

**Cathay May 2023**

[www.cathayradio.org](http://www.cathayradio.org)

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**Mission:** The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

**Monday Night Net Time:** 9 PM Local Time/PST, Repeater: WB6TCS - RX 147.210, TX 147.810, Offset +0.6 MHz, CTCSS/Tone PL100 Hz

Please note: Repeater: N6MNV UHF 442.700 Mhz, Offset +5MHz, CTCSS/Tone PL 173.8 Hz in South San Francisco is cross linked every Monday Night Net at 9 p.m. to WB6TCS 2-meter repeater.

The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

**Message from the President:** George Chong, W6BUR

Hello CARC Members and Friends;

Many thanks to Mr. Denis L. Moore – WB6TCS (SK) & his son; Robert Moore for the use of his repeater for our CARC Monday Night Net.

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

**Chat sub s'em to all you CARC members! - George W6BUR.**

## **Upcoming Field Day is June 24-25, 2023**

Ed Fong-WB6IQN is in the planning stage of hosting a field day at the Fairbrae Swim and Tennis Center, just like he did last year. More details to come in next newsletter.

**FARS Club Meeting/Dinner Event Grand Prize Winner from April 28<sup>th</sup>, 2023, it was our very own club member Ron Quan – KI6AZB, as seen in picture below.**



## **Tech Article Introduction:**

This month's tech article is about the James Webb Space Telescope detection of the presence of water vapor around a rocky exoplanet GJ 486 b. Finding water near or on exoplanet is a big deal because water is one of the precursors for life to exist as we know it. Please go to the Tech Article section in this newsletter for additional details about this latest discovery.

The James Webb Space Telescope was launched in December 25 2021 and is continuing to making new discoveries and building up our scientific knowledge of our universe.

For more details about the James Webb Space Telescope, please refer to:  
[https://en.wikipedia.org/wiki/James\\_Webb\\_Space\\_Telescope](https://en.wikipedia.org/wiki/James_Webb_Space_Telescope)

## Public Service Announcements

### **HAM CRAM / HAM Licensing**

For upcoming HAM Licensing locations please refer to:

<http://www.arrl.org/find-an-amateur-radio-license-exam-session>

### **Auxiliary Communications Service (ACS)**

The Auxiliary Communications Service (ACS) is a unit of trained professionals who supply communications support to the agencies of the City and County of San Francisco, particularly during major events/incidents. ACS goals are the support of gathering and distribution of information necessary to respond to and recover from a disaster.

The ACS Net begins at 1930 hours (7:30 p.m. PT) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS members perform Net Control duty on a regular basis. On the second Thursday of each month, the net is conducted in simplex mode on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz.

ACS holds its General Meetings on the third Tuesday of each month from 1900 hours to 2100 hours local time. Currently meetings are exclusively conducted over Zoom during the COVID-19 pandemic, ACS looks forward to meeting in person again as soon as possible.

Upcoming meeting dates in 2023 are:

- May 16, 2023
- June 20, 2023
- July 18, 2023
- August 15, 2023

Location of in person future ACS meetings are yet to be determined as the regular location is under reconstruction. All interested persons are welcome to attend. For further information, contact Corey Siegel KJ6LDJ <kj6ldj@gmail.com>.

For more information, please attend an ACS meeting, check in on the ACS radio net, or call 415-558-2717.

**Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).**

<http://sf-fire.org/calendar-special-events>

**+ TBD**

Spring into Readiness!

This Virtual Drill will take place from 9am-12pm with virtual skill rotations and words from some special guests!

Invitation and sign-up coming next week!

**+ Recertifications - Coming Soon!**

Now that San Francisco has entered the Red Tier for COVID-19 Transmission (see <https://covid19.ca.gov/safer-economy/#county-status> for more details), we are working to schedule recertification trainings for NERTs who were current as of December 2019 or later. Stay tuned for details and times over the next month! (At this time, all class 5&6 recerts will take place outdoors only, at the SFFD Division of Training at 19th St & Folsom St in the Mission.)

\***SFFD DOT** is the Fire Department Division of Training. All participants walking, biking or driving **enter through the driveway gate on 19th St.** between Folsom and Shotwell. Parking is allowed along the back toward the cinderblock wall.

