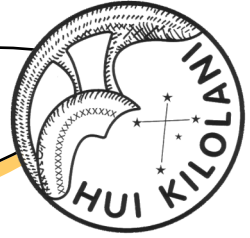


THE ASTRONEWS



Volume 73, Issue 1

January 2023

www.hawastsoc.org

A word from your editor by Sapavith 'Ort' Vanapraks

As Oahu COVID-19 case count daily average started to get better (99+), we hope that we could go hybrid this month. However, we could not arrange with Bishop Museum for January. Board of Director will work on it to get Hybrid meeting for February. Our public star party and school star party is starting back up. We are waiting for approval from City Park. Please check your email and website for an update.

NASA's Orion spacecraft successfully completed a parachute-assisted splashdown in the Pacific Ocean at 9:40 PST, 12:40 EST as the final major milestone of the Artemis I mission. It has been secured in the well deck of the USS Portland. The ship will soon begin its trip back to U.S. Naval Base San Diego, where engineers will remove Orion from the ship in preparation for transport back to Kennedy Space Center in Florida for post-flight analysis. Once at Kennedy, technicians will open the hatch and unload several payloads, including Commander Moonikin Campos, zero-gravity indicator Snoopy, and the official flight kit as part of de-servicing operations. In addition to removing the payloads, Orion's heat shield and other elements will be removed for analysis, and remaining hazards will be offloaded. (<https://blogs.nasa.gov/artemis/>)

Observing of Mare Orientale (Moon's Bulleye) was impossible during December 14 – 18, 2022. The weather in Hawaii was horrendous. We had strong wind and rain. I have not of any chance to see Mare Orientale in 2023 yet. I will post this once I have more

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Upcoming Events:

- The next Board meeting is Sun., Jan. 1st 3:30 PM. **(Zoom Meeting)**
- The next meeting is on Tue., Jan. 3rd at the Bishop Museum at 7:30 PM. —**Zoom Meeting**
- Bishop Museum's planetarium shows are every 1st Saturday of the month at 8:00 PM **(Online)** www.bishopmuseum.org/calendar

President's Message January 2023

The coming year will be one of transition for HAS. COVID is not gone and will probably be around for the foreseeable future, but vaccinations have allowed many activities to return to more normal levels. We plan to do the same. I was unable to get checked out on Bishop Museum's hybrid meeting system in time for January's meeting, but I have plans to do so in plenty of time for the February meeting, so we should have just one Zoom-only meeting left. I am expecting new Bishop Museum planetarium director Romee Gaoiran to join the meeting and introduce herself to us, so please attend to meet her.

We have already made the decision to return to our regular star party format. For anyone who could use a reminder and for those new to the club, the schedule of public and club-only star parties is available on our website at www.hawastsoc.org/2023events.shtml. The next public star party at Dillingham is on 1/14, and at Kahala and Geiger parks on 1/28. The Kahala and Geiger events (all public) are on the Saturday nearest first quarter Moon, so that's usually easy to figure out (unless first quarter Moon is in the middle of the week), but for the Dillingham events it's best to check the schedule to know which is club-only and which is public.

We still have the bright planets in the sky for a while. Saturn is almost gone, but Jupiter is still high enough to provide good views early in the evening when most visitors attend our star parties. We will still have Mars for quite a while, although it is well past its biggest size in our eyepieces. Still, we won't have a better opposition for several more years, so if you're a Mars fan, grab whatever chances you still have.

There are always some reliable events to look forward to each year, such as meteor showers. However, the most memorable sights are often the ones that are difficult or impossible to pre-

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Observer's Notebook—January 2023 by Ort

Planets Close to the Moon

Times are Hawaii Standard Time










- Jan 3, 0h, Moon 7.5° S of Venus; 10° from the Sun in the evening sky; magnitudes -5.1 and -4.2
- Jan 3, 17h, Moon 3.1° SE of Mercury; 19° from the Sun in the evening sky; magnitudes -6.1 and -0.7
- Jan 4, 9h, Moon 4.1° SE of Saturn; 28° from the Sun in the evening sky; magnitudes -6.8 and 0.8
- Jan 5, 18h, Moon 4.2° SE of Jupiter; 46° from the Sun in the evening sky; magnitudes -8.1 and -2.1
- Jan 7, 4h, Moon 3.7° SE of Neptune; 64° from the Sun in the evening sky; magnitudes -9.0 and 7.9
- Jan 11, 3h, Moon 1.35° SE of Uranus; 110° from the Sun in the evening sky; magnitudes -10.7 and 5.7
- Jan 29, 6h, Moon 2.43° S of Mars; 36° from the Sun in the morning sky; magnitudes -7.4 and 1.4
- Jan 30, 17h, Moon 7.5° S of Mercury; 16° from the Sun in the morning sky; magnitudes -5.7 and 1.5

