SkyNews Astronomical events for Indian observers

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Sun, Planets and Transitions

The Sun will be in Sagittarius, The Archer (*Dhanu*) on 1 January. Its angular diameter will be 32'31.8". The Earth reaches perihelion (the point in its orbit nearest to the Sun) on 3 January at 06:03 hours IST. The distance of the Earth from the Sun at this point will be 0.9833070 AU, or about 147 million kilometres. After that, the angular diameter of the Sun will start decreasing, as seen from Earth. **The Sun** moves to Capricornus, The Sea Goat (*Makara*) on 20 January. On 31 January, its angular diameter will be 32'28.3".

Mercury is in Ophiuchus, The Serpent Bearer (*Bhujangadhari* or *Sarpdhar* or *Naraturunga*) on 1 January. It has been in retrograde motion and will be stationary on 2 January. It will cross over to Sagittarius on 10 January.

Venus, which has been in Libra, The Scales (*Tula*), crosses over to Scorpius, The Scorpion (*Vrishchika*) on 1 January. It will then enter Ophiuchus on 5 January. It moves to Sagittarius on 20 January.

Mars is in Sagittarius throughout January 2024. **Jupiter** and **Saturn** are in Aries, The Ram (*Mesha*) and Aquarius, The Water-bearer (*Kumbha*) respectively.

(Disclaimer: we categorically mention here that we do not believe in astrology and believe that the only influence a planet has on us is to give us the viewing pleasure of its beauty. The sole purpose of giving the transition of planets and the Sun is to acquaint the reader with the Indian nomenclature of planets and constellations and also to show that the actual positions of the Sun and planets, which are based on modern computing, are very different from those given in astrology tables.)

List of Events in January 2024

Dt	Dy	Time	Event
01	Mo	20:58	Moon apogee: 404900 km
02	Tu	11:30	Mercury stationary
03	We	05:29	Perihelion: 0.9833 AU
04	Th	09:00	Last Quarter
04	Th	14:45	Quadrantid shower: ZHR = 120
05	Fr	00:22	Moon descending node
05	Fr	04:36	Moon-Spica: 2.2° S
07	Su	06:05	Venus-Antares: 6.3° N
08	Mo	19:54	Moon-Antares: 0.8° S
09	Tu	01:42	Moon-Venus: 5.9° N
10	We	12:34	Moon south declination: 28.2° S
10	Tu	13:30	Mars 4.1° N of Moon
11	Th	17:27	New Moon
12	Fr	19:29	Mercury elongation: 23.5° W
13	Sa	16:05	Moon perigee: 362300 km
14	Su	15:01	Moon-Saturn: 2.1° N
15	Mo	2:30	Neptune 0.8° N of Moon, occultation
17	We	19:35	Moon ascending node
18	Th	09:23	First quarter
19	Fr	02:10	Moon-Jupiter: 2.9° S
19	For	23:30	Uranus 2.8° S of Moon
20	Sa	18:55	Moon-Pleiades: 0.9° N
23	Tu	09:14	Moon north declination: 28.2° N
25	Th	00:30	Moon-Pollux: 1.9° N
25	Th	23:24	Full Moon
26	Fr	01:34	Moon-Beehive: 3.6° S
27	Sa	15:30	Uranus stationary
27	Sa	21:18	Mercury-Mars: 0.2° N
28	Su	01:25	Moon-Regulus 3.2°N
29	Mo	13:44	Moon apogee: 405800 km

March of the Moon

Nearly two hours before sunrise on New Year's Day, you can spot the nearly 78% illuminated lunar disk almost overhead. To its west will be Regulus (the tenth *Nakshatra, Magha*). On 2 January the Moon will be south of the line joining Zosma (Delta Leonis) and Chertan (Theta Leonis). These two stars make the eleventh *Nakshatra*, *Purva Phalguni*.

By the end of the first week of January, the Moon will be seen above the eastern horizon before dawn. On 5 January, the Moon pairs up with Spica (Alpha Virginis and also the fourteenth *Nakshatra*, *Chitra*). They will be less than 2.5° from each other. Then on 8 January the Moon will be seen in the claw of Scorpius. Three stars, Acrab (β Sco), Dschubba (δ Sco) and Fang (π Sco) make the seventeenth *Nakshatra*, *Anuradha*. The crescent Moon will be at the apex of a right-angled triangle formed by Venus and Antares (*Jyeshta*) as the base of the triangle.

