Newsletter

Wiltshire Astronomical Society

May 2025

Inside:

'Big Muley'—Lunar Rock Sample 61016 from Apollo 16 (1972). From the Descartes area of the moon. NASA

Upcoming Observing Session

Prime Session **Friday 23rd May 2025**
Back Up Friday 30th May 2025

Start time 21:00Hrs. for Prime Session

Please look out for a confirmation email from Chris that the session is either ON or OFF (Also shown on the Members Facebook page)
Location:
Red Lion Pub carpark SN15 2LQ
W3W - airbag.shudders.losing

Sign up to the Observing Mailing List here: https://wasnet.org.uk/observing/

Geological Map of the Moon. USGS

Wiltshire AS Contact Info:

Chairperson: Simon Barnes

Newsletter: Simon Barnes

Treasurer and Membership: Sam Franklin

Speaker secretary: Position Vacant

Observing Sessions coordinators: Chris Brooks, Jon Gale,

Web coordinator: Sam Franklin

PR and Design: Tracey Kelly

Contact the Society here:

Email: contact@wasnet.org.uk

Website url: https://wasnet.org.uk/

Follow our Public Facebook Page
https://www.facebook.com/Wiltshire-Astronomical-Society-154077261327030/

Join the members only Facebook group:
https://www.facebook.com/groups/wiltshire.astro.society/

Committee Page:

https://wasnet.org.uk/committee/

Member Society

2025 Upcoming Speakers:

4t

6th May	**Lunar Geology**	Barry Fitzgerald (Z)
3rd June	**6 various topics TBA**	Society Members (IP)

Z = (Zoom Meeting) IP = (In person at meeting hall)

******Interested in Joining the Society? See https://membermojo.co.uk/was/**

Report from the Chair

Hello Members,

Its been a bit of a struggle putting this months Newsletter ready I've had a busy month and in the last week I succumbed to Covid which knocked me sideways. Nevertheless I just finished it on the day before our meeting. As Andy will concur, it can be a little time consuming to bring everything together and I have against my usual ethos stole some parts from NASA.

We were lucky to get some clear skies in early April, I know some members have been busy with their smart telescopes as well as more conventional set ups. You are always welcome to submit your photos for the Newsletter.

Four members have offered to give a short presentation for the June meeting. Jon Gale, Matthew Terrell, John Dartnell and Tracey Kelly. Following these talks we will have a short AGM including a treasurers report. If there any subjects you wish to be raised at the AGM, or if anybody would like to volunteer for the committee, please email the general WAS email contact@wasnet.org.uk

In the early years of the Society we undertook a Perseids meteor watch and reported our observations to the BAA meteor section. At that time it was the late Neil Bone that was director of the section and was often a speaker. It is now under the guidance of Dr John Mason. The Perseids peak on 12/13 August and can have rates of 150/hr. It can be a fun evening albeit a later session than normal observing sessions. Its also a chance to learn more of the night sky. Would our observing members like to do this again?

Comet C/2025 F2 (SWAN) may well have disintegrated. It was visible for a short time in UK skies and increased in brightness but then dipped, probably due to dispersion of the comet…. Perihelion was on May 1 when its demise may well have occurred. Did anybody get an image of it?

There have been a number of Aurora alerts of this last month. I wasn't able to get a glimpse, did any members see it or maybe imaged it?

The Newsletter always welcomes images or articles, questions or reviews of equipment.

We welcome our May 2025 Speaker: Barry Fitzgerald Topic: Lunar Geology

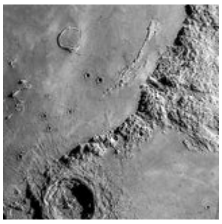
Barry Fitz-Gerald has a long and distinguished history of contributions to lunar studies and to the work of the BAA Lunar Section, of which he too is a Committee member. Active in the Section since the 1990s, Barry has long championed the cause of lunar geological studies and shown that the amateur can make a worthwhile contribution to the field, one that is recognised by professional colleagues. He too contributes regularly to Section publications and to the BAA Journal. His research papers have also appeared in professional publications, including Icarus, Planetary and Space Science, and Lunar & Planetary Science. Whereas Raf's interests are centred (although not exclusively) on lunar domes, Barry has deployed his geological knowledge in the investigation of a variety of lunar landforms, including a reinterpretation of how concentric craters might have formed. A recent issue of the Lunar Section Circular contains a tenacious and convincing interpretation of the tortured morphology of the strange lunar crater Gaudibert.

