PRESS RELEASE JUNE 2022

ASTRONOMICAL DIARY

PREPARED BY ASTRONOMICAL PUBLICATION UNIT, SPACE SCIENCE AND ASTRONOMY SECTION

ASTRONOMICAL EVENTS, JUNE 2022

DATE	EVENT	TIME
2	Moon at Apogee (Distance = 406,145.934 km)	09:13 AM
14	Perigean Full Moon	07:52 PM
15	Moon at Perigee (Distance = 357,539.327 km)	07:23 AM
17	Mercury at greatest western elongation	05:21 AM
18	Close Approach of Moon and Saturn	10:48 PM
19	Mercury at highest altitude in morning sky	- - -
21	June Solstice	05:14 PM
21	Close Approach of Moon and Jupiter	11:54 PM
22	Mercury at dichotomy	06:40 PM
23	Close Approach of Moon and Mars	03:07 AM
26	Close Approach of Moon and Venus	02:30 PM
27	June Bootids	08:00 PM
29	Moon at Apogee (Distance = 406,542.449 km)	02:08 PM

PHASES OF THE MOON

First Quarter
June 07 10:48 PM

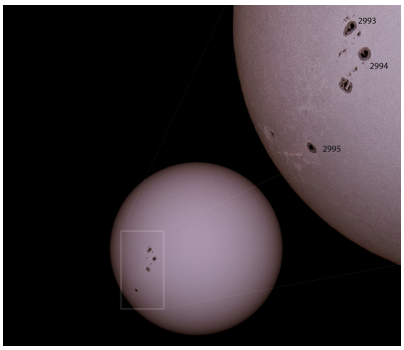
Full Moon
June 14 07:52 PM

Last Quarter
June 21 11:11 AM

New Moon
June 29 10:52 AM

RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
June 01	04:39 AM	05:15 PM	03:14 AM	03:42 PM	01:38 AM	01:43 PM	01:32 AM	01:36 PM	11:20 PM	*10:57 AM
June 11	04:07 AM	04:46 PM	03:16 AM	03:53 PM	01:23 AM	01:34 PM	12:58 AM	01:03 PM	10:41 PM	*10:17 AM
June 21	04:00 AM	04:46 PM	03:20 AM	04:05 PM	01:07 AM	01:24 PM	12:23 AM	12:28 PM	10:01 PM	*09:37 AM
June 30	04:15 AM	05:10 PM	03:26 AM	04:16 PM	12:53 AM	01:15 PM	11:47 PM	*11:57 AM	09:24 PM	*09:01 AM



SUNSPOT GROUP

ASTRONOMY PICTURE OF THE MONTH

This image of the Sun was taken this morning, 21 April 2022, showing three (3) large sunspot groups. Sunspots are areas on the Sun's surface that are relatively cooler and appear dark than its surroundings. These patches are roughly the size of Earth, or about 20-40 times larger than a typical spot. The Sun is entering the Solar Maximum phase of its current solar cycle, where there will be an expected increase in solar activity (e.g., frequent solar flares, increased number of sunspots, and the like).

Photo details: Canon EOS 6D MII, Prime Focus in 90mm refracting telescope with Baader Solar Filter, ISO 100 SS 1/1250sec
Image Credit: Mendoza, L.P.

Notes:
*[1] * following day*
[2] All times displayed are in Philippine Standard Time (PhST)

"tracking the sky…helping the country"
PAGASA Science Garden Complex, BIR Road,
Brgy. Central, Quezon City, Metro Manila, Philippines

Telephone Number: 8-284-0800 loc 116, 107, 106
Website: https://bagong.pagasa.dost.gov.ph

Stars and Constellations

June is the best month to observe the northern constellations of **Boötes** and **Ursa Minor** and the southern constellations **Libra** and **Lupus**. Figure 1 shows the view of the June constellation located high in the sky on 15 June 2022 at 9:00 PM. The brightest stars of **Ursa Minor** are known asterisms in the northern sky, the **Little Dipper**. **Little Dipper** is an asterism used for navigation because the star that marks the end of the Dipper's handle or the tip of the Bear's tail, **Polaris**, is the closest bright star to the north celestial pole [1].

