0.10	14.4	1.4
05/25/2023	20:12:05.574	-22:36:08.10	34.2077447	0.10	14.4	1.4
05/26/2023	20:12:03.014	-22:36:25.36	34.1942904	0.10	14.4	1.4
05/27/2023	20:12:00.346	-22:36:42.91	34.1810009	0.10	14.4	1.4
05/28/2023	20:11:57.573	-22:37:00.73	34.1678803	0.10	14.4	1.4
05/29/2023	20:11:54.695	-22:37:18.82	34.1549323	0.10	14.4	1.3

## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
05/30/2023	20:11:51.716	-22:37:37.17	34.1421607	0.10	14.4	1.3
05/31/2023	20:11:48.637	-22:37:55.75	34.1295692	0.10	14.4	1.3
06/01/2023	20:11:45.462	-22:38:14.57	34.1171612	0.10	14.4	1.3
06/02/2023	20:11:42.193	-22:38:33.61	34.1049403	0.10	14.4	1.3
06/03/2023	20:11:38.833	-22:38:52.87	34.0929097	0.10	14.4	1.3
06/04/2023	20:11:35.384	-22:39:12.36	34.0810729	0.10	14.4	1.2
06/05/2023	20:11:31.845	-22:39:32.09	34.0694329	0.10	14.4	1.2
06/06/2023	20:11:28.217	-22:39:52.07	34.0579932	0.10	14.4	1.2
06/07/2023	20:11:24.497	-22:40:12.29	34.0467569	0.10	14.4	1.2
06/08/2023	20:11:20.685	-22:40:32.76	34.0357276	0.10	14.4	1.2
06/09/2023	20:11:16.781	-22:40:53.46	34.0249085	0.10	14.4	1.1
06/10/2023	20:11:12.785	-22:41:14.37	34.0143032	0.10	14.4	1.1
06/11/2023	20:11:08.699	-22:41:35.47	34.0039153	0.10	14.4	1.1
06/12/2023	20:11:04.528	-22:41:56.75	33.9937483	0.10	14.4	1.1
06/13/2023	20:11:00.275	-22:42:18.19	33.9838056	0.10	14.4	1.1
06/14/2023	20:10:55.943	-22:42:39.78	33.9740910	0.10	14.4	1.0
06/15/2023	20:10:51.535	-22:43:01.53	33.9646076	0.10	14.4	1.0
06/16/2023	20:10:47.053	-22:43:23.44	33.9553590	0.10	14.4	1.0
06/17/2023	20:10:42.498	-22:43:45.50	33.9463484	0.10	14.4	1.0
06/18/2023	20:10:37.871	-22:44:07.73	33.9375788	0.10	14.4	0.9
06/19/2023	20:10:33.173	-22:44:30.12	33.9290532	0.10	14.4	0.9
06/20/2023	20:10:28.404	-22:44:52.67	33.9207745	0.10	14.4	0.9
06/21/2023	20:10:23.565	-22:45:15.37	33.9127455	0.10	14.4	0.9
06/22/2023	20:10:18.657	-22:45:38.21	33.9049686	0.10	14.4	0.8
06/23/2023	20:10:13.682	-22:46:01.18	33.8974464	0.10	14.4	0.8
06/24/2023	20:10:08.641	-22:46:24.27	33.8901812	0.10	14.4	0.8
06/25/2023	20:10:03.537	-22:46:47.46	33.8831751	0.10	14.4	0.8
06/26/2023	20:09:58.373	-22:47:10.74	33.8764303	0.10	14.4	0.7
06/27/2023	20:09:53.152	-22:47:34.09	33.8699487	0.10	14.4	0.7
06/28/2023	20:09:47.878	-22:47:57.50	33.8637321	0.10	14.4	0.7
06/29/2023	20:09:42.553	-22:48:20.96	33.8577823	0.10	14.4	0.7
06/30/2023	20:09:37.181	-22:48:44.47	33.8521009	0.10	14.4	0.6
