

SKYWATCHER NEWSLETTER

UPCOMING FULL MOONS

- JULY 10: BUCK MOON
- AUGUST 9: STURGEON MOON
- SEPTEMBER 7: CORN MOON
- OCTOBER 6: HARVEST MOON
- NOVEMBER 5: BEAVER MOON
- DECEMBER 4: COLD MOON

Total
Lunar EclipseSep 7, 2025
WeymouthSeptember 7, 2025 Total Lunar Eclipse in Weymouth,
England, United KingdomStart time, end time, animation, and detailed viewing information for the
upcoming eclipse in Weymouth, England, United Kingdom

timeanddate.com

June's Night Sky Notes: Seasons of the
Solar System

By: Kat Troche

Here on Earth, we undergo a changing of seasons every three months. But what about the rest of the Solar System? What does a sunny day on Mars look like? How long would a winter on Neptune be? Let's take a tour of some other planets and ask ourselves what seasons might look like there.

Martian Autumn

Although Mars and Earth have nearly identical axial tilts, a year on Mars lasts 687 Earth days (nearly 2 Earth years) due to its average distance of 142 million miles from the Sun, making it late autumn on the red planet. This distance and a thin atmosphere make it less than perfect sweater weather. A recent weather report from Gale Crater boasted a high of -18 degrees Fahrenheit for the week of May 20, 2025.

Seven Years of Summer

Saturn has a 27-degree tilt, very similar to the 25-degree tilt of Mars and the 23-degree tilt of Earth. But that is where the similarities end. With a 29-year orbit, a single season on the ringed planet lasts seven years. While we can't experience a Saturnian season, we can observe a ring plane crossing here on Earth instead. The most recent plane crossing took place in March 2025, allowing us to see Saturn's rings 'disappear' from view.

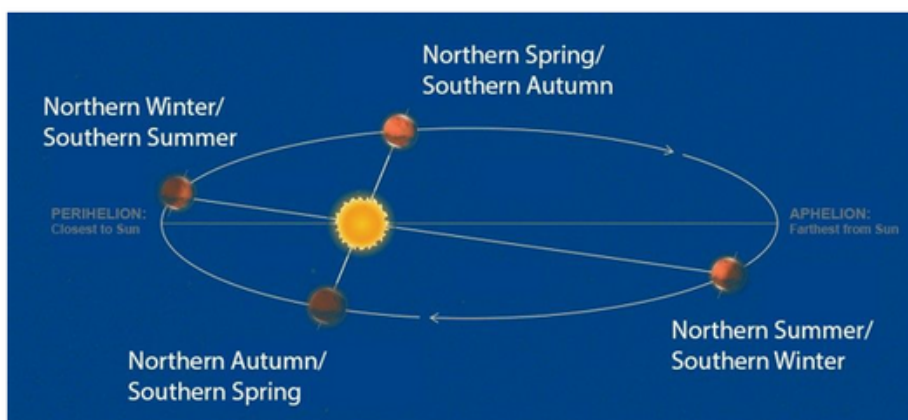
LATEST NEWS

Despite the poorer sky conditions in recent weeks, the summer has a lot of observing to look forward too. Perhaps you were able to see the very low altitude 'Strawberry Moon' this week. There are several conjunctions visible for small telescopes coming up as well as plenty more full moons. A fun list of names are given here.

the Sept 7 'Corn Moon' will have a Total Lunar Eclipse taking place. timeanddate.com gives plenty of information on this event which we will present in an upcoming newsletter before the main event.

A few more back issue snips celebrating the WAC entering its 20th year are on Page 4. If you have any memories of the WAC over the years to share, please send them to me for inclusion!

Until next month and hopefully 20 years more of the WAC... SLK

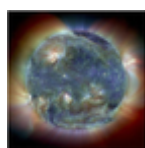


An artist's rendition of Mars' orbit around the Sun, and its seasons. Credit: NASA/JPL-Caltech

A Lifetime of Spring

Even further away from the Sun, each season on Neptune lasts over 40 years. Although changes are slower and less dramatic than on Earth, scientists have observed seasonal activity in Neptune's atmosphere. These images were taken between 1996 and 2002 with the Hubble Space Telescope, with brightness in the southern hemisphere indicating seasonal change.

