



Sun, Planets and Transitions

The **Sun** will be in Gemini, the Twins (*Mithuna*) on 1 July; its angular diameter will be 31'28". The Earth reaches aphelion, its farthest point from the Sun, on 5 July, around 11:30 hours IST. The Earth-Sun distance will be about 1.0167 AU. The Sun's angular diameter will decrease slightly over these four days. It will then start increasing as the Earth moves closer to the Sun. On 20 July the Sun moves to Cancer, the Crab (*Karka*). On 31 July, the Sun's angular diameter increases by four seconds of arc to 31'31".

Mercury will be in Gemini on 1 July. It will cross over to Cancer on 2 July, and then to Leo, the Lion (*Simha*) on 14 July. It passes through M44, the Beehive cluster, on 7 July. It is about 2° away from Regulus (*Magha*) on 26 July.

After its superior conjunction, **Venus** will reappear in the evening sky in July. We will start seeing the planet over the western horizon after sunset. It will be in Gemini on 1 July. It will cross over to Cancer on 10 July. Venus will pass through the Beehive cluster on 18 July. On 26 July, it will move to Leo.

See below for the track of Venus in its 2024/25 appearance.

Mars will be in Aries, the Ram (*Mesha*) on 1 July. It will then cross over to Taurus, the Bull (*Vrushabha*). On 15 July it will pass within half a degree of Uranus.

Jupiter and **Saturn** continue to remain in Taurus 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

List of Events in July 2024 (Time in IST)

Dt	Dy	Time	Event
01	Mo	23:57	Moon-Mars: 4.2° S
02	Tu	13:34	Uranus 3.8° S of Moon
02	Tu	21:01	Moon-Pleiades: 0.3° N
03	We	12:08	Jupiter 4.9° S of Moon
05	Fr	05:38	Moon north declination: 28.4° N
05	Fr	11:29	Aphelion: 1.0167 AU
06	Sa	04:27	New Moon
06	Sa	18:16	Venus 5.6° S of Pollux
06	Sa	21:17	Venus 3.8° S of Moon
07	Su	02:42	Mercury-Beehive: 0.1° S
07	Su	21:34	Moon-Beehive: 3.3° S
08	Mo	02:07	Moon-Mercury: 3.5° S
08	Mo	13:44	Jupiter-Aldebaran: 4.8° N
09	Tu	13:34	Regulus 2.8° S of Moon
10	We	04:38	Jupiter 4.8° N of Aldebaran
12	Fr	13:42	Moon Apogee: 404400 km
13	Sa	03:57	Moon descending node (Ketu)
14	Su	04:19	First quarter
14	Su	07:18	Moon-Spica: 1° S
15	Mo	19:54	Mars 0.5° S of Uranus
18	Th	01:07	Moon-Antares: 0.2° S
19	Fr	16:29	Moon south declination: 28.4° S
21	Su	01:05	Mars-Pleiades: 4.8° S
21	Su	15:47	Full Moon
22	Mo	12:29	Mercury elongation: 26.9° E
24	We	11:13	Moon perigee: 364900 km
25	Th	02:08	Moon will occult Saturn — see below
25	Th	07:10	Mercury-Regulus: 2° S
25	Th	19:55	Neptune 0.5° S of Moon
26	Fr	16:12	Mercury 2.2° S of Regulus
26	Fr	11:03	Moon ascending node (Rahu)
28	Su	03:14	Delta Aquarid shower: ZHR = 20
28	Su	08:22	Last quarter
29	Mo	20:51	Uranus 4.0° S of Moon
30	Tu	02:43	Moon-Pleiades: 0.1° N
30	Tu	14:03	Mars 4.9° S of Moon
31	We	03:52	Jupiter 5.3° S of Moon



◀ Please scan this QR code if you would like to receive this newsletter directly in your inbox or send an email to astronomydiy@gmail.com

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.)

March of the Moon

During the first few days of July 2024 the Moon, Mars, Jupiter, the Pleiades and Hyades clusters can be seen over the eastern horizon in the pre-dawn sky, along with Aldebaran.

On 2 July, the 18% illuminated lunar crescent can be seen northeast of Mars. The following day on 3 July, an even thinner lunar crescent will be north of the half-way mark between

the Pleiades and Jupiter.

New Moon is on 6-7 July, following which a thin lunar crescent can be seen northwest of Mercury in the evening sky.

