

PRESS RELEASE JANUARY 2025

# ASTRONOMICAL DIARY

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

# **ASTRONOMICAL EVENTS, JANUARY 2025**

DATE	EVENT	TIME
01-31	Planetary alignment of Venus, Saturn, Neptune,	
	Uranus, Jupiter, and Mars	
03	Quadrantid meteor shower (ZHR = 120)	
03	Conjunction of the Waxing Crescent Moon and Venus	11:23 p.m.
04	Close approach of the Waxing Crescent Moon and Venus	12:32 a.m.
05	Close approach of the Moon and Saturn	12:51 a.m.
05	Conjunction of the Moon and Saturn	01:24 a.m.
08	Moon at Perigee (Distance = 370,198.573 km)	08:01 a.m.
10	Venus at Greatest Elongation East	01:02 p.m.
11	Close approach of the Moon and Jupiter	05:45 a.m.
11	Conjunction of the Moon and Jupiter	07:13 a.m.
12	Venus at dichotomy	10:04 a.m.
12	Mars at perigee	09:32 p.m.
14	Conjunction of Waning Gibbous Moon and Mars	11:43 a.m.
14	Close approach of Waning Gibbous Moon and Mars	11:48 a.m.
16	Venus at Highest Altitude in the Evening Sky	
16	Mars in opposition	10:39 a.m.
19	Close approach of Venus and Saturn	01:30 a.m.
20	Conjunction of Venus and Saturn	01:00 p.m.
21	Moon at Apogee (Distance = 404,225.560 km)	12:54 p.m.

## **RISE AND SET TIMES OF PLANETS**

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan 01	04:50 am	04:08 pm	09:26 am	09:02 pm	07:02 pm	08:02 am*	03:32 pm	04:27 am*	10:24 am	10:10 pm
Jan 11	05:12 am	04:26 pm	09:20 am	09:06 pm	06:06 pm	07:08 am*	02:49 pm	03:44 am*	09:47 am	09:35 pm
Jan 21	05:39 am	04:53 pm	09:11 am	09:06 pm	05:08 pm	06:13 am*	02:07 pm	03:02 am*	09:11 am	08:59 pm
Jan 31	06:05 am	05:25 pm	08:56 am	09:01 pm	04:13 pm	05:19 am*	01:26 pm	02:21 am*	08:35 am	08:24 pm



#### NATIONAL TIME CONSCIOUSNESS WEEK "Oras Pinas: Tara Na! Kilos Na!"

The Department of Science and Technology (DOST), once again, highlights the significance of efficient time management for both individual and national development through the observance of the National Time Consciousness Week (NTCW) on 01-07 January 2025.

"This year's campaign calls on Filipinos to take decisive action towards personal and collective growth by reflecting and observing effective ways on time management, which could lead to empowered communities, enhanced productivity, and a secured future."

Reference and more on this at: https://www.stii.dost.gov.ph/1961-dost-moves-for-a-culture-of-responsible-time-management-through-oras-pinas

Notes:

All times displayed are in Philippine Standard Time (PhST)
\*following day

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### PHASES OF THE MOON

First Quarter Jan 07 07:56 a.m.



**Full Moon** Jan 14 06:27 a.m.





**New Moon** Jan 29 08:36 p.m.

#### Stars and Constellations

January offers the best view of the northern constellations Auriga, Taurus, and Orion, and the southern constellations Lepus, Caelum, Pictor, Dorado, and Reticulum. The prominent constellations are positioned directly overhead at 09:00 p.m. on 15 January 2025 as shown in Figure 1. [1,2]



Figure 1: The view of the night sky featuring the prominent January constellations at 09:00 p.m. on 15 January 2025 using the Stellarium software.