Other Events of Interest

Times are Hawaii Standard Time

- Jan 3, 11h, Quadrantid meteors; ZHR 120; 1 day after New Moon
- Jan 3, 17h, Earth at perihelion; 0.9833 AU from the Sun
- Jan 6, 19h, Moon shows maximum libration for the year, 9.89°
- Jan 12, 19h, Mercury 3.4° W of Saturn; 17° and 20° from the Sun in the evening sky; magnitudes 0.2 and 0.7; quasi-conjunction
- Jan 15, 13h, Mercury at perihelion, 0.3075 AU from the Sun
- Jan 15, 22h, Pluto at conjunction with the Sun; 35.428 AU from Earth; latitude -1.80°
- Jan 22, 20h, Venus at perihelion, 0.7184 AU from the Sun
- Jan 23, 0h, Mercury at inferior conjunction with the Sun; 0.663 AU from Earth; latitude 6.76°

Planets in January

 <h3>Mercury</h3> <p>A great planet for evening viewing. Mercury nears Venus on 1 January, after that it is hard to see. Poorly placed at the end of the month.</p>	 <h3>Venus</h3> <p>A brilliant planet for evening viewing. Venus is near Mercury on 1 January and Saturn on 22 January. Best at the end of the month.</p>	 <h3>Mars</h3> <p>Well-positioned evening planet, reaching 600 altitude. Shrinks from 14-10 arcseconds over the month.</p>
 <h3>Jupiter</h3> <p>Evening planet best at the start of the month, then losing altitude. Moon close on 25 and 26 January.</p>	 <h3>Saturn</h3> <p>Best viewing at the start of the month. Near Venus on 21 and 22 January and the Moon on 23 Jan.</p>	 <h3>Uranus</h3> <p>Well-placed evening planet shining at mag. +5.7. Occulted by the Moon on 1 January.</p>
 <h3>Neptune</h3> <p>Deteriorating evening planet, close to Jupiter. Losing altitude by the end of the month.</p>	 <h3>Pluto (Dwarf Planet)</h3> <p>is visible in the morning sky, becoming accessible around 23:35, when it reaches an altitude of 21° above your south-eastern horizon.</p>	 <h3>2—Pella (Asteroid)</h3> <p>is visible between 20:27 and 02:37. It will become accessible around 20:27, when it rises to an altitude of 21° above your south-eastern horizon.</p>

Meeting Minutes

H.A.S. Secretary

December 6th, 2022 7:30 PM (Zoom Meeting)

Andy Stroble

Meeting called to order at 7:30 pm by President Chris Peterson. Eighteen participants were present.

Minutes of the November meeting were adopted.

President Chris updated the club on the likelihood of an hybrid in-person and online meeting for January, and the possible resumption of public star parties in the coming year.

Attending for the first time was Leslie Keating, and her son Jack who aspires to be an asteroid miner. And Kent Taylor and Andrea also attended for the first time.

The club has a 5" Orion reflector that is for sale. Lists for \$400 new.

Elections were held during the December General Membership meeting. Offices of President, Treasurer, Secretary and AstroNews Editor were uncontested, with current office holders agreeing to stand for re-election. For the first time in Astronomical Memory, we had contested elections for Vice President, Polly Miao stepping down from the position, and for the At-large board members, one of which has traditionally been the school star party co-ordinator. Bill Barr was elected Vice President, Mark Watanabe will continue as School Star Party Coordinator, and Steven Chun is now our At-large board member.

Bill Barr provided an update on efforts to upgrade the Bishop Museum Observatory telescope.

AstroNews Editor Ort shared photography of the recent lunar eclipse, taken from Pu'uloa Beach Park, and reported on his participation in a Girl Scouts STEM event at Chaminade University, where he used the Oreos lunar eclipse illustration.

Gary asked if the Mauna Loa eruption was affecting the Mauna Kea telescopes, and shared the USGS webcam of one of the vents. Charles had questions about the Webb telescope imaging exoplanets.