The images on the front page of this Newsletter have been selected to tie into this months speaker.

Moon—May 2025 Phases with Rise and Set Times

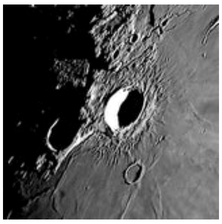
May 2025						
Sun	**Mon**	**Tues**	**Wed**	**Thur**	**Fri**	**Sat**
27 Sun: 05:50 20:27 Moon: 05:21 20:35	28 Sun: 05:48 20:29 Moon: 05:40 22:12	29 Sun: 05:46 20:30 Moon: 06:06 23:45	30 Sun: 05:44 20:32 Moon: 06:44 ------	1 Sun: 05:42 20:34 Moon: 07:39 01:04	2 Sun: 05:40 20:35 Moon: 08:51 02:03	3 Sun: 05:39 20:37 Moon: 10:12 02:42
4 Sun: 05:37 20:39 Moon: 11:34 03:08 First Qtr.,14:53	5 Sun: 05:35 20:40 Moon: 12:53 03:26	6 Sun: 05:33 20:42 Moon: 14:08 03:40	7 Sun: 05:32 20:43 Moon: 15:20 03:51	8 Sun: 05:30 20:45 Moon: 16:30 04:00	9 Sun: 05:28 20:47 Moon: 17:40 04:10	10 Sun: 05:27 20:48 Moon: 18:51 04:20
11 Sun: 05:25 20:50 Moon: 20:03 04:31	12 Sun: 05:23 20:51 Moon: 21:18 04:46 Full Moon,17:56	13 Sun: 05:22 20:53 Moon: 22:30 05:06	14 Sun: 05:20 20:54 Moon: 23:39 05:34	15 Sun: 05:19 20:56 Moon: ------ 06:12	16 Sun: 05:17 20:57 Moon: 00:36 07:05	17 Sun: 05:16 20:59 Moon: 01:20 08:12
18 Sun: 05:14 21:00 Moon: 01:52 09:29	19 Sun: 05:13 21:02 Moon: 02:15 10:50	20 Sun: 05:12 21:03 Moon: 02:32 12:12 Last Qtr.,13:00	21 Sun: 05:10 21:05 Moon: 02:46 13:36	22 Sun: 05:09 21:06 Moon: 02:59 15:00	23 Sun: 05:08 21:07 Moon: 03:11 16:27	24 Sun: 05:07 21:09 Moon: 03:25 17:58
25 Sun: 05:06 21:10 Moon: 03:41 19:34	26 Sun: 05:05 21:11 Moon: 04:03 21:09	27 Sun: 05:04 21:13 Moon: 04:34 22:37 New Moon,04:04	28 Sun: 05:03 21:14 Moon: 05:22 23:47	29 Sun: 05:02 21:15 Moon: 06:27 ------	30 Sun: 05:01 21:16 Moon: 07:48 00:36	31 Sun: 05:00 21:17 Moon: 09:12 01:09
1 Sun: 04:59 21:18 Moon: 10:35 01:30	2 Sun: 04:58 21:19 Moon: 11:54 01:46	3 Sun: 04:58 21:20 Moon: 13:08 01:58 First Qtr.,04:42	4 Sun: 04:57 21:21 Moon: 14:18 02:08	5 Sun: 04:56 21:22 Moon: 15:29 02:18	6 Sun: 04:56 21:23 Moon: 16:39 02:27	7 Sun: 04:55 21:24 Moon: 17:51 02:39

Suggested Lunar Viewing



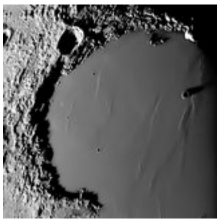
Montes Apenninus

Montes Apenninus, also known as the Apennine Mountain Range, is named after the Apennine Mountains in Italy. It was formed when the Mare Imbrium basin was created nearly four billion years ago. The Apennine mountains stretch out over 370 miles and include more than 3,000 peaks. The highest peak is Mons Huygens. Measured from its base to its peak, it reaches 18,000 feet. Use a telescope at high magnification to explore this region.



