

Trips / Events

Ideas for trips and events
always welcome!

events@weymouthastronomy.co.uk

Society Meetings

7 June—WAS—*The Birth of the Solar System* by James Fradgley

15 June—CADAS—Bob Mizon *The Cape York Meteorite*

5 July - WAS—*The Green Flash* by Mike Frost

Jul 20—CADAS—Tim Wetherell *The end of the Universe...*

2 Aug—WAS—*Fire and Ice: Introducing the Two Most Volcanically Active Bodies in the Solar System* by Richard Miles (BAA Comet Section)

Sky Watcher



Latest News:

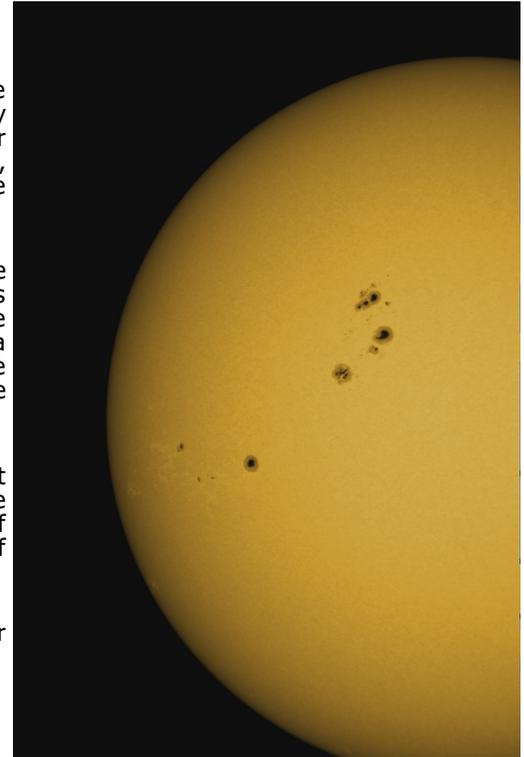
The Sun is indeed getting more active this year. Last month under some remarkably clear skies I was finally able to dust off the solar scopes and capture Active Regions AR2993, 2994, 2995 and 2996. What a feast for the eyes!

This white light image of the photosphere shows some beautiful structure in the sunspots as well as plage and pores. The sunspots are areas of cooler temperatures due to plasma being drawn up and away from what we consider to be the 'surface' or layer where the sun becomes opaque.

The solar activity has increased to the point where a small telescope or binoculars, which are properly filtered for the intense brightness of the sun's light, can be seen in low powers of magnification.

This image was taken with a 110mm refractor and Baader Herschel Wedge.

Until next month...Clear Skies! ~ Sheri



Night Lights: Aurora, Noctilucent Clouds, and the Zodiacal Light



by David Prosper

Have you spotted any "night lights"? These phenomena brighten dark skies with celestial light ranging from mild to dazzling: the subtle light pyramid of the zodiacal light, the eerie twilight glow of noctilucent clouds, and most famous of all, the wildly unpredictable and mesmerizing aurora.

Aurora, often referred to as the northern lights (aurora borealis) or southern lights (aurora australis), can indeed be a wonderful sight, but the beautiful photos and videos shared online are often misleading. For most observers not near polar latitudes, auroral displays are relatively rare and faint, and without much

structure, more gray than colorful, and show up much better in photos. However, geomagnetic storms can create auroras that dance and shift rapidly across the skies with several



Comet NEOWISE flies high above a batch of noctilucent clouds in this photo from Wikimedia contributor Brwynog.

