

Stars Over Surrey Astronomy & Spaceflight News

1st July 2022



Scene seen from Perseverance

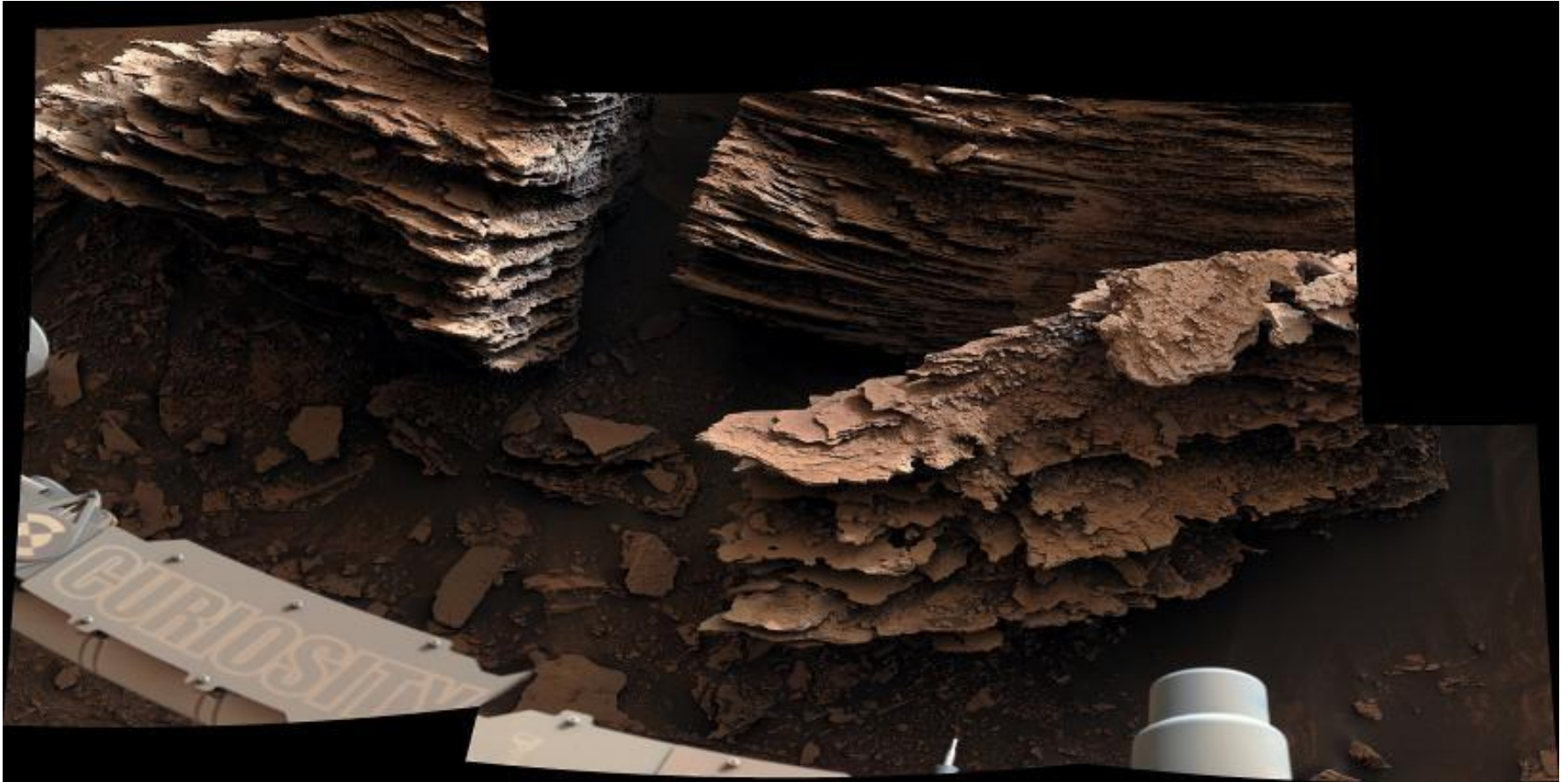
- The rover is at the Jezero delta and has sent back a trove of images clearly showing the stratified layers of what looks like sedimentary rock
 - imagine how geologists would love to explore those layers!



Credit: NASA

- Amongst them is this picture which shows a small boulder precariously perched on an outcrop
 - probably caused by the Martian wind eroding a larger sedimentary rock, leaving this final boulder.

