





ASTRONOMICAL DIARY

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

ASTRONOMICAL EVENTS, FEBRUARY 2023

DATE	EVENT	TIME
1	C/2022 E3 ZTF at Perigee (Distance = 48 million km)	---
4	Moon at Apogee (Distance = 406,438.393)	04:55 PM
8	α -Centaurids (ZHR = 6)	04:00 AM
19	Moon at Perigee (Distance = 358,371.702)	05:06 PM
19-25	NATIONAL ASTRONOMY WEEK	---

PHASES OF THE MOON

	Full Moon Feb 06 02:29 AM
	Last Quarter Feb 14 00:01 AM
	New Moon Feb 20 15:06 PM
	First Quarter Feb 27 16:06 PM

RISE AND SET TIMES OF PLANETS

DATE	MERCURY		VENUS		MARS		JUPITER		SATURN	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Feb 01	04:47 AM	04:05 PM	07:55 AM	07:38 PM	01:15 PM	*02:16 AM	09:33 AM	09:38 PM	07:19 AM	06:52 PM
Feb 11	05:00 AM	04:20 PM	07:56 AM	07:50 PM	12:46 PM	*01:48 AM	08:59 AM	09:07 PM	06:44 AM	06:18 PM
Feb 21	05:18 AM	04:45 PM	07:56 AM	08:00 PM	12:21 PM	*01:23 AM	08:27 AM	08:36 PM	06:09 AM	05:44 PM
Feb 28	05:32 AM	05:06 PM	07:56 AM	08:08 PM	12:05 PM	*01:08 AM	08:04 AM	08:15 PM	05:44 AM	05:20 PM



COMET 2022 E3 ZTF

ASTRONOMY PICTURE OF THE MONTH

C/2022 E3 ZTF is a long-period comet discovered by the Zwicky Transient Facility (ZTF) on 02 March 2022. On 01 February 2023, it will make its closest approach to Earth at a distance of 0.28 AU (42 million km).

"This fine telescopic image from December 19 does show the comet's brighter greenish coma, short broad dust tail, and long faint ion tail stretching across a 2.5-degree wide field-of-view."

Image Credit: Dan Bartlett (<https://apod.nasa.gov/apod/ap221224.html>)

Notes:

[1] * following day

[2] All times displayed are in Philippine Standard Time (PhST)

Stars and Constellations

The constellations best observed in February are Auriga, Camelopardalis, Gemini, and Monoceros, which can be observed as northern constellations, while Canis Major, Columba, and Puppis will be the southern constellations for this month (Figure 1). Aside from the constellations, the popular deep sky objects; Messier 36, Messier 37, and Messier 38, the Eskimo Nebula, the Christmas Tree Cluster, the Cone Nebula, and the Rosette Nebula can be observed this February [1,2].

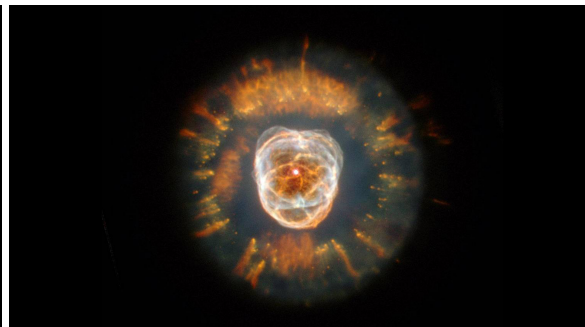


Figure 1: The view of the night sky featuring the prominent February constellations showing the Northern and the Southern Hemisphere on 14 February at 09:00 PM using the Stellarium software

Capella, the brightest star in the constellation Auriga the Charioteer, can be observed in the northern night sky. This star is one of the vertices of the asterism of the Winter Hexagon, together with the stars Rigel in the constellation Orion, Aldebaran in the constellation Taurus, Castor and Pollux in the constellation Gemini, Procyon in the constellation Canis Minor, and Sirius in the constellation Canis Major. Also, three Messier clusters can be found in the constellation Auriga; these are Messier 36, Messier 37, and Messier 38 [2,3].



(a) Figure 2a. The Rosette Nebula. Credit: NASA



(b) Figure 2b. The Eskimo Nebula. Credit: NASA

Figure 2

In the constellation Monoceros, the Unicorn, a deep sky object known as the Rosette Nebula can be seen. Believed to have formed about four million years ago, the Rosette Nebula has an open cluster of bright young stars called NGC 2244. Its red-like glow, as shown in Figure 2a, is due to the ultraviolet light emitted by the hot cluster of stars surrounding it. This nebula is located 5000 light-years away and has a span of 100 light-years; it can be observed using a small telescope [2,4]. Meanwhile, in the constellation Gemini, the planetary nebula NGC 2392, commonly called the Eskimo Nebula or sometimes referred to as the Clown Nebula, can be found (Figure 2b) [2,5].

Planetary Location

Mercury will remain a morning planet for the month of February, however, it will be difficult to observe due to its poor placement in the sky. Meanwhile, it will share the same right ascension with the 28-day-old moon on 19 February among the background stars of the constellation Capricornus [6].

Venus will remain a bright planet in the night sky. On 22 February, the Moon will pass at 2°05' South of Venus (Figure 3); both can be observed in the constellation Pisces [7]. There will also be a conjunction between Venus and Neptune on 15 February; however, it will not be visible without the use of a telescope or a binocular [8].