Meeting was adjourned at 9:10 pm. There were 25 participants, at maximum.

Faithfully submitted,
James Andy Stroble, Secretary.

(Continued from page 2) President's Message

dict. Some, like a new comet, come with sufficient advance notice that we can plan our observing. Others, such as fireballs or other spectacular meteors, are simply observed by chance. The only way to increase your odds of seeing one of those is to spend more time outside looking at the sky. More star parties will provide more opportunities this year.

Hawaiian Astronomical Society
Event Calendar

January 2023						
◀ Dec						Feb ▶
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 <i>New Year's Day</i> BoD Meeting 3:30 PM Zoom	2	3 Club Meeting 7:30 PM Zoom	4	5	6  Full Moon 1:07PM	7
8	9	10	11	12	13	14  3rd Qtr 4:10PM Public Party Dillingham 6:09 PM
15	16 <i>Martin Luther King Jr.</i>	17	18	19	20 <i>Inauguration Day</i>	21  New Moon 10:53AM Club Party Dillingham 6:15 PM
22	23	24	25	26	27	28  1st Qtr 5:18AM Public Party 6:19 Geiger/Kahala
29	30	31	Notes:			

<<Upcoming Star Parties>>

- Public Party-Dillingham January 14 —7:00 PM**
- Club Party Dillingham January 21 —7:00 PM**
- Public Party Geiger/Kahala January 28 — 7:00 PM**

Upcoming School Star Parties

NASA's Night Sky Notes

Spot the Messenger: Observe Mercury

By David Prosper



Most planets are easy to spot in the night sky, but have you spotted Mercury? Nicknamed the Messenger for its speed across the sky, Mercury is also the closest planet to the Sun. Its swift movements close to our Sun accorded it special importance to ancient observers, while also making detailed study difficult. However, recent missions to Mercury have resulted in amazing discoveries, with more to come.

Mercury can be one of the brightest planets in the sky – but also easy to miss! Why is that? Since it orbits so close to the Sun, observing Mercury is trickier than the rest of the “bright planets” in our solar system: Venus, Mars, Jupiter, and Saturn. Mercury always appears near our Sun from our Earth-bound point of view, making it easy to miss in the glare of the Sun or behind small obstructions along the horizon. That’s why prime Mercury viewing happens either right before sunrise or right after sunset; when the Sun is blocked by the horizon, Mercury’s shine can then briefly pierce the glow of twilight. Mercury often appears similar to a “tiny Moon” in a telescope since, like fellow inner planet Venus, it shows distinct phases when viewed from Earth! Mercury’s small size means a telescope is needed to observe its phases since they can’t be discerned with your unaided eye. Safety warning: If you want to observe Mercury with your telescope during daytime or before sunrise, **be extremely careful:** you don’t want the Sun to accidentally enter your telescope’s field of view. As you may already well understand, this is extremely dangerous and can not only destroy your equipment, but permanently blind you as well! That risk is why NASA does not allow space telescopes like Hubble or the JWST to view Mercury or other objects close to the Sun, since even the tiniest error could destroy billions of dollars of irreplaceable equipment.

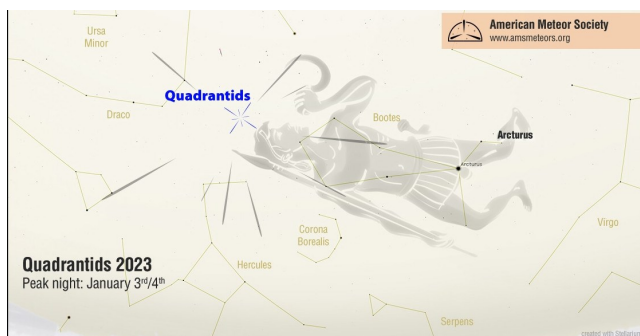
Despite being a small and seemingly barren world, Mercury is full of interesting features. It’s one of the four rocky (or terrestrial) planets in our solar system, along with Earth, Venus, and Mars. Mercury is the smallest planet in our solar system and also possesses the most eccentric, or non-circular, orbit of any planet as well: during a Mercurian year of 88 Earth days, the planet orbits between 29 million and 43 million miles from our Sun – a 14-million-mile difference! Surprisingly, Mercury is not the hottest planet in our solar system, despite being closest to the Sun; that honor goes to Venus, courtesy its thick greenhouse shroud of carbon dioxide. Since Mercury lacks a substantial atmosphere and the insulating properties a layer of thick air brings to a planet, its temperature swings wildly between a daytime temperature of 800 degrees Fahrenheit (427 degrees Celsius) and -290 degrees Fahrenheit (-179 degrees Celsius) at night. Similar to our Moon, evidence of water ice is present at Mercury’s poles, possibly hiding in the frigid permanent shadows cast inside a few craters. Evidence for ice on Mercury was first detected by radar observations from Earth, and followup observations from NASA’s MESSENGER mission added additional strong evidence for its presence. Mercury sports a comet-like tail made primarily of sodium which has been photographed by skilled astrophotographers. The tail results from neutral atoms in its thin atmosphere being pushed away from Mercury by pressure from the nearby Sun’s radiation.

