

PRESS RELEASE JULY 2023





# ASTRONOMICAL DIARY

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

## ASTRONOMICAL EVENTS, JULY 2023

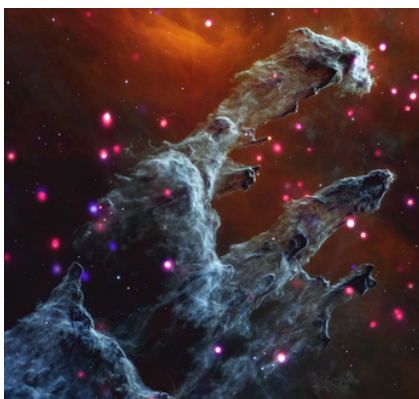
DATE	EVENT	TIME
05	Moon at Perigee (Distance = 360,241.407 km)	06:25 a.m.
07	Earth at Aphelion (Distance = 1.016680377 AU)	04:07 a.m.
07	Close approach of Saturn and waning gibbous Moon	---
12	Close approach of Jupiter and waning crescent Moon	---
20	Moon at Apogee (Distance = 406,242.796 km)	02:57 p.m.
20	Close approach of Venus and waxing crescent Moon	---
21	Close approach of Mars and waxing crescent Moon	---
29	Piscis Austrinids (ZHR=5)	02:00 a.m.
30	Southern $\delta$ -Aquariids (ZHR=25)	02:00 a.m.
30	$\alpha$ -Capricornids (ZHR=5)	02:00 a.m.

## PHASES OF THE MOON

	<b>Full Moon</b> Jul 03 07:39 p.m.
	<b>Last Quarter</b> Jul 10 09:48 a.m.
	<b>New Moon</b> Jul 18 02:32 a.m.
	<b>First Quarter</b> Jul 26 06:07 a.m.

## RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jul 01	05:29 AM	06:31 PM	08:36 AM	09:12 PM	08:51 AM	09:26 PM	01:34 AM	02:06 PM	10:05 PM	*09:50 AM
Jul 11	06:23 AM	07:19 PM	08:18 AM	08:47 PM	08:37 AM	09:07 PM	01:01 AM	01:34 PM	09:25 PM	*09:09 AM
Jul 21	07:04 AM	07:46 PM	07:49 AM	08:10 PM	08:23 AM	08:48 PM	12:27 AM	01:00 PM	08:44 PM	*08:28 AM
Jul 31	07:29 AM	07:56 PM	07:04 AM	07:21 PM	08:10 AM	08:29 PM	11:48 PM	12:26 PM	08:03 PM	*07:46 AM



## THE PILLARS OF CREATION

### ASTRONOMY PICTURE OF THE MONTH

This famous region in the Eagle Nebula (M16), is often referred to as the "Pillars of Creation", located 7,000 light-years from Earth in the constellation Serpens.

Combined data from NASA's Chandra and Webb, form this stunning image of the M16. The Webb image shows the dark columns of gas and dust shrouding the few remaining fledgling stars just being formed. The Chandra sources, which look like dots, are young stars that give off copious amounts of X-rays. (X-ray: red, blue; infrared: red, green, blue)

Read more on this: <https://chandra.si.edu/photo/2023/chandrawebb2/>  
<https://www.flickr.com/photos/nasawebsite/52920269941/in/album-72177720305127361/>

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

**July** is the best time to observe the northern constellations such as Hercules, Draco, Corona Borealis, and Serpens, whereas Ophiuchus, Scorpius, Norma, Ara, Circinus, and Triangulum Australe are best viewed in the southern hemisphere. Figure 1 shows the July constellation as seen on 15 July at 09:00 pm [1,2].

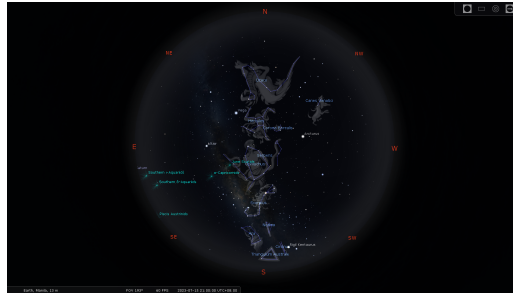


Figure 1: The view of the night sky featuring the prominent July constellations showing the Northern and the Southern Hemisphere on 15 July at 09:00 p.m. using the Stellarium software