Aristarchus

Aristarchus, named after Greek astronomer Aristarchus of Samos, is quite a spectacular reflectance lunar impact crater that lies in the northwest section of the Moon's near side. It’s a young formation, approximately 450 million years old and is considered the brightest of the large formations on the lunar surface. The crater is deeper than the Grand Canyon! Also, look for the largest sinuous valley or rille next to Aristarchus called Schroter's Valley. It’s shaped like a tadpole with a long tail.



Sinus Iridum

Latin for Bay of Rainbows, Sinus Iridum is an asteroid impact crater shaped like the letter “C,” which merges into vast lava plain called Mare Imbrium. Sinus Iridum is located on the Moon’s northwestern edge and spans nearly 250 miles. Its semicircular rim consists of a mountain range called Montes Jura.

The Planets in May

Mercury rises above the horizon a little before sunrise, mag 0.1 to -2.3.

Venus is visible at dawn; on 31 May it reaches greatest eastern elongation with mag –4.4. Its phase as shown in the infographic at the right.

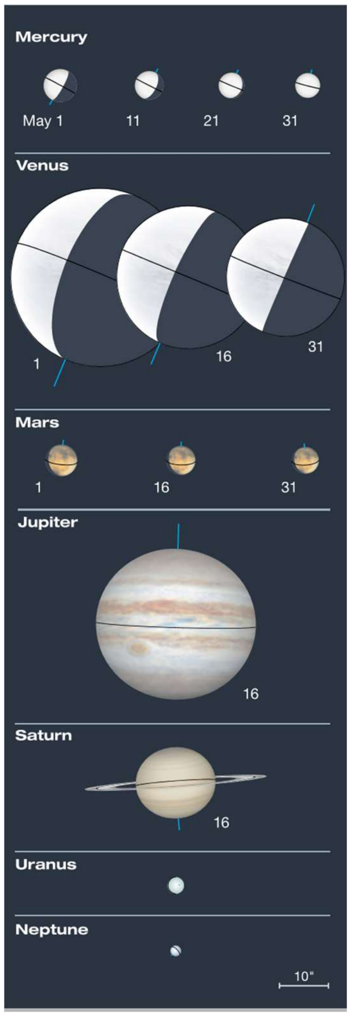
Mars clearly visible in the sky ahead of midnight., its magnitude ranging between 0.9 and –1.2 magnitude.

Jupiter still in Taurus at magnitude – 1.9 to –2.0 and can be viewed viewed early in the evening and sets earlier in the evening as the month progresses.

Saturn at mag 1.2—1.1 is above the horizon at dawn in Pisces. The rings very closed.

Uranus at magnitude 5.8 is in Taurus is very close to the Sun.

Neptune lies in Pisces at magnitude still at mag 7.8.



Other key moments during March:

5th May—η-Aquariid meteor shower maximum.

5th May — Regulus 2^{o}S of the moon.

10th May– Spica 0.4^{o}N of the moon.

11th May – Moon at apogee 406,245km

14th May—Antares 0.3^{o}N of the moon.

22th May— Saturn 2.8^{o}S of the moon.