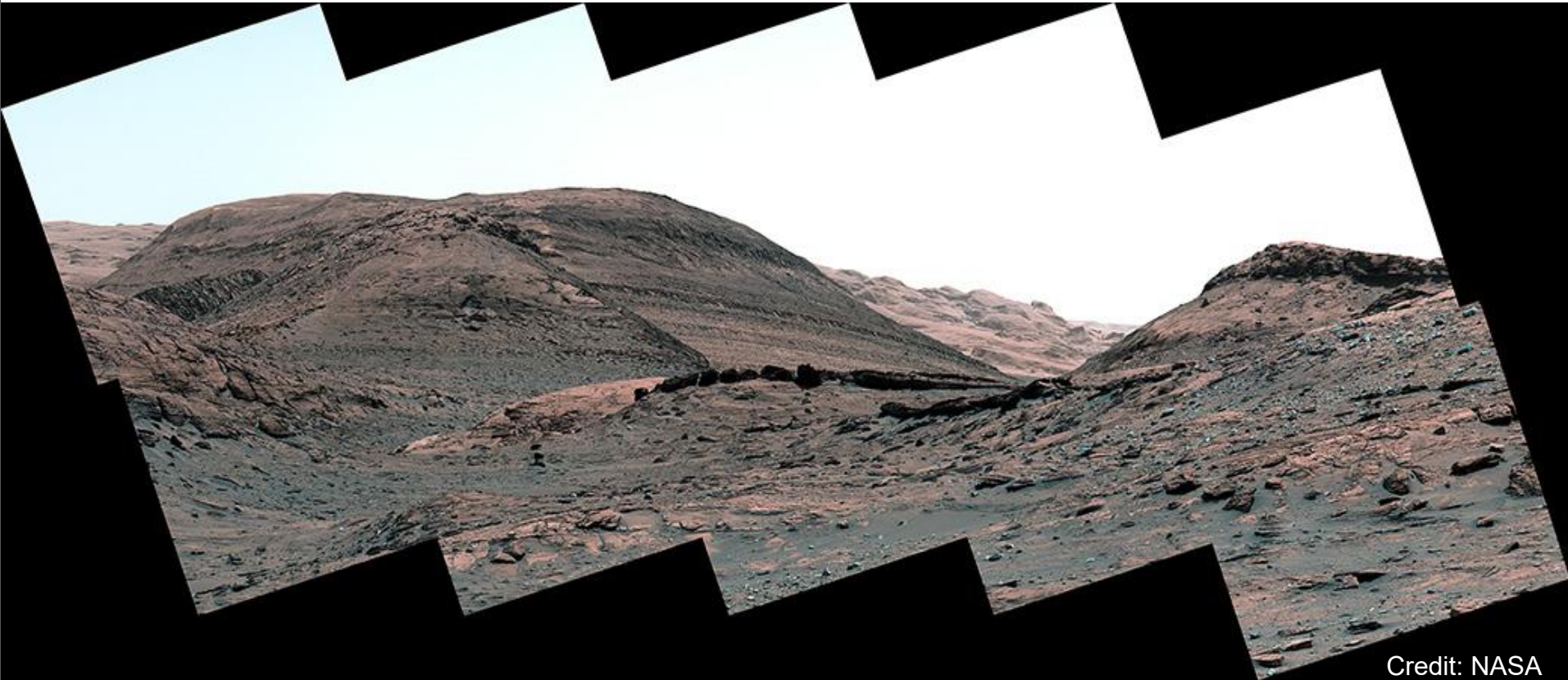
Flakiness from Curiosity



Credit: NASA

NASA's other Mars Rover, Curiosity, took this image from the slopes of Mount Sharp on June 2nd, clearly showing thin flaky sedimentary layers thought to have been laid down in stream beds or small ponds.