The next day on 9 January, an even thinner lunar crescent is part of an equilateral triangle with Venus and Antares above it. After the New Moon of 11 January, the Moon appears above the western horizon after sunset.Spotting the thin lunar crescent will be a challenge on 12 January. Another beautiful sight awaits us on 14 January when the Moon joins Saturn. As the Moon travels eastward, it will be 1°56' away from Saturn at 4.31 pm IST.

On 18 January at the end of civil twilight, one can see the approximately half illuminated Moon to the west of Jupiter. On 20 January, the Moon will occult a 5th magnitude star in the Pleiades (*Kruttika*) cluster. On 22 January The Moon will be east of Elnath (β Tauri or *Agni*). This second-brightest star in the Taurus constellation is also the second-brightest star of the Auriga pentagon asterism.

Occultations

On 20 January the Moon will pass close to the Pleiades cluster and will occult two of its stars that are brighter than 6.5 magnitude. Observers will be able to witness both the disappearance and reappearance of the stars.

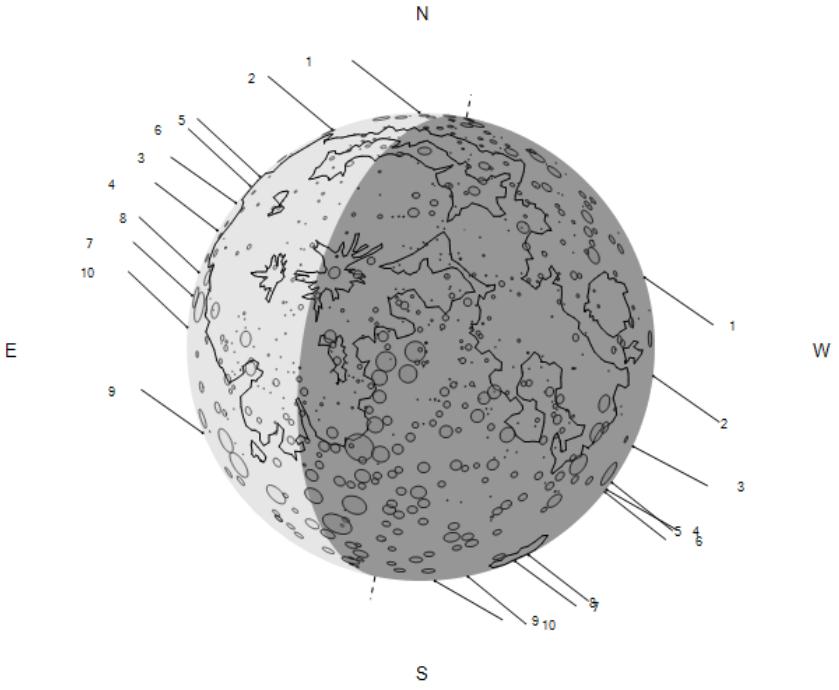
The occultation timings are given for a few metros and big cities. Predictions have also been computed for about 100 cities across the country. For details, please visit http://skytonight.wordpress.com.

It will not be difficult to see the disappearance as the star will be occulted at the darker limb of the Moon. For its reappearance, check the map, in particular if the field of view is less than 20 arc minutes.