07/01/2023	20:09:31.765	-22:49:08.02	33.8466893	0.10	14.4	0.6
07/02/2023	20:09:26.307	-22:49:31.63	33.8415491	0.10	14.4	0.6
07/03/2023	20:09:20.808	-22:49:55.30	33.8366816	0.10	14.4	0.6
07/04/2023	20:09:15.266	-22:50:19.04	33.8320882	0.10	14.4	0.5
07/05/2023	20:09:09.681	-22:50:42.84	33.8277704	0.10	14.4	0.5
07/06/2023	20:09:04.052	-22:51:06.70	33.8237295	0.10	14.4	0.5
07/07/2023	20:08:58.380	-22:51:30.59	33.8199671	0.10	14.4	0.4
07/08/2023	20:08:52.668	-22:51:54.49	33.8164848	0.10	14.4	0.4
07/09/2023	20:08:46.920	-22:52:18.38	33.8132843	0.10	14.4	0.4
07/10/2023	20:08:41.141	-22:52:42.25	33.8103670	0.10	14.4	0.4
07/11/2023	20:08:35.334	-22:53:06.08	33.8077345	0.10	14.4	0.3
07/12/2023	20:08:29.502	-22:53:29.88	33.8053883	0.10	14.4	0.3
07/13/2023	20:08:23.649	-22:53:53.65	33.8033295	0.10	14.4	0.3
07/14/2023	20:08:17.777	-22:54:17.38	33.8015595	0.10	14.4	0.3
07/15/2023	20:08:11.886	-22:54:41.09	33.8000792	0.10	14.4	0.2
07/16/2023	20:08:05.978	-22:55:04.77	33.7988896	0.10	14.4	0.2
07/17/2023	20:08:00.054	-22:55:28.42	33.7979914	0.10	14.4	0.2
07/18/2023	20:07:54.115	-22:55:52.03	33.7973852	0.10	14.4	0.2

## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
07/19/2023	20:07:48.163	-22:56:15.59	33.7970715	0.10	14.4	0.1
07/20/2023	20:07:42.198	-22:56:39.09	33.7970507	0.10	14.4	0.1
07/21/2023	20:07:36.224	-22:57:02.53	33.7973228	0.10	14.4	0.1
07/22/2023	20:07:30.244	-22:57:25.87	33.7978880	0.10	14.4	0.1
07/23/2023	20:07:24.259	-22:57:49.11	33.7987461	0.10	14.4	0.1
07/24/2023	20:07:18.274	-22:58:12.24	33.7998970	0.10	14.4	0.1
07/25/2023	20:07:12.292	-22:58:35.24	33.8013402	0.10	14.4	0.1
07/26/2023	20:07:06.317	-22:58:58.11	33.8030754	0.10	14.4	0.1
07/27/2023	20:07:00.353	-22:59:20.84	33.8051018	0.10	14.4	0.2
07/28/2023	20:06:54.401	-22:59:43.42	33.8074190	0.10	14.4	0.2
07/29/2023	20:06:48.466	-23:00:05.86	33.8100259	0.10	14.4	0.2
07/30/2023	20:06:42.549	-23:00:28.17	33.8129219	0.10	14.4	0.2
07/31/2023	20:06:36.649	-23:00:50.36	33.8161059	0.10	14.4	0.3
08/01/2023	20:06:30.766	-23:01:12.42	33.8195772	0.10	14.4	0.3
08/02/2023	20:06:24.899	-23:01:34.36	33.8233347	0.10	14.4	0.3
08/03/2023	20:06:19.049	-23:01:56.15	33.8273779	0.10	14.4	0.3
08/04/2023	20:06:13.217	-23:02:17.78	33.8317058	0.10	14.4	0.4
08/05/2023	20:06:07.407	-23:02:39.22	33.8363179	0.10	14.4	0.4
08/06/2023	20:06:01.624	-23:03:00.46	33.8412134	0.10	14.4	0.4