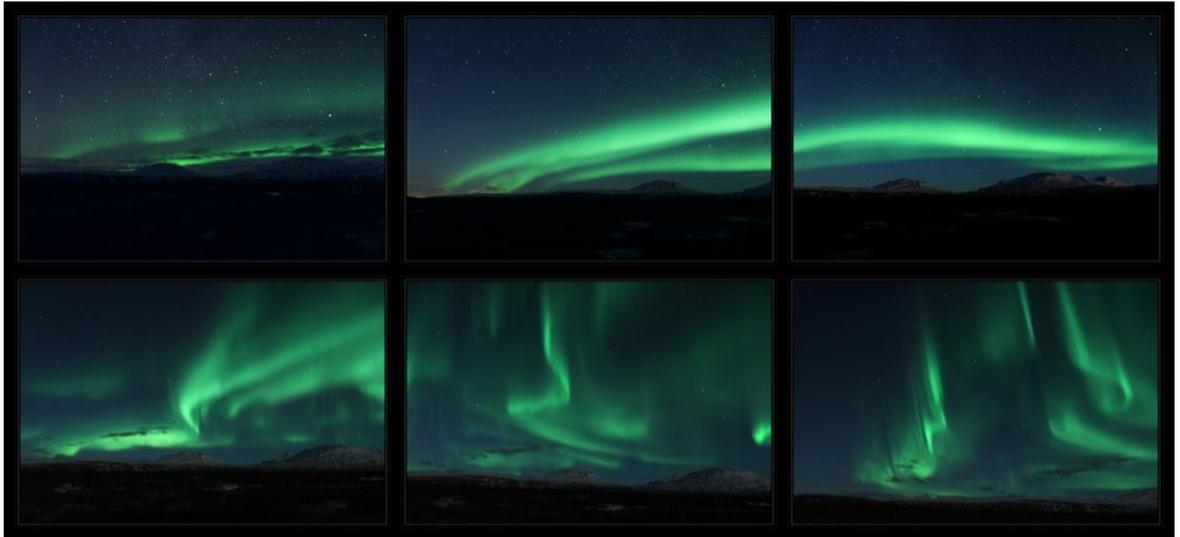
License and source CC BY-SA 4.0 https://commons.wikimedia.org/wiki/File:Comet_Neowise_and_noctilucent_clouds.jpg

WAC Upcoming Events:

17 June	Solar System Walk in Weymouth Bay - Sara Harpley and John Macdonald
8 July	Bob Mizon - Stars over the Nile: Ancient Egyptian Astronomy. (Zoom only)
12/13 Aug	Members Viewing Evening for the Perseid Meteors and Summer Constellations.

Aurora (more!)

distinct colors and appear to observers much further away from the poles - on very rare occasions even down to the mid-latitudes of North America! Geomagnetic storms are caused when a magnetic storm on our Sun creates a



massive explosion that flings a mass of particles away from its surface, known as a Coronal Mass Ejection (CME). If Earth is in the path of this CME, its particles interact with our planet's magnetic field and result in auroral displays high up in our ionosphere. As we enter our Sun's active period of its 11-year solar cycle, CMEs become more common and increase the chance for dazzling displays! If you have seen any aurora, you can report your sighting to the Aurorasaurus citizen science program at aurorasaurus.org

Have you ever seen wispy clouds glowing an eclectic blue after sunset, possibly towards your west or northwest? That wasn't your imagination; those luminescent clouds are noctilucent clouds (also called Polar Mesospheric Clouds (PMC)). They are thought to form when water vapor condenses around 'seeds' of dust from vaporized meteorites - along with other sources that include rocket launches and volcanic eruptions - around 50 miles high in the mesosphere. Their glow is caused by the Sun, whose light still shines at that altitude after sunset from the perspective of ground-based observers. Noctilucent clouds are increasing both in frequency and in how far south

they are observed, a development that may be related to climate change. Keeping in mind that observers closer in altitude to the poles have a better chance of spotting them, your best opportunity to spot noctilucent clouds occurs from about half an hour to two hours after sunset during the summer months. NASA's AIM mission studies these clouds from its orbit high above the North Pole: go.nasa.gov/3uV3Yj1

You may have seen the zodiacal light without even realizing it; there is a reason it's nicknamed the "false dawn"! Viewers under dark skies have their best chance of spotting this pyramid of ghostly light a couple of hours after sunset around the spring equinox, or a couple of hours before dawn around the autumnal equinox. Unlike our previous two examples of night lights, observers closer to the equator are best positioned to view the zodiacal light! Long known to be reflected sunlight from interplanetary dust orbiting in the plane of our solar system, these fine particles were thought to originate from comets and asteroids. However, scientists from NASA's Juno mission recently published a fascinating study indicating a possible alternative origin: dust from Mars! Read more about their serendipitous discovery at: go.nasa.gov/3Onf3kN



The zodiacal light extends into the Pleiades, as seen in the evening of March 1, 2021 above Skull Valley, Utah. The Pleiades star cluster (M45) is visible near the top.