▼Occultation Predictions of HR 1172, Magnitude 5.4

Date: 20 January 2024

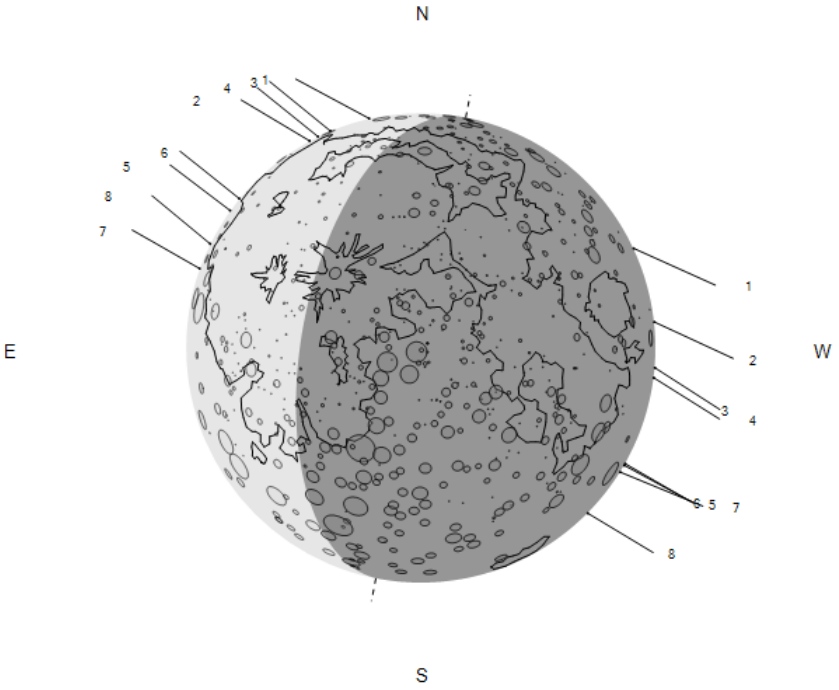
No	City	disappearance		reappearance
1	Leh	19:55:38		20:48:20
2	New Delhi	19:36:19		20:54:42
3	Guwahati	20:00:48		21:31:23
4	Kolkata	19:48:36		21:22:17
5	Mumbai	19:07:04		20:38:31
6	Pune	19:08:13		20:40:39
7	Chennai	19:19:06		20:45:19
8	Bengaluru	19:10:41		20:39:05
9	Port Blair	20:10:17		21:07:04
10	Thiruvananthapuram	19:07:46		20:24:04



Occultation Predictions of HR 1183, Magnitude 6.3

Date: 20 January 2024

No	City	Disappearance		Reappearance
1	Guwahati	21:23:40		22:17:23
2	Kolkata	21:06:24		22:20:22
3	Mumbai	20:24:16		21:46:27
4	Pune	20:24:59		21:49:45
5	Chennai	20:30:04		22:06:56
6	Bengaluru	20:22:30		21:59:51
7	Port Blair	21:05:10		22:33:40
8	Thiruvananthapuram	20:15:38		21:53:14



Events involving the moons of Jupiter

Jupiter rises nearly two hours after sunset in the beginning of the month, and then soon after sunset by month-end. We will now bring you predictions of events involving the moons of Jupiter.

These events are very enjoyable to observe. During an eclipse of the Jovian moons, one of them enters or comes out of the planet's shadow. Sometimes a moon or its shadow is seen moving across the disc of Jupiter; or a moon is occulted by it. Do enjoy these events.

In the table below, we have listed events that can be seen from India. The table gives the timings of eclipses, occultations, transits and shadow transits of the moons of Jupiter, suitable for Indian observers. The timings are given in Indian Standard Time (IST).

The output is given as per the following abbreviations and notations:

Columns: 1 = date (given only for the first event listed for that day); 2 = time; 3 = satellite number; 4 = event type; and 5 = phase.

Satellite numbers: 1 = Io; 2 = Callisto; 3 = Europa; and 4 = Ganymede.

Event type: Ec = eclipse; Oc = occultation; Tr = transit; and Sh = shadow transit.

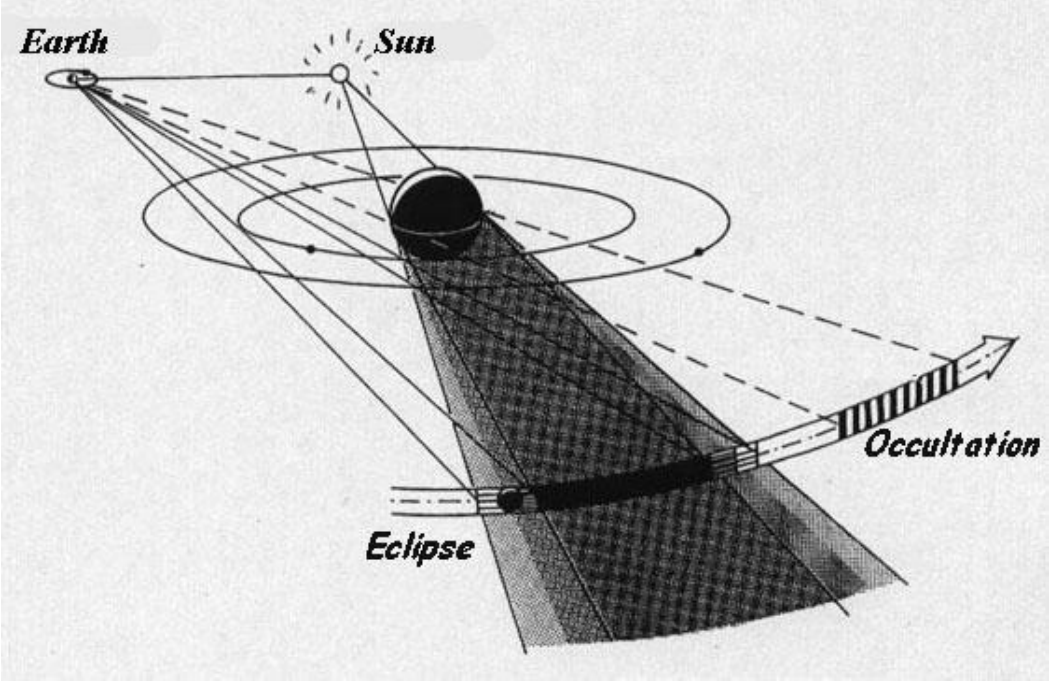
Phase: D = disappear; R = reappear; I = ingress; and E = egress.

