

# THE OBSERVER

BATTLE POINT ASTRONOMICAL ASSOCIATION

[WWW.BPASTRO.ORG](http://WWW.BPASTRO.ORG) BAINBRIDGE ISLAND, WA



## Community Outreach Opportunity

The Bainbridge Island Kids Discovery Museum (KiDiMu) has been selected by NASA to be an official host of the Webb Telescope Community Events Initiative. The BPAA recently agreed to partner with KiDiMu to put on some local outreach events, and this presents just such an opportunity.

We are planning on holding the event during the month of October, with the James Webb Space Telescope (JWST) currently scheduled to launch no earlier than October 31st. We anticipate providing general support, namely volunteers to talk to kids as we are able. KiDiMu is planning a one-day event at which we would participate with activities and exhibits (a few telescopes that the kids can touch, for example).

Once the date is set we'll look to the BPAA membership for additional volunteers.

## Ham Radio at the Observatory

The Bainbridge Amateur Radio Club (BARC) on Saturday June 26 braved 96-degree temperatures to take part in the annual Field Day contest, in which hams from all over the U.S. and Canada attempt to make contact with each other. BARC members installed several temporary antennas on and around the Ritchie Observatory, and operated three stations simultaneously to make 47 contacts from as far away as Hawaii, New York, and Alberta, Canada. Participants included 10 BARC members and 9 passersby.

## Ritchie Urgent Repairs

The rooftop stair shelter on the top of the Ritchie Observatory, affectionately referred to as the doghouse, is in urgent need of repair.

We recently discovered that water had caused a dry-rot problem in the flooring and one of the beams supporting the second floor below the doghouse. This was repaired immediately, at a cost of \$2,055, from Association general funds. But the root cause, the leaking doghouse, remains. We've determined that the doghouse itself needs to be replaced with better materials, proper flashing, and a weather-tight door. We have estimated the cost of this work at \$15,000.

BPAA recently received a \$10,000 Community Grant from the Bainbridge Community Foundation (BCF) to support this project. Generous donors have contributed an additional \$5,000, so the project is now fully funded! Thank you to everyone who contributed to improve the Ritchie Observatory! And when we finish the upgrade, we'll rename "the doghouse" to the more poetic "Sky Portal".

## Goodbye Sani-Can!!!

After a long pandemic delay, the Park District is preparing to construct a new, permanent restroom outside the Observatory. The facility will have a flush toilet, a sink with running water, and interior lights powered by a solar-charged battery.

## NASA Statement on James Webb Space Telescope Launch Readiness



NASA's James Webb Space Telescope, which will be the premier observatory of the next decade, remains on schedule for a launch readiness date no earlier than Oct. 31, 2021.

Webb will ship to the launch site in August with little to no schedule margin; launch processing will take two months. The observatory has completed all the post-environmental testing deployments, and it is in its final integration and folding stages. Final stow, closeout, and pack and ship are imminent. We are working closely with the European Space Agency (ESA) and Arianespace on establishing the launch date. We will launch approximately four months after the first launch of the Ariane 5 this year, which is scheduled for late July. Webb has no launch date constraints; hence, it can launch almost any day of the year.

Webb will study every phase in the history of our universe, including the first luminous glows after the creation of the cosmos, the formation of solar systems capable of supporting life on planets like Earth, and the evolution of our own solar system.

(Source: [nasa.gov](https://www.nasa.gov))

## Problems With Hubble

After more than 30 groundbreaking years of discovery, NASA's iconic Hubble Space Telescope ran into difficulties earlier this month when a computer shutdown forced the telescope into safe mode. Now, engineers are sorting through options and possible solutions.

The current troubles began on June 13th, when the telescope's main payload computer unexpectedly shutdown. The team suspected a degraded memory module and planned to switch over to one of three backup modules. However, attempts to switch over on June 16th and 17th were not successful, and the telescope remains in safe mode.

Hubble's original NASA Standard Spacecraft Computer-1 (NSSC-1) is located in the Science Instrument Command and Data Handling Unit (SI C&DH), and both were replaced in May 2009 during the final repair mission of the space shuttle era. To date, the backup unit has yet to be powered on since initial installation in 2009, though it was thoroughly tested on the ground prior to launch.

At this point, the team would only consider ending recovery efforts "When we have exhausted all of the redundancy options," says Claire Andreoli (NASA-Goddard). "But there are still so many we have not yet tried, and it is extremely likely that one of these will work."

