

PRESS RELEASE JANUARY 2022





# ASTRONOMICAL DIARY

PREPARED BY ASTRONOMICAL PUBLICATION UNIT, SPACE SCIENCE AND ASTRONOMY SECTION

## ASTRONOMICAL EVENTS, JANUARY 2022

DATE	EVENT	TIME
2	Moon at Perigee (Distance = 358,138.976 km)	06:55 A.M.
4	Earth at Perihelion (Distance = 0.98 AU)	02:55 P.M.
4	Quadrantid Meteor Shower (ZHR = 120)	before dawn
6	Moon passing 4°27' S of Jupiter	08:11 A.M.
7	Mercury at greatest elongation	09:14 P.M.
8	Mercury at highest altitude in the evening sky	- - -
9	Mercury at dichotomy	09:22 P.M.
14	Moon at Apogee (Distance = 405,754.940 km)	05:26 P.M.
29	Moon passing 2°24' S of Mars	11:04 A.M.
30	Moon at Perigee (Distance = 362,336.724 km)	03:11 P.M.

## PHASES OF THE MOON

	<b>New Moon</b> Jan 03 02:33 AM
	<b>First Quarter</b> Jan 10 02:11 AM
	<b>Full Moon</b> Jan 18 07:48 AM
	<b>Last Quarter</b> Jan 25 09:41 PM

## RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan 01	07:38 AM	06:55 PM	07:10 AM	06:32 PM	04:23 AM	03:38 PM	09:36 AM	09:13 PM	08:29 AM	07:53 PM
Jan 11	07:38 AM	07:03 PM	06:04 AM	05:29 PM	04:15 AM	03:28 PM	09:03 AM	08:42 PM	07:54 AM	07:19 PM
Jan 21	06:42 AM	06:08 PM	05:02 AM	04:30 PM	04:07 AM	03:20 PM	08:31 AM	08:12 PM	07:19 AM	06:45 PM
Jan 31	05:20 AM	04:44 PM	04:17 AM	03:45 PM	04:00 AM	03:12 PM	08:00 AM	07:42 PM	06:44 AM	06:10 PM



## APOM: A DAZZLING SPECTACLE

ASTRONOMY PICTURE OF THE MONTH

The trio of planets: Venus, Jupiter, and Saturn together with the waxing crescent Moon after sunset taken last 08 December 2021 at the PAGASA Astronomical Observatory

Image credit: LPMendoza &amp; JBCastillo

Notes:

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

"tracking the sky...helping the country"

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# Stars and Constellations

January is the best time to observe the prominent constellations of **Orion** and **Taurus** in the evening sky. These constellations have been known since the ancient times and are the largest and most well-known January constellations. The view of the night sky at 9:00 P.M. in mid-January 2022 is shown in Figure 1 [1].

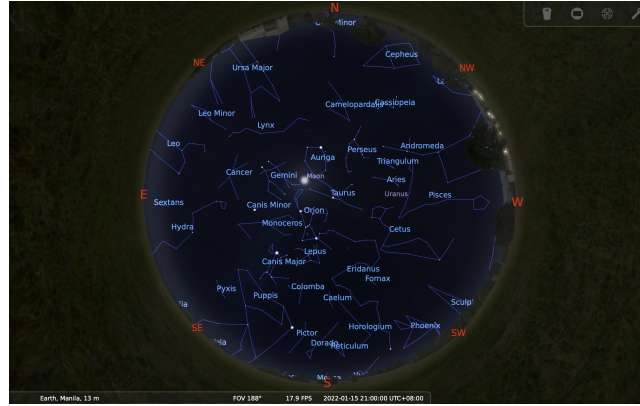


Figure 1: The view of the night sky at 9:00 P.M. on 15 January 2022 using the Stellarium Application

The **Crab Nebula**, **Orion Nebula (M42)**, **Pleiades (M45)**, and **Hyades cluster** are among the prominent astronomical objects found in **Orion** and **Taurus**. Figure 2 shows the locations of some of the deep-sky objects and bright stars in the Orion and Taurus constellations[1].



Figure 2: The view of the night sky at 9:00 P.M. on 15 January 2022 using the Stellarium Application

## Planetary Location

**Mercury** can be observed as an **evening planet** lying low in the west southwest after the sunset in the first half of January 2022[2]. On 7 January at 9:14 P.M., **Mercury** will be at its greatest elongation, which indicates that the planet will reach its greatest separation from the Sun during its evening apparition from December 2021 to January 2022. **Mercury** has already set by the time the greatest elongation occurs, however, the planet can still be seen in the west southwestern part of the sky after sunset, a few hours before its greatest elongation [3]. **Mercury** will reach its highest altitude in the evening sky on the 8 January, with a magnitude of -0.6 (Figure 4) [4]. **Mercury** will then be at dichotomy on 9 January at 9:22 P.M. Dichotomy occurs when an inferior planet such as **Mercury** reaches its half phase. Again, **Mercury** has already set by the time this event occurs but it can still be seen moments after the sunset as it sinks towards the horizon (Figure 5). Generally, observing **Mercury** during this time will be tricky as it will only reach the peak altitude of  $17^\circ$  above the horizon after the sunset [5].