As we welcome summer here on Earth, you can build a Suntrack model that helps demonstrate the path the Sun takes through the sky during the seasons. You can find even more fun activities and resources like this model on NASA's Wavelength and Energy activity.



Wavelength and Energy

Demonstrate the relationship between wavelength, frequency and energy by using a rope.

NASA / Feb 15, 2023

<https://www.nasa.gov/stem-content/wavelength-and-energy/>

LOCAL EVENTS

18 June - FA - Astro Processing. Curves, Levels and Layers - Ken Pitts

CADAS - The third Wednesday of the month from January 2025 to December 2025

1 July - WAS - Robert Harvey – Stumbling around in the dark – a 2 hour astrophoto session (In Person)

16 July - FA - Equipment Clinic. Come along and see what other people are using. Display your own kit, or bring along anything you need some help with.

5 Aug - WAS - Social and Equipment Night with Quiz

20 Aug - FA - Tutorial Clinic

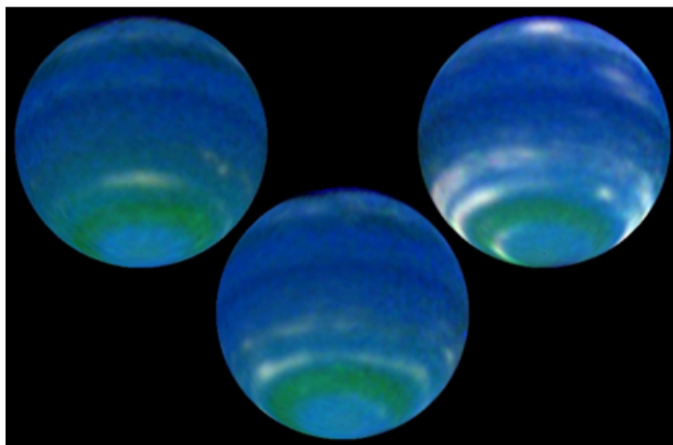
2 Sept - WAS - Dr. Lilian Hobbs – Messier Objects (In Person)

17 Sept - FA - Dark Matter - Why we think 95% of the Universe is Missing - Elizabeth Cunningham

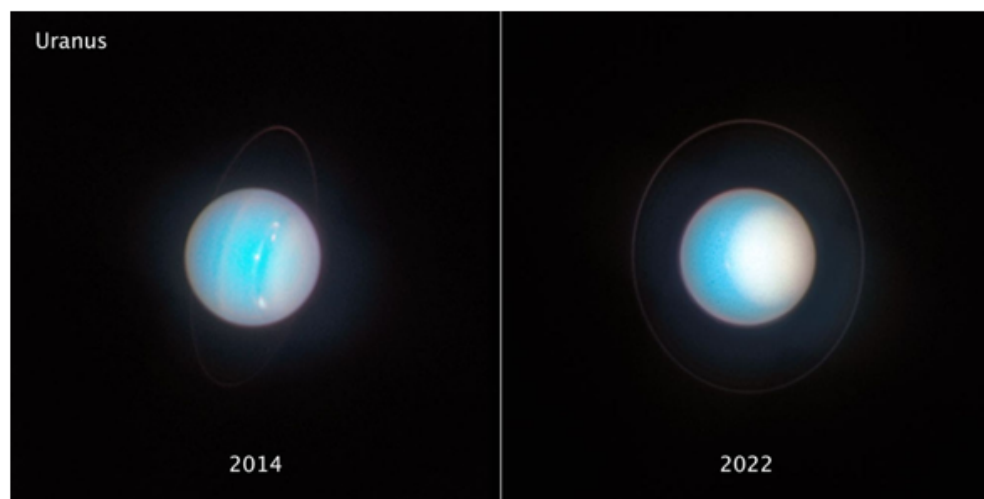
MORE TO COME IN 2025!

