

THE ASTRONEWS



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A word from your editor by
Sapavith 'Ort' Vanapruch

Inside this issue:

Message from your Vice President

Please attend the December 3rd meeting at the Bishop Museum Planetarium. We will have special guests Fengchuan Liu and Yuko Kakazu of the Thirty Meter Telescope project here to give us an update.

Included in this AstroNews is another listing of equipment for sale and for free or your donation to HAS. Last month's listing was almost completely sold out. We still have a few of those items including all the parts of a Scopetronix eyepiece projection setup. (see listing at the end of Editor Notes)

Our goal with these donated sale items is to raise funds for HAS and to help members either start in observing or filling in their equipment needs. If you have spare equipment to sell for your own cash needs or for donations to HAS, you are welcome to list those items in the AstroNews!

HAS is getting more requests for school & Bishop Museum events. As much as the Board of Directors would like to help with all events, it is just not possible. Requests from school and other organizations such as Boy Scouts & Girl Scouts will surely be coming in. The "3rd Friday monthly evening Planetarium 2024" at Bishop Museum on December 20th, 2024, from 6:00 PM - 9:00 PM is still going on (Sunset 5:54 PM, Saturn rises 11:43 AM, & Jupiter rises at 4:42 PM). There

(Continued on page 10)

Club Information	2
President's Message	2
Observer's Notebook	3
Meeting Minutes	4
Event Calendar	5
NASA's Night Sky Notes	6
Meteor Log	7
Treasurer's Report	8

Upcoming Events:

- The next Board meeting is Sun., Dec 1st 3:30 PM. **(Zoom Meeting)**
- The next meeting is on Tue., Dec 3rd at the Bishop Museum at 7:30 PM. —**Hybrid (In person and Zoom) Meeting**
- Bishop Museum's planetarium show "Planetarium at night" is every 3rd Friday, 12/20/2024, of the month at 7:00 PM

President's Message

December 2024

Astronomy is one of the oldest human activities. Even our pre-human ancestors must have noticed the lunar cycle. It would have been important for hunting, traveling, or other activities conducted at night. Humans are storytelling creatures, and some of our first stories may have been about the night sky.

There was an interesting article in the November issue of *Sky and Telescope*. It looked at various stories related to the cluster we call the Pleiades. The similarity of these stories in many (though not all) societies around the world suggested to the author that they might be related. Many of these stories include seven sisters (as in our version) or other women, often associated with a male figure in Orion. However, most people can see only six stars there without optical aid. Many of the stories refer to a lost sister or put one of the women in a special category to explain this discrepancy.

The author speculates that these stories date back at least 100,000 years, to the time when our modern human ancestors left Africa to spread across the planet. He also cites separate linguistic data that suggest the same thing. Until about 100,000 years ago, two of the stars in the Pleiades that are currently so closely aligned that they appear as only one to the unaided eye were separated enough that they could be distinguished, making the cluster appear (to most observers) to have seven stars. As the stars gradually aligned and could no longer be seen as separate, the stories could have evolved (before we left Africa) to account for the diminished number.

If this scenario is correct, it has implications that weren't addressed by the author. First, it means that for at least 100,000 years, and perhaps much longer, humans have been able to tell detailed stories. Language and storytelling are some of the characteristics that most differentiate us from other animals, but our records of written language go back only several thousand years. Spoken language leaves fewer clues to its development.

(Continued on page 4)

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Observer's Notebook—December 2024 by Ort










Planets Close to the Moon Times are Hawaii Standard Time

- Dec 1, 16h, Moon 4.9° S of Mercury; 10° and 9° from Sun in evening sky; magnitudes -5.0 and 2.6
- Dec 4, 15h, Moon 2.22° SE of Venus; 45° and 44° from Sun in evening sky; magnitudes -7.9 and -4.2
- Dec 7, 23h, Moon 0.32° N of Saturn; 87° and 86° from Sun in evening sky; magnitudes -10.1 and 1.1; occultation
- Dec 8, 23h, Moon 0.76° NNW of Neptune; 99° from Sun in evening sky; magnitudes -10.6 and 7.9; occultation
- Dec 12, 22h, Moon 4.2° NNW of Uranus; 152° from Sun in evening sky; magnitudes -12.1 and 5.6
- Dec 14, 9h, Moon 5.4° N of Jupiter; 171° and 172° from Sun in evening midnight sky; magnitudes -12.6 and -2.8
- Dec 18, 0h, Moon 0.95° NE of Mars; 141° and 142° from Sun in morning sky; magnitudes -11.7 and -0.9; occultation
- Dec 28, 18h, Moon 6.4° S of Mercury; 22° from Sun in morning sky; magnitudes -6.1 and -0.4

