

Eventos protagonizados por los satélites naturales de Júpiter, marzo de 2021

Los satélites (también conocidos como galileanos en honor a la primera persona en observarlos) de Júpiter nos proporcionan algunos de los fenómenos más llamativos observables con instrumental básico. Con unos buenos prismáticos fijados en un trípode o un pequeño telescopio, podemos ser capaces de observar eclipses, ocultaciones y tránsitos de los satélites galileanos o sus sombras sobre Júpiter. De la misma manera, la observación telescópica de la Gran Mancha Roja (GMR) de Júpiter nos permite disfrutar de una de las tormentas más grandes de todo el Sistema Solar. La siguiente tabla nos resume todos los eventos protagonizados por los satélites de Júpiter y observables desde Andalucía.

- **Columna 1:** Día del mes
- **Columna 2:** Hora en Tiempo Universal (para transformar a hora local andaluza sumar una hora en horario de invierno y dos en horario de verano)
- **Columna 3:** Altura de Júpiter sobre el horizonte
- **Columna 4:** Objeto protagonista:
 - GRS: Gran Mancha Roja
 - Io(1): Ío
 - Eur(2): Europa
 - Gan(3): Ganímedes
 - Cal(4): Calisto
- **Columna 5:** Evento

Para los no familiarizados con el lenguaje astronómico, aquí os indico en qué consiste cada uno de los fenómenos tabulados a continuación:

- **Tránsito (Transit):** Se produce cuando un satélite de Júpiter se encuentra entre nosotros y el planeta, es decir, se encuentra (en proyección) sobre el disco de Júpiter.
- **Tránsito de la sombra (shadow transit):** En base a la definición anterior os podéis hacer una idea de a qué nos referimos aquí. El Sol ilumina tanto a Júpiter como a sus satélites y todos ellos proyectan una sombra a su vez. Esta sombra, si es proyectada por un satélite, se puede perder en el espacio o puede caer sobre la superficie joviana. Si este es el caso, podremos ver un puntito oscuro moverse sobre la superficie del planeta. Para un observador localizado sobre la superficie de Júpiter estaríamos ante un eclipse solar.
- **Ocultación (Occultation):** Si la sombra, en lugar de ser proyectada por el satélite sobre la superficie de Júpiter, es proyectada por Júpiter sobre el satélite se producirá un eclipse. Lo que podremos observar es que un satélite determinado pasa de ser visible a no serlo, debido a que se encuentra en la sombra proyectada por Júpiter y por lo tanto no le llega luz que pueda reflejar para que sea visible. Sería el fenómeno equivalente a un eclipse lunar en la Tierra.
- En cuanto a la **Gran Mancha Roja (GRS)**, lo que tabulamos en esta tabla es el momento en el que pasa por el meridiano central, es decir, cuando la mancha se encuentra frente a nosotros

Día	Hora (TU)	Altura (°)	Objeto	Evento
(1)	(2)	(3)	(4)	(5)
2021:02:28	21:27	-44.6	Cal(4)	Shadow transit begins
2021:03:01	2:19	-56.1	Cal(4)	Shadow transit ends
2021:03:01	2:35	-53.3	Cal(4)	Transit begins
2021:03:01	7:30	4.1	Cal(4)	Transit ends
2021:03:01	10:45	33.9	Io (1)	Shadow transit begins
2021:03:01	11:18	36.6	Io (1)	Transit begins
2021:03:01	13:04	38.0	Io (1)	Shadow transit ends
2021:03:01	13:37	36.0	Io (1)	Transit ends
2021:03:01	15:30	22.5	Eur(2)	Shadow transit begins
2021:03:01	16:37	11.3	Eur(2)	Transit begins
2021:03:01	18:25	-9.2	Eur(2)	Shadow transit ends
2021:03:01	19:32	-22.6	Eur(2)	Transit ends
2021:03:02	8:04	11.1	Io (1)	Eclipse begins
2021:03:02	10:57	35.3	Io (1)	Occultation ends
2021:03:03	5:14	-20.9	Io (1)	Shadow transit begins
2021:03:03	5:48	-14.0	Io (1)	Transit begins
2021:03:03	7:33	6.1	Io (1)	Shadow transit ends
2021:03:03	8:07	12.3	Io (1)	Transit ends
2021:03:03	9:50	28.5	Eur(2)	Eclipse begins
2021:03:03	13:51	34.1	Eur(2)	Occultation ends
2021:03:03	19:43	-26.3	Gan(3)	Shadow transit begins
2021:03:03	22:05	-53.8	Gan(3)	Transit begins
2021:03:03	23:21	-64.8	Gan(3)	Shadow transit ends
2021:03:04	1:45	-59.7	Gan(3)	Transit ends
2021:03:04	2:32	-51.8	Io (1)	Eclipse begins
2021:03:04	5:27	-17.4	Io (1)	Occultation ends
2021:03:04	23:43	-66.9	Io (1)	Shadow transit begins
2021:03:05	0:18	-67.6	Io (1)	Transit begins
2021:03:05	1:59	-56.8	Io (1)	Shadow transit ends
2021:03:05	2:36	-50.3	Io (1)	Transit ends
2021:03:05	4:48	-24.4	Eur(2)	Shadow transit begins
2021:03:05	6:02	-9.7	Eur(2)	Transit begins
2021:03:05	7:43	9.5	Eur(2)	Shadow transit ends
2021:03:05	8:58	22.1	Eur(2)	Transit ends
2021:03:05	21:01	-43.3	Io (1)	Eclipse begins
2021:03:05	23:57	-67.6	Io (1)	Occultation ends
2021:03:06	18:11	-10.2	Io (1)	Shadow transit begins
2021:03:06	18:48	-17.7	Io (1)	Transit begins
2021:03:06	20:29	-37.8	Io (1)	Shadow transit ends
2021:03:06	21:07	-45.3	Io (1)	Transit ends
2021:03:06	23:07	-64.6	Eur(2)	Eclipse begins
2021:03:07	3:16	-41.4	Eur(2)	Occultation ends
2021:03:07	9:48	30.2	Gan(3)	Eclipse begins

