

PRESS RELEASE JANUARY 2024





ASTRONOMICAL DIARY

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

ASTRONOMICAL EVENTS, JANUARY 2024

DATE	EVENT	TIME
01-07	National Time Consciousness Week	---
01	Moon at Apogee (Distance = 404,842.946 km)	11:28 p.m.
03	Earth at Perihelion (Distance = 0.98331 AU)	08:39 a.m.
04	Quadrantid Meteor Shower (ZHR=120)	---
07	Mercury at dichotomy	04:16 p.m.
09	Conjunction of Venus and waning crescent Moon	04:12 a.m.
12	Mercury at greatest elongation west	10:37 p.m.
13	Moon at Perigee (Distance = 362,349.901 km)	06:36 p.m.
14	Conjunction of Saturn and waxing crescent Moon	05:33 p.m.
14	Close approach of Saturn and waxing crescent Moon	---
19	Close approach of Jupiter and waxing gibbous Moon	---
28	Conjunction of Mars and Mercury	---
29	Moon at Apogee (Distance = 405,725.589 km)	04:14 p.m.

PHASES OF THE MOON

	Last Quarter Jan 04 11:30 a.m.
	New Moon Jan 11 07:57 p.m.
	First Quarter Jan 18 11:53 a.m.
	Full Moon Jan 26 01:54 a.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	05:03 am	04:22 pm	03:37 am	03:02 pm	05:28 am	04:39 pm	01:14 pm	01:47 am*	09:48 am	09:27 pm
Jan 11	04:44 am	04:01 pm	03:51 am	03:11 pm	05:21 am	04:33 pm	12:35 pm	01:08 am*	09:12 am	08:51 pm
Jan 21	04:55 am	04:10 pm	04:06 am	03:23 pm	05:14 am	04:27 pm	11:58 am	12:31 am*	08:36 am	08:16 pm
Jan 31	05:16 am	04:32 pm	04:20 am	03:36 pm	05:06 am	04:21 pm	11:21 am	11:52 pm	08:01 am	07:41 pm



NATIONAL TIME CONSCIOUSNESS WEEK

"G na G! Oras Pinas para sa Bagong Pilipinas"

The Department of Science and Technology (DOST) is, once more, leading the nation to encourage everyone to support the advocacy for the observance of the National Time Consciousness Week (NTCW) on 01-07 January 2024.

"This year's theme is designed to focus on the younger generation. The DOST aims to impart the value of punctuality to the youth, emphasizing the profound impact of time management on their future success. By cultivating an understanding of the essence of time, early on, the department believes that young Filipinos can harness this knowledge as a powerful tool in shaping their personal and professional trajectories"

Reference and more on this at: <https://www.stii.dost.gov.ph/1798-dost-instills-culture-of-punctuality-to-the-young-in-time-for-national-time-consciousness-week>
Credits: Allan Mauro V. Marfal, DOST-STII

Notes:

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

[2] *following day

"tracking the sky...helping the country"

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Stars and Constellations

Observing the night sky during January can be a great experience to start the year. The most dominant constellations to view in the northern sky at this time of year are Orion, Taurus, and Auriga. Meanwhile, the southern sky offers views of Lepus, Caelum, Dorado, Pictor, and Reticulum. Figure 1 depicts the sky on 15 January at 09:00 p.m., when the January constellations are positioned directly overhead. [1, 2]



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

Orion, the Hunter, is one of the brightest and most recognizable constellations in the night sky. It contains several famous nebulae, which include the Orion Nebula (M42) and the Horsehead Nebula. M42, a diffuse nebula in the Milky Way and south of Orion's Belt, is one of the brightest nebulae and is observable in the night sky with the naked eye (Figure 2a) [2,3]. The De Mairan's Nebula, commonly known as Messier 43 (NGC 1982), is a diffuse nebula in the Milky Way Galaxy's Orion Arm, part of the Local Group of galaxies (Figure 2b) [2,4]. The other is the reflection nebula Messier 78 (NGC 2068) located in the constellation of Orion (Figure 2c). M78 is the name of the brightest diffuse reflection nebula in a cluster composed of NGC 2064, NGC 2067, and NGC 2071 [2,5].

Additionally, two of the ten brightest stars in the sky are in the constellation of Orion - Betelgeuse and Rigel. The brightest star in Orion is Rigel, the sixth brightest star in the sky. Its second brightest star, Betelgeuse, is the eighth brightest star in the sky. The Belt of Orion pattern is the most noticeable aspect of Orion. This belt contains three well-aligned stars: Alnitak (Zeta), Alnilam (Epsilon), and Mintaka (Delta) [2].

