THE ASTRONEWS

Volume 74, Issue 5

May 2024

www.hawastsoc.org

A word from your editor by Sapavith 'Ort' Vanapruks

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. With summer break arriving, we may not have school events until fall. However, "3rd Friday monthly evening Planetarium 2024" at Bishop Museum on May 17th, 2024, from 6:00 PM - 9:00 PM is still going on. So, if you have a telescope and the event is in your area, please sign up and help.

The Club Star Party at Dillingham Airfield on Saturday, 4/6/2024, did not happen. Stephen said "Just arrived at Dillingham, not looking good. Pretty socked in with occasional drizzling. Windsock is pretty much fully extended. Got some visitors waiting for the skies to clear. Apparently they can't read."

(Continued on page 10)

Inside this issue:

Upcoming Events:

- The next Board meeting is Sun., May 5th 3:30 PM. (**Zoom Meeting**)
- The next meeting is on Tue., May 7th at the Bishop Museum at 7:30 PM. —**Hybrid (In person and Zoom) Meeting**
- Bishop Museum's planetarium show "The Star Tonight" is every 3rd Friday, 5/17/2024, of the month at 7:00 PM

President's Message
May 2024

If you viewed the recent total solar eclipse or even attempted to, we'd like to hear your story and see your images at May's monthly meeting. I mentioned the rarity of eclipses in last month's column, but it's worth noting that Earth is the only planet in our solar system where such a thing even happens. Viewed from the surface of Mars, for example, Phobos and Deimos cover only a portion of the Sun when they pass in front of it.

It is a remarkable coincidence that the Sun is about 400 times the diameter of the Moon and also about 400 times as far from Earth. Of course, both Earth's and the Moon's orbits are a bit elliptical, so the relative apparent sizes of the Sun and Moon vary from eclipse to eclipse. When the Moon is closest to Earth, it appears a little bigger and covers the Sun longer. When the Moon is most distant from Earth, it can't completely cover the Sun resulting in an annular eclipse such as the one coming up on October 2nd. The difference between apogee and perigee is about 12%, so that is the maximum difference in the apparent lunar diameter. The Sun's apparent size also varies by about 3% between Earth's perihelion and aphelion.

The Moon is gradually moving away from Earth due to tidal forces. The current rate of increase in the distance is about 38 mm/year. Over a long period of time, this will decrease the maximum duration of total eclipses and increase the ratio of annular to total eclipses. The rate of distance increase varies due to several factors, but after 1 billion years at the current rate of recession, the Moon would average 38,000 km farther away. The difference between current perigee and apogee is about 42,000 km. At some point, Earth could witness its final total solar eclipse.

However, if we want to survive the Sun's relentless warming, which would be making it difficult for life to survive on Earth in about 1 billion years, we will have to have started gradually increasing the size of Earth's orbit, perhaps by directing a large asteroid to pass closely in front of us every century or so. That would make the Sun appear ever smaller in our sky (until it starts more rapidly expanding), so total solar eclipses might continue.

Hawaiian Astronomical Society
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Observer's Notebook—May 2024 by Ort

Planets Close to the Moon
Times are Hawaii Standard Time

May 3, 14h, Moon 0.77° SE of Saturn; 57° from Sun in morning sky; magnitudes -8.7 and 1.3; occultation
May 4, 9h, Moon, Mars, and Neptune within circle of diameter 4.16°; about 44° from the Sun in the morning sky; magnitudes -8, 1, 8
May 4, 10h, Moon 0.31° ESE of Neptune; 46° from Sun in morning sky; magnitudes -8.0 and 7.9; occultation
May 4, 17h, Moon 0.44° NE of Mars; 41° and 42° from Sun in morning sky; magnitudes -7.7 and 1.1; occultation
May 5, 20h, Moon 3.4° NNW of Mercury; 26° from Sun in morning sky; magnitudes -6.6 and 0.7
May 7, 4h, Moon 3.2° NNW of Venus; 8° from Sun in morning sky; magnitudes -4.8 and -3.9
May 8, 2h, Moon 3.4° NNW of Uranus; 6° and 4° from Sun in evening sky; magnitudes -4.6 and 5.8
May 8, 4h, Moon, Jupiter, and Uranus within circle of diameter 4.46°; about 6° from the Sun in the evening sky; magnitudes -5, -2, 6
May 8, 7h, Moon 4.1° NNW of Jupiter; 8° and 7° from Sun in evening sky; magnitudes -4.8 and -2.0
May 30, 23h, Moon 0.46° ESE of Saturn; 81° and 82° from Sun in morning sky; magnitudes -9.8 and 1.2; occultation

