

PRESS RELEASE NOVEMBER 2023





ASTRONOMICAL DIARY

PREPARED BY ASTRONOMICAL PUBLICATION AND PLANETARIUM UNIT, SPACE SCIENCE AND ASTRONOMY SECTION

ASTRONOMICAL EVENTS, NOVEMBER 2023

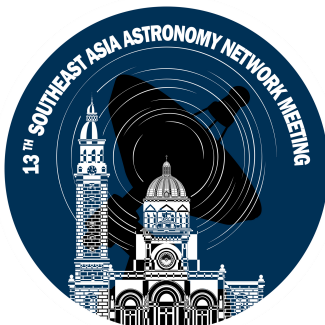
DATE	EVENT	TIME
03	Jupiter at opposition	
07	Moon at Apogee (Distance = 404,499.468 km)	05:49 a.m.
09	Conjunction of Moon and Venus	
09	Close approach of Moon and Venus	
13	Northern Taurid Meteor Shower (ZHR = 5)	12:00 a.m.
18	Leonid Meteor Shower (ZHR = 15)	05:00 a.m.
20	Conjunction of Moon and Saturn	
20	Close approach of Moon and Saturn	
22	Moon at Perigee (Distance = 369,849.851 km)	05:01 a.m.
25	Close approach of Moon and Jupiter	
25	Conjunction of Moon and Jupiter	

PHASES OF THE MOON

	Last Quarter Nov 05 04:37 p.m.
	New Moon Nov 13 05:27 p.m.
	First Quarter Nov 20 06:50 p.m.
	Full Moon Nov 27 05:16 p.m.

RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Nov 01	06:24 am	05:53 pm	02:42 am	02:54 pm	06:15 am	05:45 pm	05:33 pm	06:09 am*	01:39 pm	01:19 am*
Nov 11	06:53 am	06:10 pm	02:47 am	02:52 pm	06:06 am	05:31 pm	04:48 pm	05:24 am*	01:00 pm	12:40 am*
Nov 21	07:20 am	06:30 pm	02:53 am	02:50 pm	05:57 am	05:19 pm	04:05 pm	04:39 am*	12:21 pm	12:01 am*
Nov 30	07:39 am	06:47 pm	03:01 am	02:50 pm	05:50 am	05:08 pm	03:26 pm	03:59 am*	11:47 am	11:23 pm



SOUTHEAST ASIA ASTRONOMY NETWORK MEETING

ASTRONOMY EVENT OF THE MONTH

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the National Astronomical Research Institute of Thailand (NARIT) are pleased to host this year's 13th Southeast Asia Astronomy Network Meeting (SEAN 2023), which will be held in Manila, the Philippines, from 28 - 29 November 2023. The theme of the meeting is "Radio Astronomy Development in Southeast Asia."

The development of radio astronomy in Southeast Asia is a significant achievement, and it has the potential to make a major contribution to our understanding of the universe. Radio astronomy can be used to study a wide range of astronomical phenomena, including the formation and evolution of galaxies, the physics of black holes and neutron stars, the search for exoplanets, and the study of the cosmic microwave background.

Visit the official event link for more details: indico.narit.or.th/event/SEAN2023

Notes:

[1] All times displayed are in Philippine Standard Time (PhST)

[2] *following day

"tracking the sky...helping the country"

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Telephone Number: 8-284-0800 loc 3015, 3016, 3017

Website: <https://bagong.pagasa.dost.gov.ph>

Stars and Constellations

The constellations best seen this November are Cepheus, Cassiopeia, Andromeda, and Pisces in the northern sky, while Cetus, Hydrus, Phoenix, Sculptor, and Tucana are most visible in the southern sky. Figure 1 shows the view of the sky on 15 November at around 09:00 p.m. when the November constellations are situated overhead [1,2].

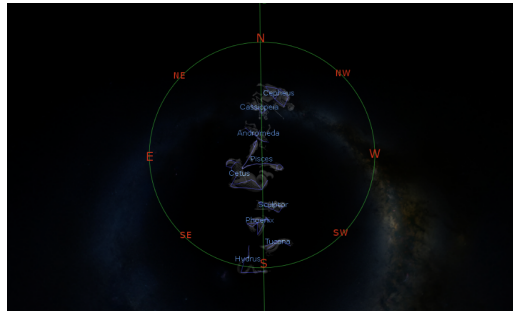


Figure 1: The view of the night sky featuring the prominent November constellations at 09:00 p.m. on 15 November 2023, using the Stellarium software

Cepheus and Cassiopeia are circumpolar constellations in the northern skies and are observable throughout the year. The northernmost constellation is Cepheus, which represents the mythical King Cepheus. Its brightest stars are Alderamin (Alpha Cephei), Errai (Gamma Cephei), Alfirk (Beta Cephei), and Kurhah (Xi Cephei). The star Errai never sets below the horizon and can be easily seen by the naked eye, with a magnitude of 3.20. Several well-known deep sky objects may be found in Cepheus, including the Wizard Nebula, the Iris Nebula, the Ghost Nebula, and the Fireworks Galaxy, along with VV Cephei and the Garnet Star (Mu Cephei) (See Figure 2) [2].