08/07/2023	20:05:55.872	-23:03:21.48	33.8463915	0.10	14.4	0.4
08/08/2023	20:05:50.155	-23:03:42.29	33.8518516	0.10	14.4	0.5
08/09/2023	20:05:44.476	-23:04:02.89	33.8575925	0.10	14.4	0.5
08/10/2023	20:05:38.836	-23:04:23.27	33.8636133	0.10	14.4	0.5
08/11/2023	20:05:33.238	-23:04:43.46	33.8699127	0.10	14.4	0.5
08/12/2023	20:05:27.683	-23:05:03.45	33.8764893	0.10	14.4	0.6
08/13/2023	20:05:22.170	-23:05:23.23	33.8833417	0.10	14.4	0.6
08/14/2023	20:05:16.701	-23:05:42.80	33.8904682	0.10	14.4	0.6
08/15/2023	20:05:11.278	-23:06:02.17	33.8978669	0.10	14.4	0.7
08/16/2023	20:05:05.903	-23:06:21.30	33.9055360	0.10	14.4	0.7
08/17/2023	20:05:00.576	-23:06:40.21	33.9134734	0.10	14.4	0.7
08/18/2023	20:04:55.300	-23:06:58.86	33.9216768	0.10	14.4	0.7
08/19/2023	20:04:50.078	-23:07:17.26	33.9301440	0.10	14.4	0.8
08/20/2023	20:04:44.914	-23:07:35.38	33.9388725	0.10	14.4	0.8
08/21/2023	20:04:39.810	-23:07:53.23	33.9478596	0.10	14.4	0.8
08/22/2023	20:04:34.770	-23:08:10.78	33.9571028	0.10	14.4	0.8
08/23/2023	20:04:29.797	-23:08:28.04	33.9665992	0.10	14.4	0.9
08/24/2023	20:04:24.894	-23:08:45.01	33.9763460	0.10	14.4	0.9
08/25/2023	20:04:20.063	-23:09:01.69	33.9863401	0.10	14.4	0.9
08/26/2023	20:04:15.306	-23:09:18.09	33.9965787	0.10	14.4	0.9
08/27/2023	20:04:10.623	-23:09:34.21	34.0070584	0.10	14.4	0.9
08/28/2023	20:04:06.013	-23:09:50.06	34.0177765	0.10	14.4	1.0
08/29/2023	20:04:01.477	-23:10:05.65	34.0287296	0.10	14.4	1.0
08/30/2023	20:03:57.012	-23:10:20.96	34.0399149	0.10	14.4	1.0
08/31/2023	20:03:52.620	-23:10:35.99	34.0513294	0.10	14.4	1.0
09/01/2023	20:03:48.302	-23:10:50.70	34.0629702	0.10	14.4	1.1
09/02/2023	20:03:44.064	-23:11:05.07	34.0748345	0.10	14.4	1.1
09/03/2023	20:03:39.908	-23:11:19.11	34.0869196	0.10	14.4	1.1
09/04/2023	20:03:35.839	-23:11:32.80	34.0992225	0.10	14.4	1.1
09/05/2023	20:03:31.860	-23:11:46.15	34.1117404	0.10	14.4	1.1
09/06/2023	20:03:27.972	-23:11:59.17	34.1244701	0.10	14.4	1.2

## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
09/07/2023	20:03:24.177	-23:12:11.88	34.1374085	0.10	14.4	1.2
09/08/2023	20:03:20.473	-23:12:24.26	34.1505522	0.10	14.4	1.2
09/09/2023	20:03:16.863	-23:12:36.34	34.1638978	0.10	14.4	1.2
09/10/2023	20:03:13.345	-23:12:48.10	34.1774416	0.10	14.4	1.2
09/11/2023	20:03:09.921	-23:12:59.53	34.1911800	0.10	14.4	1.3
09/12/2023	20:03:06.591	-23:13:10.65	34.2051091	0.10	14.4	1.3
09/13/2023	20:03:03.358	-23:13:21.43	34.2192250	0.10	14.4	1.3
09/14/2023	20:03:00.221	-23:13:31.86	34.2335237	0.10	14.4	1.3
09/15/2023	20:02:57.184	-23:13:41.94	34.2480009	0.10	14.4	1.3
09/16/2023	20:02:54.248	-23:13:51.66	34.2626524	0.10	14.4	1.3
09/17/2023	20:02:51.416	-23:14:01.01	34.2774739	0.10	14.4	1.4
09/18/2023	20:02:48.691	-23:14:09.99	34.2924609	0.10	14.4	1.4
09/19/2023	20:02:46.075	-23:14:18.58	34.3076089	0.10	14.4	1.4
09/20/2023	20:02:43.571	-23:14:26.80	34.3229133	0.10	14.4	1.4
09/21/2023	20:02:41.179	-23:14:34.66	34.3383695	0.10	14.4	1.4
09/22/2023	20:02:38.900	-23:14:42.15	34.3539728	0.10	14.4	1.4
09/23/2023	20:02:36.736	-23:14:49.29	34.3697186	0.10	14.4	1.4
09/24/2023	20:02:34.684	-23:14:56.09	34.3856021	0.10	14.4	1.5
09/25/2023	20:02:32.743	-23:15:02.55	34.4016187	0.10	14.4	1.5
09/26/2023	20:02:30.913	-23:15:08.67	34.4177638	0.10	14.4	1.5
09/27/2023	20:02:29.191	-23:15:14.45	34.4340329	0.10	14.4	1.5
09/28/2023	20:02:27.579	-23:15:19.86	34.4504217	0.10	14.4	1.5
09/29/2023	20:02:26.079	-23:15:24.89	34.4669257	0.10	14.5	1.5
09/30/2023	20:02:24.694	-23:15:29.52	34.4835407	0.10	14.5	1.5
10/01/2023	20:02:23.428	-23:15:33.76	34.5002625	0.09	14.5	1.5
10/02/2023	20:02:22.283	-23:15:37.60	34.5170869	0.09	14.5	1.5
10/03/2023	20:02:21.259	-23:15:41.07	34.5340093	0.09	14.5	1.5
10/04/2023	20:02:20.359	-23:15:44.17	34.5510256	0.09	14.5	1.6
10/05/2023	20:02:19.579	-23:15:46.91	34.5681310	0.09	14.5	1.6
10/06/2023	20:02:18.921	-23:15:49.30	34.5853210	0.09	14.5	1.6
10/07/2023	20:02:18.382	-23:15:51.35	34.6025908	0.09	14.5	1.6
10/08/2023	20:02:17.964	-23:15:53.04	34.6199356	0.09	14.5	1.6
10/09/2023	20:02:17.664	-23:15:54.39	34.6373503	0.09	14.5	1.6
10/10/2023	20:02:17.484	-23:15:55.37	34.6548301	0.09	14.5	1.6
10/11/2023	20:02:17.424	-23:15:56.00	34.6723699	0.09	14.5	1.6
10/12/2023	20:02:17.485	-23:15:56.25	34.6899644	0.09	14.5	1.6
10/13/2023	20:02:17.668	-23:15:56.12	34.7076085	0.09	14.5	1.6
10/14/2023	20:02:17.975	-23:15:55.61	34.7252969	0.09	14.5	1.6
10/15/2023	20:02:18.407	-23:15:54.71	34.7430242	0.09	14.5	1.6
10/16/2023	20:02:18.966	-23:15:53.42	34.7607852	0.09	14.5	1.6
10/17/2023	20:02:19.653	-23:15:51.75	34.7785744	0.09	14.5	1.6
10/18/2023	20:02:20.469	-23:15:49.71	34.7963863	0.09	14.5	1.6
10/19/2023	20:02:21.413	-23:15:47.30	34.8142156	0.09	14.5	1.6
10/20/2023	20:02:22.485	-23:15:44.54	34.8320569	0.09	14.5	1.6
10/21/2023	20:02:23.683	-23:15:41.45	34.8499048	0.09	14.5	1.6
10/22/2023	20:02:25.005	-23:15:38.01	34.8677541	0.09	14.5	1.6
10/23/2023	20:02:26.448	-23:15:34.25	34.8855996	0.09	14.5	1.6
10/24/2023	20:02:28.011	-23:15:30.16	34.9034362	0.09	14.5	1.6
10/25/2023	20:02:29.692	-23:15:25.72	34.9212590	0.09	14.5	1.6
10/26/2023	20:02:31.493	-23:15:20.92	34.9390630	0.09	14.5	1.6

## Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
10/27/2023	20:02:33.415	-23:15:15.76	34.9568436	0.09	14.5	1.6
10/28/2023	20:02:35.460	-23:15:10.22	34.9745960	0.09	14.5	1.6
10/29/2023	20:02:37.631	-23:15:04.30	34.9923158	0.09	14.5	1.6
10/30/2023	20:02:39.927	-23:14:58.03	35.0099981	0.09	14.5	1.6
10/31/2023	20:02:42.348	-23:14:51.42	35.0276385	0.09	14.5	1.6
11/01/2023	20:02:44.894	-23:14:44.48	35.0452321	0.09	14.5	1.6
11/02/2023	20:02:47.562	-23:14:37.22	35.0627742	0.09	14.5	1.6
11/03/2023	20:02:50.350	-23:14:29.65	35.0802600	0.09	14.5	1.6
11/04/2023	20:02:53.257	-23:14:21.77	35.0976845	0.09	14.5	1.6
11/05/2023	20:02:56.280	-23:14:13.58	35.1150428	0.09	14.5	1.6
11/06/2023	20:02:59.420	-23:14:05.08	35.1323298	0.09	14.5	1.6
11/07/2023	20:03:02.675	-23:13:56.27	35.1495406	0.09	14.5	1.6
11/08/2023	20:03:06.045	-23:13:47.14	35.1666701	0.09	14.5	1.5
11/09/2023	20:03:09.531	-23:13:37.68	35.1837131	0.09	14.5	1.5
11/10/2023	20:03:13.133	-23:13:27.89	35.2006646	0.09	14.5	1.5
11/11/2023	20:03:16.851	-23:13:17.77	35.2175195	0.09	14.5	1.5
11/12/2023	20:03:20.686	-23:13:07.33	35.2342726	0.09	14.5	1.5
11/13/2023	20:03:24.639	-23:12:56.55	35.2509189	0.09	14.5	1.5
11/14/2023	20:03:28.710	-23:12:45.47	35.2674531	0.09	14.5	1.5
11/15/2023	20:03:32.897	-23:12:34.08	35.2838703	0.09	14.5	1.5
11/16/2023	20:03:37.199	-23:12:22.40	35.3001655	0.09	14.5	1.5
11/17/2023	20:03:41.613	-23:12:10.45	35.3163337	0.09	14.5	1.4
11/18/2023	20:03:46.137	-23:11:58.24	35.3323701	0.09	14.5	1.4
11/19/2023	20:03:50.766	-23:11:45.77	35.3482700	0.09	14.5	1.4
11/20/2023	20:03:55.498	-23:11:33.05	35.3640289	0.09	14.5	1.4
11/21/2023	20:04:00.331	-23:11:20.06	35.3796425	0.09	14.5	1.4
11/22/2023	20:04:05.264	-23:11:06.79	35.3951065	0.09	14.5	1.4
11/23/2023	20:04:10.299	-23:10:53.25	35.4104168	0.09	14.5	1.4
11/24/2023	20:04:15.435	-23:10:39.41	35.4255695	0.09	14.5	1.3
11/25/2023	20:04:20.674	-23:10:25.29	35.4405606	0.09	14.5	1.3
11/26/2023	20:04:26.016	-23:10:10.90	35.4553863	0.09	14.5	1.3
11/27/2023	20:04:31.461	-23:09:56.25	35.4700428	0.09	14.5	1.3
11/28/2023	20:04:37.006	-23:09:41.35	35.4845263	0.09	14.5	1.3
11/29/2023	20:04:42.649	-23:09:26.22	35.4988331	0.09	14.5	1.3
11/30/2023	20:04:48.388	-23:09:10.88	35.5129592	0.09	14.5	1.2
12/01/2023	20:04:54.218	-23:08:55.33	35.5269008	0.09	14.5	1.2
12/02/2023	20:05:00.138	-23:08:39.58	35.5406541	0.09	14.5	1.2
12/03/2023	20:05:06.146	-23:08:23.61	35.5542150	0.09	14.5	1.2
12/04/2023	20:05:12.240	-23:08:07.44	35.5675798	0.09	14.5	1.2
12/05/2023	20:05:18.420	-23:07:51.05	35.5807445	0.09	14.5	1.2
12/06/2023	20:05:24.684	-23:07:34.44	35.5937052	0.09	14.5	1.1
12/07/2023	20:05:31.032	-23:07:17.62	35.6064581	0.09	14.5	1.1
12/08/2023	20:05:37.464	-23:07:00.58	35.6189994	0.09	14.5	1.1
12/09/2023	20:05:43.980	-23:06:43.32	35.6313252	0.09	14.5	1.1
12/10/2023	20:05:50.579	-23:06:25.85	35.6434318	0.09	14.5	1.1
12/11/2023	20:05:57.261	-23:06:08.18	35.6553155	0.09	14.5	1.0
12/12/2023	20:06:04.025	-23:05:50.31	35.6669726	0.09	14.5	1.0
12/13/2023	20:06:10.869	-23:05:32.27	35.6783995	0.09	14.5	1.0
12/14/2023	20:06:17.790	-23:05:14.08	35.6895926	0.09	14.5	1.0
12/15/2023	20:06:24.783	-23:04:55.74	35.7005488	0.09	14.5	0.9

Pluto - Apparent data

Date 0 h TT	Right Ascension hms	Declination dms	Distance au	Diameter arc sec	Magnitude	Phase Angle deg.
12/16/2023	20:06:31.844	-23:04:37.28	35.7112647	0.09	14.5	0.9
12/17/2023	20:06:38.970	-23:04:18.68	35.7217375	0.09	14.5	0.9
12/18/2023	20:06:46.158	-23:03:59.95	35.7319643	0.09	14.5	0.9
12/19/2023	20:06:53.406	-23:03:41.08	35.7419424	0.09	14.5	0.8
12/20/2023	20:07:00.715	-23:03:22.05	35.7516695	0.09	14.5	0.8
12/21/2023	20:07:08.084	-23:03:02.87	35.7611433	0.09	14.5	0.8
12/22/2023	20:07:15.514	-23:02:43.54	35.7703616	0.09	14.5	0.8
12/23/2023	20:07:23.004	-23:02:24.07	35.7793222	0.09	14.5	0.7
12/24/2023	20:07:30.554	-23:02:04.47	35.7880232	0.09	14.5	0.7
12/25/2023	20:07:38.161	-23:01:44.75	35.7964625	0.09	14.5	0.7
12/26/2023	20:07:45.823	-23:01:24.95	35.8046383	0.09	14.5	0.7
12/27/2023	20:07:53.536	-23:01:05.06	35.8125485	0.09	14.5	0.7
12/28/2023	20:08:01.298	-23:00:45.11	35.8201912	0.09	14.5	0.6
12/29/2023	20:08:09.104	-23:00:25.09	35.8275644	0.09	14.5	0.6
12/30/2023	20:08:16.953	-23:00:05.00	35.8346663	0.09	14.5	0.6
12/31/2023	20:08:24.841	-22:59:44.86	35.8414950	0.09	14.5	0.6
01/01/2024	20:08:32.768	-22:59:24.65	35.8480484	0.09	14.5	0.5
01/02/2024	20:08:40.732	-22:59:04.37	35.8543249	0.09	14.5	0.5