Other Events of Interest
Times are Hawaii Standard Time

May 4, 14h, Eta Aquarid meteors; ZHR 50; 3 days before New Moon
May 12, 23h, Uranus at conjunction with the Sun; 20.602 AU from Earth; latitude -0.28°
May 13, 16h, Moon 3.5° NNE of Beehive Cluster; 74° from Sun in evening sky; magnitudes -9.4 and 3.7
May 17, 5h, Mars and Saturn at heliocentric conjunction; longitude 342.3°
May 18, 2h, Venus, Jupiter, and Uranus within circle of diameter 4.86°; only about 3° from the Sun; magnitudes -4, -2, 6
May 18, 3h, Venus 0.45° SE of Uranus; 5° from Sun in morning sky; magnitudes -3.9 and 5.8
May 18, 13h, Asteroid 2 Pallas at opposition in longitude; magnitude 8.9
May 22, 23h, Venus 0.19° N of Jupiter; 3° from Sun in morning sky; magnitudes -3.9 and -2.0
May 24, 9h, Venus, Jupiter, and the Pleiades within circle of diameter 4.82°; only about 4° from the Sun; magnitudes -4, -2, 3

Planets in May

☿ Mercury

is visible as a morning object, having recently passed greatest elongation west

♀ Venus

will soon pass behind the Sun. From Honolulu, it is not readily observable since it is very close to the Sun, at a separation of only 5° from it.

♂ Mars

is currently emerging from behind the Sun. From Honolulu, it is visible in the dawn sky, rising at 03:30 (HST) – 2 hours and 20 minutes before the Sun.

♃ Jupiter

will soon pass behind the Sun at solar conjunction. From Honolulu, it is not readily observable since it is very close to the Sun, at a separation of only 2° from it.

♄ Saturn

is currently emerging from behind the Sun. From Honolulu, it is visible in the dawn sky, rising at 02:20 (HST) – 3 hours and 30 minutes before the Sun.

♅ Uranus

recently passed behind the Sun at solar conjunction. From Honolulu, it is not readily observable since it is very close to the Sun, at a separation of only 1° from it.

♆ Neptune

recently passed behind the Sun at solar conjunction. From Honolulu, however, it is visible in the dawn sky, rising at 02:53 (HST) – 2 hours and 57 minutes before the Sun.

♇ Pluto (Dwarf Planet)

is visible in the dawn sky, rising at 23:51 (HST) and reaching an altitude of 45° above the southern horizon before fading from view as dawn breaks at around 04:53.

1—Ceres (Asteroid)

is visible in the morning sky, becoming accessible around 01:07, when it reaches an altitude of 21° above your south-eastern horizon.

Meeting Minutes

H.A.S. Secretary

April 2nd, 2024 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)
Andy Stroble

Meeting called to order at 7:30pm by President Chris Peterson.
Minutes of previous meeting unanimously adopted.

Winners of the Hawaiian Astronomical Society State Science Fair awards were announced.
Junior Division: Addai Wright, Hilo Intermediate School "Listening to High Frequency Radio Beacons to See the Effect of Geomagnetic Storm Events"
Senior Division: Ryan Aipa, Kamehameha School Maui, "KIC 9832227 Proto Red Nova Candidate"

The Institute for Astronomy will be holding its annual Open House on April 21st, and HAS will have an informational table. Volunteers included Bill, Steven, Ort, and the Strobles.
Bishop Museum "Stars Tonite" on April 19 needs scopes, and we have the Iolani star party on 4/10, UH Lab School on 4/15. Kailua Middle School potentially on 4/22, and Kailua Elementary on 5/17. Thanks again to our School Star Party coordinator, Mark Watanabe.