VISIT OUR WEBSITE FOR THE LATEST CLUB INFORMATION

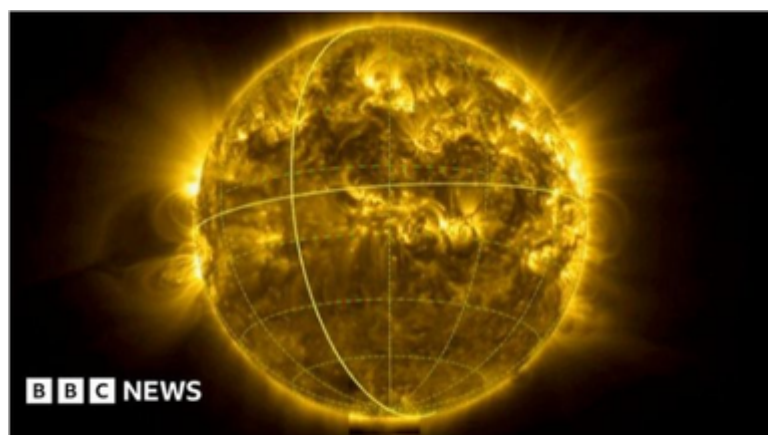
Continued from page 1:



NASA Hubble Space Telescope observations in August 2002 show that Neptune's brightness has increased significantly



Uranus rolls on its side with an 84-year orbit and a tilt just 8° off its orbital plane. Its odd tilt may be from a lost moon or giant impacts. Each pole gets 42 years of sunlight or darkness. Voyager 2 saw the south pole lit; now Hubble sees the north pole facing the Sun. Credit: NASA, ESA, STScI, Amy Simon (NASA-GSFC), Michael Wong (UC Berkeley); Image Processing: Joseph DePasquale (STScI)

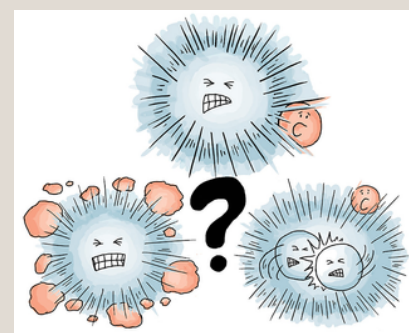


Solar Orbiter spacecraft snaps first images of Sun's south pole

Never before seen pictures will help scientists learn how the Sun's activity changes from stormy to quiet periods

BBC News / Jun 11

<https://www.bbc.co.uk/news/articles/clyqry9ppl9o>



WAC Upcoming Events

JULY 11 - EQUIPMENT EVENING, SOLARGRAPHS AND MEAL/SOCIAL (IN-PERSON ONLY)

AUG - NO MEETING THIS MONTH

SEPT 12 - DAVID WHITEHOUSE - SEARCHING FOR LIFE (IN-PERSON AND ZOOM)

OCT 10 - SHERI KARL - ORBITING SOLAR OBSERVATORIES (IN-PERSON AND ZOOM)

WEYMOUTH ASTRONOMY

Gaia mission updates

After the end of science observations on 15 January and until March 2025, a series of technology tests were performed.

The Gaia spacecraft appeared brighter than usual and the follow-up campaign by (citizen) astronomers brought many amazing images of Gaia in the night sky.

On 27 March 2025, the Gaia spacecraft was sent into its retirement orbit and passivated.

SKY-SCANNING COMPLETE FOR ESA'S MILKY WAY MAPPER GAIA

From 24 July 2014 to 15 January 2025, Gaia made more than three trillion observations of two billion stars and other objects, which revolutionised the view of our home galaxy and cosmic neighbourhood.



580 MILLION

Accesses of Gaia catalogue so far

13 000

Refereed scientific publications so far

2.8 MILLION

Commands sent to spacecraft

142 TB

Downlinked data (compressed)

500 TB

Volume of data release 4
(5.5 years of observations)

3 TRILLION

Observations

2 BILLION

Stars & other objects observed

938 MILLION

Camera pixels on board

15 300

Spacecraft 'pirouettes'