Auriga, the Charioteer, is a readily identifiable constellation due to its pentagonal shape. It contains the sixth brightest star in the sky, Capella, having a magnitude of 0.08. From a distance of about 43 light-years, Capella appears to be a single object, however, it is actually a stellar system made up of two sets of binary star systems. The constellation is home to numerous interesting deep-sky objects. The Flaming Star Nebula (IC 405) and Tadpole Nebula (IC 410) [Figure 2a], located in Auriga, are a sight to behold for those with sophisticated technology. [3,4]

**Taurus**, the Bull, is one of the zodiac constellations that offers a multitude of observation opportunities. It is recognizable for its 'V'-shape pattern, formed by the star cluster Hyades, which represents the head of the bull. Its brightest star, Aldebaran, which marks the right eye of the bull has an apparent magnitude of 0.85 and is 65 light years away. Taurus hosts several fascinating deep-sky attractions, including the most renowned open cluster in the night sky, the Pleiades, also known as the Seven Sisters, which symbolizes the heart of the bull. Another one is the first Messier object observed and catalogued, the Crab Nebula (M1) [Figure 2b], which is a remnant of a supernova explosion discovered in 1054 AD. [2,5]



Figure 2: The Northern Constellations

Figure 3: The Southern Constellations

Depicted as the great hunter of **Taurus**, Orion lies along the celestial equator making it observable from most locations on Earth. The constellation's prominent stars display an hourglass-like pattern, with a distinguishing line of three stars forming the famous Orion's belt asterism. Its brightest stars, Rigel and Betelgeuse, along with the stars Saiph and Bellatrix, create the outline of the hourglass. Noteworthy nebula can be found in Orion, including, the Horsehead Nebula (NGC 2023), the Orion Nebula (M42) [Figure 2c], Monkey Head Nebula (NGC 2174), and the Flame Nebula (NGC 2024). [2,6]

The Hare constellation, **Lepus**, despite its small size, is well-known for its wide variety of stars and deep-sky objects. The brightest star, Ameb or Alpha Leporis, is a supergiant with an apparent magnitude of 2.6, located 2,200 light-years away. Lepus houses the Spirograph Nebula (IC 418) [Figure 3a], a planetary nebula named for its elaborate design that resembles spirograph illustrations, the irregular galaxy NGC 1821, and the globular cluster Messier 79. [2,7]

Being a circumpolar constellation, **Dorado** is always visible in the Southern Hemisphere. It is a relatively small constellation, but, astronomers are interested in it due to the amazing celestial objects it contains including part of the Large Magellanic Cloud, an irregular dwarf galaxy that is the third nearest to the Milky Way. Among the most recognized deep-sky attractions in the galaxy are the Tarantula Nebula (NGC 2070) [Figure 3b], the supernova remnant SNR 0509, and the intermediate spiral galaxy NGC 1566 [Figure 3c]. Alpha Doradus, the brightest star in Dorado, is a binary star system with comparable brightness that revolves around each other every twelve (12) years. [2,8]

#### **Planetary Location**

Mercury can be seen sitting low on the eastern horizon for the first two weeks of the year but will be challenging to observe thereafter as it gets lost in the glare of the Sun. Venus, Jupiter, and Saturn will be visible as dusk fades to darkness until they set in the western horizon. Mars will display its presence in the sky for the entire night until it disappears in the dawn twilight. On 12 January at 09:32 p.m., Mars will be at its closest point to Earth, known as perigee, when it will appear larger and brighter in the sky. Mars will then reach opposition on 16 January at 10:39 a.m., when it is positioned opposite the Sun with Earth in between. [1,9,10,11]



Figure 4: The view of the night sky showing the planetary alignment of six (6) planets – Venus, Saturn, Neptune, Uranus, Jupiter, and Mars – on 01 January at 08:00 p.m. using Stellarium.

