SkyNews Astronomical events for Indian observers

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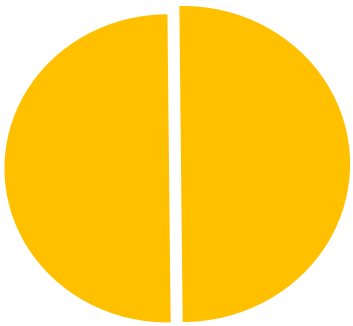
Sun, Planets and Transitions

The **Earth** will be at aphelion, which is its farthest distance from the **Sun,** on 6 July at 8:29 am IST. The Earth's distance from the Sun will be 1.0167291 AU; its angular diameter will be 31'28". After the Earth crosses aphelion, the angular diameter of the Sun will start increasing. It will rise to 31'32" by 31 July.

We suggest a simple project. Try taking a picture of the Sun at about 10:30 am on any day close to perihelion. Repeat this exercise once every month at the same time. Please note that you must keep the focal length of the lens fixed.

On 4 Jan 2022, the Earth will be at its perihelion point. On that day the angular diameter of the sun will be 32'32", about 3.4% larger than that on 6 July. It should be possible for you to make out the difference between the sizes of the two images (as shown below).



On 1 July the **Sun** is in Gemini, the Twins (*Mithuna*) and transits to Cancer, the Crab (*Karka*) on 21 July.

Mercury transits from Taurus, the Bull (*Vrushabh*) to Orion, the Hunter (*Mriga*) on 10 July and then to Gemini on 12 July. After that it transits to Cancer.

Venus transits from Cancer to Leo, the Lion (*Simha*) on 12 July.

List of Events in July 2021

Dt	Dy	Time	Event
02	Fr	02:41	Last quarter
03	Sa	08:15	Venus-Beehive: 0.1° N
05	Mo	01:29	Mercury elongation: 21.6° W
05	Mo	20:18	Moon apogee: 405300 km
06	Tu	08:29	Earth at aphelion: 1.0167 AU
07	We	04:11	Moon ascending node
08	Th	10:08	Mercury 4.1° S of Moon
09	Fr	15:35	Moon north declination: 25.6° N
10	Sa	06:46	New Moon
12	Mo	14:40	Venus 3.5° S of Moon
12	Mo	15:40	Mars 4° S of Moon
13	Tu	18:47	Mars 0.5° N of Venus
17	Sa	15:41	First quarter
20	Tu	18:52	Moon descending node
21	We	16:00	Moon perigee: 364500 km
22	Th	08:49	Regulus 1.1° N of Venus
22	Th	20:42	Moon south declination: 25.6° S
24	Sa	08:07	Full Moon
24	Sa	22:12	Saturn 3.9° N of Moon
26	Mo	06:47	Jupiter 4.3° N of Moon
28	We	08:47	Delta Aquarid Shower: ZHR = 20
30	Th	06:49	Regulus 0.6° N of Mars
31	Sa	18:46	Last Quarter

The table below gives Venus' phase, elongation (Sun-Earth-Venus angle) and angular diameter. The magnitude of Venus will remain constant at -3.9.

Date	Phase	El(°)	Diam(")
01 Jul 2021	0.899	25.2	11.17
11 Jul 2021	0.876	27.8	11.57
21 Jul 2021	0.852	30.3	12.05
31 Jul 2021	0.825	32.7	12.60

Mars transits from Cancer to Leo on 10 July.

Jupiter and **Saturn** are now close to the western horizon at sunrise. Jupiter continues its retrograde motion in Aquarius, the Water- Bearer (*Kumbha*);

Saturn too continues its retrograde motion within Capricorn, the Horned Goat (*Makar*). In a few days both the planets will be visible above the eastern horizon at sunset.

(*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*.)

March of the Moon

During the first 10 days of July 2021, the Moon can be seen in the morning sky above the eastern horizon. It will be about 4° south of the Pleiades (*Kruttika*).

On 8 July the thin lunar crescent can be seen about 4° north of Mercury. On this morning the Moon will be halfway between Alnath (β Tauri, mag 1.7, called *Agni* in Indian astronomy) and Mercury. About 16 arcseconds north of Mercury will be Zeta Tauri (mag 2.9). The Crab Nebula lies about halfway between the Moon and Zeta Tauri.

The Moon will then reappear above the western horizon soon after sunset. The next few days will offer good photo-opportunities. You may consider taking photo sequences even if the sky is has passing clouds. The evening of 12 July will present a great evening sight with the thin lunar crescent just about 3° north of Mercury and Venus. (See below for the planet-planet and planet-star conjunctions.)

On 13 July the 13% illuminated moon can be seen right above Regulus (*Magha*). On 18 July it will be above Spica (α Virginis, *Chitra*). It will pass 4° above Antares (α Scorpii, known as *Jyeshtha* in Indian astronomical nomenclature), on 21 July.

The Full Moon on 24 July will be about 4° south of Saturn; then on 25 July, it can be seen south of Jupiter.

Conjunctions

Venus and Mars

After the conjunction of Jupiter and Saturn in December 2020, there will be another interesting planetary conjunction on 13 July 2021 at 19:04 hours. Mars and Venus will be separated by 0°28'08". This event will demonstrate the contrast in brightness and colour of the two planets. Venus will be a -3.9 magnitude dazzling white object, while Mars will be a ruddy red 1.8 magnitude object. Venus will be nearly 190x brighter than Mars.