Mount Sharp Panorama from Curiosity

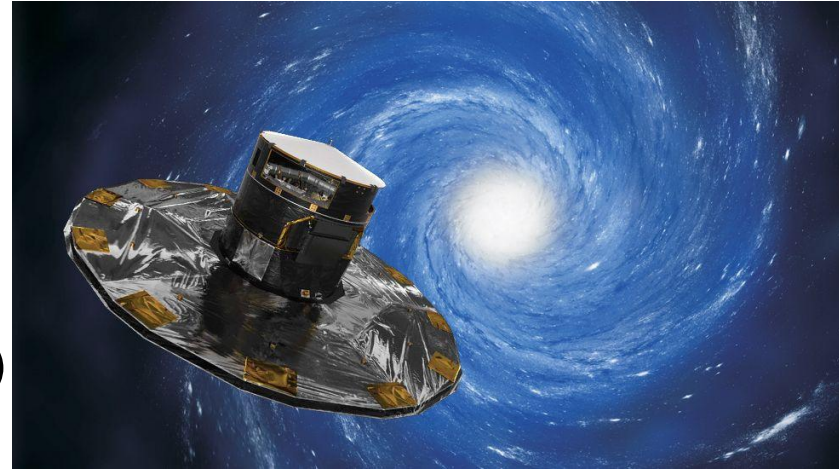


Credit: NASA

A composite picture taken by Curiosity during May as it climbs the slopes of Mount Sharp. As it gets higher it sees fewer instances of traces of previous water, and more deposits of sulphates.

Gaia drops its third batch of data

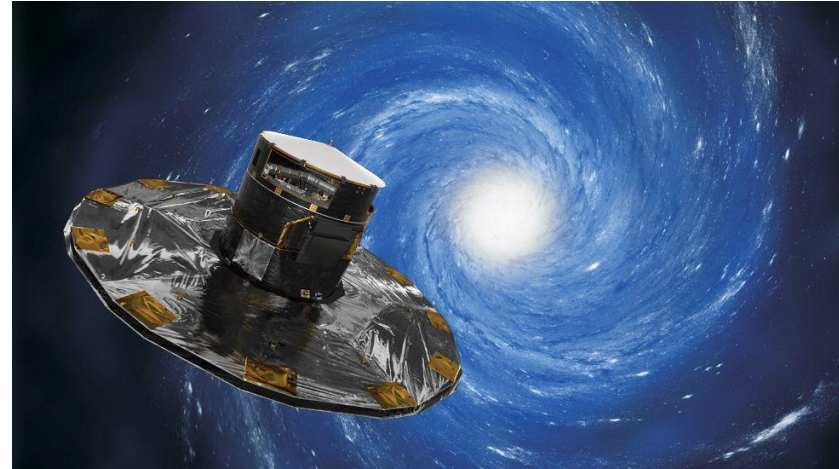
- ESA's Gaia space telescope has downloaded its latest batch of data this month
 - Incredibly sensitive billion pixel camera built in Chelmsford (e2v)
 - launched in 2013 Gaia is a million miles from Earth at the L2 Lagrange point
- Gaia's data includes detail on:
 - two billion sources, mostly stars
 - spectroscopy showing temperature, chemistry, mass for hundreds of millions of objects
 - 1.9 million quasars (distant galaxies with huge light emission)
 - 156,000 asteroids



Credit: ESA

Gaia drops its third batch of data

- One surprising discovery from the recent data was that Gaia can do astroseismology
 - its instruments are so sensitive that it was able to detect starquakes, where internal disturbances were distorting the globular shapes of stars
- Gaia's data covers the first three years of its operation
 - five more years data has been collected but not yet fully processed
 - it should keep working until 2025, so it will be perhaps into the next decade before all the data is released
 - because it measures a star's motion precisely, over a 10 year period, oscillations in its path will reveal whether that star has planets
 - it's thought that by the end of its life it could identify tens of thousands of exoplanets



