






ASTRONOMICAL DIARY

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

ASTRONOMICAL EVENTS, AUGUST 2023

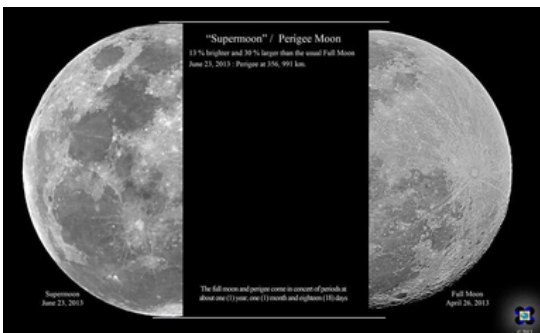
DATE	EVENT	TIME
02	Moon at Perigee (Distance = 357,417.847 km)	01:52 p.m.
03	Close approach of Moon and Saturn	---
08	Close approach of Moon and Jupiter	---
10	Mercury at greatest elongation east	09:47 a.m.
13	Perseids (ZHR=150)	04:00 a.m.
16	Moon at Apogee (Distance = 406,596.974 km)	07:54 p.m.
18	κ -Cygnids (ZHR=3)	09:00 p.m.
30	Moon at Perigee (Distance = 357,289.429 km)	11:54 p.m.

PHASES OF THE MOON

	Full Moon Aug 02 02:32 a.m.
	Last Quarter Aug 08 06:28 p.m.
	New Moon Aug 16 05:38 p.m.
	First Quarter Aug 24 05:57 p.m.
	Full Moon Aug 31 09:36 a.m.

RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Aug 01	07:30 a.m.	07:56 p.m.	06:58 a.m.	07:15 p.m.	08:08 a.m.	08:28 p.m.	11:45 p.m.	12:23 p.m.	07:59 p.m.	07:42*a.m.
Aug 11	07:36 a.m.	07:49 p.m.	05:58 a.m.	06:14 p.m.	07:55 a.m.	08:09 p.m.	11:09 p.m.	11:47*a.m.	07:17 p.m.	07:00*a.m.
Aug 21	07:21 a.m.	07:24 p.m.	04:54 a.m.	05:13 p.m.	07:41 a.m.	07:50 p.m.	10:32 p.m.	11:11*a.m.	06:35 p.m.	06:18*a.m.
Aug 31	06:32 a.m.	06:34 p.m.	04:00 a.m.	04:23 p.m.	07:28 a.m.	07:31 p.m.	09:53 p.m.	10:33*a.m.	05:53 p.m.	05:35*a.m.



BLUE MOON AT PERIGEE

ASTRONOMY PICTURE OF THE MONTH

A Perigee Full Moon, commonly known as the Supermoon, is an astronomical phenomenon occurring when the closest approach of the Moon to the Earth, referred to as perigee, coincides with a Full Moon. This month, two (2) Perigee Full Moon will be observed, on 02 August and 31 August. When two full Moon close to perigee occur on the same calendar month, the second Full Moon is called a Super Blue Moon. During perigee, the Moon appears slightly brighter and larger than the usual full Moon.

Image Credit: Lordnico P. Mendoza, Astronomical Observation and Time Service Unit, PAGASA

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

The constellations that are best observed in August in the northern sky are Aquila, Corona Australis, Lyra, Pavo, Sagitta, Sagittarius, Scutum, and Telescopium. Lyra, Sagitta, and Aquila while in the southern sky are Scutum, Sagittarius, Corona Australis, Telescopium, and Pavo (Figure 1) [1].

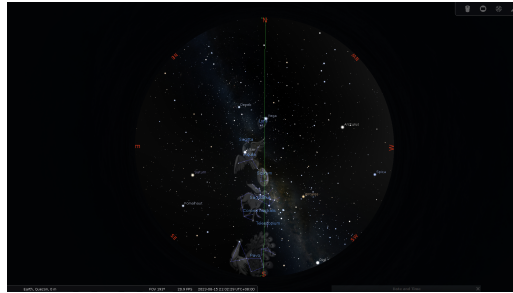


Figure 1: The view of the night sky featuring the prominent August constellations at 09:00 p.m. on 15 August 2023 using the Stellarium software

Sagittarius is considered one of the most prominent southern constellations. Its brightest star, the blue giant Kaus Australis (Epsilon Sagittarii), has a visual magnitude of 1.85. To locate the constellation Sagittarius and its deep sky objects, look for its well-known asterism Teapot which consists of the eight brightest stars of the constellation (Figure 2). The asterism is composed of eight bright stars – Kaus Australis (Epsilon Sagittarii), Kaus Media (Delta Sagittarii), Kaus Borealis (Lambda Sagittarii), Alnasl (Gamma Sagittarii), Ascella (Zeta Sagittarii), Nanto (Phi Sagittarii), Nunki (Sigma Sagittarii) and Hecatebolus (Tau Sagittarii) – form the shape of the celestial Teapot [2].