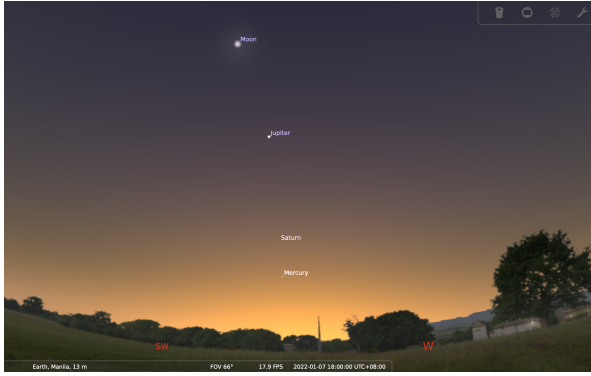


Figure 3: The view of the west southwestern sky after sunset on 7 January 2022 showing the position of Mercury few hours before its greatest elongation using the Stellarium application

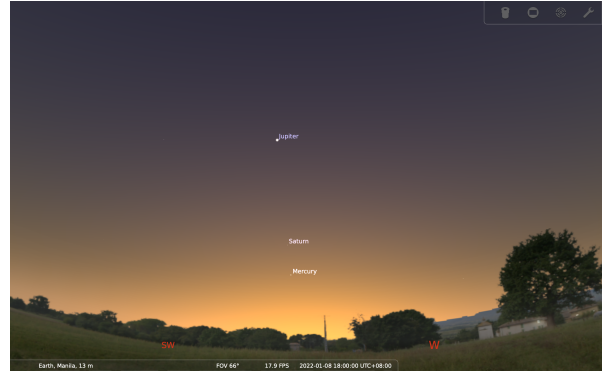


Figure 4: The view of the west southwestern sky after sunset on 8 January 2022 showing the position of Mercury as it reach its highest altitude in the evening sky using the Stellarium application

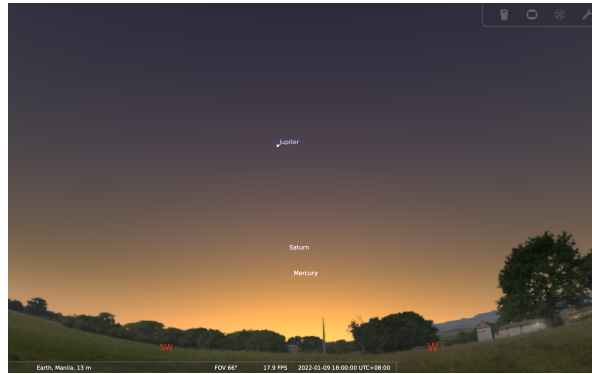


Figure 5: The view of the west southwestern sky after sunset on 9 January 2022 showing the position of Mercury few hours before it reach its dichotomy using the Stellarium application

**Jupiter** is also an **evening planet** observable in the west southwest after sunset for the entire month[2]. **Jupiter** and the **Moon** will have the same right ascension on 6 January at 8:11 A.M., as the **Moon** will pass  $4^{\circ}27'$  south of **Jupiter**[6]. The exact moment of the conjunction cannot be observed as it will occur during the daytime, however, the close pairing can still be observed in the constellation **Aquarius** after sunset at an altitude of  $41^{\circ}$  (Figure 6). The **Moon** and **Jupiter** will be at mag -10.7 and mag -2.1, respectively.



Figure 6: The view of the west southwestern part of the sky on 6 January 2022 at 6:00 P.M. showing the close pairing of Moon and Jupiter using the Stellarium Application

**Saturn** is another **evening planet** visible in the west southwest in January 2022. By mid-January, **Saturn** will be close to Mercury (Figure 7) and will be lying low along the horizon a few days later[2].



Figure 7: The view of the west southwestern part of the sky at 6:00 P.M. on 15 January 2022 showing the position of the observable planets after sunset using the Stellarium Application

After reaching the inferior conjunction, **Venus** can be seen as a morning planet[2]. Inferior conjunction occurs when an inferior planet such as **Venus** approximately lies between the Earth and the Sun. **Venus** can be observed on the eastern horizon before sunrise.



Figure 8: The view of the east southeastern part of the sky at 6:00 A.M. on 31 January 2022 showing the position of the planets Venus and Mars using the Stellarium Application

**Mars** can also be observed in the southeast a few hours before sunrise for the entire month of January. The view of the southeastern portion of the sky at 6:00 A.M. at the end of January is shown in Figure 8. The **27-day-old Moon** will be passing  $2^{\circ}24'$  to the south of **Mars** at 11:04 P.M. on January 29. Although the **Moon** and **Mars** are still below the horizon at the time of the conjunction, the pair can still be seen the next day at around 5:00 A.M. until just before dawn (Figure 9). The **Moon** and **Mars** will be both in the constellation **Sagittarius** and will be at mag -10.3 and mag 1.4, respectively[7]. The above-mentioned close pairings are observable through the naked eye or using a pair of binoculars having a separation too wide to fit in the field of view of a telescope.