Other Events of Interest Times are Hawaii Standard Time

- Dec 5, 16h, Mercury at inferior conjunction with the Sun; 0.678 AU from Earth; latitude 3.06°
- Dec 7, 11h, Jupiter at opposition in longitude; magnitude -2.8; declination 22.1°
- Dec 13, 14h, Geminid meteors; ZHR 150; 1 day before Full Moon
- Dec 18, 2h, Moon, Mars, and Beehive cluster within circle of diameter 3.22°; about 140° from the Sun in the morning sky; magnitudes -12, -1, 4
- Dec 20, 14h, December (northern winter) solstice
- Dec 21, 14h, Ursid meteors; ZHR 10; 1 day before Last Quarter Moon

Planets in December

 <h3>Mercury</h3> <p>is emerging into the morning sky as it approaches greatest elongation west. From Honolulu, it is visible in the dawn sky, rising at 05:37 (HST) – 1 hour and 22 minutes before the Sun .</p>	 <h3>Venus</h3> <p>is emerging into the evening sky as it approaches greatest elongation east. From Honolulu, it will become visible at around 18:06 (HST), 34° above your south-western horizon, as dusk fades to darkness.</p>	 <h3>Mars</h3> <p>is currently approaching opposition. From Honolulu, it is visible in the morning sky, becoming accessible around 21:29, when it reaches an altitude of 8° above your eastern horizon.</p>
 <h3>Jupiter</h3> <p>recently passed opposition. From Honolulu, it is visible in the evening sky, becoming accessible around 18:06 (HST), 12° above your eastern horizon, as dusk fades to darkness.</p>	 <h3>Saturn</h3> <p>is currently an early evening object, now receding into evening twilight. From Honolulu, it will become visible at around 18:23 (HST), 59° above your southern horizon, as dusk fades to darkness.</p>	 <h3>Uranus</h3> <p>recently passed opposition. From Honolulu, it is visible in the evening sky, becoming accessible around 18:48 (HST), 41° above your eastern horizon, as dusk fades to darkness.</p>
 <h3>Neptune</h3> <p>is currently an early evening object, now receding into evening twilight. From Honolulu, it will become visible at around 18:48 (HST), 66° above your southern horizon, as dusk fades to darkness.</p>	 <h3>Pluto (Dwarf Planet)</h3> <p>is not observable – it will reach its highest point in the sky during daytime and is no higher than 19° above the horizon at dusk.</p>	 <h3>4 Vesta (Asteroid)</h3> <p>is visible in the dawn sky, rising at 02:24 (HST) and reaching an altitude of 48° above the south-eastern horizon before fading from</p>

*November 5th 2024 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)
Andy Stroble*

Meeting was called to order at 7:34pm by President Chris Peterson.
Minutes of previous meeting unanimously adopted.
Comet, seen during in town star parties. President Chris has iPhone 11 pics!

Maksim was attending for the first time, after attending the Dillingham star party.

Elections of Board members to be held at the December meeting. Nominations still being sought for School Star Party Coordinator. A sitting ovation thanked Mark for his years of serviced in this position. He mentioned that the Coordinator is responsible for the club's presence on the Night Sky Network.

School star parties: HBA 11/7, Iolani (single class(11/18), Bishop Museum Third Friday on 11/15.

Vice President Bill announced that there will be speakers at the December Meeting, on the TMT. Bio's are in the current AstroNews. He also shared photos of the partial solar eclipse, and the Trifid nebula. Donated equipment for sale is listed in the AstroNews. And Bill possesses a 3D printer, if anyone needs small parts printed.

