





ASTRONOMICAL DIARY

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

ASTRONOMICAL EVENTS, SEPTEMBER 2022

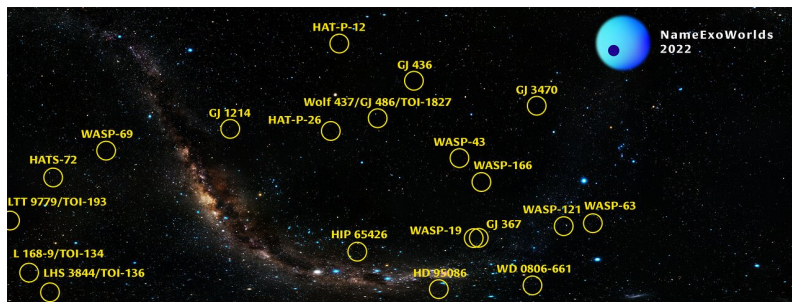
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PHASES OF THE MOON

	First Quarter Sep 04 02:08 AM
	Full Moon Sep 10 05:59 PM
	Last Quarter Sep 18 05:52 AM
	New Moon Sep 26 05:55 AM

RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Sep 01	07:33 AM	07:27 PM	04:48 AM	05:23 PM	11:10 PM	11:59 AM	07:38 PM	*07:47 AM	05:02 PM	*04:36 AM
Sep 11	07:08 AM	06:55 PM	05:01 AM	05:27 PM	10:51 PM	11:43 AM	06:55 PM	*07:03 AM	04:21 PM	*03:53 AM
Sep 21	06:04 AM	05:56 PM	05:13 AM	05:29 PM	10:30 PM	11:24 AM	06:11 PM	*06:19 AM	03:39 PM	*03:12 AM
Sep 30	04:57 AM	05:03 PM	05:23 AM	05:30 PM	10:08 PM	11:04 AM	05:32 PM	*05:38 AM	03:03 PM	*02:35 AM



NameExoWorlds 2022 Star Chart, Credit: IAU OAO/NARIT/M. Tangmatithan
Read IAU Press Release here: [iau.org/news/pressreleases/detail/iau2209/](https://www.iau.org/news/pressreleases/detail/iau2209/)

NAMEEXOWORLDS 2022

IAU global contest to name the next exoplanets and their host stars

The International Astronomical Union (IAU), through a collaboration between the IAU EC WG on Exoplanetary Systems Nomenclature and the IAU Office for Astronomy Outreach, invites professional astronomers, amateur astronomers, astronomy enthusiasts, teachers and students to come together and propose to name one of the 20 exoworlds (1 exoplanet +1 star).

The systems to be named by NameExoWorlds 2022 are among some of the first exoplanet targets of the James Webb Space Telescope. The exoplanets have been discovered through a mix of techniques, mostly via the transit method and direct imaging.

To know more about this competition, you may visit the **NameExoworlds Official Website:** nameexoworlds.iau.org/2022edition

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

The constellations best observed in September are Aries, Pisces, Cassiopeia, Cepheus, Lacerta, Pegasus, Ursa Minor, Draco, Cygnus, Lyra, Vulpecula, Sagitta, Hercules, and Corona Borealis in the northern constellations, while Capricornus, Aquarius, Sagittarius, Scorpius, Microscopium, Sculptor, Indus, Telescopium and Corona Australis are located in the southern sky [1]. Figure 1 shows the view of the sky on 15 September at around 09:00 PM when the September constellations are situated overhead.

