

PRESS RELEASE JUNE 2024





ASTRONOMICAL DIARY

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

ASTRONOMICAL EVENTS, JUNE 2024

DATE	EVENT	TIME
02	Moon at Perigee (Distance = 368,148.204 km)	03:16 p.m.
03	Planetary Alignment of Saturn, Neptune, Mars, Uranus, Mercury, and Jupiter	---
03	Close approach of Waning Crescent Moon and Mars	05:42 a.m.
03	Conjunction of Waning Crescent Moon and Mars	07:37 a.m.
05	Venus at superior solar conjunction	12:03 a.m.
08	Daytime Arietid meteor shower (ZHR = 50)	---
14	Moon at Apogee (Distance = 404,005.957 km)	09:35 p.m.
15	Mercury at superior solar conjunction	12:38 a.m.
21	June Solstice	04:51 a.m.
27	Moon at Perigee (Distance = 369,319.493 km)	07:30 p.m.
27	Close approach of Waning Gibbous Moon and Saturn	10:56 p.m.
27	Conjunction of Waning Gibbous Moon and Saturn	11:00 p.m.
27	June Bootid meteor shower (ZHR = var)	---
30	Saturn enters retrograde motion	03:16 a.m.
30	International Asteroid Day	---

PHASES OF THE MOON

	New Moon Jun 06 08:38 p.m.
	First Quarter Jun 14 01:18 p.m.
	Full Moon Jun 22 09:08 a.m.
	Last Quarter Jun 29 05:53 a.m.

RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jun 01	04:28 am	05:14 pm	05:23 am	06:17 pm	02:36 am	02:57 pm	04:50 am	05:37 pm	00:43 am	12:33 pm
Jun 11	05:07 am	06:06 pm	05:35 am	06:32 pm	02:22 am	02:49 pm	04:20 am	05:08 pm	00:05 am	11:55 am
Jun 21	06:01 am	07:04 pm	05:48 am	06:47 pm	02:08 am	02:40 pm	03:50 am	04:38 pm	11:23 pm	11:17 am*
Jun 30	06:45 am	07:43 pm	06:02 am	06:59 pm	01:55 am	02:33 pm	03:22 am	04:12 pm	10:48 pm	10:42 am*



ASTEROID PSYCHE

A World Rich in Metal

About three times further from the Sun than Earth, Psyche is a massive metal-rich asteroid and one of the most fascinating objects in the main asteroid belt. It was discovered by Italian astronomer Annibale de Gasparis on March 17, 1852. It was the 16th asteroid to be discovered, thus, sometimes referred to as 16 Psyche. This illustration portrays the 140-mile-wide (226-kilometer-wide) asteroid Psyche, located in the main asteroid belt between Mars and Jupiter.

The United Nations General Assembly (UNGA) declared on December 6, 2016, by resolution A/71/492 that International Asteroid Day (IAD) will be observed every June 30th of each year. Asteroid Day is a vibrant global awareness and education campaign that aims to educate people about asteroids and their significance in the formation of the universe, how to utilize their resources, pave the way for future space exploration, and safeguard Earth against asteroid impacts. Asteroid Day is conducted to commemorate the anniversary of the Tunguska asteroid event over Siberia, which was the largest asteroid impact on Earth in recorded history.

Image credit: [NASA/JPL-Caltech/ASU](https://www.nasa.gov/feature/jpl-caltech/asu)

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

Northern constellations best viewed during **June** are **Ursa Minor** and **Boötes** while those in the southern sky are **Libra** and **Lupus**. The prominent June constellations at 09:00 p.m. on 15 June 2024 are positioned directly overhead as shown in Figure 1. [1,2]

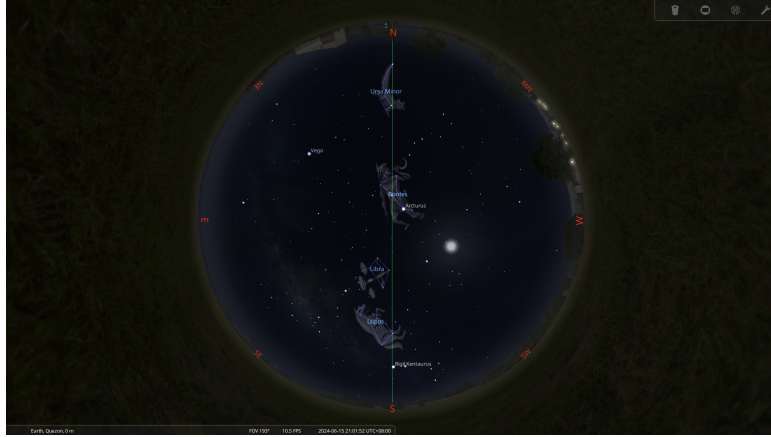


Figure 1: The view of the night sky featuring the prominent June constellations at 09:00 p.m. on 15 June 2024 using the Stellarium software