28th May— Jupiter 5.20^{0} S of the moon

30th April– Jupiter 5.4^{o}S of the moon

For further information about the current night sky, you can go to various web pages e.g., Sky and Telescope

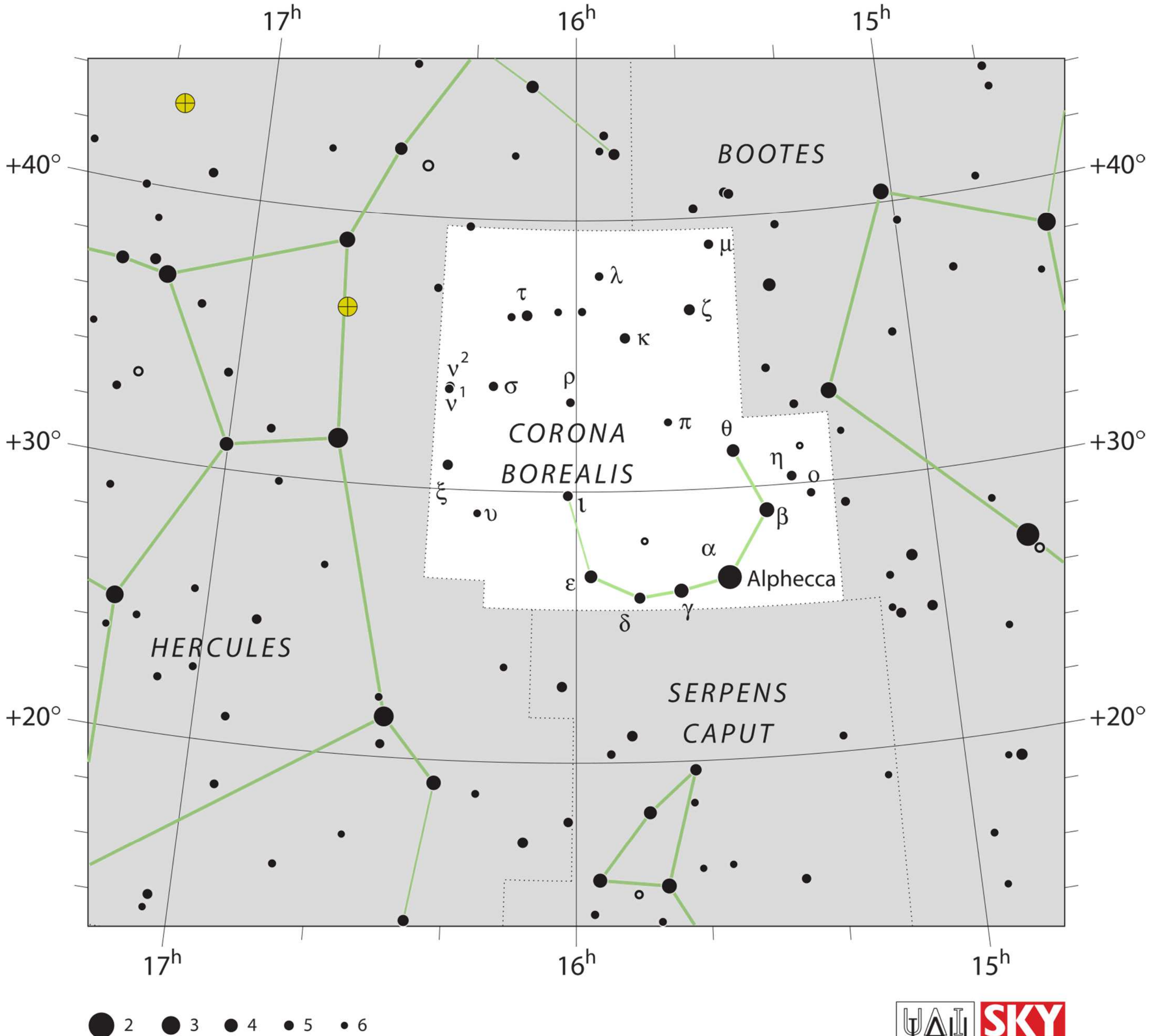
https://skyandtelescope.org/observing

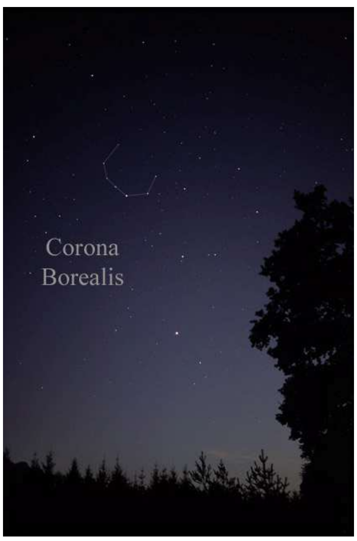
or the British Astronomical Society

https://britastro.org/news/sky-notes

Constellation of the Month

Corona Borealis





Corona Borealis is a small but recognizable constellation in the northern sky. Its name means "the northern crown" in Latin. The constellation has only four stars brighter than magnitude 3.00. It was first catalogued by the Greek astronomer Ptolemy in the 2nd century. At the time, it was known simply as Corona. The Greeks saw the constellation representing the southern crown, Corona Australis, as a wreath.

Corona Borealis lies between the constellations Boötes and Hercules and represents the crown of Ariadne, daughter of King Minos in Greek mythology, who helped the hero Theseus defeat the Minotaur and find his way out of the labyrinth in which the creature lived. In Celtic mythology, Corona Borealis is known as Caer Arianrhod, or the Castle of Arianrhod, the place where the mythical Lady Arianrhod lived.

Corona Borealis contains the famous Blaze Star (T Coronae Borealis), a recurrent nova, and the Fade-Out Star (R Coronae Borealis), but does not have any bright deep sky objects. The Corona Borealis Galaxy Cluster (Abell 2065) does not contain any galaxies brighter than 16th magnitude.

Corona Borealis contains four named stars. The star names approved by the International Astronomical Union (IAU) are Alphecca, Kamui, Moldoveanu, and Nusakan.

Alpha Coronae Borealis is the brightest of the seven stars that make up Ariadne's crown. It is an eclipsing binary star classified as an EA variable, with a period of 17.36 days. The star has an apparent magnitude that varies between 2.21 and 2.32. It is approximately 75 light years distant.