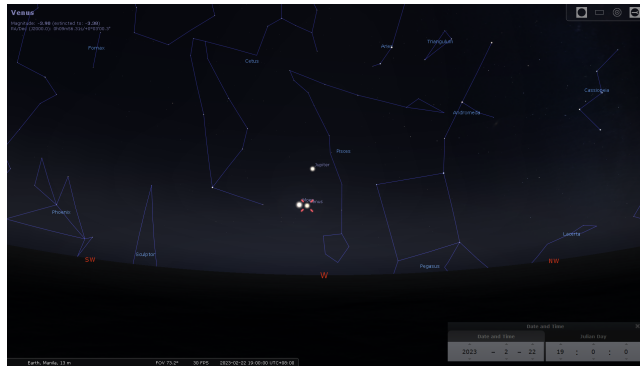


Figure 3: The view of the western sky on 22 February at 07:00 P.M. showing the close approach of the Moon and Venus together with Jupiter, 1 hour after sunset using the Stellarium software

Mars will be visible in the night sky during the whole month. On 28 February at 12:11 PM, the waxing gibbous Moon and Mars will approach closely, passing within $1^{\circ}03''$ of each other (Figure 4). However, because the events occurred during the day, they will not be visible [9].



Figure 4: The view of the western sky on 28 February at 09:00 P.M. showing the position of Moon and Mars during their close approach, using the Stellarium software

On 23 February, the waxing crescent Moon will be passing over **Jupiter**, creating a lunar occultation (Figure 5); however, it will not be observable in the Philippines, unlike their conjunction, which will also happen on the same day [10]. The Moon and Jupiter will be sharing the same right ascension, located among the background stars of the constellation Pisces [11].



Figure 5: The view of the western sky on 23 February at 07:00 P.M. showing the position of the Moon, Jupiter, and Venus, 1 hour after sunset, using the Stellarium software

Meanwhile, **Saturn** will not be observable during this month due to its proximity to the Sun.

Meteor Shower

The α -Centaurid meteor shower is active from 28 January to 21 February, with peak activity occurring on 08 February. At its peak, α -Centaurids is estimated to produce a nominal rate of 6 meteors per hour. The meteor shower is anticipated to be active from the time the radiant, constellation Centaurus rises in the northeastern sky around 12:22 AM. In Manila, during the peak of the meteor shower, expect to observe 1 meteor per hour since the radiant is on the lower portion of the sky (Figure 6) [12].

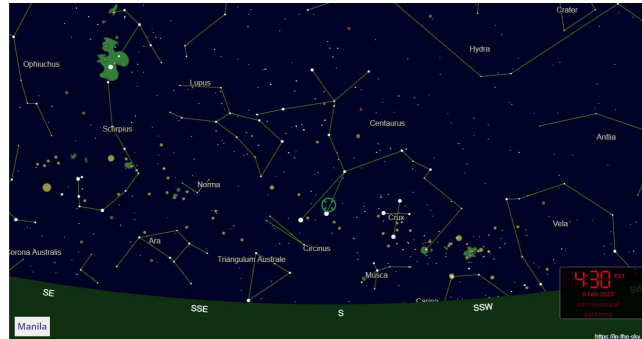


Figure 6: The view of the southern sky during the peak of α Centaurids on 08 February 2023 at 4:30 AM when the shower’s radiant is represented by the green solid circle.

The finest display of meteor shower is visible whenever the shower’s radiant point is above the horizon, with the number of visible meteors increasing as the radiant point ascends higher 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.

Comet C/2022 E3 (ZTF)

On 01 February 2023, **Comet C/2022 E3 ZTF** will make its closest approach to Earth at a distance of 0.28 AU (42 million km), among the background stars of the constellation Camelopardalis, the Giraffe. **C/2022 E3 ZTF** is a long-period comet discovered by the Zwicky Transient Facility (ZTF) on 02 March 2022. It will be visible in the evening sky until midnight. With a magnitude of 6, it can be seen using a telescope or binoculars [13,14].



Figure 7: "This fine telescopic image of C/2022 E3 ZTF from 19 December 2022 does show the comet’s brighter greenish coma, short broad dust tail, and long faint ion tail stretching across a 2.5-degree wide field-of-view" Image credit: Dan Bartlett/APOD NASA [15]

National Astronomy Week

The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) is mandated to spearhead the annual celebration of the **National Astronomy Week (NAW)**, observed every 3rd week of February under the Presidential Proclamation No. 130, s. 1993. This year's celebration will be on **19-25 February 2023**, with the theme "**Breaking Barriers in Philippine Astronomy: Overcoming Adversity for a Better and Sustainable Development**".

The theme for the 30th National Astronomy Week (NAW) celebration is in line with the United Nations Educational, Scientific and Cultural Organization (UNESCO) 17 Sustainable Development Goals (SDG). It focuses on the 4th SDG which is Education. The celebration of NAW will focus on educating the youth of this generation through a series of lectures and activities with the following objectives:

1. Promote Philippine Astronomy among youths;
2. Conduct free Planetarium shows and telescoping and stargazing sessions;
3. Conduct a free seminar and workshop for selected Public School Teachers of a selected province and;
4. Conduct an Astro-Camp for selected Junior High School Students

Calendar of Astronomical Events for February 2023

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

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19-25	NATIONAL ASTRONOMY WEEK	—

Approved by:

Ms. SHIRLEY J. DAVID
Chief, RDTD

27 January 2023

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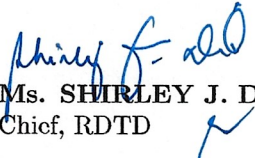
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