First time attendees included Michael Clark, and Sean Alexander who possesses an 8" Dobsonian.

President Chris shared some recent work on galaxies by the Webb Space telescope.
Michael Kinzer updated us on the potential to observe on the ridge next to the Space Force tracking station. A list of interested members and potential dates are being worked on. Mark will coordinate.
Ort shared photos of lightning, comet 12P/Pons-Brooke, and a supernova in the Silver Streak galaxy.
Peter gave us some interesting information on Magnetic Swirls in black holes, namely in M87 and Sgr A, images using observations from the Event Horizon Telescope radio telescopes with five years of data. And exploding rockets, so we would not be disappointed, and news about Moon Rust.

Eclipse viewing was on many members minds, and the reason some were not with us. Chris pointed out the lucky area where this present total solar eclipse and that of 2017 crossed, so people there get one every seven years, or so. VP Bill Barr and other members plan on observing what can be seen from our island at Sandy Beach (north end) starting at about 5:30am on the day.

Andy inquired of Larry Wiss as to the status of negotiations on the long term lease of Dillingham/ Kawaihapai Airfield. Nothing certain as of now.

Romee wielded the Planetarium, modeling the eclipse and showing some other neat Moon stuff. Thanks, Romee!

Meeting adjourned at 9:00 pm.
There were 10 persons in person, and 7 unique zoom logins.

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

The magnificent central bar of NGC 2217 (also known as AM 0619-271) shines bright in the constellation of Canis Major (The Greater Dog), in this image taken by the NASA/ESA Hubble Space Telescope.

Hawaiian Astronomical Society
Event Calendar

◄ Apr **May 2024** Jun ►

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1  3rd Qtr 1:27AM	2	3	4 Club Party Dillingham Airfield Gate Close 7:00PM
5 Cinco De Mayo BoD Meeting 3:30PM Zoom	6	7  New Moon 5:21PM General Meeting Bishop Museum 7:30PM Hybrid	8	9	10	11 Public Party Dillingham Airfield Gate Close 7:00PM
12 Mother's Day	13	14	15  1st Qtr 1:48AM	16	17 Planetarium 3rd Friday Show Bishop Museum 6:30PM - 9:00PM	18 Armed Forces Day Public Party Geiger/Kahala Sunset 7:04PM
19	20	21	22	23  Full Moon 3:53AM Flower Moon	24	25
26	27 Memorial Day	28	29	30  3rd Qtr 7:12AM	31	Notes:

<<Upcoming Star Parties>>

Club Party Dillingham May 4 —7:00 PM
Public Party-Dillingham May 11 — 7:00 PM
Public Party Geiger/Kahala May 18 — 7:00 PM

Upcoming School Star Parties

Date	Time	Location

NASA's Night Sky Notes

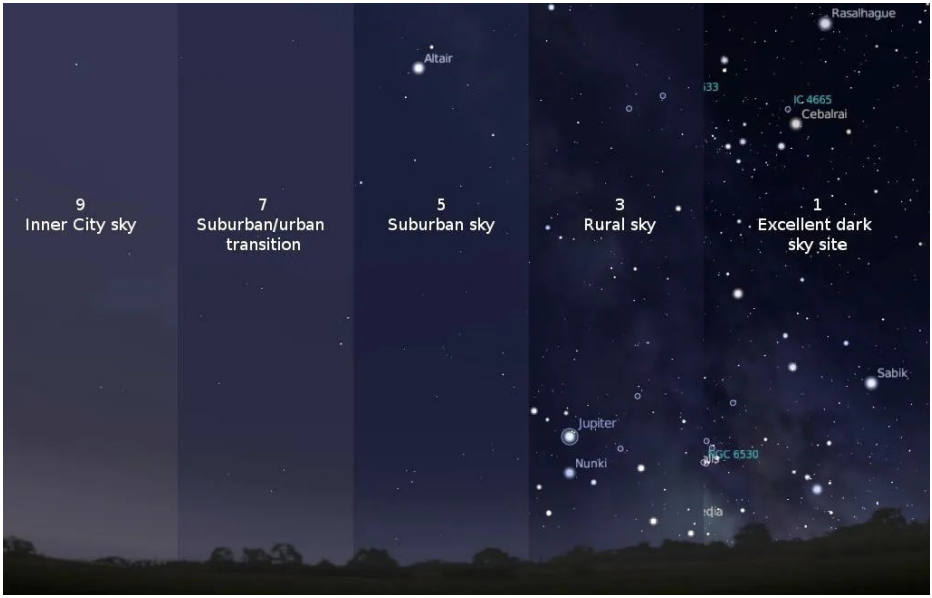
May's Night Sky Notes: Stargazing for Beginners