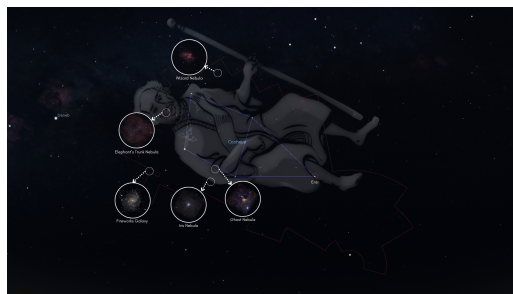


Figure 2: The Cepheus constellation showing its third brightest star Errai encircled in red and some deep-sky objects at 09:00 p.m. on 15 November 2023, using the Stellarium software.

Above Cassiopeia and just beneath Pegasus is the constellation Andromeda. This constellation is best known for having the Andromeda Galaxy (Messier 31), the nearest spiral galaxy to the Milky Way (Figure 3). It is approximately 2.54 million light-years away, has a magnitude of 3.44, and can be seen by the naked eye, under good sky conditions. It is positioned at 8 degrees to the northwest of Mirach. When viewed via binoculars, a small cloud peeks through the night sky, providing an excellent opportunity for skygazers. It is accompanied by the dwarf elliptical galaxies Messier 32, also called Le Gentil and Messier 110. The brightest stars in the constellation are Alpheratz, Mirach, and Almach [2].



Figure 3: The Andromeda constellation showcasing the Andromeda Galaxy (Messier 31) at 09:00 p.m. on 15 November 2023, using the Stellarium software

Pisces (Psc) is one of the most known zodiac constellations. Its brightest star is Eta Piscium, also known as Kullat Nunu. Beneath the Great Square of Pegasus and the Water Jar of Aquarius lies a known asterism called the "Circlet of Pisces." The circlet asterism symbolizes the head of the western fish composed of stars Gamma, Kappa, Lambda, TX, Iota, and Theta Piscium [2].

Cetus, often called the Whale, is named after the sea monster from Greek mythology. Cetus's brightest star is Diphda (Beta Ceti), also known as Deneb Kaitos, followed by Menkar (Alpha Ceti) and Mira (Omricon Ceti). Cetus is home to notable deep-sky wonders. Messier 77, a barred spiral galaxy, and the enigmatic Skull Nebula are among them. These celestial gems invite exploration and contemplation under the starry canvas [2].

The Sculptor constellation is located in the southern hemisphere. It is known for the Sculptor Galaxy (NGC 253), the Sculptor Dwarf Galaxy, and NGC 288 (Figure 4). Beneath is Phoenix, named after the mythical bird, which contains stars like Ankaa and Beta Phoenicis, with notable deep-sky objects including Robert's Quartet [2].



Figure 4: The Sculptor constellation and Phoenix constellation at 09:00 p.m. on 15 November 2023, using the Stellarium software

Directing our gaze downward from Sculptor, we encounter the Tucana constellation. Tucana hosts celestial wonders within its cosmic boundaries, like the Tucana Dwarf galaxy, the Small Magellanic Cloud, the globular cluster 47 Tucanae, and many other remarkable deep-sky objects. This constellation finds its place within the celestial assemblage known as the "Southern Birds" group. Meanwhile, the southernmost constellation is Hydrus, with its bright star Beta Hydri and deep sky objects like the globular cluster NGC 1466 and spiral galaxy PGC 6240 (White Rose Galaxy) [2].

Planetary Location

Mars and **Mercury** will not be visible this November due to their proximity to the Sun. However, towards the end of the month, Mercury will be observable just after sunset at about 10° above the horizon in the west-southwestern sky (Figure 5) [1,3].

Venus can be observed as an early morning planet this month and will rise above the horizon at around 03:00 a.m. Among the background stars of the constellation Virgo, on 09 November at 05:30 p.m., the waning Crescent Moon and Venus will be in conjunction, where the Moon and Venus will be apart by 1.01° from each other. The pair will then be at close approach after an hour at 06:34 p.m. passing within 53.1 arcminutes of each other. The conjunction and close pairing will be unobservable since both will be below the horizon, so the best time to observe this pairing is at 05:00 a.m. on 09 November (Figure 6) [4,5].