Beta Coronae Borealis is a spectroscopic binary, with a period of 10.5 years. It is an Alpha-2 Canum Venaticorum (ACV) type variable star with a period of 18.487 days and a magnitude varying between 3.65 and 3.72. Beta Coronae Borealis is 1Gamma Coronae Borealis is a close binary star with an orbit of 91 years. The two components in the system are only 0.2'' apart.

Gamma Coronae Borealis is classified as a Delta Scuti variable (or a so-called dwarf Cepheid), a star showing variations in luminosity as a result of both radial and non-radial pulsations of its surface. It belongs to the spectral class A0. The star's apparent magnitude varies from 3.80 to 3.86 with a period of 0.03 days (43 minutes and 12 seconds).14 light years distant from the solar system. It is the second brightest star in Corona Borealis.

Zeta Coronae Borealis is another double star in the constellation. It consists of a pair of blue and white stars 7.03'' apart. The system is approximately 220 light years from the solar system.

T Coronae Borealis is a recurrent nova, sometimes also known as the Blaze Star. It is a spectroscopic binary with a period of 227.6 days. The star usually has a magnitude of about 10-10.8, but it was seen reach magnitude 2.0 on May 12, 1866 and magnitude 3.0 on February 9, 1946.T Coronae Borealis is a red giant. It belongs to the spectral type M3III and is approximately 2,000 light years distant. I know Andy Burns is following this star closely for its imminent brightening.

Rho Coronae Borealis is a yellow dwarf star with an apparent magnitude of 5.4. It belongs to the spectral class G0-2Va and is considered a solar twin, with almost the same mass, luminosity and radius as the Sun. In 1997, a planet was discovered in the star's orbit. Rho Coronae Borealis is 56.2 light years distant.

R Coronae Borealis is a yellow supergiant star, belonging to the spectral class F7, with an apparent magnitude of 6.46. It is about 6,000 light years distant. It is a variable star, with its brightness fading by several magnitudes at irregular intervals. The star's variability was first discovered by the English astronomer Edward Pigott in 1795.