Figure 9: The view of the southeastern part of the sky at 6:00 A.M. on 30 January 2022 showing the close pairing of Moon and Mars using the Stellarium Application



# Meteor Showers

**Quadrantids** is an annual major meteor shower observable from 28 December through 12 January, with its peak activity on 4 January. It is estimated to generate 120 meteors per hour if observed in a clear dark moonless location. The **asteroid 2003 EH1** is the parent body responsible for the meteor shower’s occurrence. The view of the meteor shower can be enjoyed once the radiant of the shower, which is located in **Bootes**, is rising above the northeastern horizon around 1:00 A.M. The radiant point will be at its highest in the sky at 8:00 a.m., therefore the shower will be best seen just before sunrise (Figure ??). The presence of a waxing crescent phase of the Moon will produce minimal interference during the observation of the meteor shower.

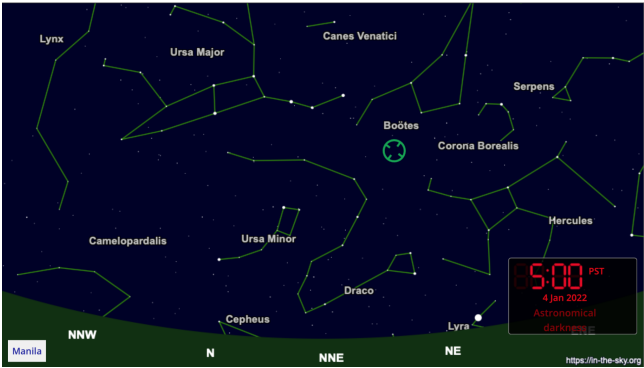


Figure 10: The view of the northeastern sky during the peak of Quadrantids on 4 January 2022 at 6:00 A.M

Meteor showers are can be observed through the naked eyed and there is no need to use special equipment such as telescopes or binoculars. To maximize the viewing experience, it is ideal to observe in a dark site away from the city lights under clear and moonless sky conditions.

# Calendar of Astronomical Events for January 2022

Table ?? shows summary of the astronomical events for the month of January 2022. All times displayed are in Philippines Standard Time (PhST).

Table 1: The summary of astronomical events for the month of January 2022

Date	Event	Time
2	Moon at Perigee (Distance = 358,138.98 km)	6:55 A.M.
4	Quadrantid Meteor Shower (ZHR = 120)	before dawn
4	Earth at Perihelion (Distance = 0.98 AU)	2:55 P.M.
6	Moon passing 4°27' S of Jupiter	8:11 A.M.
7	Mercury at greatest elongation	9:14 P.M.
8	Mercury at highest altitude in evening sky	- - -
9	Mercury at dichotomy	9:22 P.M.
14	Moon at Apogee (Distance = 405,754.94 km)	5:26 P.M.
29	Moon passing 2°24' S of Mars	11:04 A.M.
30	Moon at Perigee (Distance = 362,336.72 km)	3:11 P.M.

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13 December 2021

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## References


- [1] C. Guide, "Constellations: Guide to the Night Sky." <https://www.constellation-guide.com/constellations-by-month/january-constellations/>, Last accessed on 2021-12-6, 2021.
- [2] P. Lawrence, "Observing the planets in 2022, month by month," *BBC Sky at Night Magazine*, Nov 2021.
- [3] D. Ford, "In-The-Sky.org Guide to the night sky: Mercury at greatest elongation east." [https://in-the-sky.org/news.php?id=20220107\\_11\\_101](https://in-the-sky.org/news.php?id=20220107_11_101), Last accessed on 2021-12-6, 2021.
- [4] D. Ford, "In-The-Sky.org Guide to the night sky: Mercury at highest altitude in evening sky." [https://in-the-sky.org/news.php?id=20220107\\_11\\_100](https://in-the-sky.org/news.php?id=20220107_11_100), Last accessed on 2021-12-6, 2021.
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- [6] D. Ford, "In-The-Sky.org Guide to the night sky: Conjunction of the Moon and Jupiter." [https://in-the-sky.org/news.php?id=20220106\\_20\\_100](https://in-the-sky.org/news.php?id=20220106_20_100), Last accessed on 2021-12-7, 2021.
- [7] D. Ford, "In-The-Sky.org Guide to the night sky: Conjunction of the Moon and Mars." [https://in-the-sky.org/news.php?id=20220129\\_20\\_100](https://in-the-sky.org/news.php?id=20220129_20_100), Last accessed on 2021-12-7, 2021.

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