AstroNews Editor Ort shared photos, of the comet and other things, some taken with a GoPro. He also mentioned that we sometimes participate in daylight activities at schools, such as his recent attendance at the Girl Scouts Stem Fest, and at Princess Victoria Kaiulani Elementary school.

Treasurer Peter presented some recent photos, where no comets were harmed. Comparisons were made between a Sony RX10 and the SeeStar, with pictures of NGC 7000 and the Helix Nebula, using the SeeStar nebula filter. And there are rumors that SeeStar will be adding a Mosaic function.

At-large board member Steven shared photos from the recent school star party at Helemanu Elementary, and a quite detailed explanation of solar filtered photography, distinguishing between the photosphere and the chromosphere, faculae and plages.

Sabina related her adventures on Mauna Kea, where her Dwarf II visited his big brothers, and took pictures of many galaxies. She also shared a tour of globular clusters.

Meeting adjourned at 8:52pm.
There were 11 persons in person, and 6 unique zoom logins.

Faithfully submitted,
James Andy Stroble, Secretary.
Honolulu, Hawaii

(Continued from page 2) - President's Message

Further, this means that we could count at least up to seven by that time. When language and mathematical knowledge arose and how fast they developed are difficult questions to answer, but our long study of astronomy may be providing some clues.



Aurora Borealis above the northern region of Death Valley National Park. Caused by the May 2024 Extreme (G5) Geomagnetic Storm from Sunspot Cluster AR3664. Observed from just outside the park at Latitude 36.35° N on May 10-11, 2024. Photo by: Gary Chock
Equipment: Canon EOS 6D (H-alpha Modified), Rokinon 24mm f/1.4 ED AS UMC. Exposures: ISO 6400; f/2.0; 4 to 8 sec.

Hawaiian Astronomical Society

December 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 BoD Meeting 3:30 PM Zoom	2	3 General Meeting 7:30 PM Hybrid Bishop Museum	4	5	6	7 Public Party Geiger / Kahala Sunset 5:49 PM
8  1st Qtr 5:26AM	9	10	11	12	13	14  Full Moon 11:01PM
15	16	17	18	19	20 Planetarium At Night Bishop Museum 6:00 PM - 9:00 PM	21 Start of Winter (Winter Solstice) Public Party Dillingham Airfield Gate Close 7:00PM
22  3rd Qtr 12:18PM	23	24	25 Christmas	26	27	28 Club Party Dillingham Airfield Gate Close 7:00PM
29	30  New 12:26PM	31	Notes:			

<<Upcoming Star Parties>>

Public Party Geiger/Kahala December 7 — 7:00 PM

Public Party-Dillingham December 21 — 7:00 PM

Club Party Dillingham December 28 — 7:00 PM

Upcoming School Star Parties

Date	Time	Location

NASA's Night Sky Notes

December's Night Sky Notes: Spot the King of Planets

By Dave Prosper, Updated by Kat Troche



Jupiter is our solar system's undisputed king of the planets! Jupiter is bright and easy to spot from our vantage point on Earth, helped by its massive size and banded, reflective cloud tops. Jupiter even possesses moons the size of planets: Ganymede, its largest, is bigger than the planet Mercury. What's more, you can easily observe Jupiter and its moons with a modest instrument, just like Galileo did over 400 years ago.



NASA's Juno mission captured this look at the southern hemisphere of Jupiter on Feb. 17, 2020, during one of the spacecraft's close approaches to the giant planet. This high-resolution view is a composite of four images captured by the JunoCam imager and assembled by citizen scientist Kevin M. Gill. Credit: NASA, JPL-Caltech, SwRI, MSSS | Image processing by Kevin M. Gill, © CC BY