The 13% lunar crescent will be north of Regulus (*Magha*) on 9 July. The Moon will occult a 5.6 magnitude globular cluster, M4, on the night of 17 and 18 July. This is a large globular cluster that can be seen through a pair of binoculars.

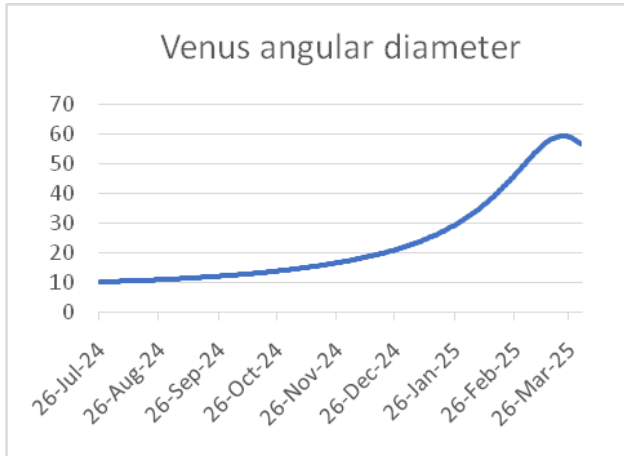
The Moon crosses the Teapot asterism of Sagittarius (*Dhanu*) between 19 and 20 July. On 25 July, the Moon will occult Saturn (see below).

The Moon, Mars, Jupiter, the Pleiades and Hyades clusters and Aldebaran will be together once again on 30 July.

Venus in 2024-25



Venus reappears above the western horizon after sunset in the first half of July 2024. It will travel southward, almost parallel to the horizon, until the end of September. After that, it will continue to travel southward but its altitude will start increasing. Until about this time its angular diameter will be close to 15 seconds of arc. After December it will start moving northward; and by January 2025 it will reach its highest altitude. By the third week of March 2025 its angular diameter will be close to one minute of arc.



☞ From July to December 2024, the angular diameter of Venus will remain almost steady around fifteen arc seconds. By the end of December the angular diameter will start increasing until it reaches almost one arc minute by the third week of March 2025

Occultation of Saturn by the Moon

On the night of 24 July, Saturn will be hidden by the Moon. In technical terms, this is called the occultation of Saturn by the Moon. This event will be visible over most places in India. The waxing Moon will be 84% illuminated. Saturn will disappear behind the illuminated limb of the Moon. It will reappear from behind the dark limb. How Saturn appears against the lunar limb will depend on the location of the observer. See the illustrations below.



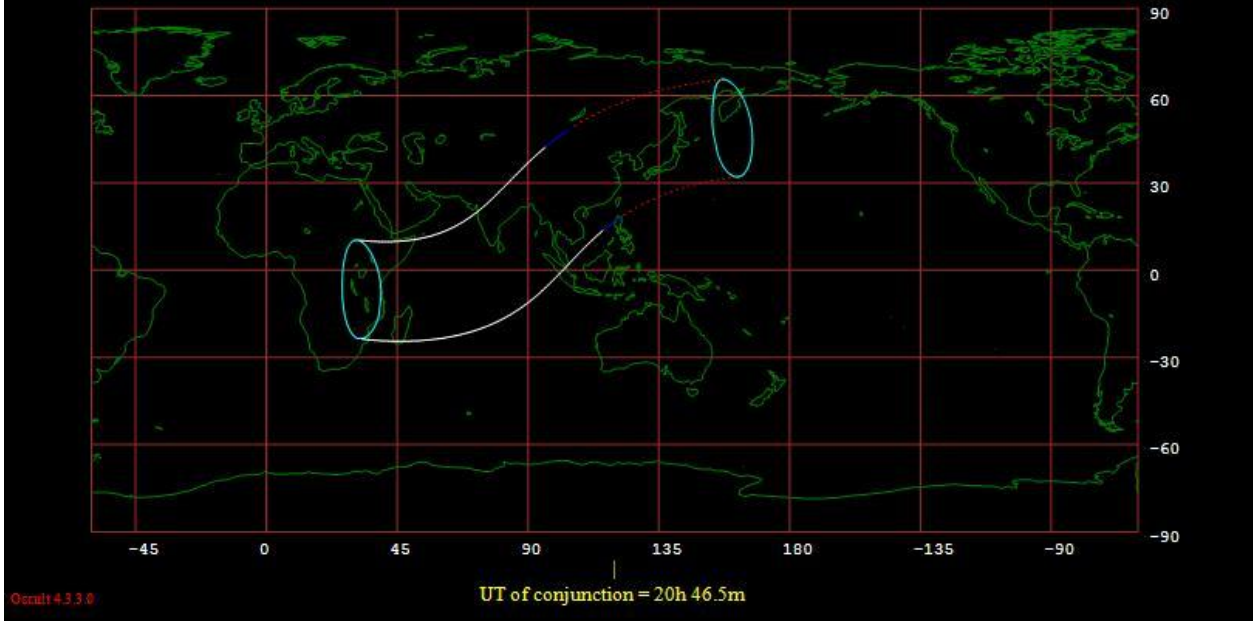
☞ How Saturn appears against the lunar limb will depend on the location of the observer.