55 KG

Cold nitrogen gas consumed

3827

Days in science operations

50 000 HOURS

Ground station time used

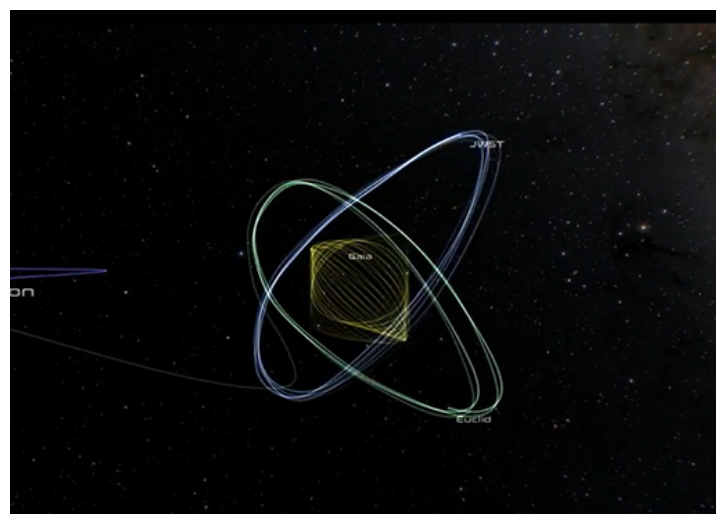
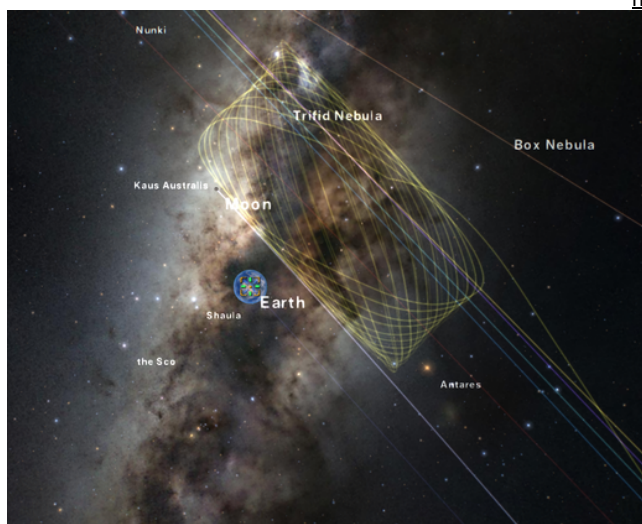


Gaia Sky | Gaia Sky

Open source 3D Universe visualization platform with support for a billion objects

 gaiasky.space

<https://gaiasky.space>



https://www.esa.int/Enabling_Support/Operations/Farewell_Gaia!
Spacecraft operations come to an end

WEYMOUTH ASTRONOMY

WAC Members Corner

WEYMOUTH ASTRONOMY



Sky Watcher

Volume 1, Issue 3
7 July 2006

At the last meeting the club was treated to an inspiring talk by one of our own members, Geoff Kirby. His presentation entitled "50 Years an Amateur Astronomer" struck a chord with members of all levels of astronomical interest.

Geoff's book of the same title was made available to members on CD for a donation to a cancer charity. More copies of the book can be requested direct from Geoff.

Celestial Sights
Jupiter is still very bright sitting above the southern horizon as it gets dark. The gas giant sets around 1.30am at the start of the July. By the end of the month it will set before midnight. Check out the finder chart opposite to locate Jupiter this month.

Venus can be seen as a gleaming object over in the east/north-east before the sunrise. In July, you'll need to look over in the east before 4.30am to see this planet.



The club would like to hear from other members who would be interested in contributing. Please contact Sheri or Nigel for more information.

Discovery Soars Into Space!



Space Shuttle Discovery lifts off Pad 39B at Kennedy Space Center headed for the International Space Station. Photo credit: NASA/KSC

6 July 2006—STS-121
Space Shuttle Discovery's engines roared to life and the orbiter lifted off from Pad 39B at the Kennedy Space Center in Florida. Cheers and applause rippled throughout the Space Coast as Discovery climbed higher and higher into the crisp blue sky.

Thursday, Discovery will meet up and dock with the International Space Station. Steven Lindsey commands a crew of five American astronauts, Pilot Mark Kelly and Mission Specialists Michael Fossum, Lisa Nowak, Stephanie Wilson and Piers Sellers, and one astronaut from the European

Space Agency, Thomas Reiter. This is the 18th U.S. flight to the International Space Station and the 32nd flight for Space Shuttle Discovery.

While docked, the STS-121 crew will test new equipment and procedures to improve shuttle safety, as well as make repairs to the station. Reiter will remain with the Expedition 13 crew on the station.