NASA’s Mariner 10 was Mercury’s first robotic explorer, flying by three times between 1974-1975. Decades later, NASA’s MESSENGER first visited Mercury in 2008, flying by three times before settling into an orbit in 2011. MESSENGER thoroughly studied and mapped the planet before smashing into Mercury at mission’s end in 2015. Since MESSENGER, Mercury was briefly visited by BepiColombo, a joint ESA/JAXA probe, which first flew by in 2021 and is expected to enter orbit in 2025 - after completing six flybys. Need more Mercury in your life? Check out NASA’s discoveries and science about Mercury at solarsystem.nasa.gov/mercury/, and visit the rest of the universe at nasa.gov.

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Quadrantids (010 QUA) - The Quadrantids can be one of the strongest displays of the year, yet they are difficult to observe. The main factor is that the display of strong activity only has a duration of about 6 hours. Predictions for the peak of the 2023 Quadrantids range from 3:40 to 6:40 Universal Time on January 4th (5:40pm to 8:40pm HST on January 3rd). The reason the peak is so short is due to the shower's thin stream of particles and the fact that the Earth crosses the stream at a perpendicular angle. Unlike most meteor showers which originate from comets, the Quadrantids have been found to originate from an asteroid. Asteroid 2003 EH1 takes 5.52 years to orbit the sun. It is possible that 2003 EH1 is a "dead comet" or a new kind of object being discussed by astronomers sometimes called a "rock comet." In 2022, the Quadrantids meteor rates were below the average peak values. Modeling the stream is difficult, and it may be helpful to get an idea about the 010 QUA peak ZHR to verify the current model parameters. Despite the bright moonlight, a rough estimate of the peak ZHR is of interest to the AMS and the IMO. Shielding the direct view to the Moon is essential – the morning hours with lower Moon elevation and high radiant position provide the best opportunities for viewing this shower. The timing is optimal for European observers, but will still be ok for observers in Hawaii. In the morning of January 4, we find the Moon in Taurus.

γ -Ursae Minorids (404 GUM) - Little is yet known about this minor shower which is found in both video and visual data. It was included in the IMO's working list from 2017 onwards and has been annually observed. Considering the velocity, meteors from this far northern radiant should be similar to the Ursids in their appearance. All data about the activity period and shower parameters should be treated as tentative and need further confirmation. Last quarter Moon on January 15 allows observations around the given maximum and later.



Phases of the Moon (courtesy timeanddate.com)

First Quarter	Full Moon	Last Quarter	New Moon
January 28	January 06	January 14	January 21

Shower	Activity	Maximum		Radiant		V_{∞} km/s	r	ZHR
		Date	λ_{\odot}	α	δ			
Quadrantids (010 QUA)	Dec 28 - Jan 12	Jan 04	283.15°	230°	+49°	41	2.1	110
γ -Ursae Minorids (404 GUM)	Jan 10 - Jan 22	Jan 18	298.0°	228°	+67°	31	3.0	3

Big Moon for the Quadrantids – still need observations!; also try the γ -Ursae Minorids for 2023! Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Cash Flow - 11/10/2022 to 12/11/2022

Beginning Balance	\$4,580.69
Money into selected accounts comes from	
Donation	\$16.00
Membership – Electronic	\$40.00
Membership - Family	\$10.00
Membership – Paper	\$78.00
Membership - Paper – Student	\$16.00
Total Money In	\$160.00
Money out of selected accounts goes to	
Total Money Out	\$0.00
Difference	\$160.00
Ending Balance	\$4,415.31

Here are the financials up through December 11.

Thanks to everyone who paid, renewed, and donated. Here's also hoping you didn't have a "relaxing" trip to the mainland, becoming intimately acquainted with the interiors of certain airports.