Credit: ESA

Misc Spaceflight News

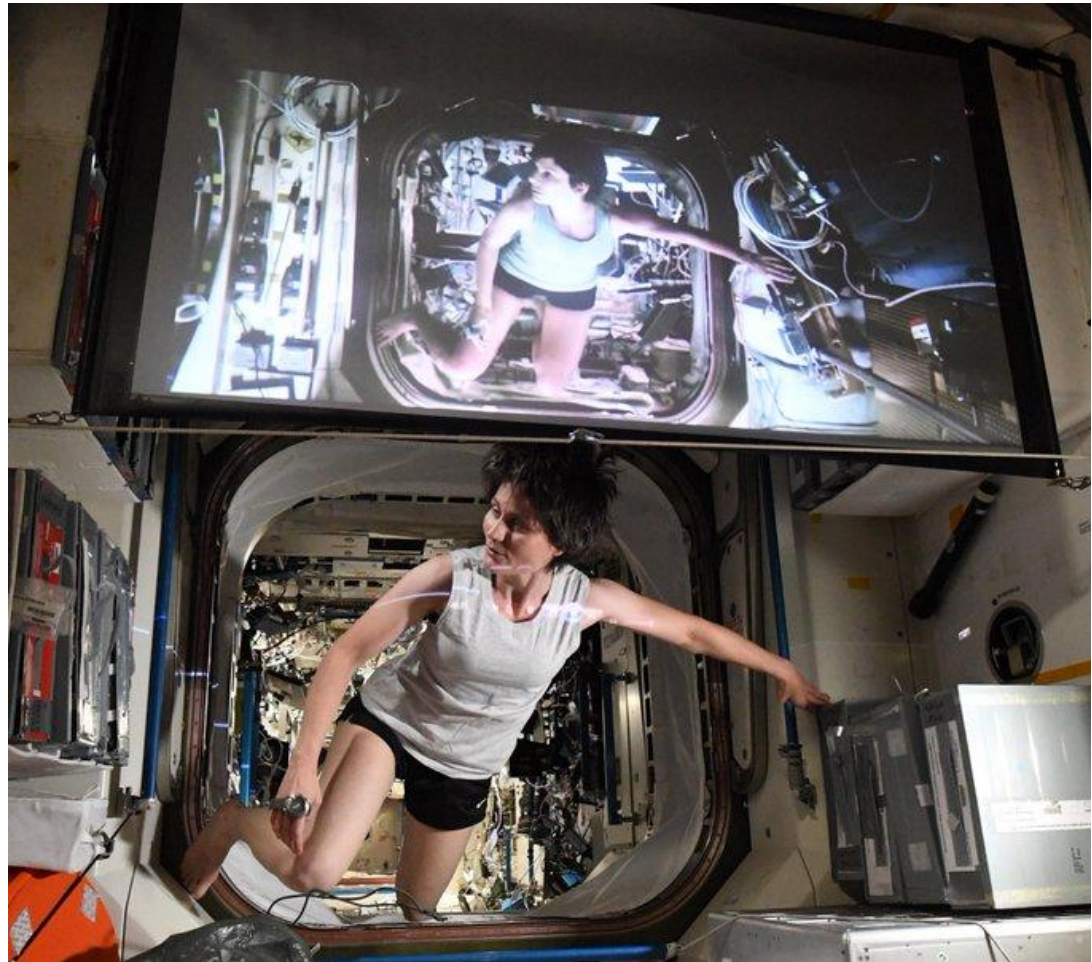
- NASA announces that the James Webb Telescope has had one of its mirror segments dinged by a micro-meteor
 - the impact has slightly degraded performance but following readjustment it is “marginally detectable”
- NASA’s massive 322-foot-tall Space Launch System has now completed the “wet dress rehearsal” at the KSC launch pad and all is now “go” for the test launch late Aug/early Sept. The cryogenic fuel was successfully loaded/unloaded but there were minor problems, which NASA has decided don’t need retesting
- South Korea has joined the Space-Faring Nations Club
 - its three-stage Nuri launcher delivered it’s 1,500 kg payload of six satellites into orbit on June 21st

Misc SpaceX News

- Between 17th & 19th June SpaceX set yet another record, launching three Falcon 9s within 36 hours
 - two from Kennedy and one from Vandenberg
 - one of the boosters made its 13th flight, also a record
- SpaceX have achieved legal approval to launch their massive Super Heavy/Starship combination from Boca Chica, Texas, bringing the first launch one step closer
- Construction now well under way at KSC of the Starship launch tower

Sandra Bullock or Samantha Cristoforetti?

ESA Astronaut
Samantha Cristoforetti,
onboard the ISS reprised
a pose by the actress
Sandra Bullock, playing
the role of Dr.Stone in
the film *Gravity*. She
posted the photo on
Twitter



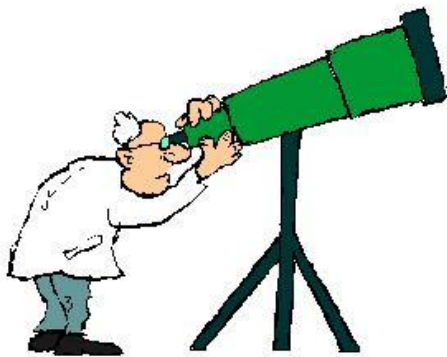
Credit: Twitter/@AstroSamantha

“Hey, Dr. Stone! Quick question for you. How did you get your hair to stay put? #AskingForAFriend”