Editor: Dennis Armstrong
NASA Official: Brian Dunbar

- Upcoming Events:**
- 11/12 Aug Viewing Night*
 - 29 Sept Speaker Bob Mizon "Astro Alphabet"
 - 13 Oct Meeting (TBA)
 - 10 Nov Meeting (TBA)
 - 15 Dec Meeting (TBA)
- * Open viewing night(s) weather permitting from 8.30pm onwards at Fleet Farm. Perseid Meteor Shower will be active. More information will be available on the website or ring 07970 644637

www.weymouthastronomy.co.uk

Sky Watcher

Volume 1, Issue 4

Deadly Planets

(Continued from page 1)

Where did these worlds come from? NASA's Spitzer Space Telescope may have found the answer. Last year, a group of astronomers led by Deepo Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets! As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets'

surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a bag glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field. Wasted beauty? Maybe. But it's an awful place to try and form planets, but if you can do it there, you can do it anywhere." More news and images from Spitzer can

be found at www.spitzer.caltech.edu/. In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to space.place.nasa.gov/cm/kids/live/ for a great place to introduce kids to infrared and the joys of astronomy.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



MEMBER PHOTO
Partial Lunar Eclipse as seen from Weymouth 7/9/06.
Submit a photo for the next newsletter

We have recently been contacted by a gentleman interested in the navigation and planning of the NASA space probe missions. He has recently retired early, and is trying to learn his way around the subject, to

discover whether any of his skills (signal processing and classification) could be applied in the field during retirement. If anyone has an interest in, or already knows their way around the subject, with whom he could discuss issues that he finds puzzling, please let Sheri know so she can pass on his contact details.

IAU Defines "Planet"

The IAU has resolved that "planets" and other bodies in our Solar System be defined into three distinct categories in the following way:

- (1) A "planet" is a celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round shape), and (c) has cleared the neighbourhood around its orbit.
- (2) A "dwarf planet" is a celestial body that (a) is in orbit around the Sun, (b) has

sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round shape), (c) has not cleared the neighbourhood around its orbit, and (d) is not a satellite.

(3) All other objects except satellites orbiting the Sun shall be referred to collectively as "Small Solar-System Bodies".

IAU Resolution: Pluto
Pluto is a "dwarf planet" by the above definition and is recognized as the prototype of a new category of trans-Neptunian objects.

Have your say!
What do club members think? Let us know your opinion on this issue for the next newsletter.

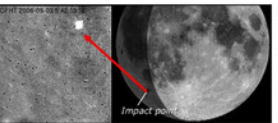
Comments regarding the defining of the term "planet" are very welcome.

Update: Current voting results at planetpetition.com
Pluto is a planet? Yes (7425 votes) No (2325 votes)

SMART 1—LUNAR IMPACT

3 September—The SMART-1 mission has ended with a controlled impact with the lunar surface. Last signal from the spacecraft was observed at 05:42:22 UT. Approximate impact coordinates are 34.4 S, 46.2 W on the edge of Lacus Excellence.

www.esa.int/SPECIALS/SMART-1/index.html

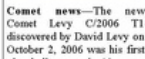
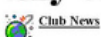


www.weymouthastronomy.co.uk

WEYMOUTH ASTRONOMY

Sky Watcher

Volume 1, Issue 5
13 October 2006



Comet news—The new Comet Levy C/2006 T1 discovered by David Levy on October 2, 2006 was his first visual discovery in 12 years, and it brings his total comet finds to 22 (9 visually and 13 photographically). It was discovered in a 16-inch f/5 Newtonian reflector and confirmed visible in a Meade 8-inch "finderscope." C/2006 T1 reaches perihelion on October 9th at a distance of 1.072 astronomical units from the Sun. It is not expected to get brighter than 10th or 11th magnitude. The comet is currently in Leo, moving southeastward to Sextans. To get the comet's orbital elements and ephemeris, go to the [Central Bureau for Astronomical Telegrams](http://www.minorplanetcenter.org/).

The first meeting of autumn brought us Bob Mizon and his talk on the "Astro-Alphabet". The objects he talked about really encouraged members to get out and re-look at some familiar patches of sky for some very rewarding surprises! He also gave us an update on the CEDS and encourages all members to keep "talking" and get the word out. Use proper lighting and illuminate only the areas which require it, not areas which don't.

The end of October brings us a New Moon and early dark skies. The next Open Viewing Night(s) will be the 27th and 28th of Oct at Fleet Farm. If the weather looks promising, we'll be at the farm from 8pm onwards. Dress warm!

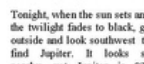
A trip to the Norman Lockyer Observatory (NLO) is scheduled for the 3rd Nov (Friday). The NLO members meet at 7.30pm in Sidmouth and have invited us to join them. If it is not clear, we can postpone the trip to the 17th Nov. They are looking forward to meeting the WAC members. Please contact Sheri to express interest.