Example:

1	**19:39:36**	**2**	**Oc**	**D**
	20:53:54	**1**	**Oc**	**D**
	22:01:42	**2**	**Oc**	**R**

Means that

At 7:39:36 pm, Callisto (2) will be occulted by Jupiter. It will reappear at 22:01:42 pm. Io gets occulted at 20:53:54 pm. Later it enters Jupiter's shadow and reappears after midnight.



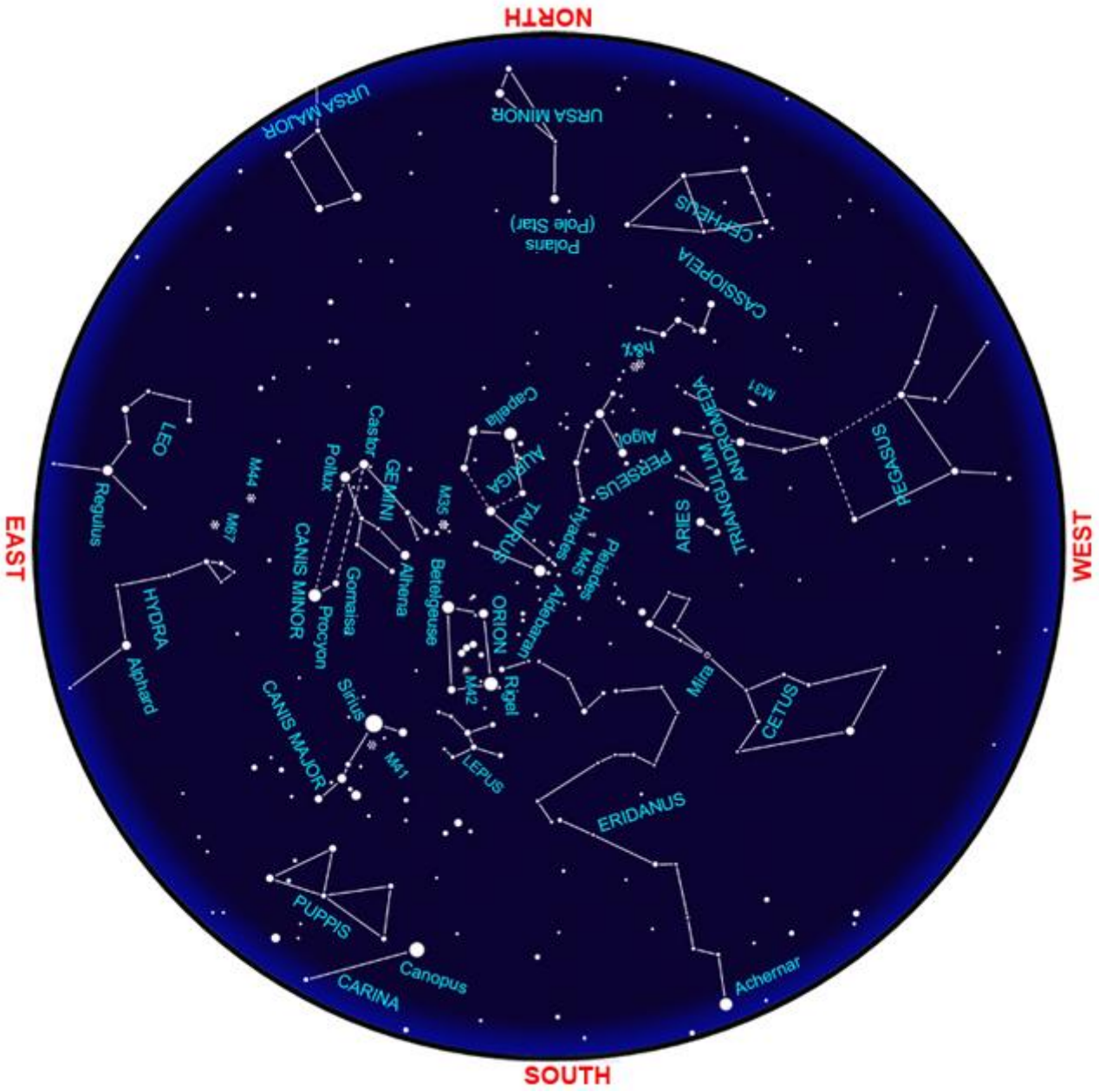
Eclipses occur when the satellites pass in the shadow of Jupiter. Occultations occur when the satellites pass behind Jupiter for a terrestrial observer (picture courtesy: https://promenade.imcce.fr/en/pages3/365.html#eclip