Hercules and Draco are the most prominent northern constellations in July despite lacking first-magnitude stars (Figure 2). Hercules is the fifth largest constellation in the sky, with Kornephoros (Beta Hercules) being its brightest star. Hercules contains two Messier objects, the globular clusters Messier 13 (M13, NGC 6205) and Messier 92 (M92, NGC 6341). The stars in this constellation – Pi, Eta, Zeta, and Epsilon Herculis – combine to form an asterism called the “Keystone”, a trapezoid-shaped pattern that also represents Hercules’s torso, making it easy for observers to identify the constellation. On a clear night, the Keystone can be found surrounded by the constellations Draco, Corona Borealis, Ophiuchus, and Lyra [2,3].



Figure 2: The view of the northern sky featuring the constellation Draco and Hercules, and the Keystone asterism (in yellow outline), using the Stellarium software

Draco, the Dragon, is the eighth-largest constellation in the night sky, with Eltanin (Gamma Draconis) being its brightest star. Several well-known deep-sky objects can be found in Draco. These include the Tadpole Galaxy (NGC 5866), the Cat’s Eye Nebula (NGC 6543), and the Spindle Galaxy (Messier 102, NGC 5866) [2,4].

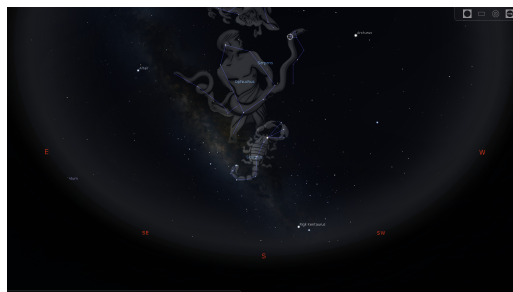


Figure 3: The view of the southern sky featuring the constellation Ophiuchus, Serpens, and Scorpius, using the Stellarium software

To the south of Hercules and Corona Borealis, the Northern Crown lie the constellations Ophiuchus and Serpens, representing the Serpent Bearer and the Serpent, respectively (Figure 3). Ophiuchus is one of the thirteen constellations that pass the ecliptic. Its brightest star, Rasalhague, is a binary star system. Serpens is split into two halves by Ophiuchus: Serpens Cauda, the serpent’s tail, and Serpens Caput, the serpent’s head. The Eagle Nebula (Messier 16), one of the most well-known nebulae in the sky, is located in the constellation Serpens, which is home to the iconic Pillars of Creation, a star-forming region in the nebula (2,5).

The zodiacal constellation Scorpius, the Scorpion, is one of the most recognizable patterns in the southern sky. It can be identified by its 13 stars that are brighter than magnitude 3.0, which represents the scorpion's stinger. Antares, its brightest star, is a red supergiant and represents the scorpion's heart [2].

## Planetary Location

**Mercury, Venus, and Mars** will be visible as evening planets lying low near the west-northwestern horizon. Mercury will be challenging to observe during the first two weeks of the month due to its proximity to the Sun, but as the day advances, it will eventually be observable until the early evening hours. On 19 July at 04:56 p.m., the waxing crescent Moon and Mercury will be in conjunction, where Mercury is  $3^{\circ}51'$  to the south of the Moon; however, the exact event of the conjunction will not be visible as it will happen during the daytime, but you may catch a glimpse of their close approach, lying low in the western sky as soon as the sun sets (Figure 4) [6,7].



Figure 4: The view of the west-northwestern sky on 19 July 2023 at 07:00 p.m. showing the close approach of the Mercury and Moon, using the Stellarium application

Meanwhile, Mars can be observed hovering above Venus, and both will be visible until the evening hours. On 01 July, Venus and Mars can be seen  $3^{\circ}33'$  apart, among the background stars of the constellation Leo. On 10 July, Venus will reach its greatest brightness, shining brightly in its evening apparition at a magnitude of -4.7 [8,9].

The waxing crescent Moon and Venus will be in conjunction on 20 July at 04:37 p.m., where Venus can be found  $7^{\circ}51'$  south of the Moon [6, 10]. Similarly, the waxing crescent Moon and Mars will likewise be in conjunction on 21 July at 12:00 p.m., with Mars placed  $3^{\circ}16'$  south of the Moon [6, 11]. The exact event of these conjunctions is not observable as it happened during the daytime. Nonetheless, at night, these close pairings are best observed around 07:00 p.m., when the Moon is roughly  $27^{\circ}$  above the western horizon (Figure 5).