Celestial Sights
The bright eclipsing variable star Algol should be in one of its periodic dimming, magnitude 3.4 instead of its usual 2.1, for a couple hours centred on 5:48 a.m. Saturday morning BST. Algol takes several additional hours to fade and to re-brighten.

Comet SWAN update: A nice binocular comet is now 6th magnitude, slightly brighter than predicted, as it moves from the dawn to the evening sky, passing below the north celestial pole. Right now Comet SWAN (C/2006 M4) is near Cor Caroli in Canes Venatici, under the handle of the Big Dipper. It is climbing higher into good view in Canes Venatici and Bootes

Staggering Distance

By Dr. Tony Phillips

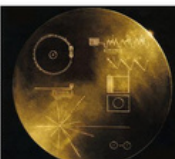


Harvest Moon 6 Oct. 2006.

Tonight, when the sun sets and the twilight fades to black, go outside and look southwest to find Jupiter. It looks so nearby, yet Jupiter is 830 million km away. Light from the sun takes 43 minutes to reach the giant planet, and for Earth's fastest spaceship, New Horizons, it's a trip of 13 months. Not far to the left of Jupiter is Pluto. Tiny Pluto is almost 5 billion km away. Sunlight takes more than 4 hours to get there, and New Horizons 9 years. A smidgen to the right of Pluto, among the stars of the constellation Ophiuchus, is Voyager 1. Launched from Florida 29 years ago, the spacecraft is a staggering 15 billion km away. It has traveled beyond all the known planets, beyond the warmth of the sun, almost beyond the edge of the solar system itself.

farther from the Sun than Earth," says Ed Stone, Voyager project scientist. "This is an important milestone in our exploration of the Solar System. No other spacecraft has gone so far." At 100 AU, Voyager 1 is in a strange realm called "the heliosheath." Our entire solar system sits inside a giant bubble of gas called the heliosphere. The sun is responsible; it blows the bubble by means of the solar wind. Voyager 1 has traveled all the way from the bubble's heart to its outer edge, a gassy membrane dividing the solar system from interstellar space. This "membrane" is the heliosheath. Before Voyager 1 reached its present location, researchers had

calculated what the heliosheath might be like. "Many of our predictions were wrong," says Stone. In situ, Voyager 1 has encountered unexpected magnetic anomalies and a surprising increase in low-energy cosmic rays, among other things. It's all very strange—"and we're not even out of the Solar System yet." Radio messages take 14 hours to arrive, "it's worth the wait" says Stone. Courtesy JPL.



In case it is ever found by intelligent beings elsewhere in the galaxy, Voyager carries a recording of songs and sounds of Earth and its inhabitants. The diagram on the cover of the recording symbolizes Earth's location in the galaxy and how to play the record.

- Upcoming Events:**
- 3 Nov Trip to Norman Lockyer Observatory
 - 10 Nov James Fradley
 - 17 Nov Alternate date for NLO trip
 - 15 Dec Regular Meeting

Observing Nights:
27-28 Oct Fleet Farm—
Weather Permits—
More to come!

Suggestions welcome
Ring 07970 644637

www.weymouthastronomy.co.uk

WEYMOUTH ASTRONOMY



<https://www.spaceweather.com>

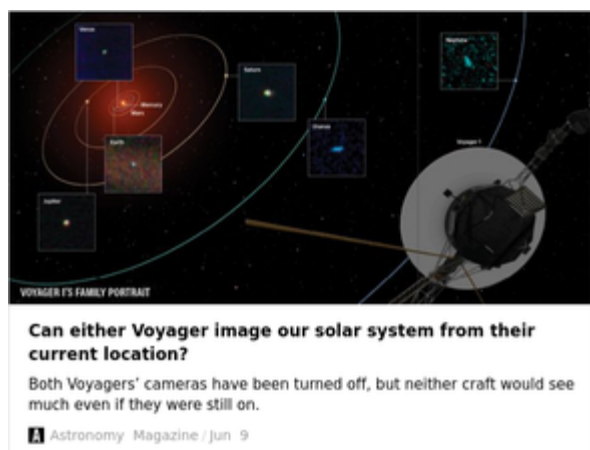
16 May 2025 - FIZZY TRI-HYDROGEN AURORAS ON JUPITER: NASA's James Webb Space Telescope (JWST) has discovered a new type of aurora "fizzing and popping" on Jupiter. Unlike auroras on Earth, which come from oxygen and nitrogen, Jupiter's arise from a completely different compound: ionized trihydrogen (H_3^+).