Satellites of Jupiter in January 2024

1	2	3	4	5
1	19:39:36	2	Oc	D
	20:53:54	1	Oc	D
	22:01:42	2	Oc	R
	22:09:24	2	Ec	D
	00:16:54	1	Ec	R
	00:31:30	2	Ec	R
2	18:07:36	1	Tr	I
	19:21:00	1	Sh	I
	20:17:42	1	Tr	E
	21:30:54	1	Sh	E
3	18:45:42	1	Ec	R
	19:08:00	2	Sh	E
	19:17:18	3	Ec	R
7	01:31:42	1	Tr	I
8	22:10:36	2	Oc	D
	22:45:30	1	Oc	D
	00:33:36	2	Oc	R
	00:48:18	2	Ec	D
	02:12:12	1	Ec	R
9	20:00:00	1	Tr	I
	21:17:00	1	Sh	I
	22:10:18	1	Tr	E
	23:26:48	1	Sh	E
10	18:12:18	3	Oc	R
	19:12:24	2	Tr	E
	19:24:30	2	Sh	I
	20:41:00	1	Ec	R
	21:35:30	3	Ec	D
	21:43:54	2	Sh	E
	23:18:48	3	Ec	R
11	17:55:42	1	Sh	E
15	00:38:24	1	Oc	D
	00:44:18	2	Oc	D

1	2	3	4	5
16	21:53:48	1	Tr	I
	23:13:00	1	Sh	I
	00:04:06	1	Tr	E
	01:22:42	1	Sh	E
17	19:06:48	1	Oc	D
	19:23:42	2	Tr	I
	20:06:42	3	Oc	D
	21:44:24	2	Tr	E
	22:00:18	2	Sh	I
	22:06:30	3	Oc	R
	22:36:24	1	Ec	R
	00:19:48	2	Sh	E
	01:37:24	3	Ec	D
18	18:32:42	1	Tr	E
	19:51:42	1	Sh	E
19	19:08:42	2	Ec	R
23	23:48:36	1	Tr	I
	01:09:06	1	Sh	I
24	21:01:06	1	Oc	D
	21:57:18	2	Tr	I
	00:04:06	3	Oc	D
	00:18:42	2	Tr	E
	00:31:48	1	Ec	R
	00:36:12	2	Sh	I
25	18:17:30	1	Tr	I
	19:38:00	1	Sh	I
	20:28:00	1	Tr	E
	21:47:42	1	Sh	E
26	19:00:36	1	Ec	R
	19:03:24	2	Oc	R
	19:25:06	2	Ec	D
	21:47:42	2	Ec	R
28	19:56:00	3	Sh	I
	21:35:48	3	Sh	E
31	22:56:30	1	Oc	D
	00:33:12	2	Tr	I

This sky map for January is drawn for mid-northern latitudes, to be used around 9:30 p.m. local time



For star maps of other months please visit http://astron-soc.in/outreach/resources/sky-maps/

For notes on stargazing click here.

Or visit https://skytonight.wordpress.com/monthly-sky-notes-and-links/

Acknowledgements:

http://www.lunar-occultations.com/iota/occult4.htm

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https://eclipse.gsfc.nasa.gov/SKYCAL/SKYCAL.html by Fred Espenak and Sumit Dutta.

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https://www.gimp.org/

These pages are contributed by:

Arvind Paranjpye (paranjpye.arvind@gmail.com) (http://arvindparanjpye.blogspot.com/) and Anjanee Rao (rao.anjanee@gmail.com)