(Source: [skyandtelescope.org](https://www.skyandtelescope.org))

## Did Ancient Comet Strike Change Human Civilization?

Scientists think that a cluster of comet shards may have smashed into Earth's surface 13,000 years ago, in the most catastrophic impact since the Chicxulub event killed off Earth's large dinosaurs about 66 million years ago. In a new study, a team led by Martin Sweatman, a scientist at the University of Edinburgh in Scotland, investigated the impact and how it could have shaped the origins of human societies on Earth.

While the first Homo sapiens emerged between 200,000 and 300,000 years ago, much farther in the past than this impact, the researchers found that this comet crash actually coincided with significant changes in how human societies self-organized.

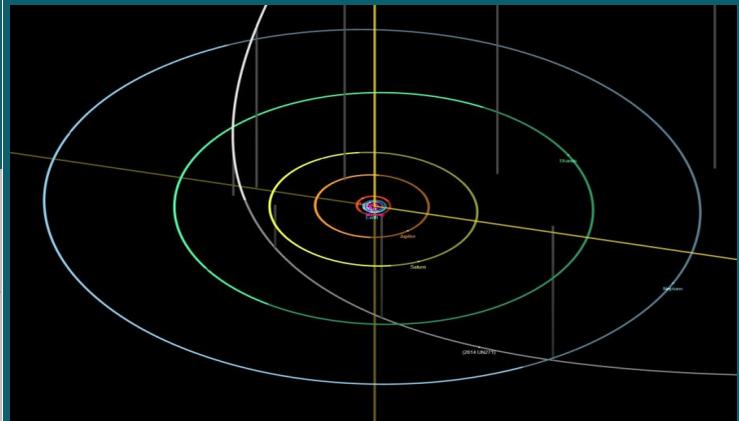
This work builds on previous research that has suggested that a significant impact may have preceded the beginning of the Neolithic period, the first part of the Stone Age in which a number of major developments in human civilization took place, including notable steps forward in agriculture, architecture and stone tools.

At that time, humans in the "Fertile Crescent," which encompassed countries we know today as Egypt, Iraq and Lebanon, were moving away from nomadic, hunter-gatherer lifestyles to more permanent settlements.

While the new study work is exciting and suggestive, the team acknowledges that more evidence and more research is necessary to better understand how this impact could have affected global climate and, ultimately, human civilizations, according to the statement.

(Source: [space.com](https://www.space.com))

## Giant Oort Cloud Comet Lights up in the Outer Solar System



The Oort Cloud comet 2014 UN271 is shown in white in this solar system diagram. The orbits of Jupiter, Saturn, Uranus, and Neptune are marked in orange, yellow, green, and blue, respectively. (Image source: NASA)

Astronomers have spotted the largest comet ever recorded coming from the Oort Cloud. And at 20 times the distance between Earth and the Sun (20 astronomical units), beyond Uranus's orbit, it's already venting gas.

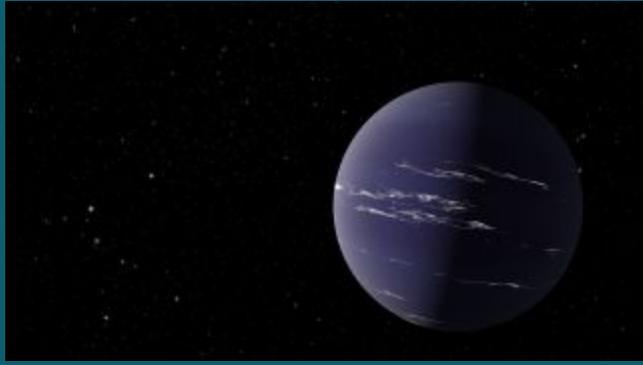
New observations, taken on June 22nd with the 0.51-meter SkyGems Remote Telescope in Namibia, reveal "clear cometary activity, with a 15-arcsecond coma," Luca Buzzi reported this morning on the Minor Planet Mailing List.

Astronomers discovered the comet, dubbed 2014 UN271, in data collected by the Dark Energy Survey, which recently released data on hundreds of millions of galaxies spread over one-eighth of the sky. Survey computers spent millions of hours automatically searching the entire data set for transient objects moving across the sky. And from 2014 to 2018 one of them was the comet, yielding the orbit reported June 19th in a Minor Planet Electronic Circular.

The new observations put it at about magnitude 20, which enables a rough estimate of its diameter of 160 kilometers (100 miles). That size isn't enough to make it a dwarf planet, but it is the biggest object from the Oort Cloud seen so far.