The asterism lies next to a dense area of the Milky Way and can be used to find several Messier objects and other famous deep-sky objects. Under favorable sky conditions, the Milky Way appears as steam coming out of the spout of the Teapot. Moreover, Sagittarius is the home of 15 Messier objects like the Lagoon Nebula, Omega Nebula, and Sagittarius Star Cloud. Another prominent object in Sagittarius is the compact radio source Sagittarius A* (Sgr *A), a top candidate to be a location of the supermassive black hole at the center of the galaxy [2].

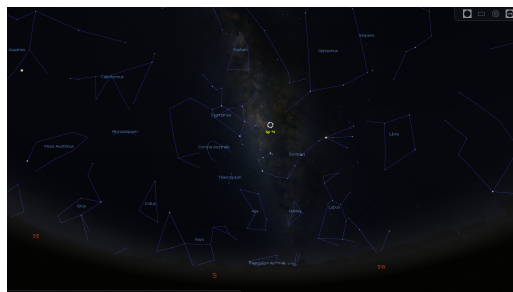


Figure 2: The constellation lines showing the Teapot formation in the sky in Sagittarius and Corona Australis and the position of Sgr *A at 09:00 p.m. on 15 August 2023, using the Stellarium software

Another visible constellation in the night sky of August is the **Corona Australis** or the Southern Crown, the smallest constellation. An oval-shaped constellation (Figure 2) is easily identifiable in rural and urban areas with lesser light pollution. Corona Australis does not contain any star brighter than 4.0 magnitude making it fainter compared to its northern counterpart, the Corona Borealis or the Northern Crown. Its brightest star, however, is a bright orange giant star named Coronae Australis [2].

Looking below Corona Australis is another faint constellation known as **Telescopium**. With no stars having a magnitude greater than 3.0, its brightest star is the Alpha Telescopii, a blue-white giant, approximately 278 light years from Earth. Another constellation to look out for in the August night sky is Pavo the Peacock, a part of the group known as the “Southern Birds” along with constellations Phoenix, Tucana (the Toucan), and Grus (the Crane) [2].



Figure 3: The view of the northeastern sky showing the position of the Summer Triangle (red solid line) at 09:00 p.m. on 15 August 2023 using the Stellarium software

Going to the Northern sky, a sizable asterism that dominates the summer night sky can be observed and is called the Summer Triangle (Figure 3). It is composed of the brightest stars of the constellations; Lyra, Cygnus, and Aquila. Lyra represents a stringed musical instrument, the Lyre. Its brightest star Vega has an apparent magnitude of 0.026 and is 40 times brighter than the Sun [2].

Meanwhile, the **Aquila**, or “the eagle” is flying opposite the Celestial Swan or Cygnus. The brightest star of Aquila is the white dwarf star Altair, one of the stars close to Earth and can be identified with the naked eye [2]. On the other hand, the third star to complete the summer triangle is Deneb, the brightest star of the constellation Cygnus. This blue-white supergiant star has an apparent magnitude of 1.25 and is currently the North Pole star of the planet Mars [3].

Planetary Location

The planets **Mercury** and **Mars** can be observed lying low in the western sky after sunset. In contrast, **Saturn** can be seen in the early evening in the eastern sky (Figure 4). **Jupiter** will be visible as it rises on the eastern horizon in the late evening. Meanwhile, **Venus** is not visible in the first half of the month due to its proximity to the Sun, but it can be seen as a morning planet in the second half of the month, resting low in the eastern sky just before sunrise [4] (Figure 5).