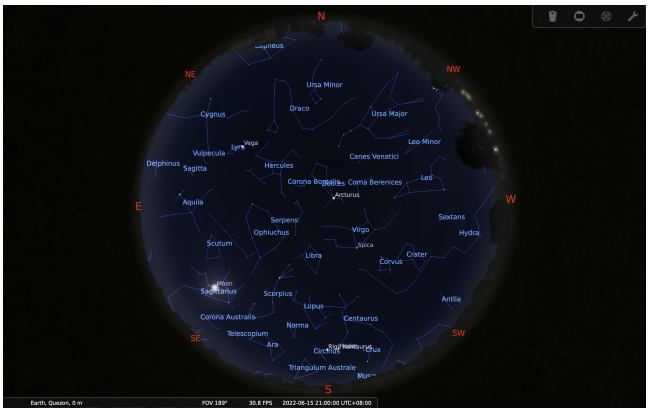


Figure 1: The view of the night sky featuring the prominent June constellations at 9:00 PM on 15 June 2022 using the Stellarium software

Arcturus, the brightest star in **Boötes**, is a part of two prominent spring asterisms namely, the **Spring Triangle** with stars **Spica** of **Virgo** and **Regulus** of **Leo** (Figure 2) and the **Great Diamond of Virgo** with **Spica**, **Denebola** of **Leo**, and **Cor Caroli** of **Canes Venatici** (Figure 3) [1].

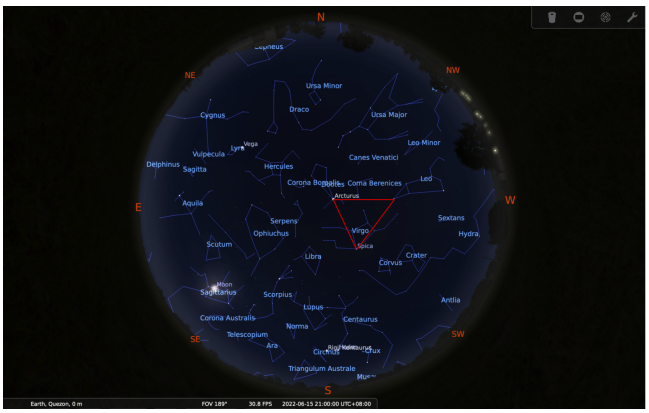


Figure 2: The position of the Spring Triangle asterism in the sky at 9:00 PM on 15 June 2022 using the Stellarium software

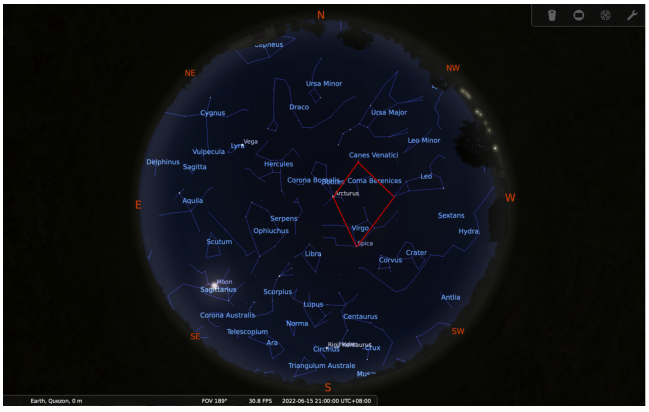


Figure 3: The position of the Great Diamond asterism in the sky at 9:00 PM on 15 June 2022 using the Stellarium software

Ursa Minor, **Bootes**, and **Libra** do not contain many bright deep-sky objects, while **Lupus** contains several interesting deep-sky objects. These include the bright globular clusters **NGC 5927**, **NGC 5824**, and **NGC**

