DOST PAGASA
The Weather and Climate Authority

PRESS RELEASE NOVEMBER 2024

ASTRONOMICAL DIARY

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

ASTRONOMICAL EVENTS, NOVEMBER 2024

DATE	EVENT	TIME
05	Close approach of Waxing Crescent Moon and Venus	07:42 a.m.
05	Conjunction of Waxing Crescent Moon and Venus	08:15 a.m.
11	Close approach of Waxing Gibbous Moon and Saturn	09:38 a.m.
11	Conjunction of Waxing Gibbous Moon and Saturn	09:43 a.m.
14	Moon at Perigee (Distance = 360,204.917 km)	07:16 p.m.
15	Saturn enters retrograde motion	10:37 p.m.
16	Mercury at Greatest Elongation East	04:09 p.m.
17	Close approach of the Moon and Jupiter	09:52 p.m.
17	Conjunction of the Moon and Jupiter	10:53 p.m.
17	Leonid meteor shower (ZHR = 15)	---
18	Mercury at Highest Altitude in the Evening Sky	---
21	Mercury at dichotomy	08:32 a.m.
21	Conjunction of the Moon and Mars	05:09 a.m.
21	Close approach of the Moon and Mars	06:27 a.m.
26	Moon at Apogee (Distance = 405,255.192 km)	07:56 p.m.

PHASES OF THE MOON

New Moon
Nov 01 08:47 p.m.

First Quarter
Nov 09 01:55 p.m.

Full Moon
Nov 16 05:28 a.m.

Last Quarter
Nov 23 09:28 a.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	07:13 am	06:31 pm	08:41 am	07:51 pm	10:50 pm	11:44 am*	08:02 pm	08:59 am*	02:19 pm	02:07 am*
Nov 11	07:34 am	06:44 pm	08:55 am	08:04 pm	10:25 pm	11:18 am*	07:19 pm	08:15 am*	01:39 pm	01:27 am*
Nov 21	07:39 am	06:47 pm	09:08 am	08:17 pm	09:56 pm	10:49 am*	06:35 pm	07:31 am*	12:59 pm	12:48 am*
Nov 30	07:05 am	06:14 pm	09:18 am	08:30 pm	09:26 pm	10:19 am*	05:55 pm	06:51 am*	12:24 pm	12:13 am*

C/2023 A3
Tsuchinshan-ATLAS

Comet C/2023 A3 (Tsuchinshan-ATLAS) made its closest approach to Earth on 12 October 2024 at a distance of 0.46 AU, with an estimated visual magnitude of 2.8. This November, the comet is likely to vanish from our night sky as it is already on its return voyage to the outer solar system. This comet, referred to as the "comet of the century", will be visible again after another 80,000 years and that's only if it survives its orbit around the solar system. This image of Comet C/2023 A3 (Tsuchinshan-ATLAS) streaking across the western sky of the Philippines was taken on 18 October 2024.

Notes:
[1] All times displayed are in Philippine Standard Time (PhST)
*[2] *following day*

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Stars and Constellations

The northern constellations best observed in **November** are **Cassiopeia, Andromeda,** and **Pisces**. Meanwhile, the outstanding southern constellations are **Cetus, Sculptor, Phoenix,** and **Tucana**. The prominent constellations are placed directly overhead at 09:00 p.m. on 15 November 2024 as shown in Figure 1. [1,2]