The map below gives the track of the occultation across the globe. The coloured lines have the following meaning:

- Cyan: The curves of occultation D (disappearance) or R (reappearance) at moonrise or moonset
- White continuous line: The northern and southern occultation limits (graze paths), with the event occurring during the dark hours
- Blue continuous line: Occultation limits, event in twilight
- Red dotted line: Occultation limits, event in daylight

Occultation of Saturn, Magnitude 0.9, on 2024 Jul 24



City	Disappearance		Reappearance	
	Time (IST)	Alt°	Time (IST)	Alt°
Agartala	01:44:10	58	02:54:23	60
Aizawl	01:45:18	58	02:57:49	59
Amravati	01:15:49	52	02:19:49	63
Bengaluru	01:03:21	49	02:09:07	62
Bhopal	01:42:48	51	02:04:04	54
Bhubaneswar	01:30:24	56	02:37:40	63
Chennai	01:06:02	52	02:16:43	65
Dispur	01:50:21	56	02:56:44	57
Gangtok	01:52:01	54	02:47:46	57
Guwahati	01:50:21	56	02:56:37	57
Hyderabad	01:17:18	50	02:13:37	60
Imphal	01:48:58	58	03:01:20	58

City	Disappearance		Reappearance	
	Time (IST)	Alt°	Time (IST)	Alt°
Itanagar	01:54:01	56	03:01:41	56
Kavaratti	00:52:31	43	01:53:43	57
Kohima	01:51:07	57	03:02:15	57
Kolkata	01:38:33	57	02:46:01	61
Lucknow	01:55:57	52	02:15:28	54
Mumbai	01:25:15	47	01:50:00	51
Panaji	01:09:19	46	01:57:52	56
Patna	01:46:10	54	02:36:16	58
Port Blair	01:20:55	65	02:42:21	72
Puducherry	01:02:33	51	02:14:27	65
Raipur	01:31:14	53	02:24:40	60
Ranchi	01:37:49	55	02:36:07	60
Thiru'puram	00:50:59	47	02:03:42	63

In the table above, the timings are computed for the centre of Saturn's disk, which has an appreciable angular size. Saturn will take nearly a minute to disappear or reappear from behind the Moon. The limbs of the Moon and Saturn will therefore touch each other almost 50 seconds earlier than the timings given above. Data is given only for those locations from where the event is observable. It is advisable to start observations about 10 minutes prior to the timing giving for a particular location.

Some links:

- ▶ To learn how to make an electronic eyepiece to watch the event on your computer monitor and record it, [click here](#).
- ▶ New to occultation observation? [Click here](#).
- ▶ The uploaded KMZ file can be loaded onto Google Earth. Click [here](#) to download this file and save it to some directory. Now open Google Earth, click on the file menu, then click 'Import KML/KMZ file' (or Ctrl + I) to upload the file where you saved it. You should see the northern and southern limits of the event.
- ▶ For the occultation timings of the disappearance and reappearance over about 80 locations in India, [click here](#).

Acknowledgement

[Occult 4](#), David Herald's Occultation Prediction Software, has been used to calculate the predictions. Stellarium, a free, open-source desktop planetarium software, has been used to generate the simulation.