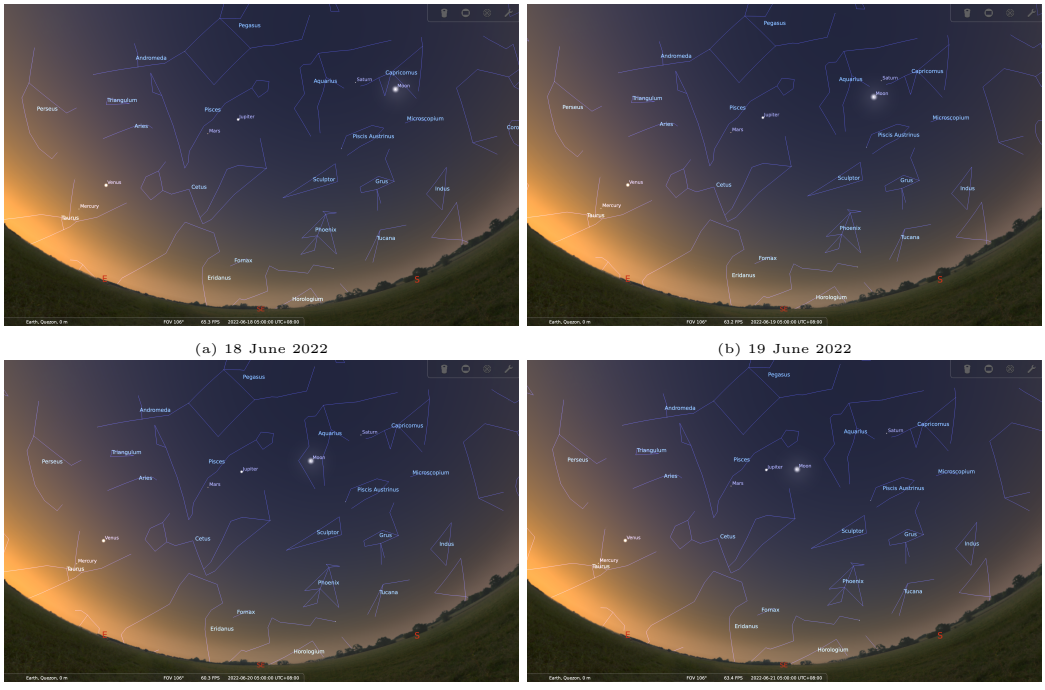
5986, the planetary nebulae **NGC 5882** and **IC 4406**, also known as the **Retina Nebula**, the open clusters **NGC 5822** and **NGC 5749**, and lastly, a supernova remnant observed in 1006 called **SN 1006** [1].

Figure 4: The position of the deep-sky objects in Lupus at 9:00 PM on 15 June 2022 using the Stellarium software

Planetary Location

Mercury, Venus, **Mars**, **Jupiter**, and **Saturn** will be visible in the eastern sky for the entire month. **Mercury** lies very low near the horizon during the first half of the month but is best observed later on at the end of the month [2]. On 17 June at 5:21 AM, **Mercury** will be at the greatest separation from the Sun, also known as the greatest western elongation [3]. On 19 June, **Mercury** is at its highest altitude in its May to July 2022 morning apparition [4]. **Mercury** is then at dichotomy or will reach half phase on 22 June at 6:40 PM [5].

The month of June provides a rare opportunity to view the planets **Mercury, Venus**, **Mars**, **Jupiter**, and **Saturn** at the same time in the eastern sky before sunrise. The daily view of the eastern sky at around 5:00 AM showcasing the stunning view of the planetary parade joined each day by the **Moon** from 18-27 June, together with its background constellations, is shown in 5 [6].