By Kat Troche

Millions were able to experience the solar eclipse on April 8, 2024, inspiring folks to become amateur astronomers – hooray! Now that you've been 'bitten by the bug', and you've decided to join your local astronomy club, here are some stargazing tips!

The Bortle Scale

Before you can stargaze, you'll want to find a site with dark skies. It's helpful learn what your Bortle scale is. But what is the Bortle scale? The Bortle scale is a numeric scale from 1-9, with 1 being darkest and 9 being extremely light polluted; that rates your night sky's darkness. For example, New York City would be a Bortle 9, whereas Cherry Springs State Park in Pennsylvania is a Bortle 2.



The Bortle scale helps amateur astronomers and stargazers to know how much light pollution is in the sky where they observe. Credit: International Dark Sky Association

Determining the Bortle scale of your night sky will help narrow down what you can expect to see after sunset. Of course, other factors such as weather (clouds namely) will impact seeing conditions, so plan ahead. Find Bortle ratings near you here: www.lightpollutionmap.info

No Equipment? No Problem!

There's plenty to see with your eyes alone. Get familiar with the night sky by studying star maps in books, or with a planisphere. These are great to begin identifying the overall shapes of constellations, and what is visible during various months.

(Continued on page 9)

Meteor Log—May 2024 by Tom Giguere

The η-Aquariids meteor stream is associated with Comet 1P/Halley, like the Orionids of October. Shower meteors are only visible in the hours before dawn. The shower is one of the best for southern observers but with a radiant at -1 degree declination will be nicely placed for Hawaii. The radiant culminates near 8h local time. In most years, a substantial amount of optical ETA-data is collected worldwide. However, due to the relatively short observing window between radiant rise and morning twilight for each site, it remains difficult to obtain a continuous profile. This year there is no moonlight interference around the maximum period (New Moon on May 8). IMO analyses of visual data collected since 1984 have shown that ZHRs are generally above 30 in the period May 3–10. The variability of the peak rates associated with Jupiter's orbital period (~12 years) has not been confirmed in a recent study (Egal et al., 2020) using optical and radar data. However, there might be enhanced activity (Egal, 2020) related to the 1:6 mean motion resonance in 2023 and 2024– hence observers should try to monitor the activity of the near-peak period which extends

2008	2009	2017	2018	2019	2020	2021	2022	2023
≈ 85	≈ 70	75	60	50	50	45	42	40 (preliminary)

from May 4 to 6. Apart from a (likely) maximum near $\lambda_\odot \approx 43^\circ$, the preliminary data of the moonlit 2023 return do not show peculiarities of the rate. Recent peak ZHRs were: Mikhail Maslov's calculations reveal that in 2024 the Earth comes close to meteoroids ejected from the comet in −985. Meteoroids of the trail had ejection velocities of ≥ 10 m/s. Observers might see some activity increase on May 3 between 05h and 08h UT. The ejec-

(Continued on page 11)

Phases of the Moon (courtesy timeanddate.com)

First Quarter	Full Moon	Last Quarter	New Moon
May 15	May 23	May 1/30	May 7

Shower	Activity	Maximum		Radiant		V_∞	*r*	ZHR
		Date	λ	α	δ	km/s		
η-Aquariids (ETA), 031 ETA	Apr 19–May 28	May 05	45.5°	338°	-01°	66	2.4	50
η -Lyrids (ELY), 145 ELY	May 03–May 14	May 10	50.0°	291°	+43°	43	3.0	3

Great opportunity to catch the Eta Aquarids! Thanks to the IMO for meteor information. Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Treasurer's Report

by Peter Besenbruch

Cash Flow - 3/11/2024 to 4/9/2024

Beginning Balance	**$6,248.73**
Money into selected accounts comes from	
Donation	$12.00
Membership - Electronic	$40.00
Membership – Family	$6.00
Membership – Paper	$26.00
Total Money In	**$84.00**

Money out of selected accounts goes to	
Total Money Out	**$0.00**

Difference	$84.00

Ending Balance	**$6,332.73**

Here are the financials up through April 9.