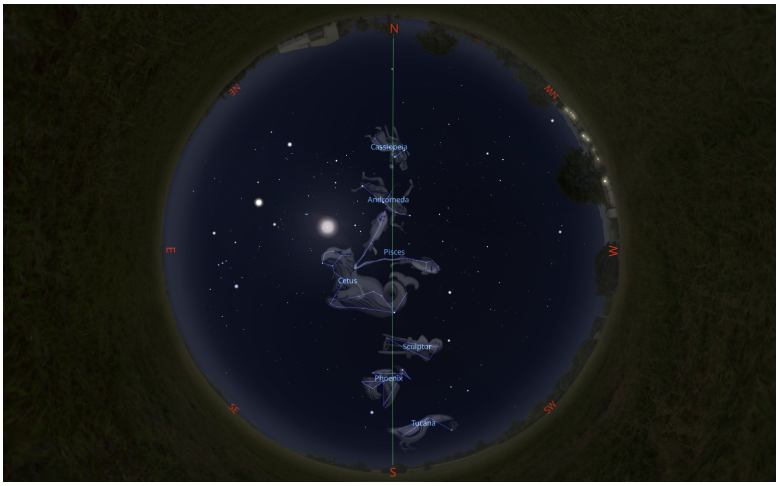

Figure 1: The view of the night sky featuring the prominent November constellations at 09:00 p.m. on 15 November 2024 using the Stellarium software.

Cassiopeia, the Seated Queen, is a circumpolar constellation that can be easily recognized by its five (5) brightest stars forming a "W" or "M" pattern. At magnitude 2.2, the orange giant Alpha Cassiopeiae, sometimes referred to by its given name Schedar, is typically the brightest star in the constellation, however, it is frequently outshone by Gamma Cassiopeiae, the eruptive variable star that can occasionally reach a brightness of magnitude 1.6. The constellation is home to several fascinating deep-sky objects. The Heart (IC 1805) and Soul (IC 1848) nebulae [Figure 2a], emission nebulae situated around 7,500 light-years away, are two of the most notable deep-sky objects in Cassiopeia. [2,3]

As the home of the largest neighbor of the Milky Way, the Andromeda Galaxy (M31) [Figure 2b], **Andromeda** is one of the most well-known constellations in the sky. Numerous deep-sky objects can be found in this constellation, in addition to the Andromeda Galaxy, including the Blue Snowball Nebula (NGC 7662) and NGC 752. The brightest star in the constellation, Alpheratz, is a binary system made up of two intense blue stars. [2,4]

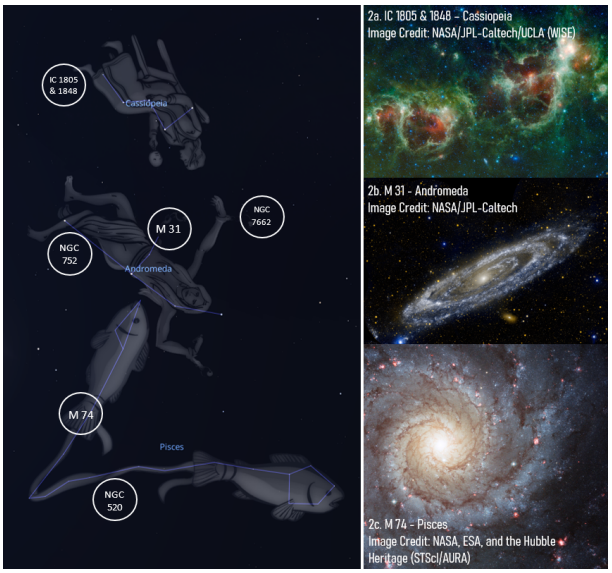

Figure 2: The Northern Constellations

Figure 3: The Southern Constellations

Pisces, the Fishes, is a relatively faint constellation that is one of the twelve (12) constellations of the zodiac. Its brightest star, Eta Piscium, also known as Alpherg or Kullat Nunu, with a magnitude of 3.62, is a massive star situated approximately 294 light-years away from Earth. It is a wealth of fascinating deep-sky objects, including the Phantom Galaxy (M74) [Figure 2c], a stunning face-on spiral galaxy that is one of the faintest

Messier objects, and the interacting galaxies, NGC 520. [2,5]