A planetary alignment will grace the night sky throughout January, featuring six (6) planets – **Venus, Saturn, Neptune, Uranus, Jupiter**, and **Mars** [Figure 4]. Four (4) planets – Venus, Saturn, Jupiter, and Mars – will be readily visible in this astronomical phenomenon, but a modest telescope or high-powered binoculars will be needed to view Neptune and Uranus. [1]

On 03 January at 11:23 p.m., the Waxing Crescent Moon and Venus will share the same right ascension, separated by  $1^{\circ}26'$ . About an hour later, the two will be in close proximity, passing within  $1^{\circ}18'$  of each other. The exact occurrence of these events will not be observable as the two objects are already below the horizon, lying behind the background stars of Aquarius. Their close pairing starts to be visible at 06:20 p.m. until they set in the western horizon [Figure 5]. [9,12,13]

The **Moon** and **Saturn** will make a close approach on 05 January at 12:51 a.m., passing within a mere 36.3 arcminutes. It will be followed by their conjunction at 01:24 a.m., with the Moon passing 41' to the north of Saturn. The two objects are below the horizon during the exact timing of these events, thus the best time to observe the pair will be from 06:15 p.m. on 04 January until they dive into the western horizon [Figure 6]. [9,14,15]

**Venus** will attain its **Greatest Elongation East** on 10 January at 01:02 p.m., when it will reach a maximum separation from the Sun of around 47.2°. On 12 January at 10:04 a.m., the planet will undergo dichotomy, when a planet is inferior to the Sun enters its half phase. Venus will reach its highest altitude in the evening sky on 16 January, shining brightly at magnitude -4.4. [16,17,18]

The 11-day-old **Moon** and **Jupiter** will approach closely on 11 January at 05:45 a.m., passing within 5°21' of each other. The two will be in conjunction at 07:13 a.m., located in the constellation Taurus. The exact events will not be observable since the Moon and Jupiter are below the horizon, but the pair can be seen above the western horizon at midnight on the same day [Figure 7]. [9,19,20]



Figure 5: The view of the western sky showing the close pairing of the Waxing Crescent Moon and Venus on 03 January at 06:20 p.m. using Stellarium.



Figure 7: The view of the western sky showing the close pairing of the Moon and Jupiter on 11 January at 12:00 a.m. using Stellarium.

On 14 January, the **Waning Gibbous Moon** will pass 13' north of **Mars** as they will be in conjunction at 11:43 a.m. At about the same moment, they will approach each other closely, passing within 13.2 minutes. The exact timing of these events will not be visible since the two objects are still below the horizon but they can be observed at 05:00 a.m. above the western horizon [Figure 8]. [9,21,22]

Venus and Saturn will make a close approach on 19 January at 01:30 a.m., passing within  $2^{\circ}10'$  of each other. The two planets will be in conjunction, separated by 2°31', at 01:00 p.m. the next day. Venus and Saturn are situated high in the sky during these events, however, the brightness of the Sun obstructs the viewing of their exact timing. Thus, the best time to view their close pairings is at 06:30 p.m. on the same day [Figure 9]. [9,23,24]



Figure 6: The view of the western sky showing the close pairing of the Moon and Saturn on 04 January at 06:00 p.m. using Stellarium.



Figure 8: The view of the western sky showing the close pairing of the Waning Gibbous Moon and Mars on 14 January at 05:00 a.m. using Stellarium.



Figure 9: The view of the eastern sky showing the close pairing of Venus and Saturn on 19 January at 06:30 p.m. using Stellarium.

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 year starts with a major meteor shower, the **Quadrantids**, which is active from **26 December to 12 January**, with an expected peak activity on **03 January**. The view of the meteor shower may be observed as soon as the constellation Bootes, the shower's radiant rises above the horizon around 01:10 a.m. The radiant is highest in the sky at around 08:00 a.m. [Figure 10]. Thus, the shower will produce its best display shortly before dawn, around 05:00 a.m., with up to 120 observable meteors per hour. The shower will remain active until before sunrise, around 05:56 a.m. The presence of the waxing crescent Moon presents minimal interference in the meteor shower viewing. [25,26]



Figure 10: The view of the northeastern sky during the peak of the Quadrantid meteor shower on 03 January 2025 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 January 2025

Table 1 shows a summary of the astronomical events for January 2025. All times displayed are in Philippines Standard Time (PhST).

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Table 1: The su	mmary of astron	nomical events	for .	January 20	25
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Original signed:

19 December 2024

For more information, call or email:

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