Visit [www.sfgov.org/sffdnert](http://www.sfgov.org/sffdnert) to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

**San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)**

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will no longer need to complete the Fire Department's Neighborhood Emergency Response Team (NERT) ([www.sfgov.org/sfnert](http://www.sfgov.org/sfnert)) training and then graduate into two 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

### **SFPD ALERT Training (New Members)**

The next SFPD ALERT training class has been scheduled for: TBD

\* Class date indicated are only for new members

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, Marina at [sfpdalert@sfgov.org](mailto:sfpdalert@sfgov.org), or by telephone at 415-401-4615.

### **SFPD ALERT Practice/Training Drill**

All active/trained ALERT members are asked to join us for our next training drill, via scheduled for on TBD

For more information on the San Francisco Police Department ALERT Program, email us at [sfpdalert@sfgov.org](mailto:sfpdalert@sfgov.org), or call Lt. Marina Chacon (SFPD Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:

<https://sfgov.org/policecommission/alert>

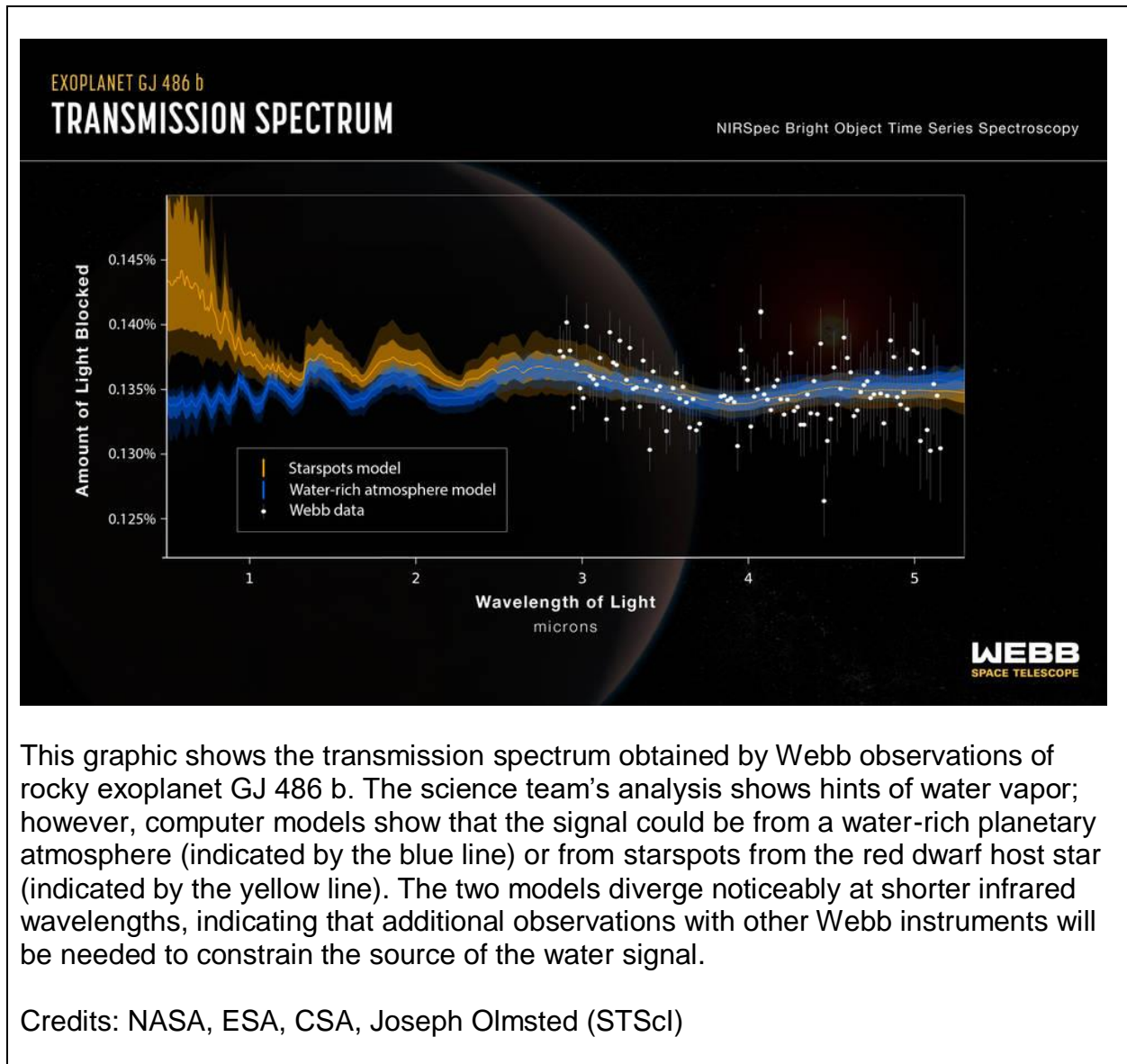
## Tech Article



# Webb Finds Water Vapor, But From a Rocky Planet or Its Star?

May 1, 2023

<https://www.nasa.gov/feature/goddard/2023/webb-finds-water-vapor-but-from-a-rocky-planet-or-its-star>



[Download the full-resolution, uncompressed version and supporting visuals from the Space Telescope Science Institute.](#)

The most common stars in the universe are red dwarf stars, which means that rocky exoplanets are most likely to be found orbiting such a star. Red dwarf stars are cool, so a planet has to hug it in a tight orbit to stay warm enough to potentially host liquid water (meaning it lies in the habitable zone). Such stars are also active, particularly when they are young, releasing ultraviolet and X-ray radiation that could destroy planetary atmospheres. As a result, one important open question in astronomy is whether a rocky planet could maintain, or reestablish, an atmosphere in such a harsh environment.