2021:03:07	15:30	18.7	Io (1)	Eclipse begins
2021:03:07	16:02	13.2	Gan(3)	Occultation ends
2021:03:07	18:27	-14.3	Io (1)	Occultation ends
2021:03:08	12:39	37.9	Io (1)	Shadow transit begins
2021:03:08	13:19	35.2	Io (1)	Transit begins
2021:03:08	14:58	23.2	Io (1)	Shadow transit ends
2021:03:08	15:37	16.8	Io (1)	Transit ends
2021:03:08	18:07	-11.0	Eur(2)	Shadow transit begins
2021:03:08	19:28	-27.2	Eur(2)	Transit begins
2021:03:08	21:01	-45.7	Eur(2)	Shadow transit ends
2021:03:08	22:23	-59.9	Eur(2)	Transit ends
2021:03:09	8:04	15.9	Cal(4)	Eclipse begins
2021:03:09	9:58	32.3	Io (1)	Eclipse begins
2021:03:09	12:54	36.8	Cal(4)	Eclipse ends
2021:03:09	12:58	36.5	Io (1)	Occultation ends
2021:03:09	14:24	27.4	Cal(4)	Occultation begins
2021:03:09	19:16	-25.6	Cal(4)	Occultation ends
2021:03:10	7:08	6.6	Io (1)	Shadow transit begins
2021:03:10	7:49	14.0	Io (1)	Transit begins
2021:03:10	9:26	29.0	Io (1)	Shadow transit ends
2021:03:10	10:07	33.6	Io (1)	Transit ends
2021:03:10	12:25	38.2	Eur(2)	Eclipse begins
2021:03:10	16:40	4.3	Eur(2)	Occultation ends
2021:03:10	23:43	-67.7	Gan(3)	Shadow transit begins
2021:03:11	2:33	-46.6	Gan(3)	Transit begins
2021:03:11	3:21	-37.2	Gan(3)	Shadow transit ends
2021:03:11	4:26	-24.1	Io (1)	Eclipse begins
2021:03:11	6:13	-3.1	Gan(3)	Transit ends
2021:03:11	7:28	11.1	Io (1)	Occultation ends
2021:03:12	1:36	-56.0	Io (1)	Shadow transit begins
2021:03:12	2:19	-48.5	Io (1)	Transit begins
2021:03:12	3:54	-29.9	Io (1)	Shadow transit ends
2021:03:12	4:38	-21.1	Io (1)	Transit ends
2021:03:12	7:25	11.2	Eur(2)	Shadow transit begins
2021:03:12	8:53	25.5	Eur(2)	Transit begins
2021:03:12	10:20	35.6	Eur(2)	Shadow transit ends
2021:03:12	11:48	38.9	Eur(2)	Transit ends
2021:03:12	22:55	-65.7	Io (1)	Eclipse begins
2021:03:13	1:58	-51.6	Io (1)	Occultation ends
2021:03:13	20:04	-38.4	Io (1)	Shadow transit begins
2021:03:13	20:49	-47.0	Io (1)	Transit begins
2021:03:13	22:23	-62.6	Io (1)	Shadow transit ends
2021:03:13	23:08	-66.9	Io (1)	Transit ends
2021:03:14	1:42	-53.7	Eur(2)	Eclipse begins
2021:03:14	6:04	-2.5	Eur(2)	Occultation ends
2021:03:14	13:48	29.6	Gan(3)	Eclipse begins
2021:03:14	17:24	-7.2	Io (1)	Eclipse begins
2021:03:14	20:29	-43.9	Io (1)	Occultation ends
2021:03:14	20:30	-44.1	Gan(3)	Occultation ends
2021:03:15	14:33	22.8	Io (1)	Shadow transit begins