Stars Over Surrey

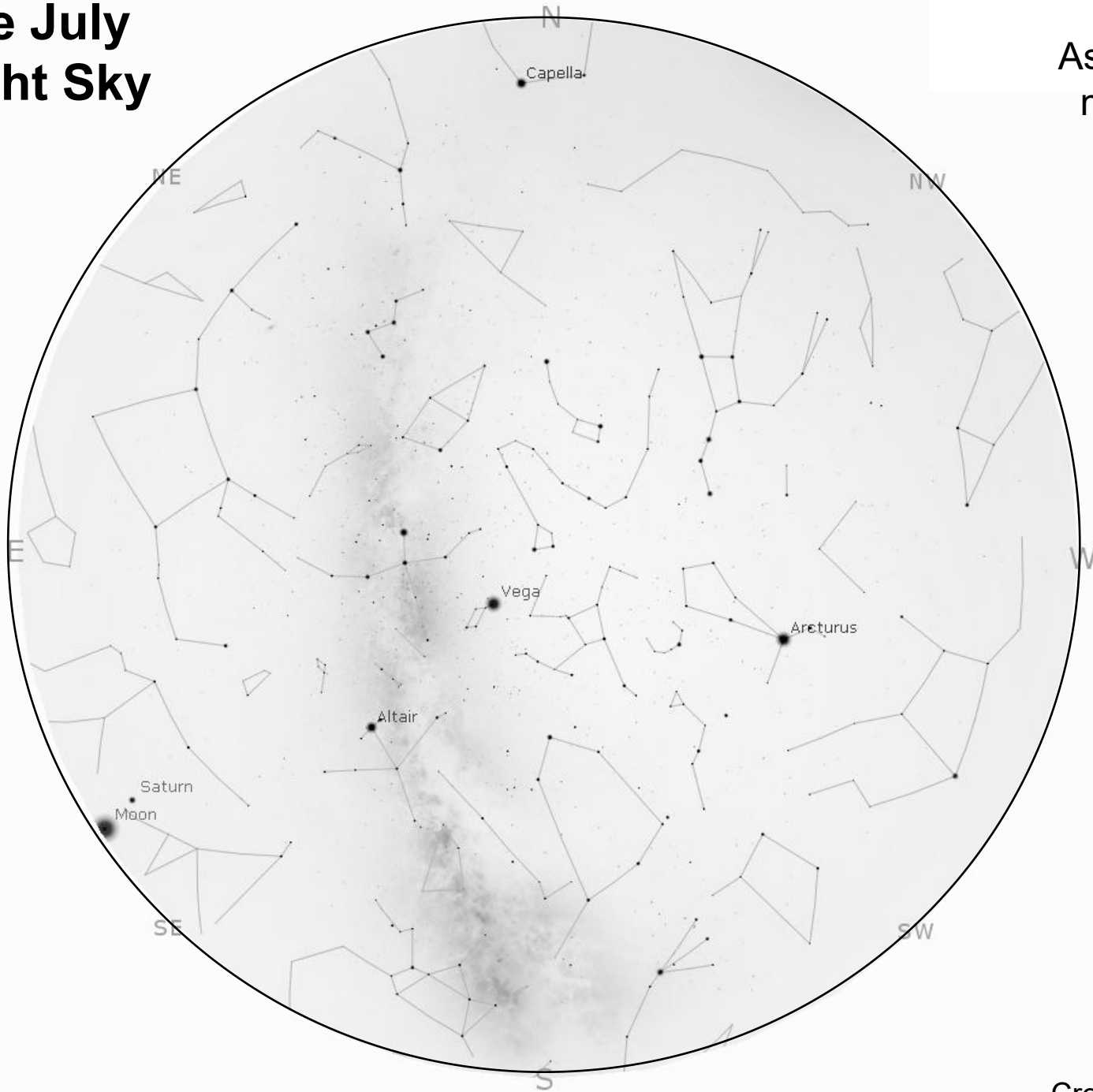
What's Up!