R Coronae Borealis serves as a prototype of a class of stars known as the RCB variables. The star's variability is the result of a cloud of carbon dust created in the line of sight that dims the star's apparent magnitude by several magnitudes. In the case of R CrB, the apparent magnitude ranges from 5.71 to 14.8 magnitudes. As the cloud of dust moves away from the star, it becomes brighter again. Because it has such dramatic changes of brightness, R Coronae Borealis is also known as the Fade-Out Star or Reverse Nova.

Kappa Coronae Borealis is an orange subgiant belonging to the spectral class K1Iva, approximately 101.5 light years from Earth. It has an apparent magnitude of 4.82. A giant planet was discovered in the star's orbit in 2007.

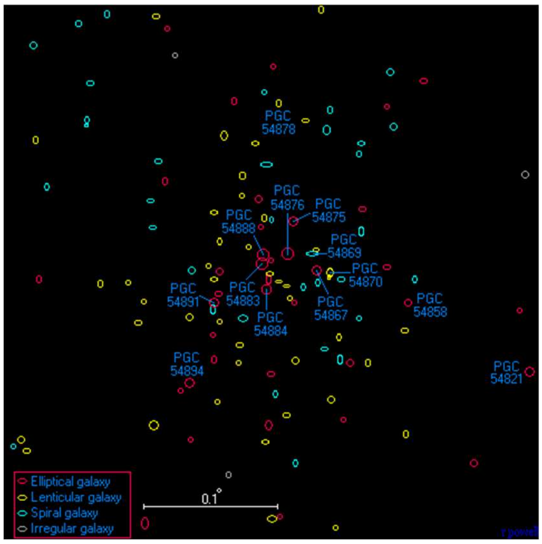
HD 144579 is the nearest star to the solar system in Corona Borealis. It is a binary star composed of a class G8V star, only 13.91 light years from Earth, and a M4 class star, 13.79 light years distant. The primary component has an apparent magnitude of 5.87.

Deep sky objects in Corona Borealis

Corona Borealis Galaxy Cluster (Abell 2065)

Abell 2065 is a densely populated galaxy cluster in Corona Borealis. It is between 1 and 1.5 billion light years distant and lies about a degree southwest of the star Beta Coronae Borealis, in the southwest corner of the constellation.

The cluster contains more than 400 galaxies in an area spanning about one degree in the sky. The galaxies are more than a billion light years away and very dim. The brightest galaxy in the cluster has an apparent magnitude of 16.5.



Beginners Section

Meteoroids

Meteoroids are space rocks that range in size from dust grains to small asteroids. This term only applies when these rocks while they are still in space.

Most meteoroids are pieces of other, larger bodies that have been broken or blasted off. Some come from comets, others from asteroids, and some even come from the Moon and other planets. Some meteoroids are rocky, while others are metallic, or combinations of rock and metal.

Meteors

When meteoroids enter Earth's atmosphere, or that of another planet, at high speed and burn up, they're called meteors. This is also when we refer to them as "shooting stars." Sometimes meteors can even appear brighter than Venus – that's when we call them "fireballs." Scientists estimate that about 48.5 tons (44,000 kilograms) of meteoritic material falls on Earth each day.

Meteor Showers

Several meteors per hour can usually be seen on any clear night. When there are lots more meteors, you're watching a meteor shower. Some meteor showers occur annually or at regular intervals as the Earth passes through the trail of dusty debris left by a comet (and, in a few cases, asteroids).

Meteor showers are usually named after a star or constellation that is close to where the meteors appear to originate in the sky. Perhaps the most famous are the Perseids, which peak around August 12 every year. Every Perseid meteor is a tiny piece of the comet Swift-Tuttle, which swings by the Sun every 135 years. Other notable meteor showers include the Leonids, associated with comet Tempel-Tuttle; the Aquarids and Orionids, linked to comet Halley, and the Taurids, associated with comet Encke. Most of this comet debris is between the size of a grain of sand and a pea and burns up in the atmosphere before reaching the ground. Sometimes, meteor dust is captured by high-altitude aircraft and analyzed in NASA laboratories.