Venus and Mars with Regulus

On the 22nd and 30th of July, Regulus (mag 1.4) will be seen south of Venus and Mars respectively. Venus will about 130 times brighter than Regulus and will appear as a white object; whereas Mars will be just about 1.5 times brighter than Regulus, but will show good colour contrast. The conjunctions will take place during the early morning in India. Given below are the times of the conjunctions of the star and the planets, and their separation.

The observation of Venus and Regulus will be relatively easy; but locating Mars and Regulus a week later might be a challenge. The pair will be just about 10° above the western horizon at the end of evening civil twilight.

Venus - Regulus

21 July after sunset: Separation = 1°15'45"

22 July conjunction at 08:49: Separation = 1°05'16"

22 July after sunset: Separation = 1°13'18"

Mars - Regulus

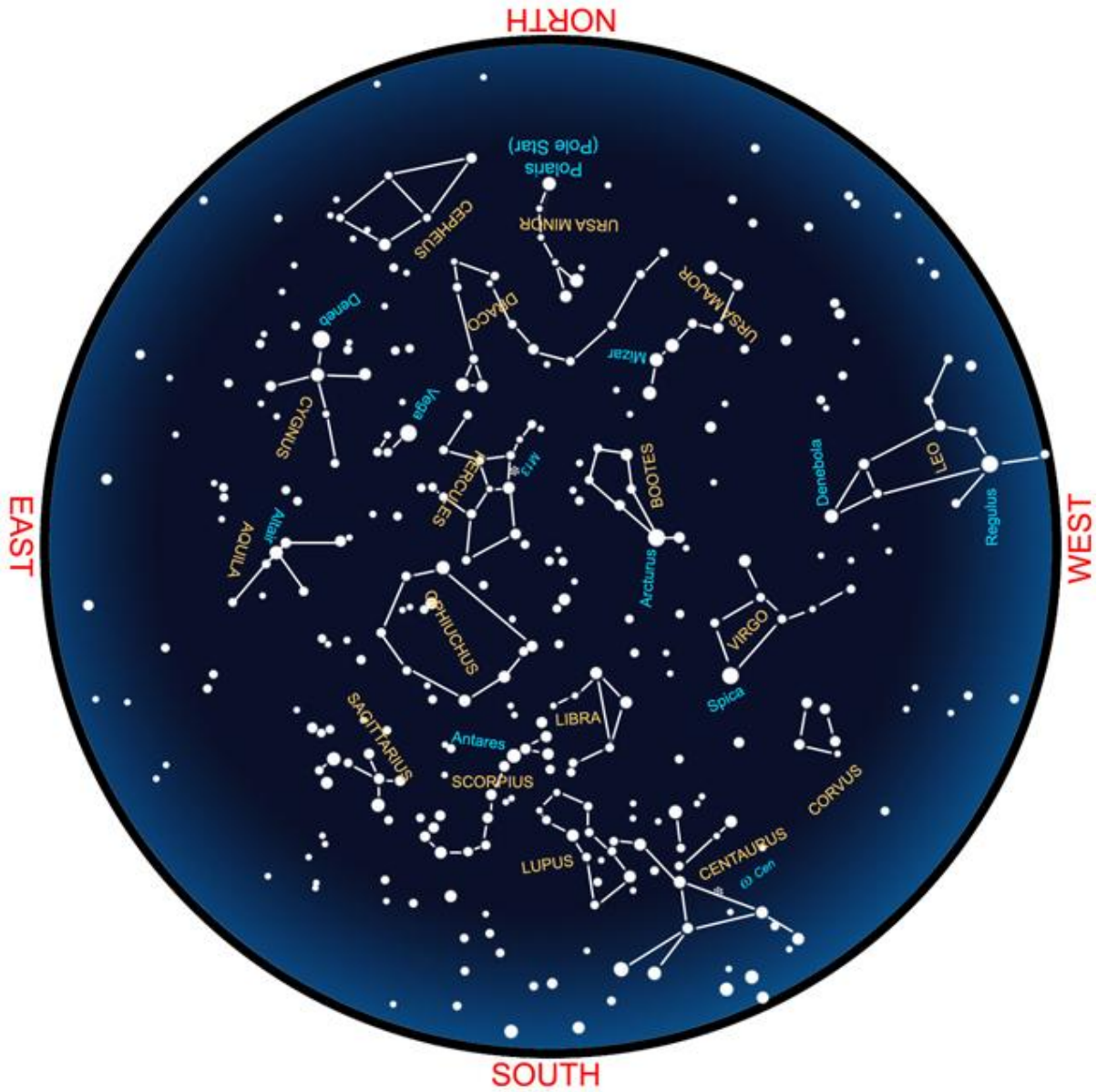
29 July after sunset: Separation = 0°41'43"

30 July conjunction at 06:49: Separation = 0°38'07"

30 July after sunset: Separation = 0°43'19"

Graphic Visualisations of Conjunctions for latitude 22° N

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



For notes on stargazing click here.
Or visit https://skytonight.wordpress.com/monthly-sky-notes-and-links/

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