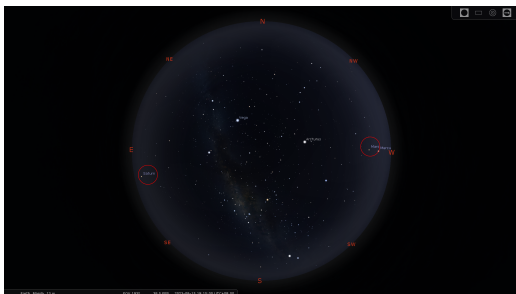


Figure 4: The view of the sky on 15 August 2023 showing the position of Mars and Mercury in the western sky and Saturn in the eastern sky at 07:15 p.m., using the Stellarium application

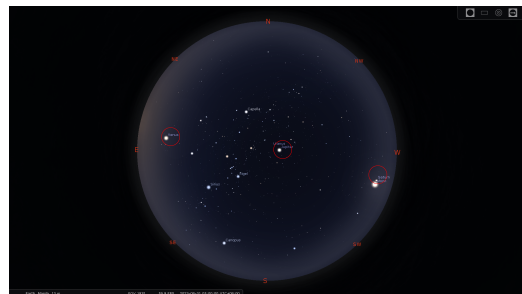


Figure 5: The view of the sky on 31 August 2023 showing the position of the Saturn and Moon in the western sky, Jupiter near the Meridian and Venus in the eastern sky at 05:00 a.m., using the Stellarium application

Mercury is an evening planet observable after sunset. On 05 August, Mercury will be at its highest point in the sky, 20° above the western horizon [5]. On 09 August at 07:19 p.m., Mercury will be in its half phase, or dichotomy (Figure 6) [6], and then on 10 August, Mercury will reach its farthest distance from the Sun at 27.4° , sometimes referred to as Greatest Elongation East at 09:47 a.m. [7,8]. However, observing Mercury during this time will be tricky since its altitude in the western sky after sunset will be very close to the horizon.

On 03 August at 06:25 p.m., the Waning Gibbous Moon and Saturn will be $2^\circ 15'$ of each other. The pair will be located in Aquarius and will be visible on the east southeastern horizon when they are already high in the sky at around 09:25 p.m. (Figure 7) [8] [9]. Likewise, on 31 August at 02:08 a.m., the Waxing Gibbous Moon and Saturn will be in conjunction, where Saturn is separated $2^\circ 29'$ to the north of the Moon [8,10]. More than an hour later, the pair will also make a close approach, passing within $2^\circ 16'$ of each other. These two objects are both located in the constellation Aquarius and will be visible in the west southwestern sky at 03:43 a.m. (Figure 8) [11].

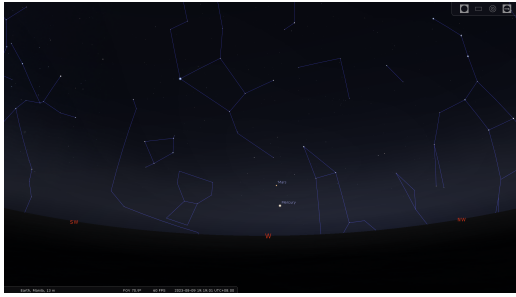


Figure 6: The view of the western sky on 09 August 2023 showing the position of Mercury at dichotomy at the exact event 07:19 p.m., using the Stellarium application

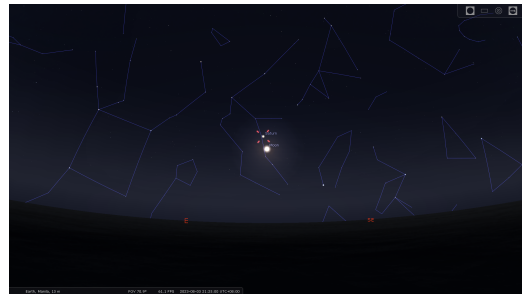


Figure 7: The view of the east-southeastern sky on 03 August 2023 showing the close approach of the Moon and Saturn at 09:25 p.m., 3 hours after the exact event at 06:25 p.m., using the Stellarium application



Figure 8: The view of the southwestern sky on 31 August 2023 showing the conjunction of the Moon and Saturn at 02:07 a.m., using the Stellarium application



Figure 9: The view of the eastern sky on 09 August 2023 at 12:45 a.m. showing the close approach of the Moon and Jupiter, 9 hours after the exact event at 03:45 p.m. of 08 July, using the Stellarium application

Similarly, the Waning Crescent Moon and Jupiter will also make a close approach on 08 August, passing within $2^{\circ}39'$ of one another. The pair will be visible shortly after it rises at the eastern horizon at 11:21 p.m. [12]. The best time to view this pairing is on 09 August (Figure 9), the exact event since these two objects are still lying low on the eastern horizon. The pair will also be in conjunction at 05:44 p.m., where Jupiter is separated $2^{\circ}53'$ to the south of the Moon. Both these objects are located in the constellation Aries [13].