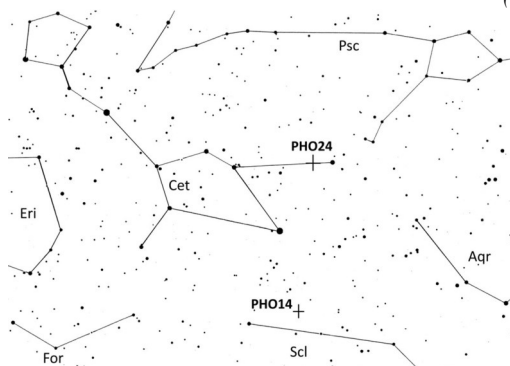
Jupiter's position as our solar system's largest planet is truly earned; you could fit 11 Earths along Jupiter's diameter, and in case you were looking to fill up Jupiter with some Earth-size marbles, you would need over 1300 Earths to fill it up – and that would still not be quite enough! However, despite its formidable size, Jupiter's true rule over the outer solar system comes from its enormous mass. If you took all of the planets in our solar system and put them together, they would still only be half as massive as Jupiter all by itself. Jupiter's mighty mass has shaped the orbits of countless comets and asteroids. Its gravity can fling these tiny objects towards our inner solar system and also draw them into itself, as famously observed in 1994 when Comet Shoemaker-Levy 9, drawn towards Jupiter in previous orbits, smashed into the gas giant's atmosphere. Its multiple fragments slammed into Jupiter's cloud tops

(Continued on page 9)

The month of December hosts the highly productive Geminid meteor shower which unfortunately is obscured by the full Moon. Let’s focus on two other December showers.

Phoenicids (254 PHO) - Only one impressive Phoenicid return has been reported, that of its discovery in 1956, when the ZHR probably reached ≈ 100 from $\alpha = 16^\circ$, $\delta = -45^\circ$, possibly with several peaks spread over a few hours. Significant activity was observed on 2014 December 1 which occurred at the time predicted by Sato and Watanabe (2010). From their paper we take the radiant position (labeled in the chart as “PHO14”) which is about 7° southwest of the star β Cet— far north of the radiant found in 1956. The stream is associated with 289P/Blanpain (probably = 2003WY25); the orbit of the comet is subject to Jupiter perturbations. Phoenicids are extremely (!) slow meteors. Any kind of observation, including “negative” reports, are worthy of submission and may help to verify model parameters.

(Continued on page 11)



Phases of the Moon (courtesy timeanddate.com)

First Quarter	Full Moon	Last Quarter	New Moon
December 8	December 14	December 22	December 30

Shower	Activity	Maximum		Radiant		V_∞ km/s	r	ZHR
		Date	λ_{\square}	α	δ			
Phoenicids (254 PHO)	Nov 28 - Dec 09	Dec 01	249.5°	08°	-27°	18	2.8	Var
Puppids/Velids (301 PUP)	Dec 01 - Dec 15	Dec 07	(255°)	123°	-45°	44	2.9	10
Monocerotids (019 MON)	Dec 05 - Dec 20	Dec 09	257°	100°	+08°	41	3.0	3
σ -Hydrids (016 HYD)	Dec 03 - Dec 20	Dec 09	257°	125°	+02°	58	3.0	7
Geminids (004 GEM)	Dec 04 - Dec 20	Dec 14	262.2°	112°	+33°	35	2.6	150
Comae Berenidids (020 COM)	Dec 05 - Feb 04	Dec 16	264°	158°	+30°	64	3.0	3
Ursids (015 URS)	Dec 17 - Dec 26	Dec 22	270.7°	217°	+76°	33	2.8	10

The Geminids will be obliterated by the bright full Moon, time to try the Phoenicids! For more info: Thomas Giguere, 808-782-1408, Thomas.giguere@yahoo.com. Thanks to the IMO and the AMS for observing information.

Cash Flow - 10/10/2024 to 11/11/2024

Beginning Balance	\$6,708.51
Money into selected accounts comes from	
Donation	\$5.00
Membership - Electronic	\$160.00
Membership - Electronic - Student	\$12.00
Membership - Family	\$18.00
Membership - Paper	\$78.00
Membership - Paper - Student	\$16.00
Total Money In	\$289.00
Money out of selected accounts goes to	
	\$0.00
Total Money Out	\$0.00
Difference	\$289.00
Ending Balance	\$6,997.51

Here are the financials up through November 11.

Thanks to everyone who donated, paid, or renewed. A reminder to folks with electronic family memberships. If you provide the e-mail address of your family members, they, too will receive a PDF copy of our newsletter.