To help answer that question, astronomers used NASA's James Webb Space Telescope to study a rocky exoplanet known as GJ 486 b. It is too close to its star to be within the habitable zone, with a surface temperature of about 800 degrees Fahrenheit (430 degrees Celsius). And yet, their observations using Webb's [Near-Infrared Spectrograph](#) (NIRSpec) show hints of water vapor. If the water vapor is associated with the planet, that would indicate that it has an atmosphere despite its scorching temperature and close proximity to its star. Water vapor has been seen on gaseous exoplanets before, but to date no atmosphere has been definitely detected around a rocky exoplanet. However, the team cautions that the water vapor could be on the star itself – specifically, in cool starspots – and not from the planet at all.

“We see a signal, and it's almost certainly due to water. But we can't tell yet if that water is part of the planet's atmosphere, meaning the planet *has* an atmosphere, or if we're just seeing a water signature coming from the star,” said Sarah Moran of the University of Arizona in Tucson, lead author of the study.

“Water vapor in an atmosphere on a hot rocky planet would represent a major breakthrough for exoplanet science. But we must be careful and make sure that the star is not the culprit,” added Kevin Stevenson of the Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland, principal investigator on the [program](#).

GJ 486 b is about 30% larger than Earth and three times as massive, which means it is a rocky world with stronger gravity than Earth. It orbits a red dwarf star in just under 1.5 Earth days. It is expected to be tidally locked, with a permanent day side and a permanent night side.