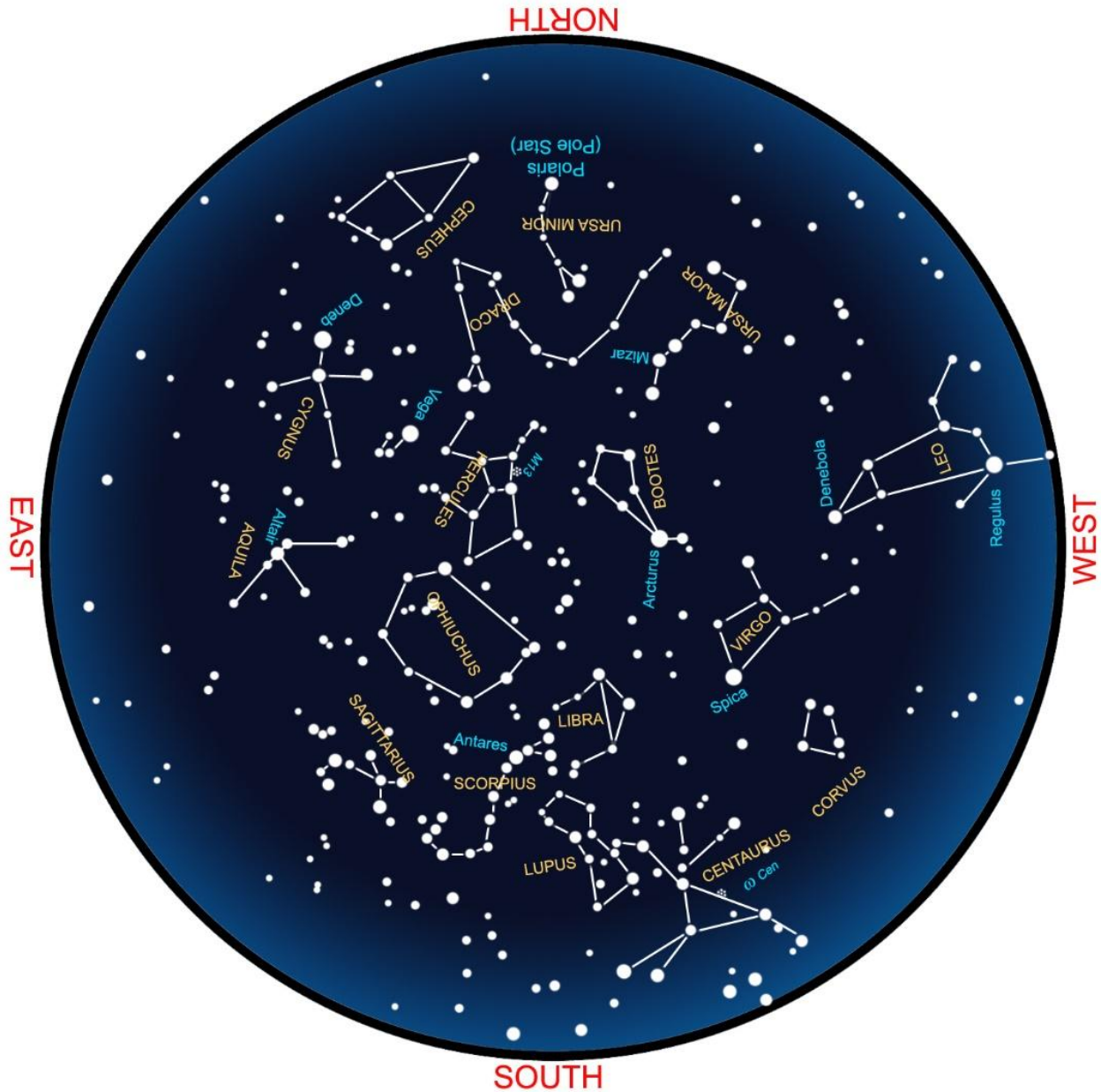
Please note that a lot of effort goes into making such information available. You are welcome to use this information, but please do not forget to acknowledge the source.

Is this a rare event?

NO! the occultation of planets by the Moon is not rare. About 14 Saturn occultations occur over a period of 18 months after every four years. These events are visible over some regions of the Earth. They begin over the Antarctic region and end over the Arctic region. Some events take place during the day time.

The next event in this series will take place on 21 August 2024. It will not be visible over India. Most part of the event on 17 September will be visible only over the Pacific Ocean and some regions of western United States. The 14 October 2024 event will be entirely visible throughout India. During this event, Saturn will disappear over the dark limb of the Moon and reappear over the bright limb.

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



Acknowledgements:

<https://eclipse.gsfc.nasa.gov/SKYCAL/SKYCAL.html> by Fred Espenak and Sumit Dutta.
Graphics using GNU Image Manipulation Program (GIMP) a cross-platform image editor.
<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)