Major Meteor Streams	2025 Peak Viewing Night (may vary by a few days)*	Rate Per Hour**	Parent Body (Asteroid or Comet)
Lyrids	April 21-22, 2025	18	Comet C/1861 G1
Eta Aquarids	May 3-4, 2025	50	Comet 1P/Halley
Southern Delta Aquariids	July 29-30, 2025	25	Comet 96P/Machholz (not confirmed)
Perseids	Aug. 12-13, 2025	100	Comet 109P/Swift-Tuttle
Orionids	Oct. 22-23, 2025	20	Comet 1P/Halley
Leonids	Nov. 16-17, 2025	15	Comet 55P/Tempel-Tuttle
Geminids	Dec. 12-13, 2025	150	(3200) Phaethon
Quadrantids	Jan. 3-4, 2026	120	(196256) 2003 EH1

* For observers in the northern hemisphere.

** Estimated rate per hour in under perfect conditions, based on activity in recent years.

Meteorites

When a meteoroid survives its trip through the atmosphere and hits the ground, it's called a meteorite. Meteorites typically range between the size of a pebble and a fist.

Most space rocks smaller than a football field will break apart in Earth's atmosphere. Traveling at tens of thousands of miles per hour, the object disintegrates as pressure exceeds the strength of the object, resulting a bright flare. Less than 5% of the original object usually makes it down to the ground.

Don't expect to find meteorites after a meteor shower. Most meteor showers come from comets, whose material is quite fragile. Small comet fragments generally won't survive entry into our atmosphere. In theory, the Taurids and Geminids…….

....could send meteorites down to our surface every once in a while, but no remnants have been traced to them definitively.

It can be difficult to tell the difference between a meteorite and an Earth rock, but there are some special places where they're much easier to identify: deserts. In sandy deserts with large, open regions of sand and few rocks, dark meteorites stand out. Similarly, meteorites can be much easier to spot in cold, icy deserts, such as the frozen plains of Antarctica.

Why Do We Care About Meteorites?

Meteorites that fall to Earth represent some of the original, diverse materials that formed planets billions of years ago. By studying meteorites we can learn more about our solar system's history. This includes learning the age and composition of different planetary building blocks, the temperatures achieved at the surfaces and interiors of asteroids, and the degree to which materials were shocked by impacts in the past.

What Do Meteorites Look Like?

Meteorites may resemble Earth rocks, but they usually have a burned exterior that can appear shiny. This "fusion crust" forms as the meteorite's outer surface melts while passing through the atmosphere.

There are three major types of meteorites: the "irons," the "stonys," and the "stony-irons." Although the majority of meteorites that fall to Earth are stony, most of the meteorites discovered long after they fall are irons. Irons are heavier and easier to distinguish from Earth rocks than stony meteorites.

Where Do Meteorites Come From?

Most meteorites found on Earth come from shattered asteroids, although some come from Mars or the Moon. In theory, small pieces of Mercury or Venus could have also reached Earth, but none have been conclusively identified.

Scientists can tell where meteorites originate based on several lines of evidence. They can use photographic observations of meteorite falls to calculate orbits and project their paths back to the asteroid belt. They can also compare compositional properties of meteorites to the different classes of asteroids. And they can study how old the meteorites are – up to 4.6 billion years.

Martian rocks can be traced to the Red Planet because they contain pockets of trapped gas that matches what satellites and rovers have found at Mars. Similarly, if the composition of a meteorite resembles rocks that astronauts brought back from the Moon during the Apollo mission, it is likely to be lunar, too. Thanks to NASA's Dawn mission, we know that a class of meteorites called "howardite-eucrite-diogenite" (HED) came from asteroid Vesta in the main asteroid belt between Mars and Jupiter.