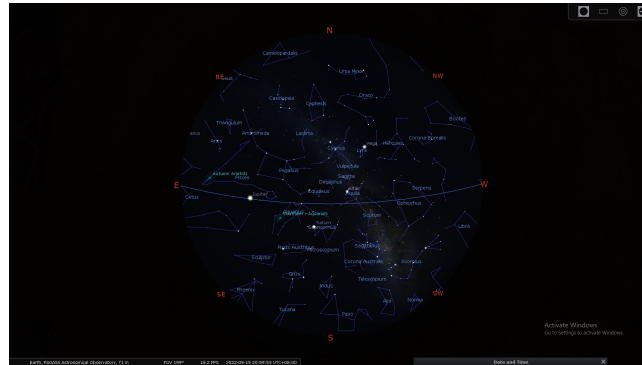
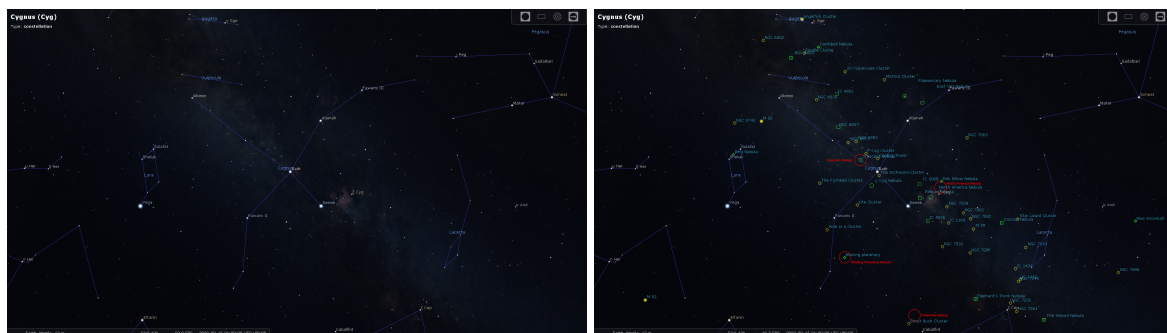


Figure 1: The view of the night sky featuring the prominent September constellations showing the Northern and the Southern Hemisphere on 15 September at 09:00 PM using the Stellarium software

The constellation **Cygnus**, the Swan can easily be recognized as a large cross-shaped asterism known as the **Northern Cross** that is shaped by the stars Deneb (Alpha Cygni), Sadr (Gamma Cygni), Albireo (Beta Cygni), Fawaris (Delta Cygni) and Aljanah (Epsilon Cygni). The constellation Cygnus holds some interesting deep sky objects such as the North America Nebula (NC 7000), the Crescent Nebula (NGC 6888), the Blinking Planetary Nebula (NGC 6826), and the Fireworks Galaxy (NGC 6946) which are best known telescope targets (Figure 2) [2].



(a) Constellation Cygnus and the asterism Northern Cross

(b) Some interesting Deep Sky Objects

Figure 2: The position of some prominent deep sky objects in the constellation Cygnus on 15 September at 9:00 PM using the Stellarium software

This month, the asterism known as the **Summer Triangle** can be observed in the night sky. It is formed by the stars **Vega** in the constellation Lyra with magnitude 0.0, **Altair** in the constellation Aquila with magnitude 0.75, and **Deneb** in the constellation Cygnus with magnitude 1.25. These stars are also the 5th, 12th, and 19th brightest stars in the night sky, respectively.

The constellation **Vulpecula** the Little Fox is a dim, unnoticeable object within the Summer Triangle (Figure 3). Located in this constellation is the first discovered planetary nebula, the **Dumbbell Nebula (M27)**, which can be seen using a powerful binocular in a clear sky condition, and only under a telescope does the nebula's double-lobed shape becomes visible.

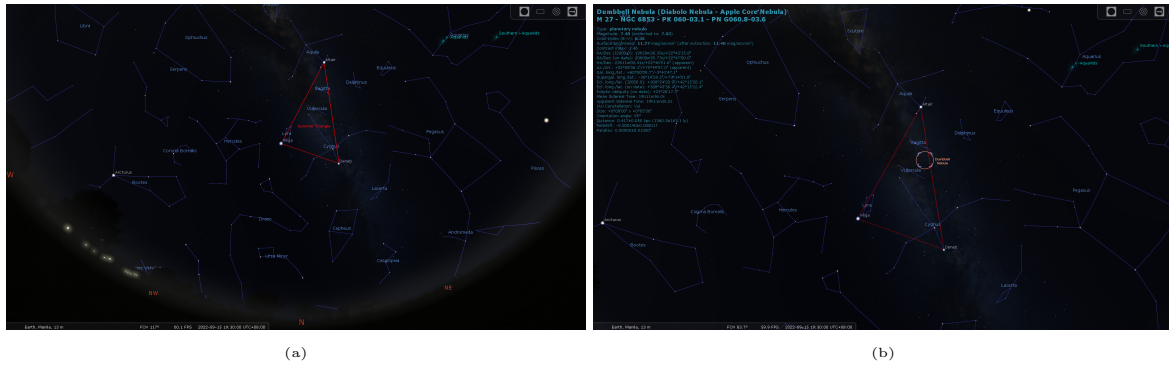


Figure 3: The view of the northwestern sky showing the (a) asterism “Summer Triangle”, and within the asterism is the (b) constellation Vulpecula and the famous Dumbbell Nebula on 15 September at 07:30 PM using the Stellarium software