Cetus, the Whale, is an equatorial constellation that is observable from most areas in the Earth. With an area of 1,231 square degrees, it is considered the fourth (4th) largest constellation in the sky. Noteworthy stars are located in Cetus. Its brightest star, Diphda (Beta Ceti), is an orange giant that is around 96 light years away from Earth. The most famous star in the constellation, Mira or Omicron Ceti, is the first discovered variable star. Aside from the distinguished stars, the constellation also hosts fascinating deep-sky objects, such as Messier 77, a barred spiral galaxy that is one of the brightest galaxies in the sky, and the Skull Nebula (NGC 246) [Figure 3a]. [2,6]

Tucana, the Toucan, one of the Southern Birds in the sky, is well-known among stargazers in the south because it contains two brilliant, remarkable deep-sky objects, the globular cluster 47 Tucanae and most of the Small Magellanic Cloud (SMC). In addition, the constellation houses star clusters NGC 346 [Figure 3b] and NGC 602 [Figure 3c] placed within the SMC. Its brightest star is Alpha Tucanae, a spectroscopic binary star with an apparent visual magnitude of 2.86. [2]

Planetary Location

Mercury can be seen sitting low on the western sky while **Venus** will be visible about two to three hours after sunset as it sets in the southwestern horizon. **Saturn** will be present in the night sky from early evening until it dives into the western horizon an hour after midnight. **Jupiter** and **Mars** can be observed rising in the east as late-evening objects. [1,7]

On 05 November at 07:42 a.m., the **Waxing Crescent Moon** and **Venus** will approach closely, passing within 3°05' of each other. It will be followed by the conjunction between these two objects, separated by 3°06', at 08:15 a.m. The exact event will not be observable as the two objects are still below the horizon. However, the best time to view their close pairings is at 06:00 p.m. on the same day until they set in the southwestern horizon [Figure 4], with the Moon shining at magnitude -10.3 and Venus at magnitude -4.0. [7,8,9]

Figure 4: The view of the southwestern sky showing the close pairing of the Waxing Crescent Moon and Venus on 05 November at 06:00 p.m. using Stellarium.

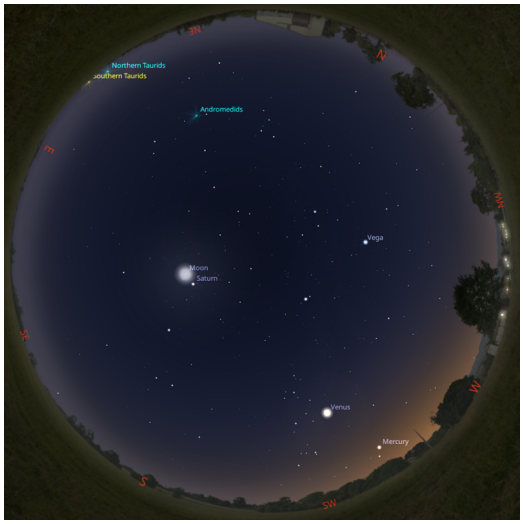

Figure 5: The view of the night sky showing the close pairing of the Waxing Gibbous Moon and Saturn on 11 November at 06:00 p.m. using Stellarium.

The **Waxing Gibbous Moon** and **Saturn** will make a close approach on 11 November at 09:38 a.m., passing within a mere 4.7 arcminutes of each other. At about the same moment, the 10-day-old Moon will pass 5'24" north of Saturn as they will be in conjunction. Both objects lie behind the background stars of Aquarius. The exact timing of these events will not be visible for both objects are still below the horizon, but their close pairing can be seen around 06:00 p.m. on 11 November until they sink in the western horizon [Figure 5]. [7,10,11]

On 15 November at 10:37 p.m., **Saturn** will reach the end of its retrograde motion, reversing its course and moving to its usual eastward movement. All of the outer planets in the solar system periodically undergo this reversal of direction, which occurs a few months after they pass opposition. The following day at 04:09 p.m., **Mercury**, shining brightly at magnitude -0.3, will reach its Greatest Elongation East, when it will be farthest from the Sun by 22.5° in its evening apparition. [7,12,13]

The **Moon** and **Jupiter** will pass in close proximity on 17 November at 09:52 PM, at about 5°36'. The two objects will then be in conjunction at 10:53 p.m., separated by 5°38'. Both are located in the constellation Taurus. The exact occurrence of these events will be visible above the eastern sky [Figure 6]. [7,14,15]

Figure 6: The view of eastern sky showing the a) close approach at 09:52 p.m. and b) conjunction at 10:53 p.m. of the Moon and Jupiter on 17 November using Stellarium.