Thanks to everyone who paid, renewed, and donated. There were several donations that will show up in next month's report. Thanks for everyone's generosity.

Covid wastewater figures have begun trending up the last two weeks on Oahu, rather drastically on the Waiane coast. Figures elsewhere remain low. As of this writing hospitals no longer need to report Covid admissions.

The First Space Shuttle

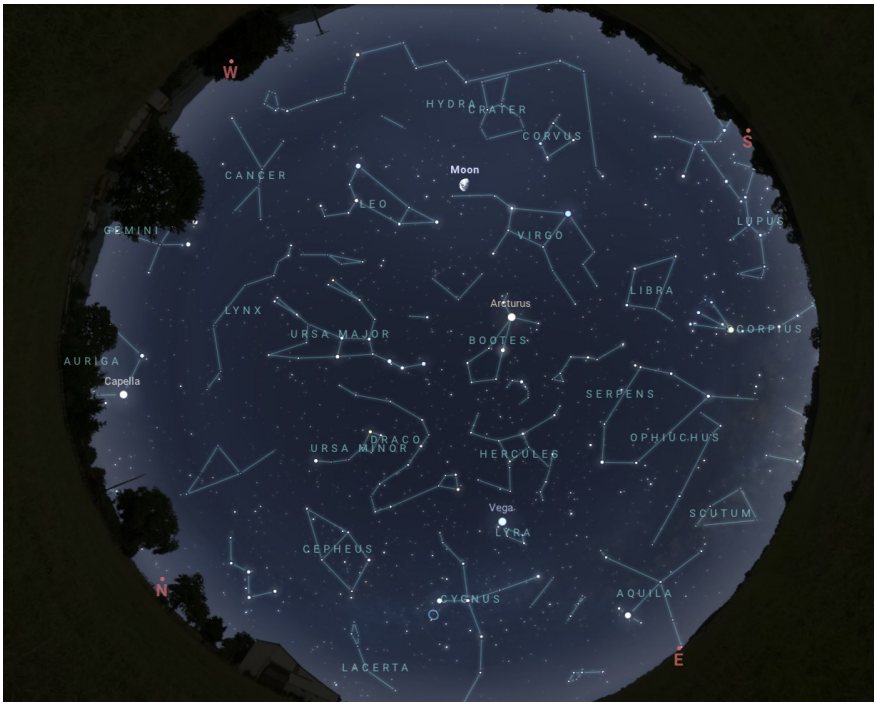
In this image from April 12, 1981, the first space shuttle, STS-1, launches from NASA's Kennedy Space Center in Florida with NASA astronauts John W. Young, commander, and Robert L. Crippen, pilot, aboard.

STS-1 was meant to demonstrate a safe launch into orbit and a safe return of the orbiter and crew, as well as verify the combined performance of the entire shuttle vehicle – orbiter, solid rocket boosters and external tank.

The first space shuttle landed at Edwards Air Force Base in California on April 14, 1981, after having successfully tested its major systems.

Image Credit: NASA

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



A full view of the northern hemisphere night sky in mid-May. Credit: Stellarium Web.

Interactive sky maps, such as Stellarium Web, work well with mobile and desktop browsers, and are also great for learning the constellations in your hemisphere. There are also several astronomy apps on the market today that work with the GPS of your smartphone to give an accurate map of the night sky.