The winged horse from Greek mythology Pegasus is the inspiration for this conspicuous constellation in the northern sky. The constellation **Pegasus** is visible in the Northern Hemisphere from the end of the summer to the beginning of autumn. The constellation is well-known for housing the first exoplanet ever discovered, 51 Pegasi b around a sun-like star, as well as the M15 galaxy. The **Great Square of Pegasus**, an asterism that stands out in this constellation is made up of four stars named **Markab, Scheat, Algenib, and Alpheratz** (Figure 4) [3].



Figure 4: The view of the northeastern sky showing the position of the constellation Pegasus with its famous asterism “Great Square of Pegasus”, and its famous Pegasus Cluster M15 and the location of the Andromeda Galaxy on 15 September at 9:00 PM using the Stellarium software

Planetary Location

Mercury is visibly low in the western horizon shortly after sunset during the first week of the month. It will eventually will be challenging to observe due to its proximity to the Sun. **Venus** remains a morning planet and is visible a few minutes before sunrise on the eastern horizon during the first week of the month. It will gradually be tricky to observe due to its low position on the eastern horizon.

Mars is first spotted during the late evening hour as it rises on the northeastern horizon. It will then reach its highest point in the sky a few minutes before sunrise. On the midnight of 17 September within the constellation Taurus, the Bull, the Moon and Mars will be seen paired closely as they rise in the eastern night sky, and will reach their highest point in the sky a few minutes before sunrise (Figure 5).

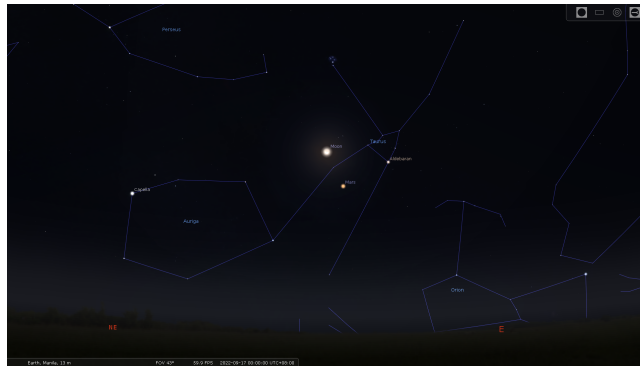


Figure 5: The view of the northeastern sky showing the Moon and Mars within the constellation Taurus on 17 September at 12:00 AM using the Stellarium software

Jupiter and **Saturn** are visible for much of the night throughout this month. The Waxing Gibbous Moon and Saturn will pass in close proximity on 08 September at 08:35 PM, at about $3^{\circ}43'$ (Figure 6). Meanwhile, on 11 September at 11:16 PM, the Waning Gibbous Moon and Jupiter will have a close approach, with the Moon passing $1^{\circ}48'$ to the south of Jupiter (Figure 7). On 27 September at 03:25 AM located in the constellation Pisces the Fish, Jupiter will be in opposition, lying opposite to the Sun in the sky [4, 5]



Figure 6: The view of the southeastern sky showing the Moon and Saturn on 08 September at 08:35 PM using the Stellarium software

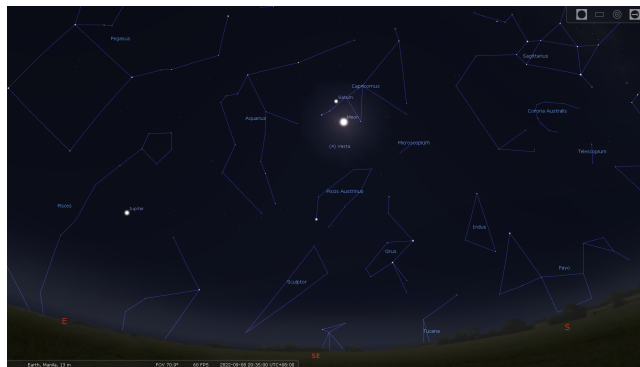


Figure 7: The view of the southeastern sky showing the Moon and Jupiter on 11 September at 11:16 PM using the Stellarium software