Covid numbers for Oahu as of this writing dipped to about 99 per day. New hospitalizations average 13 per day, a bit of an increase. Covid data from wastewater treatment facilities indicate a sharp increase in Covid in central Oahu and the north shore. Nation-wide, daily cases (67,215), hospitalizations (39,432) and deaths (388) are all up.

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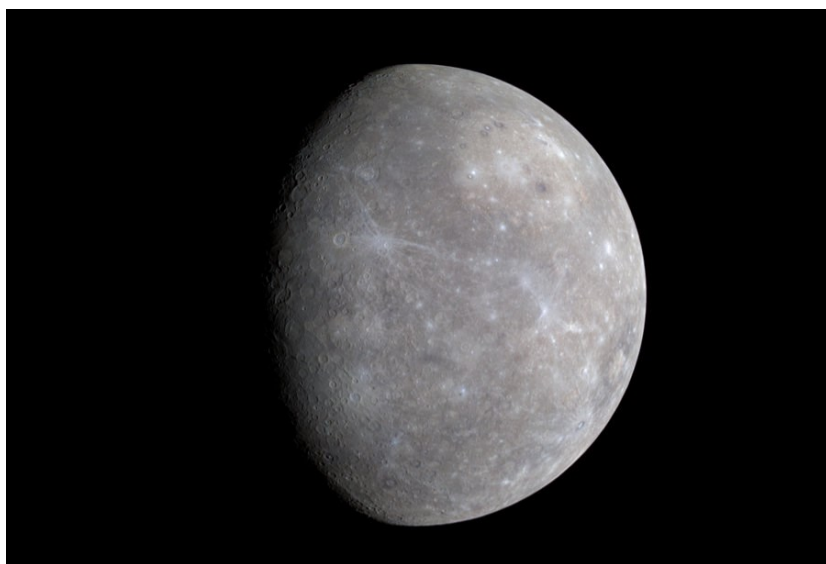


A SpaceX Falcon 9 rocket with the Surface Water and Ocean Topography (SWOT) spacecraft onboard is seen as it rolls out to the pad, Tuesday, Dec. 13, 2022, at Space Launch Complex 4E at Vandenberg Space Force Base in California.

Image Credit: NASA/Keegan Barber



Mercury reaches maximum western elongation on the morning of January 30, which means that your best chance to spot it is right before sunrise that day! Look for Mercury towards the southeast and find the clearest horizon you can. Observers located in more southern latitudes of the Northern Hemisphere have an advantage when observing Mercury as it will be a bit higher in the sky from their location, but it's worth a try no matter where you live. Binoculars will help pick out Mercury's elusive light from the pre-dawn glow of the Sun. Image created with assistance from Stellarium



Mercury is hot, small, and heavily cratered across its gray surface, as seen in this image from NASA MESSENGER. Mercury is the most heavily cratered planet in our solar system, since it lacks either a substantial atmosphere or geologic activity to erode surface features like craters - similar in certain aspects to the surface of our own Moon.

Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Source: <https://solarsystem.nasa.gov/resources/439/mercurys-subtle-colors/>

(Continued from page 1) - word from your editor
information.

Here are some Meteor Showers in 2023 when Moon will be dim enough for us to observe. Lyrids Meteor Shower will peak (18 ZHR) on April 22-23, 2023. Moon will be at 11% waxing crescent. Perseids Meteor Shower (100 ZHR) will peak on August 12-13, 2023. Moon will be at 9% waning crescent. Draconids Meteor Shower will peak (10 ZHR) on October 8-9, 2023. Moon will be at 25% waning crescent. Orionids Meteor Shower will peak (20 ZHR) on October 21-22, 2023. Moon will be at 70% waxing gibbous. Leonids Meteor Shower will peak (10 ZHR) on November 17-18, 2023. Moon will be at 30% waxing crescent. Geninids Meteor Shower will peak (150 ZHR) on December 13-14, 2023. Moon will be at 3% waxing crescent. Tom Giguere will have detail on both major and minor meteor showers monthly.