Image Left: A sampling of some of the various patterns created by aurora, as seen from Iceland in 2014. The top row photos were barely visible to the unaided eye and were exposed for 20-30 seconds; in contrast, the bottom row photos were exposed for just 4 seconds- and were clearly visible to the photographer, Wikimedia contributor Shnuffel2022.

License and source: CC BY-SA 4.0 https://commons.wikimedia.org/wiki/File:Aurora_shapes.jpg

Largest marsquakes yet detected using InSight data By [Georgina Torbet](#) April 24, 2022



The NASA InSight Mars lander might not be as well known as its rover cousins, Perseverance and Curiosity, but it is doing important work in understanding more about the interior of Mars and how the planet is shaken by [marsquakes](#). Now, researchers have identified two of the largest marsquakes seen to date.

The research, published in the journal [The Seismic Record](#), describes how two marsquakes were detected from InSight data. The first occurred on August 25, 2021, and the second shortly after on September 18, 2021. These two events were significant for a number of reasons: Firstly, they were the largest marsquakes detected to date, and secondly, they occurred on the far side of Mars from InSight, while most detected marsquakes have originated nearer to the lander.

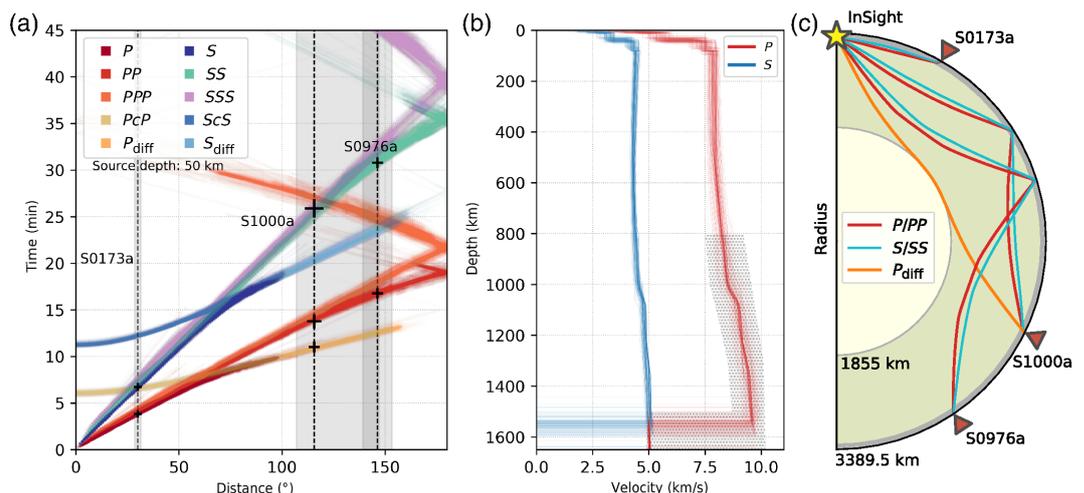
The August quake, called S0976a, was a magnitude 4.2 event, while the September quake, called S1000a, was a magnitude of 4.1. That makes them five times stronger than previously detected marsquakes. The first quake lasted a typical period of a few seconds, but the second event lasted a long time, clocking in at a total of 94 minutes, making it the longest event recorded so far. It also had unusually broad frequency, meaning its energy spread across frequencies from 0.1Hz to 5Hz.

“Not only are they the largest and most distant events by a considerable margin, S1000a has a spectrum and duration unlike any other event previously observed,” said lead researcher Anna Horleston in a [statement](#). “They truly are remarkable events in the Martian seismic catalog.”