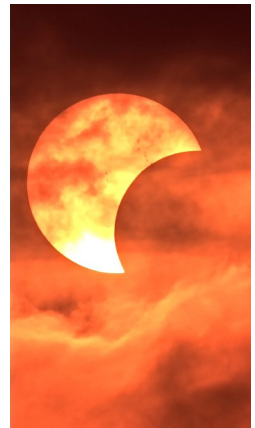
Covid wastewater nation-wide figures remain pretty low. There was a modest spike in Covid numbers in central Oahu in October, but that, too is receding. Of moderate concern are reported cases of H5N1 (bird flu) in central Oahu, as well as possible cases in Kaimuki. These have been recorded in Zebra Doves, and in barnyard fowl. If you see a dead bird, don't pick it up without protection. H5N1 does not transmit easily to people, but it has happened, and the death rate with people can reach 50%. Meanwhile, enjoy the sky.



Photo by Shane Abraham

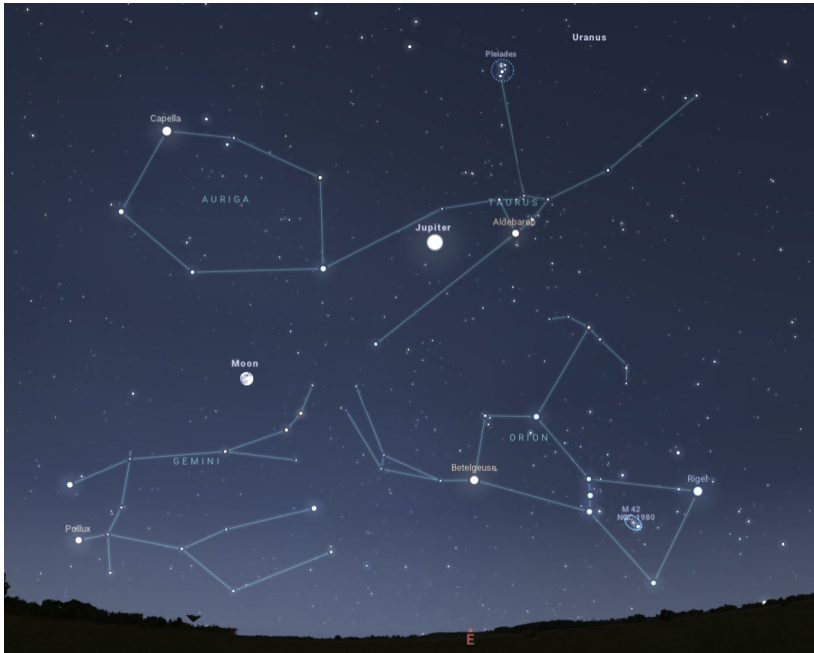
Left—C/2023 A3 on 10/13 near Pokai Bay with iPhone 15 pro max with two second exposure.

Right— Eclipse on 10/2 from Sandy Beach taken with Seestar S50



(Continued from page 6) NASA's Night Sky Notes

with such violence that the fireballs and dark impact spots were not only seen by NASA's orbiting Galileo probe but also by observers back on Earth!



Look for Jupiter near the Eye of the Bull, Aldebaran, in the Taurus constellation on the evening of December 15, 2024. Binoculars may help you spot Jupiter's moons as small bright star-like objects on either side of the planet. A small telescope will show them easily, along with Jupiter's famed cloud bands. How many can you count? Credit: Stellarium Web

Jupiter is easy to observe at night with our unaided eyes, as well-documented by the ancient astronomers who carefully recorded its slow movements from night to night. It can be one of the brightest objects in our nighttime skies, bested only by the Moon, Venus, and occasionally Mars, when the red planet is at opposition. That's impressive for a planet that, at its closest to Earth, is still over 365 million miles (587 million km) away. It's even more impressive that the giant world remains very bright to Earthbound observers at its furthest distance: 600 million miles (968 million km)! While the King of Planets has a coterie of 95 known moons, only the four large moons that Galileo originally observed in 1610 – Io, Europa, Ganymede, and Calisto – can be easily observed by Earth-based observers with very modest equipment. These are called, appropriately enough, the Galilean moons. Most telescopes will show the moons as faint star-like objects neatly lined up close to bright Jupiter. Most binoculars will show at least one or two moons orbiting the planet. Small telescopes will show all four of the Galilean moons if they are all visible, but some-

(Continued on page 10)