Trihydrogen is rare on Earth, but it is one of the most abundant ions in the universe, widespread in interstellar space and also in the cloudtops of gas giant planets like Jupiter. The atomic structure of H_3^+ causes it to glow with infrared light when it is involved in aurora-producing space storms. That's why the infrared cameras of JWST can detect it.

Trihydrogen auroras have been seen before, especially on Neptune, but these auroras on Jupiter are different. They change faster than theories predict. "We expected Jupiter's auroras to fade in and out ponderously," says astronomer Jonathan Nichols (University of Leicester), who led the observing team. "Instead, we observed the whole auroral region fizzing and popping with light, sometimes varying by the second."

Jupiter's auroras also feature "extinction events." Bright regions in the auroral zone can suddenly go dark in a matter of seconds. This graphic highlights one such event: "The radiance at this location increased steadily for the several minutes [before it] dropped precipitously, reducing in brightness by around 40%," wrote Nichols and his team.

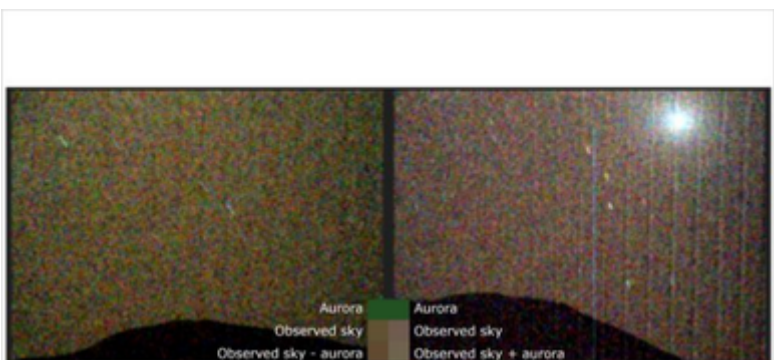
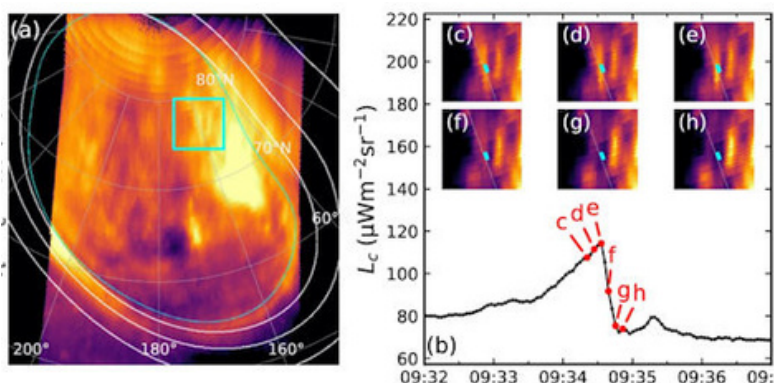
The auroras' variability may be linked to Jupiter's moon Io. On most worlds, auroras are ignited by the solar wind or a CME strike. On Jupiter, volcanic exhaust from Io can do the same job. Io is by far the most volcanically active body in the solar system with dozens of volcanoes erupting simultaneously. Energetic particles emerging from Io's vents create trihydrogen when they strike Jupiter's atmosphere, impressing upon the auroras any irregularities in the volcanic exhaust.



<https://www.astronomy.com/space-exploration/can-either-voyager-image-our-solar-system-from-their-current-location/>



<https://youtu.be/U2T8LpD4lil>



Perseverance Mars rover becomes 1st spacecraft to spot auroras from the surface of another world

"This exciting discovery opens up new possibilities for auroral research and confirms that auroras could be visible to future astronauts on Mars' surface."