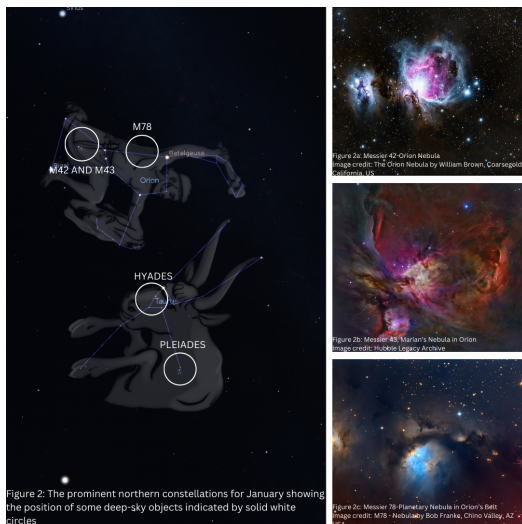


Figure 2: The Northern Constellations

Taurus, the Bull, a well-known constellation in the northern sky, is a part of the Zodiac Constellation group. It boasts three prominent stars - Aldebaran, Elnath, and Alcyone, along with a variable star, T-Tauri. The Crab Nebula (M1), a supernova remnant discovered in 1054 AD, is one of its notable deep sky objects. Taurus also houses the two nearest open clusters - the Pleiades open cluster (M45), also known as the Seven Sisters, and the Hyades cluster (Figure 2) [2].

Another northern constellation is **Auriga**, also known as "The Charioteer." The brightest star in this constellation is Capella, with the other prominent stars of Auriga, creating a pointed helmet. This is also where you can find the opposite of the center of the Milky Way called the galactic anticenter. Moreover, the closest bright star to it is Beta Tauri is Elnath [2].

Below the constellation Auriga is the **constellation Camelopardalis**, which is named after the giraffe. The animal was referred to as the "camel-leopard" because it had a long neck like a camel and a spotted body like a

leopard. The constellation contains various deep-sky objects, such as Kemble's Cascade, an open cluster, the Oyster Nebula, a spiral galaxy, and a dwarf irregular galaxy.

Beneath the feet of Orion is the constellation Lepus. Its name originates from the Latin word for "hare." According to mythology, Lepus is depicted as being hunted by Orion. Lepus contains one star with confirmed exoplanets and one Messier object, M79 (NGC 1904). The brightest star in the constellation Lepus is Arneb (Alpha Leporis), which has an apparent magnitude of 2.58 [2].

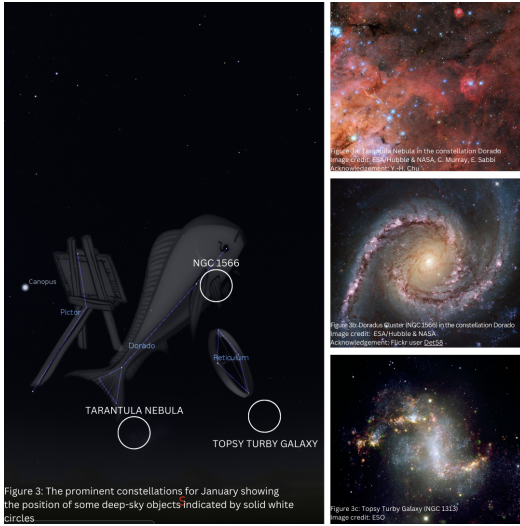


Figure 3: The Southern Constellations

G64, one of the biggest stars known, are found in the LMC. The dominant members are the interacting pair NGC 1549 and NGC 1533 and the spiral galaxy NGC 1566, also known as the Spanish Dancer (Figure 3b). Furthermore, we can find the South Ecliptic Pole in the general direction of Dorado [2,6,8].

Planetary Location

Mercury, as it recently passed the greatest elongation west, can be observed as a morning object in the eastern sky. However, Mercury will be difficult to locate at the end of the month, as it moves towards the Sun and joins Mars. They could both easily fade due to the glare of the Sun before sunrise [1,10]. On 07 January at 04:16 p.m., Mercury will be in dichotomy, a phenomenon that occurs when an inferior planet, such as Mercury, reaches its half phase. Moreover, the planet will reach its highest point in the evening sky on 10 January. The best time to view Mercury is at 06:00 a.m. when it is more than 16° above the eastern horizon (Figure 4). On 12 January at 10:37 p.m., Mercury will reach its greatest elongation west, with a maximum distance of 23.5° from the Sun. Although the exact time of the event will not be visible, as it will occur below the horizon, it will appear among the background stars of Sagittarius [9,11,12,13].