Keep track of Moon phases. Both the interactive sky maps and apps will also let you know when planets and our Moon are out! This is especially important because if you are trying to look for bright deep sky objects, like the Andromeda Galaxy or the Perseus Double Cluster, you want to avoid the Moon as much as possible. Moonlight in a dark sky area will be as bright as a streetlight, so plan accordingly! And if the Moon is out, check out this Skywatcher's Guide to the Moon: bit.ly/MoonHandout

Put On That Red Light

If you're looking at your phone, you won't be able to see as much. Our eyes take approximately 30 minutes to get dark sky adapted, and a bright light can ruin our night vision temporarily. The easiest way to stay dark sky adapted is to avoid any bright lights from car headlights or your smartphone. To avoid this, simply use red lights, such as a red flashlight or headlamp. **The reason:** white light constricts the pupils of your eyes, making it hard to see in the dark, whereas red light allows your pupils to stay dilated for longer. Most smartphones come with adaptability shortcuts that allow you to make your screen red, but if you don't have that feature, use red cellophane on your screen and flashlight.

Up next: why binoculars can sometimes be the best starter telescope, with Night Sky Network's upcoming mid-month article through NASA's website!

(Continued from page 1) A word from your editor

The Public Party at Dillingham Airfield on Saturday, 4/13/2024, weather was forecasted to be bad. However, it turned out to be pretty good. We had 2 members (Calvin and I) with telescopes and 3 visitors. We were able to show the Moon, Orion Nebula, & a few other objects. We called the night at 9 PM. Bishop Museum "3rd Friday monthly evening Planetarium 2024" on Friday, 4/19/2024, was not good. Clouds covered most of the evening. We had 3 telescopes set up (Bill, Mark, & Ort).

The Public Party in-town on Saturday, 4/20/2024, was not bad. Chris, Andy, & Hiroko were at Kahala with a few visitors. Hiroko used her new Dwarf II to capture the "Devil Comet" comet 12P/Pons/Brooks. Geiger weather was decent with some clouds. We had 5 members with telescopes (Calvin, Steven, Ort, Peter, & Tom) participate. However, no visitor.

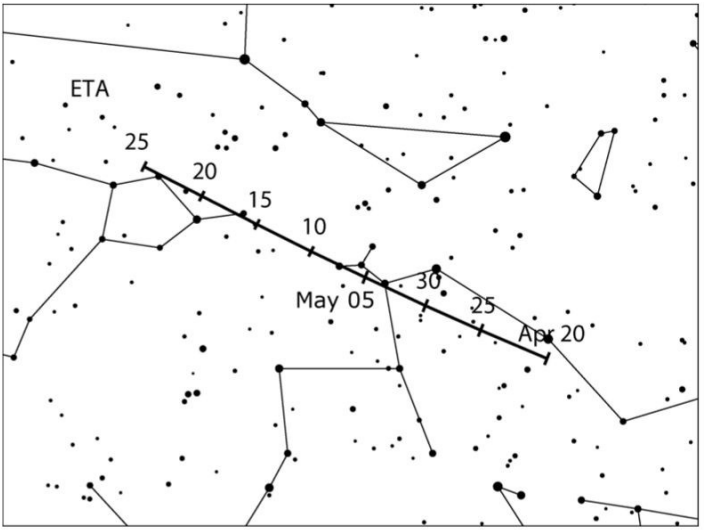
The big event for April was Solar Eclipse. We had members that went out to east side of Oahu to see partial Solar Eclipse (Ort's photo from Dwarf II below). Other members were able to travel and observe the Total Solar Eclipse either on land or in the ocean (cruise). Share your photos/videos and stories in our May general meeting.

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.

Clear Night everyone.

(Continued from page 7) - Meteor Log

tion velocity range



Looking Beyond the Veil

In this image released on March 9, 2024, the NIRCam (Near-Infrared Camera) on NASA's James Webb Space Telescope gives us a more detailed view of a well-studied but still mysterious region, NGC 604. The most noticeable features are tendrils and clumps of emission that appear bright red, extending out from areas that look like clearings, or large bubbles in the nebula. Stellar winds from the brightest and hottest young stars have carved out these cavities, while ultraviolet radiation ionizes the surrounding gas. This ionized hydrogen appears as a white and blue ghostly glow.

Image Credit: NASA, ESA, CSA, STScI

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Seeing Totality

The Moon totally obscures the Sun in this image. The Moon is a black circle and light from the Sun surrounds the Moon's border. On April 8, 2024, a NASA photographer captured the total solar eclipse in Dallas.

Image Credit: NASA/Keegan Barber