Blue Moon at Perigee

A **Perigee Full Moon**, commonly known as the **Supermoon**, is an astronomical phenomenon occurring when the closest approach of the Moon to the Earth, referred to as perigee, coincides with a Full Moon. This month, two (2) Perigee Full Moon will be observed, on 02 August and 31 August. When two full Moon close to perigee occur on the same calendar month, the second Full Moon is called a Super Blue Moon. The "once in a blue moon" idiomatic expression is associated with "not very often" or "very rarely" since this phenomenon only happens every 2.8 years. During perigee, the Moon appears slightly brighter and larger than the usual full Moon [14,15,16].

Meteor Shower

For the month of August, two meteor showers will be active. On 17 July to 24 August, **Perseids**, one of the most anticipated annual meteor showers, is active. Peak activity will be on 13 August, producing up to 150 meteors per hour. The shower will be visible once Perseus, the shower radiant, rises in the northeastern sky around midnight till just before sunrise. The number of visible meteors increases as the radiant reaches the highest point in the sky, right after dawn, and will be best observed just before sunrise. Figure 10 shows the position of the radiant in the north-northeast portion of the sky at around 04:00 a.m. The presence of the Waning Crescent Moon in Gemini will present minimal interference throughout the night [17].

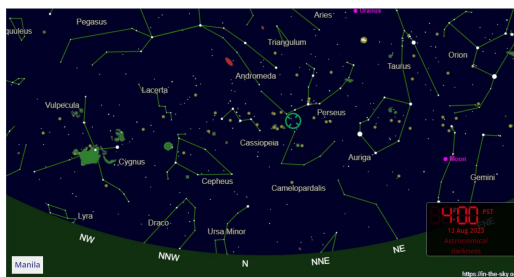


Figure 10: The view of the north-northeastern sky during the peak of Perseids on 13 August 2023 at 04:00 a.m. using the Stellarium software

Another meteor shower observable this month is κ -Cygnids, active from 03 August to 25 August, its peak activity occurring on 18 August. The κ -Cygnids at its peak activity, will produce at least three (3) meteors per hour. The shower radiant, Draco, is already observable after sunset until it sets on the horizon at around 05:00 a.m. It will be best observed around 09:00 p.m. when the radiant is at its highest position in the sky (Figure 11). The shower will peak close to the new moon, presenting minimal interference from the moonlight [18].

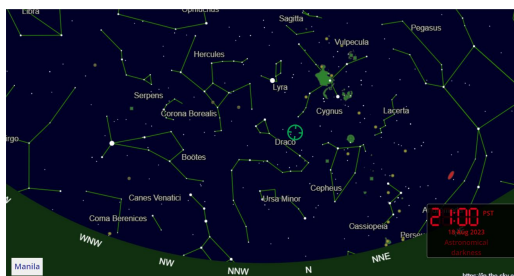


Figure 11: The view of the northern sky during the peak of κ -Cygnids on 18 August 2023 at 09:00 p.m. when the shower radiant is highest in the sky using the Stellarium software

Special tools, such as binoculars or telescopes will not be necessary to view the meteor showers this month as they can be seen with the naked eye. However, choose a dark location away from city lights with a clear sky and no moon to maximize the viewing experience [17, 18].

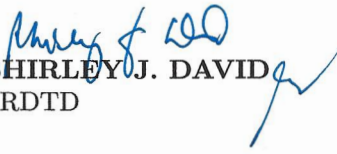
Calendar of Astronomical Events for August 2023

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

Table 1: The summary of astronomical events for August 2023


Date	Event	Time
02	Moon at Perigee (Distance = 357,417.847 km)	01:52 p.m.
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08	Close approach of Moon and Jupiter	
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18	κ -Cygnids (ZHR=3)	09:00 p.m.
30	Moon at Perigee (Distance = 357,289.429 km)	11:54 p.m.

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20 July 2023

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