More than 50,000 meteorites have been found on Earth. Of these, 99.8% come from asteroids. The remaining small fraction (0.2%) of meteorites is split roughly equally between meteorites from Mars and the Moon. The over 60 known Martian meteorites were blasted off Mars by meteoroid impacts. All are igneous rocks crystallized from magma. The rocks are very much like Earth rocks with some distinctive compositions that indicate Martian origin. The nearly 80 lunar meteorites are similar in mineralogy and composition to Apollo mission Moon rocks, but distinct enough to show that they have come from other parts of the Moon. Studies of lunar and Martian meteorites complement studies of Apollo Moon rocks and the robotic exploration of Mars.

Meteorite Impacts in History

Early Earth experienced many large meteor impacts that caused extensive destruction. While most craters left by ancient impacts on Earth have been erased by erosion and other geologic processes, the Moon's craters are still largely intact and visible. Today, we know of about 190 impact craters on Earth.

A very large asteroid impact 65 million years ago is thought to have contributed to the extinction of about 75% of marine and land animals on Earth at the time, including the dinosaurs. It created the 180-mile-wide (300-kilometer-wide) Chicxulub Crater on the Yucatan Peninsula.

One of the most intact impact craters is the Barringer Meteorite Crater (also called Meteor Crater) in Arizona. It's about 0.6 miles (1 kilometer) across and was formed by the impact of a piece of iron-nickel metal approximately 164 feet (50 meters) in diameter. It is only 50,000 years old, and it is so well preserved that it has been used to study impact processes. Geologists have studied the crater since the 1890s, but its status as an impact crater wasn't confirmed until 1960.

Well-documented stories of meteorites causing injuries or deaths are rare. Ann Hodges of Sylacauga, Alabama, was severely bruised by a 8-pound (3.6-kilogram) stony meteorite that crashed through her roof in November 1954. It was the first documented case of a person being injured by an extraterrestrial object in the United States.

The only entry of a large meteoroid into Earth's atmosphere in modern history with firsthand accounts was the Tunguska event of 1908. This meteor struck a remote part of Siberia in Russia, but didn't quite make it to the ground. Instead, it exploded in the air a few miles up. The force of the explosion was powerful enough to knock over trees in a region hundreds of miles wide. Scientists think the meteor itself was about 120 feet (37 meters) across and weighed 220 million pounds (100 million kilograms). Locally, hundreds of reindeer were killed, but there was no direct evidence that any person perished in the blast.

In 2013 the world was startled by a brilliant fireball that streaked across the sky above Chelyabinsk, Russia. The house-sized meteoroid entered the atmosphere at over 11 miles (18 kilometers) per second and blew apart 14 miles (23 kilometers) above the ground. The explosion released the energy equivalent of around 440,000 tons of TNT and generated a shock wave that blew out windows over 200 square miles (518 square kilometers) and damaged buildings. More than 1,600 people were injured in the blast, mostly due to broken glass.

With thanks to NASA.

ISS Sightings

ISS Sighting data is readily available by going to the various web pages that provide such information for the public. It does not make sense to fill these pages with data that is so easily available elsewhere. This data can be tailored to a location and most members I would imagine have access to the internet. There are also Apps for your phone or tablet that sightings can be found. I have been using the Heavens Above web page, where data for many other vehicles can be accessed.

Suggested ISS Data web pages:

https://www.heavens-above.com

https://www.spotthestation.nasa.gov/home.cfm

Rob Lucas describes his self-build smart-scope, which is now operational.

It consists of a Sky Watcher Az GTi mount with counterbalance on a Manfrotto MT290 tripod with a tripod levelling base. The computer is a Raspberry Pi 5 running the StellarMate OS for Android. The camera is a SyBony 705c. The challenges were: getting the mount working well with little play, configuring the software and getting a good balance with all the equipment well placed and connected (there are no external cables needed). The OTA is a SkyWatcher 66mm Equinox. Power for the computer is a 10000 mAh powerbank. Operation consists of placing on ground roughly level and pointing North. Then from a tablet, connect with Rasperry Pi's hotspot, run Stellarmate, select a target from a menu, tell the computer to go to it and align/centre it, you can then start a live stack.

The very first image I took with it is here:

Robs Set up: