Mutual Phenomena of Saturn's Satellites (when Sun below horiZon and event above)

		Start	Duration	Body A	Event	Body B	Impact	Light drop	Ang. sep	Phen. Alt.	Sun alt.	Moon phase	Angle to M
2024													
Nov.	6	01:01	6.78	Tethys	EC(P)	Enceladus	0.364	95	1.73	1.2	-51.1	128.6	67.8
	13	00:18	1.19	Mimas	EC(P)	Tethys	0.996	0	1.82	3.7	-55.8	40.1	27.6
	14	21:10	10.72	Mimas	EC(A)	Tethys	0.107	15	1.71	25	-45.9	14.3	56.4
	16	18:09	7.37	Mimas	EC(P)	Tethys	0.637	8	1.64	28.4	-19.1	12.7	84.8
Dec.	13	19:43	2.35	Mimas	EC(P)	Enceladus	0.452	31	1.97	23.5	-34.9	21.2	78.5
	28	21:29	1.66	Mimas	EC(P)	Enceladus	0.730	8	1.82	3.4	-49.5	155.2	90.8
	30	19:00	1.57	Tethys	EC(P)	Enceladus	0.910	1	2.53	22	-26.8	174.7	67.1
2025													
Feb.	3	17:23	2.69	Enceladus	EC(P)	Tethys	0.644	9	1.5	19.9	-5.4	111.0	36.1
	14	18:46	8.25	Dione	EC(P)	Tethys	0.632	22	0.9	3.1	-15.6	25.1	176.3
	23	17:59	1.31	Tethys	EC(P)	Mimas	0.250	95	1.6	6.3	-5.5	124.5	70.2
Mar.	4	17:55	0.73	Mimas	EC(P)	Enceladus	0.687	3	0.6	2.6	-2.3	115.2	57.6
Apr.	6	05:19	0.6	Tethys	EC(P)	Dione	0.968	0	3.0	2.3	-1.4	76.1	125.3
	11	05:17	1.49	Mimas	EC(A)	Tethys	0.089	20	2.4	5.0	0.0	19.5	173.1
	16	04:42	1.18	Mimas	EC(A)	Enceladus	0.083	61	1.9	2.3	-3.6	34.8	115.0
July	10	00:45	1.79	Tethys	EC(P)	Enceladus	0.777	3	3.8	15.4	-15.8	10.8	83.7
	25	02:58	1.2	Tethys	EC(P)	Enceladus	0.882	1	4.0	35.7	-9.5	174.6	125.4
	27	22:49	1.39	Mimas	EC(A)	Enceladus	0.099	61	3.1	8.6	-17.6	141.1	161.8
Aug.	13	23:10	1.43	Enceladus	EC(P)	Tethys	0.882	0	2.6	21.3	-23.2	60.1	21.2
Oct.	1	00:51	2.46	Tethys	OC(T)	Mimas	0.419	13	0.1	31.6	-40.0	78.0	68.3
	2	22:08	2.61	Tethys	OC(T)	Mimas	0.165	13	0.0	33.9	-38.2	55.6	43.8
	2	23:40	1.53	Tethys	OC(P)	Enceladus	0.788	6	0.1	34.8	-42.5	54.8	43.1
	4	19:26	1.7	Tethys	OC(P)	Mimas	0.750	5	0.1	19.2	-18.9	31.7	17.4
	8	19:19	2.3	Tethys	OC(P)	Dione	0.857	3	0.2	20.3	-19.2	23.4	42.4
	21	21:17	0.71	Enceladus	OC(P)	Mimas	0.172	30	0.0	34.4	-39.8	174.5	143.1
Nov.	2	23:38	1.24	Enceladus	OC(A)	Tethys	0.026	18	0.0	24.9	-53.6	35.9	9.2
	6	18:24	1.48	Dione	OC(P)	Tethys	0.610	16	0.1	27.3	-19.1	18.0	67.1

	19	01:27	0.68	Tethys	OC(P)	Dione	0.936	1	0.2	0.7	-52.2	166.1	130.6
Dec.	2	23:49	0.53	Mimas	OC(P)	Tethys	0.861	2	0.1	7.2	-60.6	28.4	47.6
	6	22:12	1.69	Dione	OC(P)	Tethys	0.306	37	0.1	18.7	-55.5	27.9	108.1
	9	21:37	1.08	Dione	OC(P)	Mimas	0.520	15	0.1	21.8	-51.4	66.4	150.1
2026													
Jan.	15	18:43	3.05	Enceladus	OC(A)	Tethys	0.331	18	0.04	26.4	-21.8	145.4	95.9

Start	Time UT. Seconds truncated (i.e. 17:23:54 given as 17:23)
Body A	Body causing the phenomenon
Event	
	EC(P) The satellite disappears partially in the shadow of the other satellite
	EC(A) The entire shadow of the eclipsing satellite passes over the disc of the eclipsed satellite but is smaller than this satellite
	OC(T) The occultating satellite passes in front of other totalling blocking light from the other
	OC(P) The occultating satellite passes in front of other partially blocking light from the other
	OC(A) The occultating satellite passes in front of other but is smaller than this satellite
Body B	Body undergoing the phenomenon
Impact	Impact parameter – from 0 for a central phenomenon to 1 for a grazing phenomenon
Light drop	Maximum light drop
Ang. sep	Angular distance between the two bodies involved at the time of the maximum
Phen. Alt.	Elevation of the planet (without refraction) with respect to the horizon
Sun alt,	Elevation of the Sun (without refraction) with respect to the horizon
Moon phase	Phase of the Moon (0 Full, 180 New, intermediate partial waxing or waning
Angle to Moon	Angle between the Earth-planet's direction and the Earth-Moon direction

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