For July 2022



The July Night Sky

As at 11 p.m.
mid-month



Credit: Stellarium

Sun & Moon in July

- **First Quarter** 7th
- **Full Moon** 13th
- **Third Quarter** 20th
- **New Moon** 28th

		Sun	Moon
1 st	Rise	04.50	06.32
	Set	21.21	23.46
15 th	Rise	05.03	22.57
	Set	21.12	08.11*
31 st	Rise	5.25	07.57
	Set	20.51	22.25

all times BST

* following day

The Planets in July

Mercury

A morning planet, best in the first few days of July when it rises 70 mins before the Sun and shines at mag -0.6 in North East. Only visible until about 12th, it becomes an evening planet late in the month but will be poorly placed.

Venus

Venus is a brilliant morning object shining at mag -3.8 low in the ENE, rising approx two hours before the Sun. Shows a gibbous disc in a telescope.

Mars

Another morning object, low in the ESE; slowly improving as the months go by. At the start of this month it rises a little after 1.00 a.m. and 12.15 a.m. by the end.

The Planets in July

Jupiter

Yet another improving morning planet, shining brightly at mag -2.4 in the South. It rises about 12.20 a.m. at the start of the month but near 11 p.m. by the end.

Saturn

More improvement, Saturn rises about 11 p.m. at the start of the month but near 9.45 p.m. by the end. At 22° above the Southern horizon Saturn will be visible in relative darkness.

Uranus

Starting to become visible in the East as a morning planet.

Neptune

Not visible at the start, but by month end it'll can be found as a telescopic morning object in the South East.

Astronomical Phenomena in July

4th	Aphelion Day - Earth is at its furthest distance from the Sun
10th	Waxing gibbous Moon just 2° from red star Antares
15th	Moon rises at 11.30 p.m. with Saturn just 5° above it
19th	Jupiter can be seen approx 4° above the Moon in early hours
22nd	The Moon sits between Mars and Uranus at about 2.30 a.m. each planet approx 2° either side
23rd	The Moon is about 4½° below The Pleiades cluster at 2 a.m.
26th & 27th	Brilliant Venus will make a nice sight near the thin crescent Moon at about 4 a.m. both days
28th to 30th	The Delta Aquarids meteor shower peaks over these nights. the max theoretical rate is 16 per hour, but the radiant is overhead and the trails are bright so it's worth trying.
	NB 1. All times given are BST 2. Noctilucent Clouds can be seen throughout the month, 90-120 mins after sunset in NW or same before sunrise in NE

Meetings at Local Societies

- Given the somewhat confused situation in relaxation of restrictions, whilst Covid-19 has not yet gone away, there's a real mixture in terms of how meetings are run. Some are now returning to physical meetings, other just via Zoom.
- You might like however to see their websites for items of interest:
 - **Guildford AS** <http://www.guildfordas.org/>
 - **Farnham AS** <https://www.farnham-as.co.uk/>
 - **Croydon AS** <http://www.croydonastro.org.uk/>
 - **Ewell AS** <https://ewellastronomy.org/>
 - **Walton AG** <http://www.waltonastrogroupp.co.uk/>

Meetings at Local Societies

- **Ewell AS** *Nonsuch High School for Girls, Cheam*
 - Friday 8th July, 20.00 hrs
 - ***Subject tbc***
 - Prof Brad Gibson
 - » Uni of Hull, Centre of Astrophysics

Meetings at Local Societies

- **Croydon AS** *Trinity School, Croydon*
 - Friday 8th July, 19.30 hrs
 - **AGM**
 - Friday 22nd July 19.30 hrs
 - **Summer Festivities and Quiz**
 - Dr Mark R. Smith FRAS

Meetings at Local Societies

- **Farnham AS** *Aldershot Cricket Club*
 - Tuesday 12th July, 7.30 pm
 - ***“The Geology of the Moon”***
 - William Joyce (FRAS)

- **Guildford AS**
 - ***AGM***
 - Zoom only, members only

Meetings at National Societies

- Both the **British Astronomical Association** and the **Society for Popular Astronomy** have returned to physical meetings
- The **British Interplanetary Society** has also restarted physical meetings but also streams them via Crowdcast.

Astronomy on TV

The Sky at Night

“The Sky At Day”

We all know what it's like to plan a night of stargazing, only to find it's forecast to be cloudy...again! So this month the team explore what you can see in the sky during the day. From the Parker Solar Probe to solar observing, Chris and Maggie take a look at what our Sun has to offer, while Pete Lawrence reveals other kinds of celestial phenomena before sunset.

Monday 11th July BBC 4, 10.00 pm

Thursday 14th July BBC 4, 7.30 pm



That's all Folks!