Figure 4: The best time to view Mercury during the highest altitude in the morning sky on 10 January 2024 at 06:00 a.m. just before sunrise using Stellarium

Venus can also be seen in the morning sky, rising in the east-southeastern horizon early in the morning and disappearing before sunrise. On 09 January at 04:12 a.m., we can witness the conjunction of the waning crescent Moon and Venus. They will be separated by a distance of $5^\circ 42'$ from each other. The best time to view this pairing is at 05:12 a.m. (Figure 5) as the pair will already be high in the east-southeastern sky before sunrise, in the background stars of the constellation Ophiuchus [14].

Mars is not readily available at the beginning of the month but will appear in the early morning sky towards the end of the month, lying low on the eastern horizon just before sunrise. On 28 January at midnight, Mars and Mercury will be in conjunction, passing within 14.4 arcminutes of each other. They will be visible to the naked eye in the morning sky, but difficult to observe due to their proximity to the Sun. The best viewing time is at 06:00 a.m. (Figure 6) as they will be more than 10° above the horizon, located on the southeastern horizon in the constellation Sagittarius. The pair will be at close approach at 12:27 a.m., passing within 14.6 arcminutes of each other [15,16].



Figure 5: The view of the conjunction of Waning Crescent Moon and Venus on 09 January at 05:12 a.m. using the Stellarium Software



Figure 6: The best time to view the conjunction of Mars and Mercury on the southeastern horizon is at 06:00 a.m. on 28 January 2024 using Stellarium.

Jupiter and **Saturn** are already visible in the night sky after sunset. They can be found high above the evening sky and will set respectively on the western horizon in the early and late evening [10]. On 14 January at 05:33 p.m., there will be a conjunction of the waxing crescent Moon and Saturn, with a separation of $2^\circ 14'$. Later, at exactly 07:02 p.m., (Figure 7) they will have a close approach, passing within $1^\circ 56'$ of each other. Both will be visible in the west-southwestern sky, located in the constellation of Aquarius [9,17,18]. Moreover, the waxing gibbous Moon and Jupiter will come very close to each other on 19 January at 02:42 a.m., passing within $2^\circ 31'$ of one another. Then, these two objects will be in conjunction, being $2^\circ 46'$ apart. Unfortunately, the exact event cannot be seen as the pair will already have set on the horizon. The best time to view this pairing is on 18 January at around 10:42 p.m., four (4) hours before the close approach in the western sky, against the background stars of the constellation Aries (Figure 8) [9, 19,20].



Figure 7: The view of the west-southwestern sky showing the close approach of the Moon and Saturn on 14 January at 07:02 p.m. using the Stellarium software



Figure 8: The view of the close approach of the Moon and Jupiter before the exact event on 18 January 2024 at 10:42 p.m. using Stellarium software

All the mentioned conjunctions and near approaches between the planet and the moon, or planet to planet, will be close enough to fit within the field of view of a telescope and will also be visible to the unaided eye or via a pair of binoculars.

Meteor Shower

The **Quadrantid Meteor Shower** is an annual major meteor shower observable between 12 December to 12 January, with its peak activity occurring on 04 January. It is often one of the strongest meteor showers of the year, capable of showcasing up to 120 meteors per hour at its peak, during a clear, dark, moonless location. The parent body responsible for the occurrence of this meteor shower is the asteroid 2003 EH1. To enjoy its view, wait until its radiant, located in Bootes, rises above the northeastern horizon around 01:10 a.m. The shower will peak at around 06:00 p.m. on 04 January, and the best displays will be after the radiant rises on 05 January until before sunrise. The presence of a waning crescent Moon will have minimal interference during the observation of the meteor shower [21].

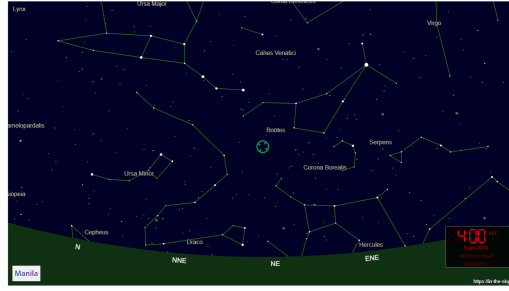


Figure 9: The view of the northeastern sky during the peak of Quadrantid on 05 January 2024 at 04:00 a.m. when the shower's radiant is represented by the green solid circle.

Meteor showers are visible to the naked eye, and there is no requirement for special equipment like telescopes or binoculars. For the best viewing experience, it is recommended to observe meteor showers in a dark location far from city lights, with clear and moonless sky conditions.

Calendar of Astronomical Events for January 2024

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

Table 1: The summary of astronomical events for January 2024

Date	Event	Time
01-07	National Time Consciousness Week	
01	Moon at Apogee (Distance = 404,842.946 km)	11:28 p.m.
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28 December 2023

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