Figure 5: The view of the west-northwestern sky on 21 July 2023 at 07:00 p.m. showing the close pairing of Mars and Moon, using the Stellarium application

**Jupiter and Saturn** will be first seen rising on the eastern horizon around midnight and in the late evening hours, respectively. On 07 July, Saturn and the waning gibbous moon will be seen close together as they rise on the eastern horizon among the background stars of the constellation Aquarius at around 9:41 p.m. On 12 July, the waning crescent Moon and Jupiter will make a close approach, passing within  $2^{\circ}03'$  of one another [12]. Subsequently, at 05:21 a.m., among the background stars of the constellation Aries, a conjunction of these two objects will take place, with Jupiter and the Moon having a separation of  $2^{\circ}14'$  [6, 13].

# Meteor Shower

**Piscis Austrinid Meteor Shower** will be active from 15 July to 10 August, with peak activity occurring on 29 July. The Piscis Austrinids will be active from the time its radiant, Piscis Austrinus, begins to rise in the southeastern sky at 08:47 p.m. until before sunrise, producing an average of 5 meteors per hour. The number of visible meteors increases as the radiant rises to its highest point in the sky around 02:00 a.m. (Figure 6). The presence of the waxing gibbous Moon will cause substantial interference in the observation [14].

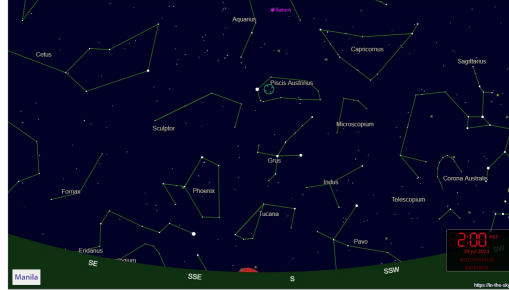


Figure 6: The view of the southern sky during the peak of Piscis Austrinids on 29 July 2023 at 02:00 a.m. when the shower's radiant represented by the solid green circle is highest in the sky

**Southern  $\delta$ -Aquariids** will be active from 12 July to 23 August, with peak activity occurring on 30 July, and is expected to produce 25 meteors per hour (Figure 7). Meanwhile, the  $\alpha$ -**Capricornids** will be active from 03 July to 15 August, with its peak of activity occurring on 30 July, and is expected to produce 5 meteors per hour (Figure 8). Both of these meteor showers can be found in the southeastern sky, and are likely to produce their best displays around 02:00 a.m., when their radiant point is highest in the sky [15, 16].

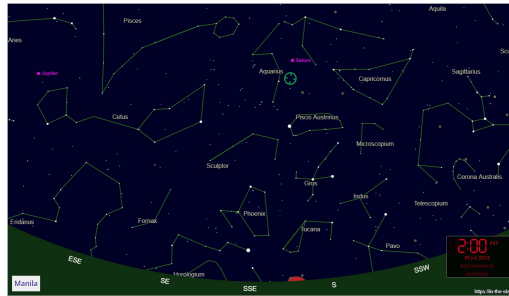


Figure 7: The view of the southeastern sky during the peak of Southern  $\delta$ -Aquariids on 30 July 2023 at 02:00 a.m. when the shower's radiant represented by the solid green circle is highest in the sky

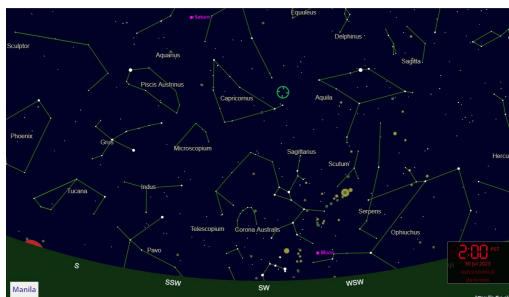


Figure 8: The view of the southwestern sky during the peak of  $\alpha$ -Capricornids on 30 July 2023 at 02:00 a.m. when the shower's radiant represented by the solid green circle is highest in the sky

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 July 2023

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

Table 1: The summary of astronomical events for July 2023

Date	Event	Time
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26 June 2023

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