(a) 18 June 2022

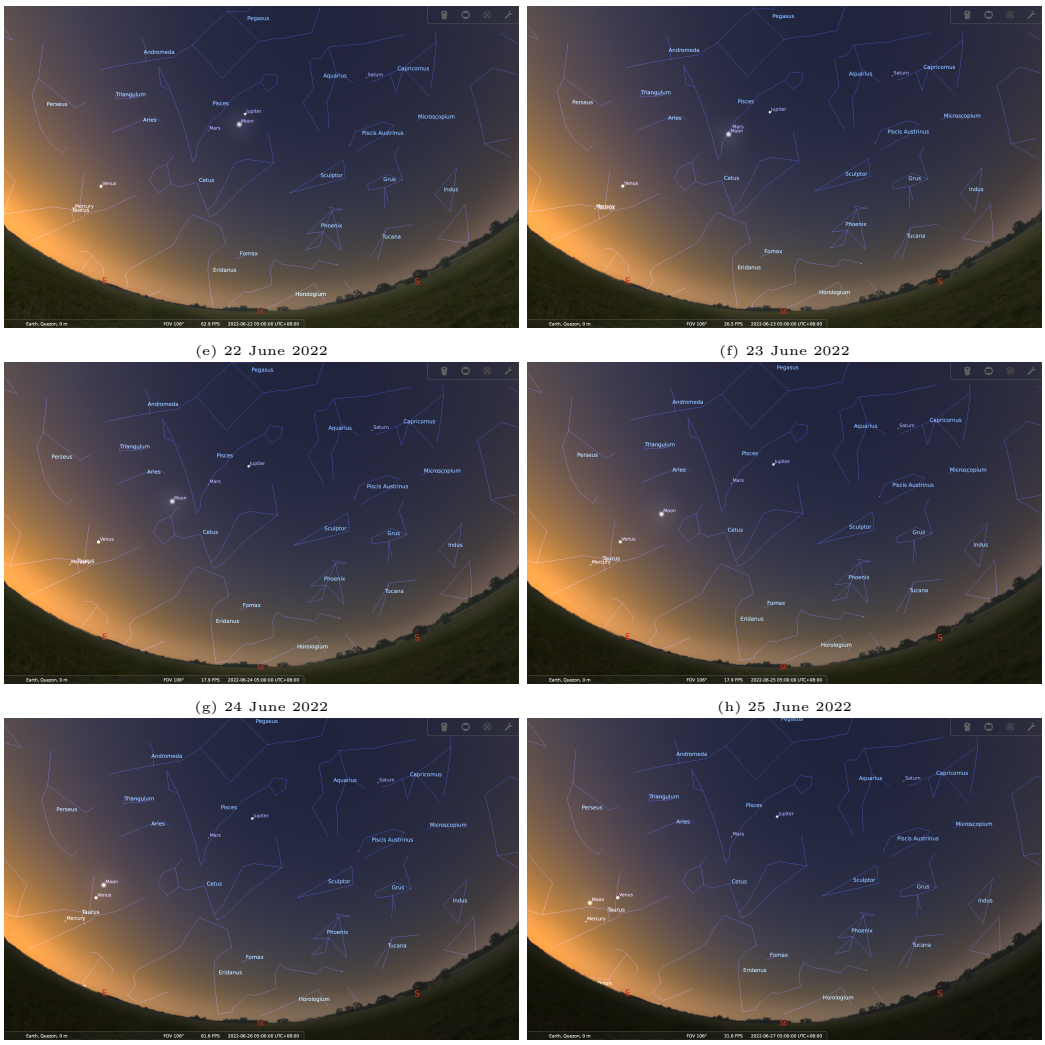
(b) 19 June 2022

(c) 20 June 2022

(d) 21 June 2022

Figure 5: The daily view of the east northeast sky from 18-27 June 2022 showing the Planetary Parade of Mercury, Venus, Mars, Jupiter, and Saturn joined by the Moon at 5:00 PM using the Stellarium application

Several close pairings, also known as **appulse,** are observable from mid to late June. On 18 June at 10:48 PM, the **Waning Gibbous Moon** and **Saturn** both located in **Capricornus**, are about 4° from each other (Figure 5a) [7]. On 21 June at 11:54 PM, the **Last Quarter Moon** and **Jupiter**, located in **Cetus** and **Pisces**,



(e) 22 June 2022

(f) 23 June 2022

(g) 24 June 2022

(h) 25 June 2022

(i) 26 June 2022

(j) 27 June 2022

Figure 5: The daily view of the east northeast sky from 18-27 June 2022 showing the Planetary Parade of Mercury, Venus, Mars, Jupiter, and Saturn joined by the Moon at 5:00 PM using the Stellarium application

respectively, will be passing 2°11' of each other (Figure 5d) [8]. Meanwhile, the **Waning Crescent Moon** and **Mars**, both located in **Pisces**, will be merely 0°50' of each other on 23 June at 3:07 AM (Figure 5f) [9]. Lastly, the **Waning Crescent Moon** will be about 2°35' away from **Venus** on 26 June at 2:30 PM as shown in Figure 5i. Both the **Moon** and **Venus** will be in **Taurus** [10]. The said close pairings are visible to the naked eye or through a pair of binoculars and are too widely separated to fit within the field of view of a telescope.