2021:03:15	15:19	15.2	Io (1)	Transit begins
2021:03:15	16:52	-1.7	Io (1)	Shadow transit ends
2021:03:15	17:37	-10.6	Io (1)	Transit ends
2021:03:15	20:44	-47.5	Eur(2)	Shadow transit begins
2021:03:15	22:18	-63.0	Eur(2)	Transit begins
2021:03:15	23:39	-67.5	Eur(2)	Shadow transit ends
2021:03:16	1:13	-57.3	Eur(2)	Transit ends
2021:03:16	11:52	38.5	Io (1)	Eclipse begins
2021:03:16	14:59	18.0	Io (1)	Occultation ends
2021:03:17	9:02	29.4	Io (1)	Shadow transit begins
2021:03:17	9:49	34.5	Io (1)	Transit begins
2021:03:17	11:19	38.9	Io (1)	Shadow transit ends
2021:03:17	12:08	37.7	Io (1)	Transit ends
2021:03:17	14:59	17.3	Eur(2)	Eclipse begins
2021:03:17	15:36	10.9	Cal(4)	Shadow transit begins
2021:03:17	19:28	-34.3	Eur(2)	Occultation ends
2021:03:17	20:29	-46.2	Cal(4)	Shadow transit ends
2021:03:17	23:17	-67.7	Cal(4)	Transit begins
2021:03:18	3:42	-27.5	Gan(3)	Shadow transit begins
2021:03:18	4:11	-21.7	Cal(4)	Transit ends
2021:03:18	6:21	3.7	Io (1)	Eclipse begins
2021:03:18	6:59	10.7	Gan(3)	Transit begins
2021:03:18	7:21	14.6	Gan(3)	Shadow transit ends
2021:03:18	9:29	32.9	Io (1)	Occultation ends
2021:03:18	10:39	38.1	Gan(3)	Transit ends
2021:03:19	3:30	-29.2	Io (1)	Shadow transit begins
2021:03:19	4:19	-19.3	Io (1)	Transit begins
2021:03:19	5:48	-1.7	Io (1)	Shadow transit ends
2021:03:19	6:38	7.7	Io (1)	Transit ends
2021:03:19	10:02	36.3	Eur(2)	Shadow transit begins
2021:03:19	11:43	38.4	Eur(2)	Transit begins
2021:03:19	12:57	33.2	Eur(2)	Shadow transit ends
2021:03:19	14:37	19.6	Eur(2)	Transit ends
2021:03:20	0:50	-58.5	Io (1)	Eclipse begins
2021:03:20	3:59	-22.5	Io (1)	Occultation ends
2021:03:20	21:58	-63.0	Io (1)	Shadow transit begins
2021:03:20	22:49	-67.3	Io (1)	Transit begins
2021:03:21	0:17	-62.6	Io (1)	Shadow transit ends
2021:03:21	1:08	-54.9	Io (1)	Transit ends
2021:03:21	4:16	-18.2	Eur(2)	Eclipse begins
2021:03:21	8:51	30.0	Eur(2)	Occultation ends
2021:03:21	17:48	-17.5	Gan(3)	Eclipse begins
2021:03:21	19:18	-35.4	Io (1)	Eclipse begins
2021:03:21	22:29	-66.5	Io (1)	Occultation ends
2021:03:22	0:56	-56.2	Gan(3)	Occultation ends
2021:03:22	16:27	-2.2	Io (1)	Shadow transit begins
2021:03:22	17:19	-12.5	Io (1)	Transit begins
2021:03:22	18:46	-29.8	Io (1)	Shadow transit ends
2021:03:22	19:37	-39.9	Io (1)	Transit ends
2021:03:22	23:20	-67.1	Eur(2)	Shadow transit begins