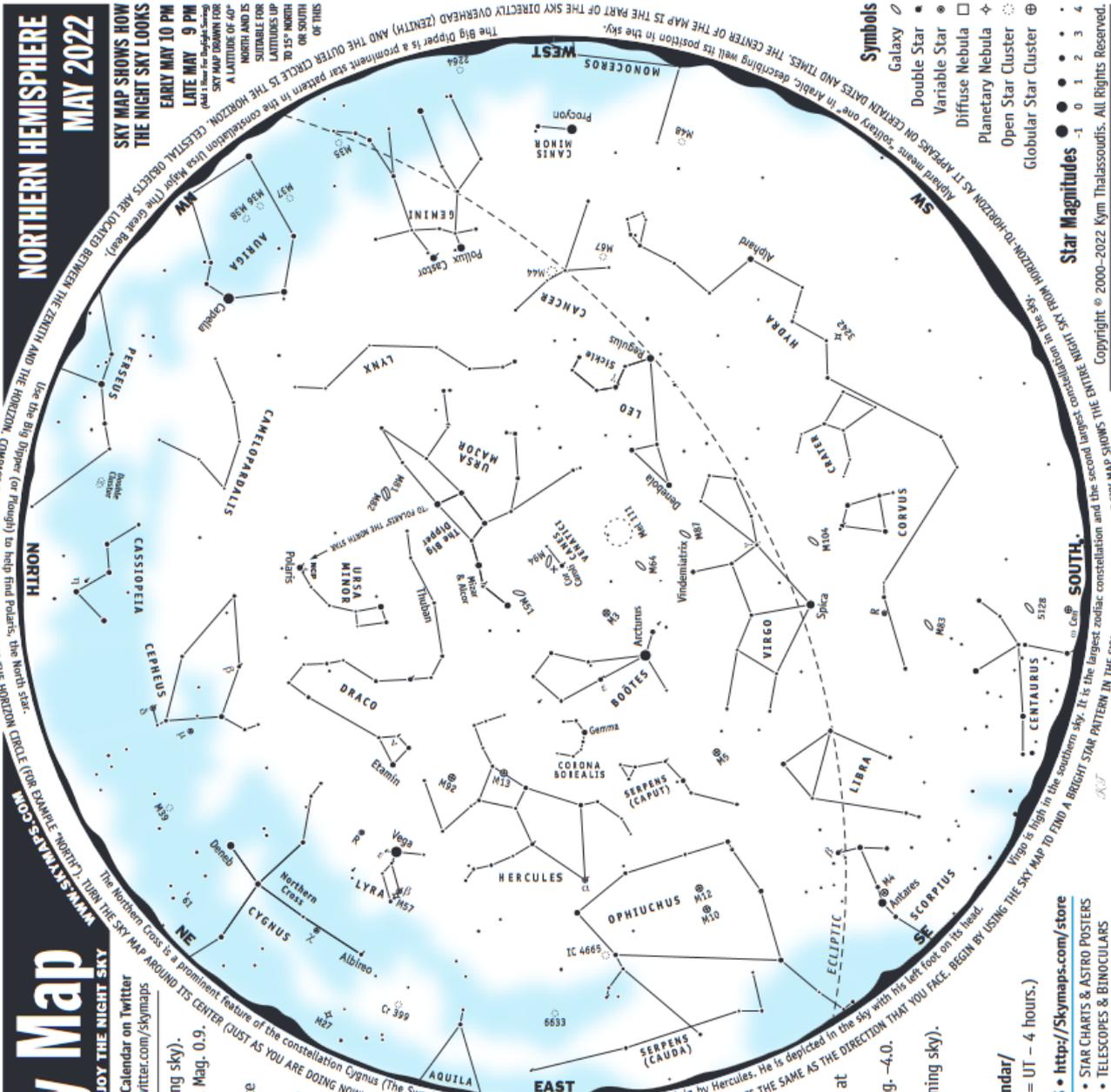
The first quake is particularly interesting as it was found to originate in the [Valles Marineris canyon network](#). Researchers had previously predicted there would be seismic activity in this region, but this is the first time they have actually found it there. Instead, most marsquakes detected to date [originate in the Cerberus Fossae region](#).

These quakes originated on the far side of the planet from the InSight lander, in an area called the core shadow zone. This is the region from which seismic waves (called P and S waves) cannot travel directly to the lander, because the core of the planet gets in the way. To detect the origin of the quake, researchers have to look at the reflections of these waves instead (called PP and SS waves). The ability to detect marsquakes coming from this zone is a major achievement in seismology on Mars. “Recording events within the core shadow zone is a real steppingstone for our understanding of Mars. Prior to these two events, the majority of the seismicity was within about 40 degrees distance of InSight,” said Savas Ceylan, a co-author of the paper from the ETH Zürich institution. “Being within the core shadow, the energy traverses parts of Mars we have never been able to seismologically sample before.” <https://pubs.geoscienceworld.org/ssa/tsr/article/2/2/88/613226/The-Far-Side-of-Mars-Two-Distant-Marsquakes>