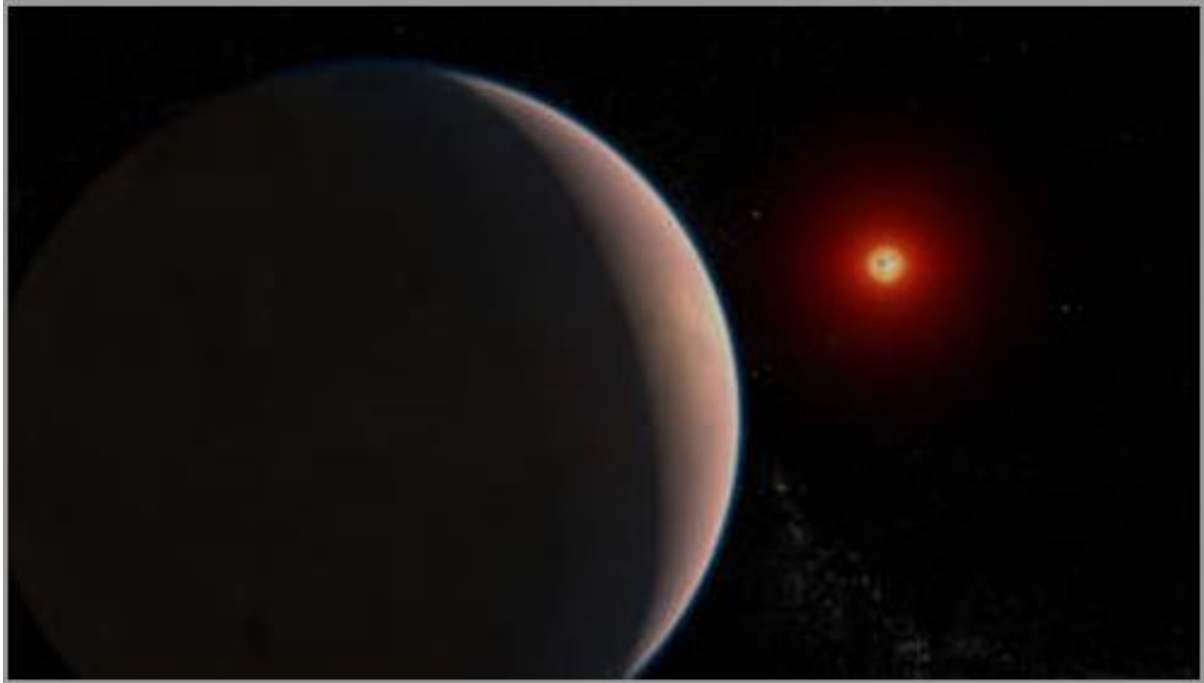


Photo Credit: NASA, ESA, CSA, Joseph Olmsted (STScI)

This artist concept represents the rocky exoplanet GJ 486 b, which orbits a red dwarf star that is only 26 light-years away in the constellation Virgo. By observing GJ 486 b transit in front of its star, astronomers sought signs of an atmosphere. They detected hints of water vapor. However, they caution that while this might be a sign of a planetary atmosphere, the water could be on the star itself – specifically, in cool starspots – and not from the planet at all.

[Download the full-resolution, uncompressed version and supporting visuals from the Space Telescope Science Institute.](#)

GJ 486 b transits its star, crossing in front of the star from our point of view. If it has an atmosphere, then when it transits starlight would filter through those gasses, imprinting fingerprints in the light that allow astronomers to decode its composition through a technique called [transmission spectroscopy](#).

The team observed two transits, each lasting about an hour. They then used three different methods to analyze the resulting data. The results from all three are consistent in that they show a mostly flat spectrum with an intriguing rise at the shortest infrared wavelengths. The team ran computer models considering a number of different molecules, and concluded that the most likely source of the signal was water vapor.

While the water vapor could potentially indicate the presence of an atmosphere on GJ 486 b, an equally plausible explanation is water vapor from the star. Surprisingly, even in our own Sun, water vapor can sometimes exist in sunspots because these spots are very cool compared to the surrounding surface of the star. GJ 486 b's host star is much



cooler than the Sun, so even more water vapor would concentrate within its starspots. As a result, it could create a signal that mimics a planetary atmosphere.

“We didn’t observe evidence of the planet crossing any starspots during the transits. But that doesn’t mean that there aren’t spots elsewhere on the star. And that’s exactly the physical scenario that would imprint this water signal into the data and could wind up looking like a planetary atmosphere,” explained Ryan MacDonald of the University of Michigan in Ann Arbor, one of the study’s co-authors.

A water vapor atmosphere would be expected to gradually erode due to stellar heating and irradiation. As a result, if an atmosphere is present, it would likely have to be constantly replenished by volcanoes ejecting steam from the planet’s interior. If the water is indeed in the planet’s atmosphere, additional observations are needed to narrow down how much water is present.

Future Webb observations may shed more light on this system. An [upcoming Webb program](#) will use the [Mid-Infrared Instrument](#) (MIRI) to observe the planet’s day side. If the planet has no atmosphere, or only a thin atmosphere, then the hottest part of the day side is expected to be directly under the star. However, if the hottest point is shifted, that would indicate an atmosphere that can circulate heat.

Ultimately, observations at shorter infrared wavelengths by another Webb instrument, the [Near-Infrared Imager and Slitless Spectrograph](#) (NIRISS), will be needed to differentiate between the planetary atmosphere and starspot scenarios.

“It’s joining multiple instruments together that will really pin down whether or not this planet has an atmosphere,” said Stevenson.

The study is accepted for publication in [The Astrophysical Journal Letters](#).

*The James Webb Space Telescope is the world’s premier space science observatory. Webb will solve mysteries in our solar system, look beyond to distant worlds around other stars, and probe the mysterious structures and origins of our universe and our place in it. Webb is an international program led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency.*

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