2021:03:23	1:07	-53.6	Eur(2)	Transit begins
2021:03:23	2:15	-41.0	Eur(2)	Shadow transit ends
2021:03:23	4:02	-19.6	Eur(2)	Transit ends
2021:03:23	13:46	25.0	Io (1)	Eclipse begins
2021:03:23	16:59	-9.3	Io (1)	Occultation ends
2021:03:24	10:55	38.9	Io (1)	Shadow transit begins
2021:03:24	11:49	37.2	Io (1)	Transit begins
2021:03:24	13:13	29.1	Io (1)	Shadow transit ends
2021:03:24	14:08	21.2	Io (1)	Transit ends
2021:03:24	17:34	-17.0	Eur(2)	Eclipse begins
2021:03:24	22:15	-66.3	Eur(2)	Occultation ends
2021:03:25	7:42	22.5	Gan(3)	Shadow transit begins
2021:03:25	8:15	27.3	Io (1)	Eclipse begins
2021:03:25	11:20	38.4	Gan(3)	Shadow transit ends
2021:03:25	11:23	38.2	Gan(3)	Transit begins
2021:03:25	11:29	38.0	Io (1)	Occultation ends
2021:03:25	15:03	11.2	Gan(3)	Transit ends
2021:03:26	2:11	-39.3	Cal(4)	Eclipse begins
2021:03:26	5:24	-1.1	Io (1)	Shadow transit begins
2021:03:26	6:19	9.2	Io (1)	Transit begins
2021:03:26	7:02	16.7	Cal(4)	Eclipse ends
2021:03:26	7:42	23.2	Io (1)	Shadow transit ends
2021:03:26	8:38	30.8	Io (1)	Transit ends
2021:03:26	10:52	38.9	Cal(4)	Occultation begins
2021:03:26	12:39	32.2	Eur(2)	Shadow transit begins
2021:03:26	14:31	16.1	Eur(2)	Transit begins
2021:03:26	15:33	5.1	Eur(2)	Shadow transit ends
2021:03:26	15:43	3.2	Cal(4)	Occultation ends
2021:03:26	17:26	-16.9	Eur(2)	Transit ends
2021:03:27	2:44	-32.1	Io (1)	Eclipse begins
2021:03:27	5:59	6.3	Io (1)	Occultation ends
2021:03:27	23:52	-62.3	Io (1)	Shadow transit begins
2021:03:28	0:49	-53.3	Io (1)	Transit begins
2021:03:28	2:11	-37.8	Io (1)	Shadow transit ends
2021:03:28	3:07	-26.7	Io (1)	Transit ends
2021:03:28	6:51	16.3	Eur(2)	Eclipse begins
2021:03:28	11:38	36.9	Eur(2)	Occultation ends
2021:03:28	21:12	-61.0	Io (1)	Eclipse begins
2021:03:28	21:48	-65.4	Gan(3)	Eclipse begins
2021:03:29	0:29	-56.1	Io (1)	Occultation ends
2021:03:29	1:27	-45.7	Gan(3)	Eclipse ends
2021:03:29	1:40	-43.0	Gan(3)	Occultation begins
2021:03:29	5:20	0.4	Gan(3)	Occultation ends
2021:03:29	18:21	-30.4	Io (1)	Shadow transit begins
2021:03:29	19:18	-41.7	Io (1)	Transit begins
2021:03:29	20:38	-56.3	Io (1)	Shadow transit ends
2021:03:29	21:37	-64.7	Io (1)	Transit ends
2021:03:30	1:57	-39.1	Eur(2)	Shadow transit begins
2021:03:30	3:55	-15.5	Eur(2)	Transit begins
2021:03:30	4:51	-4.3	Eur(2)	Shadow transit ends

2021:03:30	6:50	17.3	Eur(2)	Transit ends
2021:03:30	15:41	0.6	Io (1)	Eclipse begins
2021:03:30	18:58	-38.6	Io (1)	Occultation ends
2021:03:31	12:49	28.6	Io (1)	Shadow transit begins
2021:03:31	13:48	19.9	Io (1)	Transit begins
2021:03:31	15:07	6.2	Io (1)	Shadow transit ends
2021:03:31	16:07	-5.3	Io (1)	Transit ends
2021:03:31	20:09	-52.6	Eur(2)	Eclipse begins

Tabla 1: Fenómenos protagonizados por los satélites de Júpiter y la Gran Mancha Roja (GMR)