(Continued from page 9) NASA's Night Sky Notes

times they can pass behind or in front of Jupiter or even each other. Telescopes will also show details like Jupiter's cloud bands and, if powerful enough, large storms like its famous Great Red Spot, and the shadows of the Galilean moons passing between the Sun and Jupiter. Sketching the positions of Jupiter's moons during the course of an evening – and night to night – can be a rewarding project! You can download an activity guide from the Astronomical Society of the Pacific at bit.ly/drawjupitermoons

Now in its eighth year, NASA's Juno mission is one of just nine spacecraft to have visited this impressive world. Juno entered Jupiter's orbit in 2016 to begin its initial mission to study this giant world's mysterious interior. The years have proven Juno's mission a success, with data from the probe revolutionizing our understanding of this gassy world's guts. Juno's mission has since been extended to include the study of its large moons, and since 2021 the plucky probe, increasingly battered by Jupiter's powerful radiation belts, has made close flybys of the icy moons Ganymede and Europa, along with volcanic Io. What else will we potentially learn in 2030 with the Europa Clipper mission?

Find the latest discoveries from Juno and NASA's missions to Jupiter at science.nasa.gov/jupiter/

Originally posted by Dave Prosper: February 2023

Last Updated by Kat Troche: November 2024

(Continued from page 1) Editor Notes

is no school event this month. So, if you have a telescope and the event is in your area, please sign up and help.

The public star party at Dillingham Airfield on 11/2/2024 was not bad. Sue said "I got the Comet last evening at Dillingham. The sky surprised us and stayed clear with mixed clouds so we were able to give our visitors and pretty good show."



November "3rd Friday monthly evening Planetarium" on Friday, 11/15/2024, was not too bad. It was windy though. We were able to show Venus, Saturn, & Comet A3 to the visitors. Moon rose a little late (7:13 PM). So, no Moon viewing.

The club member only star party at Dillingham Airfield will be on 11/30/2024. Let's hope the weather is good. Hope you all have photos to share.

(Continued on page 11)

(Continued from page 7) - Meteor Log

σ -Hydrids (016 HYD) – This shower was thought to be a very minor shower with rates close to the visual detection threshold for much of the activity period. However, some bright meteors have been seen so the maximum ZHR reliably reaches 5–8. A maximum occasionally found nearer $\lambda_{\odot} \approx 262^{\circ}$ (December 14) is probably caused by mis-aligned Geminids as described for the MON. Visual IMO data from the period 2010–2021 show a maximum at $\lambda_{\odot} = 257^{\circ} - 258^{\circ}$ (December 9 -10). Video data from 2010–2021 indicate a peak at $\lambda_{\odot} \approx 255.5^{\circ}$ (December 6), and that HYD activity might persist till December 24. A careful choice of the observing field is necessary to distinguish HYD from the GEM and MON showers, which are active at the same time. Since the HYD radiant rises in the late evening hours, it is best viewed after local midnight.

(Continued from page 10) Editor Notes

Talk about sharing. I have a photo of Aurora Borealis from June by Gary Check from Death Valley National Park (Page 4). Also Shane Abraham has several photos he took from October (Page 8) and Comet C/2023 A3 below.



C2023 A3 on 10/29 in Waiialua second picture rotated camera to try get more of the tail
Telescope: Askar fra400
Focal length: 400mm
Camera: asi2600mc

On Sunday, 11/24/2024, I saw a cloud formation that I have never seen before. It is called Kelvin-Helmholtz clouds, Fluctus clouds, or Wave clouds. I was riding Hawaiian Railway Society train back from Koolina. Have you seen it before? This is my first time. I took this photo using my Samsung S23+. (<https://earthsky.org/earth/kelvin-helmholtz-clouds/>)



Many members now use Electronically Assisted Astronomy (EAA) devices. So, if you are observing and able to capture any night sky object. You can share it in AstroNews by emailing it to me at astronews@hawastsoc.org with some detail. I will post it.

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Earth Below

Earth's city lights streak by in this long-exposure photo taken by NASA astronaut Don Pettit on Oct. 24, 2024. The green glow of Earth's atmosphere is also visible on the horizon.

Image credit: NASA/Don Pettit