Meteor Showers

The **Aurigid Meteor Shower**, produced by the Comet C/1911 N1 (Kiess), is a meteor shower active from 28 August to 05 September, with peak activity occurring on 01 September. During its peak, the Aurigids is estimated to produce 6 meteors per hour. The Aurigids' radiant point is located in the constellation Auriga the Charioteer, which rises past midnight in the northeastern horizon and will remain visible until before sunrise (Figure 8) [6].

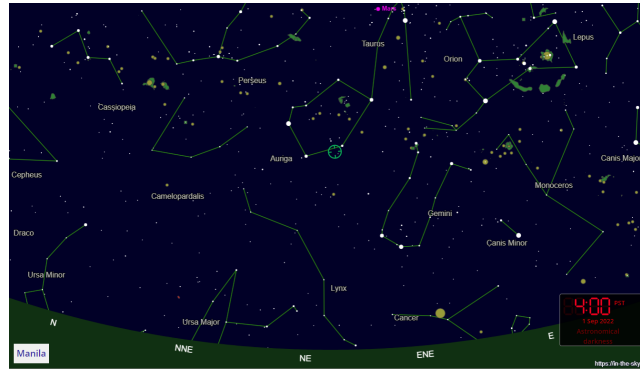


Figure 8: The view of the northeastern sky during the peak of Aurigids on 01 September 2022 at 04:00 AM when the shower's radiant represented by the green solid circle.

The **September ϵ -Perseids** is a meteor shower active from 05 September to 21 September, with peak activity on 09 September. The September ϵ -Perseids is expected to produce 5 meteors per hour during its peak. The radiant of the shower, the constellation Perseus, rises in the eastern sky at around 09:00 PM. Figure 9 shows the position of the radiant in the eastern sky at 02:00 AM on 09 September [7].

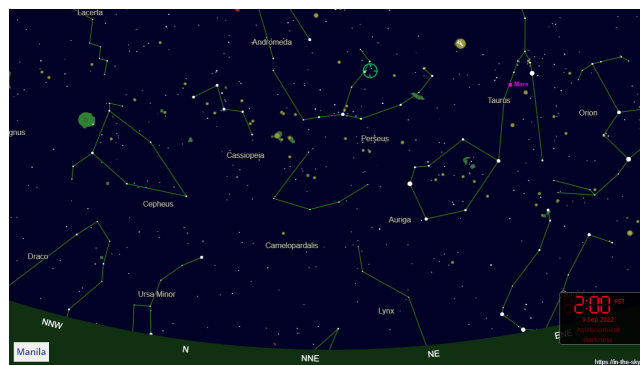


Figure 9: The view of the northeastern sky during the peak of ϵ -Perseids on 09 September 2022 at 02:00 AM when the shower's radiant represented by the green solid circle.

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.

September Equinox

September Equinox, also known as the **Autumnal Equinox** is on **23 September at 09:04 AM** [8]. The September Equinox marks the first day of autumn in the Northern Hemisphere and spring for the southern hemisphere. During equinoxes, the Sun is directly pointing over the Earth's equator, thus, creating nearly equal day and night. And also, on this day, the Sun exactly rises due east and exactly sets due west [9].

Calendar of Astronomical Events for September 2022

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

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Approved by:

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Chief, RDTD

18 August 2022

For more information, call or email:

Ms. MA. ROSARIO C. RAMOS, RCE
Chief, SSAS-RDTD
PAGASA-DOST
Quezon City
Trunkline: 8284-0800 local 106
Email address: astronomy@pagasa.dost.gov.ph

References

- [1] PAGASA Special Publication No. 840: The Philippine Star Atlas, 2019
- [2] C. Guide, "Constellations: A Guide to the Night Sky" <https://www.constellation-guide.com/constellations-by-month/september-constellations>, Last accessed on 2022-08-16, 2022.
- [3] K.A. Zimmermann, "Space.com Pegasus Constellation: Facts Notable Features" <https://www.space.com/16743-constellation-pegasus.html>, Last accessed on 2022-08-16, 2022.
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