Ursa Minor, or the Little Bear, is a noticeable constellation because of its unique pattern, and its most distinctive characteristic, the Little Dipper asterism, which consists of seven stars. The tip of the Little Dipper's handle is indicated by Polaris or the North Star, an essential navigational tool due to its relatively constant position near the north celestial pole. Given its northern location, Ursa Minor isn't very abundant in deep-sky objects. Nonetheless, it does host a small number of galaxies, such as the Ursa Minor Dwarf, a dwarf spheroidal galaxy that orbits the Milky Way galaxy, and the NGC 6217 [Figure 2a], a barred spiral galaxy situated roughly 67 million light-years from Earth. [2,3]

Boötes, or the Herdsman of the Stars, is most recognized for its brilliant stars, particularly Arcturus, the fourth brightest in the night sky and the brightest star in the Northern Hemisphere. Arcturus, which marks the left foot of Boötes, is a component of two prominent asterisms, the Great Diamond and the Spring Triangle. The constellation houses noteworthy deep-sky objects, including the Boötes Dwarf Galaxy, a satellite galaxy to the Milky Way, and NGC 5248 [Figure 2b], a condensed intermediate spiral galaxy. [2,4]



Figure 2: The Northern Constellations

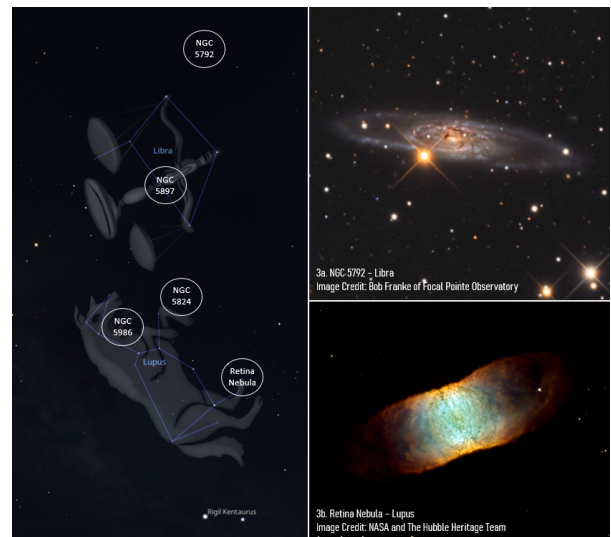


Figure 3: The Southern Constellations

Libra, or the Balance, is the lone zodiacal constellation that is neither an animal nor a mythological character. The constellation's brightest stars, Zubeneshamali and Zubenelgenubi, represent the balancing beam of the scale while the other two stars, Zubenelakrab and Brachium, symbolize the weighing pans. Various fascinating objects can be found in Libra, however, not many of them are bright ones, such as the globular cluster NGC 5897, and NGC 5792 [Figure 3a], a spiral galaxy with rings and bars located at 94 million light-years away. [2,5]

Lupus, or the Wolf, has a relatively large area of 334 square degrees, however, it does not host any particular bright stars, making it more difficult to locate. Its brightest star, Alpha Lupi, shines at magnitude 2.30, making it fainter than the other constellations' brightest star. The constellation contains several intriguing deep-sky objects including the globular cluster NGC 5824 and NGC 5986, which are visible through a small telescope. Another impressive object in Lupus is the Retina Nebula (IC 4406) [Figure 3b], a rectangular-shaped bipolar planetary nebula, thus also named 'The Box Nebula'. [6]

Planetary Location

Mars and **Saturn** can be seen rising on the eastern horizon early in the morning, displaying their presence for the entire month. **Jupiter** will not be readily observable at the beginning of June, but will eventually be visible towards the middle until the end of the month as it rises at an altitude of more than 10° above the horizon. On the other hand, **Mercury** will be sitting very low on the eastern horizon in the first few days of June making it challenging to see as it gets lost in the Sun's brightness. Moreover, **Venus** will not be visible due to its proximity to the Sun. [1,7,8]

A *planetary parade* of six (6) planets – **Saturn**, **Neptune**, **Mars**, **Uranus**, **Mercury**, and **Jupiter** – will occur in the morning of **03 June** [Figure 4]. Viewing planets Neptune and Uranus will require a modest telescope or high-powered binoculars, while, Jupiter and Mercury will be difficult to observe as it gets lost in the glare of the Sun. Only the early morning objects Saturn and Mars will be readily visible in this astronomical phenomenon. [1]



Figure 4: The view of the eastern sky showing the planetary alignment of six (6) planets on 03 June at 05:00 a.m. using Stellarium. Also, apparent in the image is the close approach of the Moon and Mars.