(Source: [skyandtelescope.org](https://www.skyandtelescope.org))

## Neptune-like Exoplanet May Have Water Clouds



An artist's depiction of a Neptune-like exoplanet. (Image credit: NASA/JPL-Caltech)

A Neptune-like planet, called TOI-1231 b, might have clouds of water high in its atmosphere, but the observations are so preliminary that it's hard to say for sure.

"Future observations of this new planet will let us determine just how common (or rare) it is for water clouds to form around these temperate worlds," Jennifer Burt, a scientist at NASA's Jet Propulsion Laboratory in California and lead author of the new research, said in a statement from the University of New Mexico, which was also involved in the research.

While observations of TOI-1231 b suggest that the planet has a substantial atmosphere, the researchers cautioned that they can't quite figure out the planet's composition. Models suggest that it has either a dense water-vapor atmosphere, which could contain the water clouds, or a larger hydrogen or hydrogen-helium atmosphere similar to Neptune's.

The confirmations could come relatively quickly. TOI-1231 b is just 90 light-years from Earth, making it relatively easy to spot in large observatories. NASA's James Webb Space Telescope, which may launch this fall, is optimized to look at planets with atmospheres, especially gas giants.

But even before that, the team will get a crack at observations using the Hubble Space Telescope, because one of the paper's authors has telescope time booked on the 31-year-old observatory. (Those observations will depend on NASA solving a computer glitch that has sidelined Hubble since June 13.)

"With a technique called transmission spectroscopy, scientists should be able to use the Hubble Space Telescope — and soon, the far more sensitive James Webb Space Telescope — to capture starlight shining through the atmosphere of TOI-1231 b," NASA said in a statement about the discovery. "Molecules in this planet's atmosphere will absorb slices of light from this spectrum, leaving dark lines that can be read like a barcode, revealing which gases are present."

(Source: [space.com](http://space.com))

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## Exoplanet Earth-like Biospheres May Be Rare

A new analysis of known exoplanets has revealed that Earth-like conditions on potentially habitable planets may be much rarer than previously thought. The work focuses on the conditions required for oxygen-based photosynthesis to develop on a planet, which would enable complex biospheres of the type found on Earth. The study was published on 6/23 in Monthly Notices of the Royal Astronomical Society.

The number of confirmed planets in our own Milky Way galaxy now numbers into the thousands. However planets that are both Earth-like and in the habitable zone -- the region around a star where the temperature is just right for liquid water to exist on the surface -- are much less common.

At the moment, only a handful of such rocky and potentially habitable exoplanets are known. However the new research indicates that none of these has the theoretical conditions to sustain an Earth-like biosphere by means of 'oxygenic' photosynthesis -- the mechanism plants on Earth use to convert light and carbon dioxide into oxygen and nutrients.

Only one of those planets comes close to receiving the stellar radiation necessary to sustain a large biosphere: Kepler-442b, a rocky planet about twice the mass of the Earth, orbiting a moderately hot star around 1,200 light years away.

By calculating the amount of photosynthetically active radiation (PAR) that a planet receives from its star, the team discovered that stars around half the temperature of our Sun cannot sustain Earth-like biospheres because they do not provide enough energy in the correct wavelength range.

"Since red dwarfs are by far the most common type of star in our galaxy, this result indicates that Earth-like conditions on other planets may be much less common than we might hope," comments Prof. Giovanni Covone of the University of Naples, lead author of the study.

(Source: [Sciencedaily.com](http://Sciencedaily.com))

## WHAT'S UP(COMING)!

Jul 9 – New Moon

Jul 13 – [Conjunction of Venus and Mars](#)

Jul 17 – [134340 Pluto at opposition](#)

Jul 23 – Full Moon

Jul 28 – [Piscis Austrinus shower peak](#)

Jul 30 – [Southern  \$\delta\$ -Aquariid shower peak](#)  
–  [\$\alpha\$ -Capricornid shower peak](#)

Aug 1 – [Saturn at opposition](#)

Aug 8 – New Moon

Aug 12 – [Perseid shower peak](#)

Aug 18 –  [\$\kappa\$ -Cygnid shower peak](#)

Aug 19 – [Jupiter at opposition](#)

Aug 22 – Full Moon

Sep 1 – [Aurigid shower peak](#)

Sep 6 – New Moon

Sep 9 – [September  \$\epsilon\$ -Perseid shower peak](#)

Sep 14 – [Neptune at opposition](#)

Sep 20 – Full Moon

Sep 22 – September equinox

Sep 27 – [Daytime Sextantid shower peak](#)