Space / May 15

<https://www.space.com/astronomy/mars/perseverance-mars-rover-becomes-1st-spacecraft-to-spot-auroras-from-the-surface-of-another-world>

WEYMOUTH ASTRONOMY



<https://www.spaceweather.com>

23 May 2025: TREES REMEMBER AN ICE AGE SOLAR STORM: More than 14 thousand years ago, there was a solar storm so big, trees still remember it. Dwarfing modern solar storms, the event would devastate technology if it happened again today. Spoiler alert: It could

The record-strong storm is described by a paper in the upcoming July 2025 edition of the peer-reviewed journal Earth and Planetary Science Letters. It occurred in 12,350 BC and is classified as a "Miyake Event."

Miyake Events are solar storms that make the Carrington Event of 1859 look puny. Trees "remember" them in their rings, which store the carbon-14 created by gargantuan storms. At least six Miyake Events have been discovered and confirmed since Fusa Miyake found the first one in 2012. The list so far includes 664-663 BC, 774 AD, 993 AD, 5259 BC, 7176 BC, and 12,350 BC.

The Miyake Event of 12,350 BC is especially intriguing. It appears as a carbon-14 spike in Scots Pine trees along the banks of the Drouzet river in France, with a matching beryllium-10 spike in Greenland ice cores. The event was global and, based on the size of the spikes, very big.

At first, no one could say how big the storm was because it happened during the Ice Age.

Carbon-14 storage is complicated. When a solar storm creates carbon-14 in the upper atmosphere, the radioisotope doesn't immediately appear in the woody flesh of trees. Getting there involves months to years of atmospheric circulation influenced by climate and geography, and even then the carbon-14 has to arrive during the tree's growing season, otherwise it won't be "taken up." High-altitude trees are favored because they encounter the carbon-14 first, while different species each have their own sensitivity.

All these factors are a harder to tease out in the Ice Age. Most known Miyake Events occurred after the Ice Age, during the Holocene, a period of relatively stable and warm climate starting about 12,000 years ago. Climate scientists have atmospheric circulation models for the Holocene, so interpreting Miyake Events in 7176 BC, 5259 BC, 664-663 BC, 993 AD, 774 AD was relatively straightforward. Not so, the event of 12,350 BC.

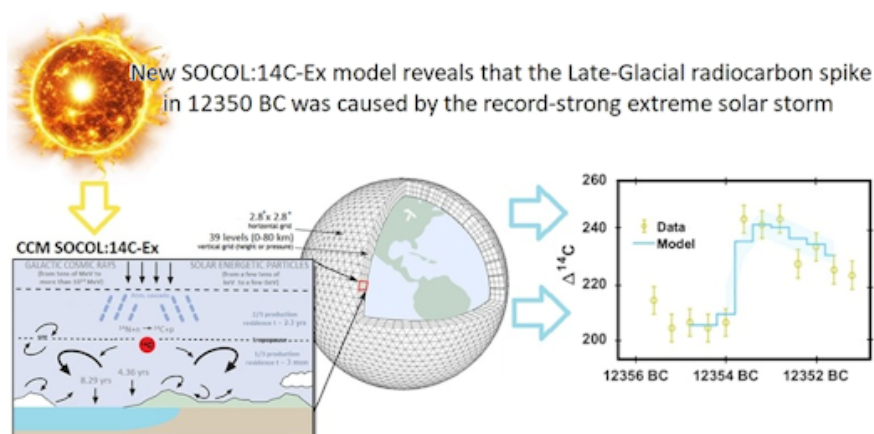
To solve this problem, Kseniia Golubenko and Ilya Usoskin from the University of Oulu in Finland developed a chemistry-climate model (SOCOL:14C-Ex) specifically for Ice Age solar storms. It takes into account ice sheet boundaries, sea levels, and geomagnetic fields that existed during the Pleistocene's Late Glacial period. Using this model, they were able to interpret tree ring data for 12,350 BC.

According to their paper, 12,350 BC is the biggest Miyake Event yet. It produced a hailstorm of solar particles 500 times greater than the most intense solar particle storm recorded by modern satellites in 2005. During the 2005 event, an airline passenger flying over the poles might have received a year's worth of sea-level cosmic radiation in just one hour. During the 12350 BC event, the same dose would have been received in a mere eight seconds.

This would seem to set a new standard for worst-case scenarios in space weather. However, the real news is deeper: The door to the Ice Age has been kicked open by Socol:14C-Ex. Older tree rings may now be interpreted with confidence, potentially revealing even worse storms.



Subfossil trees along the banks of the Drouzet river in France [ref]



Skymaps.com—Feel free to download the full article directly each month.