-Mars-Two-Distant-Marsquakes



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



The Evening Sky Map

FREE - EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

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Sky Calendar - May 2022

- 2 Moon near the Pleiades at 13h UT (19° from Sun, evening sky).
- 2 Moon near Mercury at 16h UT (20° from Sun, evening sky). Mag. 0.9.
- 3 Moon near Aldebaran at 6h UT (evening sky).
- 5 Moon at apogee (farthest from Earth) at 13h UT (distance 405,285km; angular size 29.5').
- 6 Eta Aquarid meteor shower peaks. Most active for 7 days around this date. Associated with Comet Halley. Very fast, bright meteors, up to 40 per hour. Best seen from the tropics and southern hemisphere a few hours before dawn.
- 9 First Quarter Moon at 0:21 UT.
- 10 Moon near Regulus at 0h UT (evening sky).
- 14 Moon near Spica at 2h UT (evening sky).
- 16 Full Moon at 4:15 UT.
- 16 Total Eclipse of the Moon begins at 3:29 UT and ends at 4:54 UT. Mid-eclipse at 4:11 UT. Partial phases begin at 2:28 UT and end at 5:55 UT. During totality the Moon will turn red-orange in color as it passes into the Earth's shadow. Light passing through the Earth's atmosphere scatters into red colors and reflects off the lunar surface. Visible from the Americas, Europe and Africa.
- 17 Moon at perigee (closest to Earth) at 15:29 UT (distance 360,298km; angular size 33.2').
- 18 Mars 0.52° SE of Neptune at 7h UT (62° from Sun, morning sky). Mags. 0.8 and 7.9.
- 21 Mercury at inferior conjunction with the Sun at 19h UT. The innermost planet passes into the morning sky.
- 22 Moon near Saturn at 8h UT (morning sky). Mag. 0.8.
- 22 Last Quarter Moon at 18:43 UT.
- 25 Moon, Mars and Jupiter within a circle of diameter 3.3° at 1h UT (morning sky). Mags. 0.7 and -2.2.
- 27 Moon near Venus at 4h UT (38° from Sun, morning sky). Mag. -4.0. Occultation visible from SE Asia and Indonesia.
- 29 Mars 0.58° SE of Jupiter at 11h UT (65° from Sun, morning sky). Mags. 0.7 and -2.2.
- 30 New Moon at 11:31 UT. Start of lunation 1230.

More sky events and links at <http://Skymaps.com/skycalendar/>
 All times in Universal Time (UT). (USA Eastern Daylight Time = UT - 4 hours.)



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 All sales support the production and free distribution of The Evening Sky Map.

NORTHERN HEMISPHERE MAY 2022

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

Use the Big Dipper (or Plough) to help find Polaris, the North Star. COMPASS DIRECTIONS ARE INDICATED ALONG THE HORIZON. (FOR EXAMPLE: NORTH.) TURN THE SKY MAP AROUND ITS CENTER (JUST AS YOU ARE DOING NOW) SO THE COMPASS DIRECTION THAT APPEARS ALONG THE BOTTOM OF THE MAP IS THE SAME AS THE DIRECTION THAT YOU FACE. READ BY USING THE SKY MAP TO FIND A BRIGHT STAR PATTERN IN THE SKY.

The Northern Cross is a prominent feature of the constellation Cygnus (The Swan). In mythology, the dragon (Draco) was slain by Hercules. He is depicted in the sky with his left foot on its head. Virgo is high in the southern sky. It is the largest zodiacal constellation and the second largest constellation in the sky. Right Sky from horizon-to-horizon. The Big Dipper is a prominent star pattern in the constellation Ursa Major (The Great Bear). The Big Dipper is a prominent star pattern in the constellation Ursa Major (The Great Bear). The Big Dipper is a prominent star pattern in the constellation Ursa Major (The Great Bear).

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- Symbols**
- Galaxy
 - Double Star
 - Variable Star
 - Diffuse Nebula
 - Planetary Nebula
 - Open Star Cluster
 - Globular Star Cluster
- Star Magnitudes**
- 0
 - 1
 - 2
 - 3
 - 4

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