On 03 June, at 05:42 a.m., the **Waning Crescent Moon** and **Mars** will make a close approach passing within $2^\circ 09'$ of each other. The two objects will be in conjunction at 07:37 a.m., with the Moon passing $2^\circ 24'$ to the north of Mars, where both planets lie in the constellation Pisces. Due to the presence of the Sun, the conjunction will not be viewed by the naked eye, but the best view of their close pairing will be at 05:00 a.m. when the two objects will be lying high in the eastern sky [Figure 4]. [7,9,10]

Venus will reach superior solar conjunction on 05 June at 12:03 a.m., that is, as Venus moves from Earth to the far side of the solar system, it will pass very near to the Sun in the sky. This signifies the end of Venus's morning appearance and the beginning of its gradual transition into an evening object in the following few weeks. [11]

Moreover, **Mercury** will also be in superior solar conjunction at 12:38 a.m. on 15 June. This happens every synodic cycle of the planet or approximately every 116 days. Mercury will appear at a separation of $0^\circ 56'$ from the Sun at its closest point, making it completely invisible for several weeks due to the glare of the Sun. [12]

The **Waning Gibbous Moon** and **Saturn** will make a close approach at 10:56 p.m. on 27 June passing within 4.1 arcminutes of each other. Moreover, the two objects will share the same right ascension at exactly 11:00 p.m., separated by $4'48''$. Unfortunately, the exact event will not be observable since the Moon and Saturn are still below the horizon, however, the two objects can be seen close to each other at 12:00 a.m. on 28 June [Figure 5]. [7,13,14]



Figure 5: The view of the southern sky showing the close approach of the Waning Gibbous Moon and Saturn on 28 June at 12:00 a.m. using Stellarium.

On 30 June at 03:16 a.m., **Saturn** will enter retrograde motion, reversing its course and moving westward through the constellations, ceasing its typical eastward motion. All of the outer planets in our solar system periodically experience this reversal of direction, which occurs a few months before they approach opposition. [15]

The Earth's rotation around the Sun is what causes the retrograde motion. The apparent positions of objects in the sky seem to shift every year due to our perspective changing as the Earth revolves around the Sun. [15]

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.

June Solstice

June solstice, also known as the **Summer solstice**, will occur at 04:51 a.m. on 21 June, the longest day in the northern hemisphere. On this day, the Sun reaches its highest northern position in the sky, in the constellation of Cancer at a declination of 23.5°N . Astronomers mark this day as the start of summer in the northern hemisphere, and winter in the southern hemisphere. [16]

Meteor Shower

The **Daytime Arietid** meteor shower will be viewed from **14 May to 24 June**, peaking on **07 June**. About 50 meteors per hour are expected to be produced by the meteor shower. It will be observable once its radiant point, the constellation Aries, is above the eastern horizon around 03:07 a.m. each night and remains active until around 05:00 a.m. the next day. The radiant point is highest in the sky around 10:00 a.m. and will likely produce its greatest show just before sunrise as seen in Figure 6. Favorably, the presence of the Waxing Crescent moon will present minimal impact on the meteor-watching throughout the night. [17]

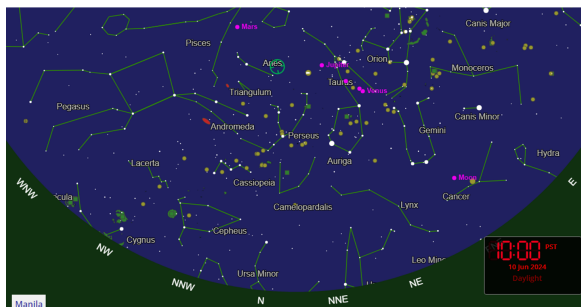


Figure 6: The view of the southeastern sky during the peak of Daytime Arietid on 07 June 2024 at 10:00 a.m. when the shower's radiant is represented by the green solid circle.



Figure 7: The view of the northern sky during the peak of June Bootid on 27 June 2024 at 08:00 p.m. when the shower's radiant is represented by the green solid circle.

Another meteor shower that can be seen in June is the **June Bootid** meteor shower which will be active from **22 June to 02 July**, with peak activity on **27 June**. In Manila, the shower will be active each day from dusk until around 03:38 a.m., when its radiant point, the constellation Bootes is highest in the sky. The radiant point is highest in the sky around 08:00 p.m. producing the best view of the meteor as depicted in Figure 7. [18]

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 June 2024

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

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24 May 2024

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