Mercury will be at its highest point in the evening sky on 18 November and will shine with a magnitude of -0.3. Mercury will undergo **dichotomy** at 08:32 a.m. on 21 November, when, as viewed from Earth, the planet appears half-illuminated. [16,17]

Figure 7: The view of the northern sky showing the Moon and Mars on 21 November at 05:09 a.m. using Stellarium.

The 19-day-old **Moon** and **Mars** will share the same right ascension on 21 November at 05:09 a.m., separated by 2°26'. The two objects will make a close approach about an hour later, passing within 2°19' of each other. The Moon and Mars lie behind the background stars of Cancer, shining brightly at magnitudes -12.3 and -0.3, respectively. The exact occurrence of their conjunction will be visible above the northwestern sky [Figure 7], while their close approach will be unobservable because of the Sun's presence. [7,18,19]

All the conjunctions and near approaches mentioned between the planet and the moon, or planet to planet, will be visible enough to fit within the field of view of a telescope and can also be viewed with the naked eye or using a pair of binoculars.

Meteor Shower

The **Leonid** meteor shower will be active from 06 November to 30 November, with an expected peak of activity on 17 November. The view of the meteor shower may be observed once Leo, its radiant point, rises over the eastern horizon around 11:51 p.m. The radiant will be highest in the sky from around 05:00 a.m. to 06:00 a.m. Thus, the shower will produce the best display before dawn [Figure 8], with up to 15 observable meteors per hour. The moonlight will present significant interference with the meteor shower viewing during its peak activity. [20,21]

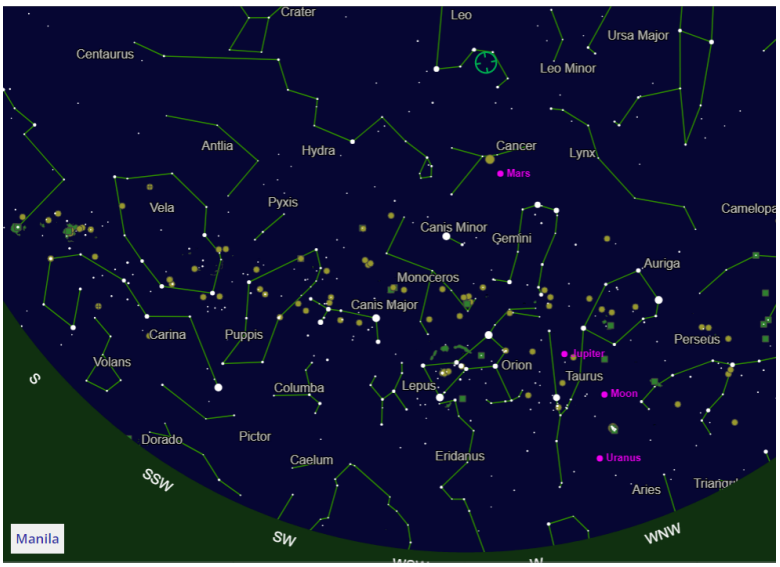

Figure 8: The view of the western sky during the peak of Leonid meteor shower on 17 November 2024 at 05:00 a.m. when the shower's radiant is represented by the green solid circle.

Meteor showers are observable through the naked eye, and no special equipment such as telescopes or binoculars is needed. Maximize the viewing experience by choosing a dark observation site away from the city lights under clear and moonless sky conditions.

Calendar of Astronomical Events for November 2024

Table 1 shows a summary of the astronomical events for November 2024. All times displayed are in Philippines Standard Time (PhST).

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28 October 2024

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