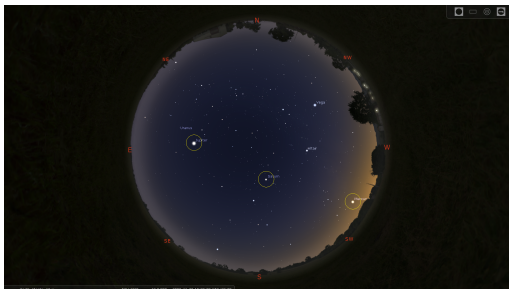


Figure 5: The view of the sky on 30 November 2023 at 06:00 p.m. showing the position of Mercury near the west-southwest horizon, Jupiter and Saturn, high above the sky after sunset, using the Stellarium application



Figure 6: The view of the sky on 09 November 2023 showing the position of the Moon and Venus before the exact event in the eastern sky at 05:00 a.m., using the Stellarium application



Figure 7: The view of the sky showing the conjunction of the Moon and Jupiter on 25 November 2023 at 07:14 p.m. facing the eastern sky, using the Stellarium application



Figure 8: The view of the west-southwestern sky showing the position of the Moon and Saturn during their close approach on 20 November 2023 at 10:06 p.m., using the Stellarium application

On 03 November at 01:02 p.m., **Jupiter** will reach opposition and will appear almost opposite the Sun in the sky. As a result, Jupiter will be visible during the whole night until it sets on the horizon just before sunrise. It will reach its highest point in the sky around midnight. Moreover, there will be a close approach of the Moon and Jupiter on 25 November at 05:19 p.m., passing within $2^{\circ}31'$ of each other. Subsequently, the pair will also be in conjunction 2 hours later at 07:14 p.m. being separated by 2.77° from each other (Figure 7) [3,6,7,8]

Meanwhile, **Saturn** still dominates the evening sky and is close to the meridian after Sunset. It will be visible at night throughout the month until it gradually fades into the west-southwestern sky before midnight. Moreover, the Moon and Saturn will be in conjunction on 20 November at 10:06 p.m., where the Moon and Saturn are apart by 2.73° (Figure 8). Likewise, the pair will have a close approach, passing within $2^{\circ}29'$ of each other at 11:58 p.m. However, the close approach will be unobservable since the Moon and Saturn will hang low on the horizon since both will set in the western horizon at 11:59 p.m. and 12:04 a.m. respectively [3,9,10].

Meteor Shower

The Leonid Meteor Shower, produced by comet 55P Tempel-Tuttle, is active from 06 November to 30 November, with peak activity occurring on 18 November. The meteor shower is expected to have 15 meteors per hour and will be active once the radiant, Leo, rises in the northeastern sky before midnight until before sunrise on 18 November. The number of visible meteors increases as the radiant ascends to its highest point in the sky at around 05:00 a.m. (Figure 9). As the shower is at its peak, the Moon in Sagittarius will be around at the first quarter phase, presenting minimal interference [11].

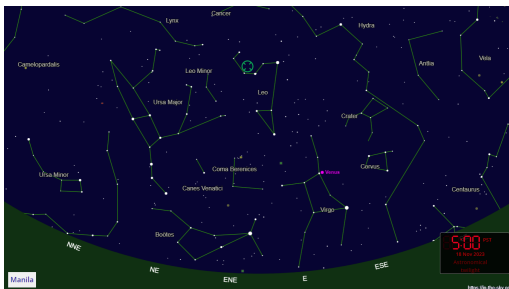


Figure 9: The view of the northeastern sky during the peak of Leonids on 18 November 2023 at 05:00 a.m. where the green solid circle represents the shower's radiant.

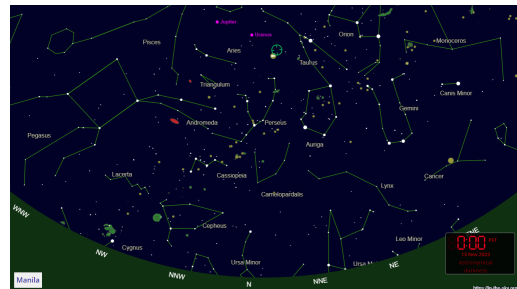


Figure 10: The view of the east-northeastern sky during the peak of Northern Taurids on 13 November 2023 at 00:00 a.m. where the green solid circle represents the shower's radiant.

The Northern Taurid Meteor Shower, produced by fragments of asteroid 2004 TG10, is active from 20 November to 10 December, with its peak activity occurring on 12-13 November. The meteor shower is anticipated to produce five (5) meteors per hour and will be active once the radiant in Taurus rises in the east-northeastern sky after sunset until just before sunrise on 13 November. The shower will peak close to the new Moon, and so the moonlight will present minimal interference (Figure 10) [12].

Special tools, such as binoculars or telescopes will not be necessary to view the meteor showers this month as they can be observed with the naked eye. However, choose a dark location away from city lights with a clear sky and no moon to maximize the viewing experience.

Calendar of Astronomical Events for November 2023

Table 1 shows a summary of the astronomical events for November 2023. All times displayed are in Philippines Standard Time (PhST).

Table 1: The summary of astronomical events for November 2023

Date	Event	Time
03	Jupiter at opposition	
07	Moon at Apogee (Distance = 404,499.468 km)	05:49 a.m.
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20	Conjunction and Close approach of Moon and Saturn	
22	Moon at Perigee (Distance = 369,849.851 km)	05:01 a.m.
25	Close approach and Conjunction of Moon and Jupiter	

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References

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