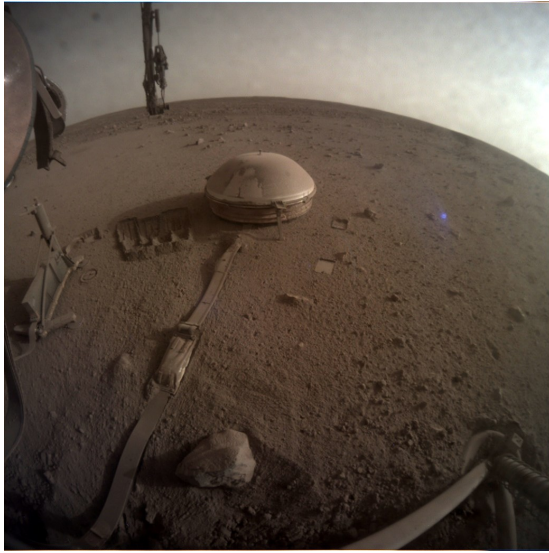
Comet C/2022 E3 ZTF (magnitude 7.8) is up in the morning sky in constellation Corona Corealis. It was discovered by astronomers using the wide-field survey camera at the Zwicky Transient Facility this year in early March. Since then the new long-period comet has brightened substantially and is now sweeping across the northern constellation Corona Borealis in pre-dawn skies. I will try to go out and shoot it one of this morning if the weather is good.



The Carina Nebula imaged by Webb.

By taking a closer look at one of Webb's first images, the iconic Cosmic Cliffs, scientists have found dozens of energetic jets and outflows from young stars previously hidden by dust clouds.

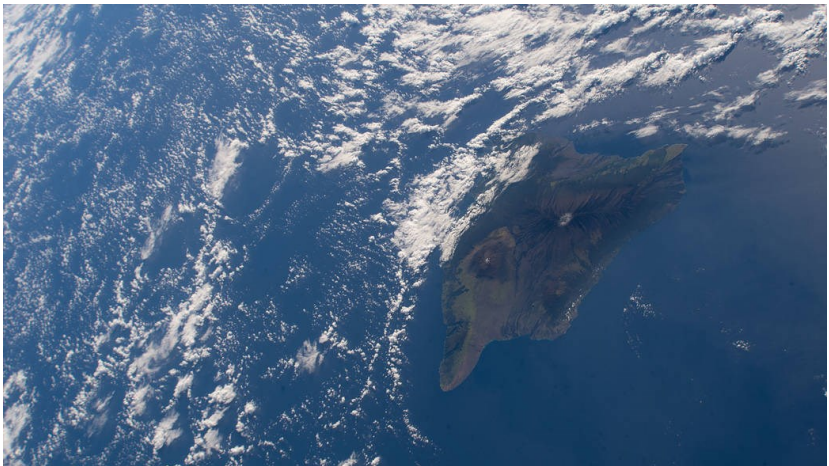
Image Credit: NASA, ESA, CSA, and STScI. Image processing: J. DePasquale (STScI).



Saying 'Farewell' to InSight Mars Lander

Surface of Mars in front of Mars InSight Lander, with lander leg visible in foreground and SEIS instrument deployed nearby

Credit: NASA/JPL-Caltech



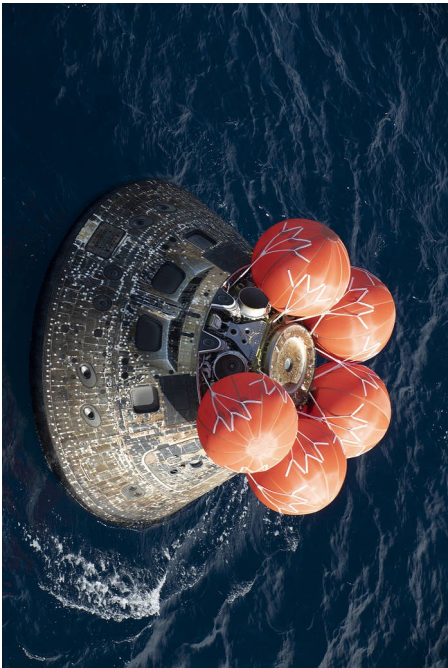
Space Station Snaps Hawaii's Volcanoes

Hawaii's big island and its two major volcanoes Mauna Kea and Mauna Loa are pictured from the International Space Station as it orbited 258 miles above the Pacific Ocean south of the Hawaiian island chain.

Image Credit: NASA



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Orion Comes Home to Earth

NASA's Orion spacecraft bobs in the water of the Pacific Ocean, after splashdown at 12:40 p.m. EST, Dec. 11, 2022, after a 25.5-day mission to the Moon.

Image Credit: NASA/James M. Blair