Meteor Showers

The **June Boötids** is a meteor shower produced by the **Comet 7P/Pons-Winnecke**. This meteor shower is active from 22 June to 2 July, with a peak of activity occurring around 27 June. The radiant of the meteor shower, **Boötes**, will start to be visible after sunset until it sets on the western horizon at around 3:40 AM the following day. The number of visible meteors increases as the radiant becomes higher in the sky at around 8:00 PM. Figure 6 shows the position of the radiant as it culminates at around 8:00 PM. The **nearing new moon phase** will cause minimal interference [11, 12].

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.

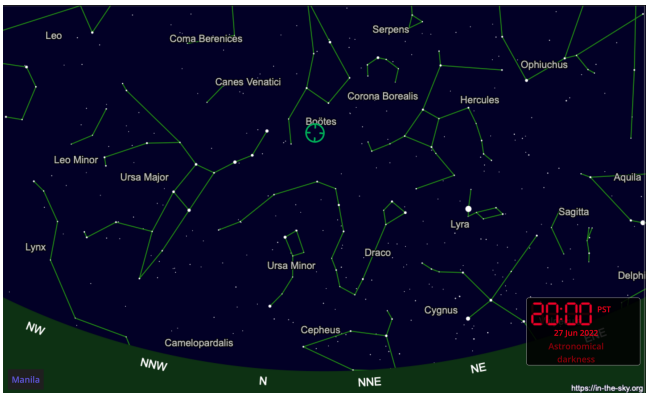


Figure 6: The view of the northern sky during the peak of **June Boötids** on 27 June 2022 at 8:00 PM when the shower's radiant represented by the green solid circle is highest in the sky

June Solstice

The **June Solstice** will be on 21 June at 5:14 PM. By then, the Sun will reach its most northerly point in the sky, in **Cancer**, at a declination of 23.5°N. During the **June Solstice**, the northern hemisphere will experience the longest day, and this day also marks the first day of summer. Consequently, this day marks the first day of winter in the southern hemisphere, wherein the Sun stays lesser time staying above the horizon than any other day of the year [13].

Supermoon

A **Supermoon** technically known as the **perigean Full Moon**, is an astronomical phenomenon occurring when the closest approach of the **Moon** to the **Earth**, referred to as perigee, coincides with a **Full Moon**. The distance of the **Moon** from the **Earth** should be about 363,300 km. The **Full Moon** on 14 June will be about 357,656.377 km away from **Earth**, thus, considered a **Supermoon**. According to NASA, the **Moon** may appear up to 17% bigger and 30% brighter than the average **Full Moon** during **Supermoon** . However, the change in size and brightness of the **Moon** during the **Supermoon** compared to the regular **Full Moon** might be difficult to detect through visual comparison. Change in the size of the **Moon** can be recognized once compared side-by-side with the previous photo of a regular **Full Moon** [6, 14].

Calendar of Astronomical Events for June 2022

Table 1 shows summary of the astronomical events for the month of June 2022. All times displayed are in Philippines Standard Time (PhST).

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

Date	Event	Time
2	Moon at Apogee (Distance = 406,145.934 km)	9:13 AM
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Approved by:

Ms. SHIRLEY J. DAVID
OIC, RDTD

13 May 2022

For more information, call or email:

Ms. MA. ROSARIO C. RAMOS, RCE
Chief, SSAS-RDTD, PAGASA-DOST
Diliman, Quezon City
Trunkline: 8284-0800 local 107
Email address: astronomy@pagasa.dost.gov.ph

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