Stars Over Surrey Astronomy & Spaceflight News

10th June 2022

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Starliner Completes ISS Mission

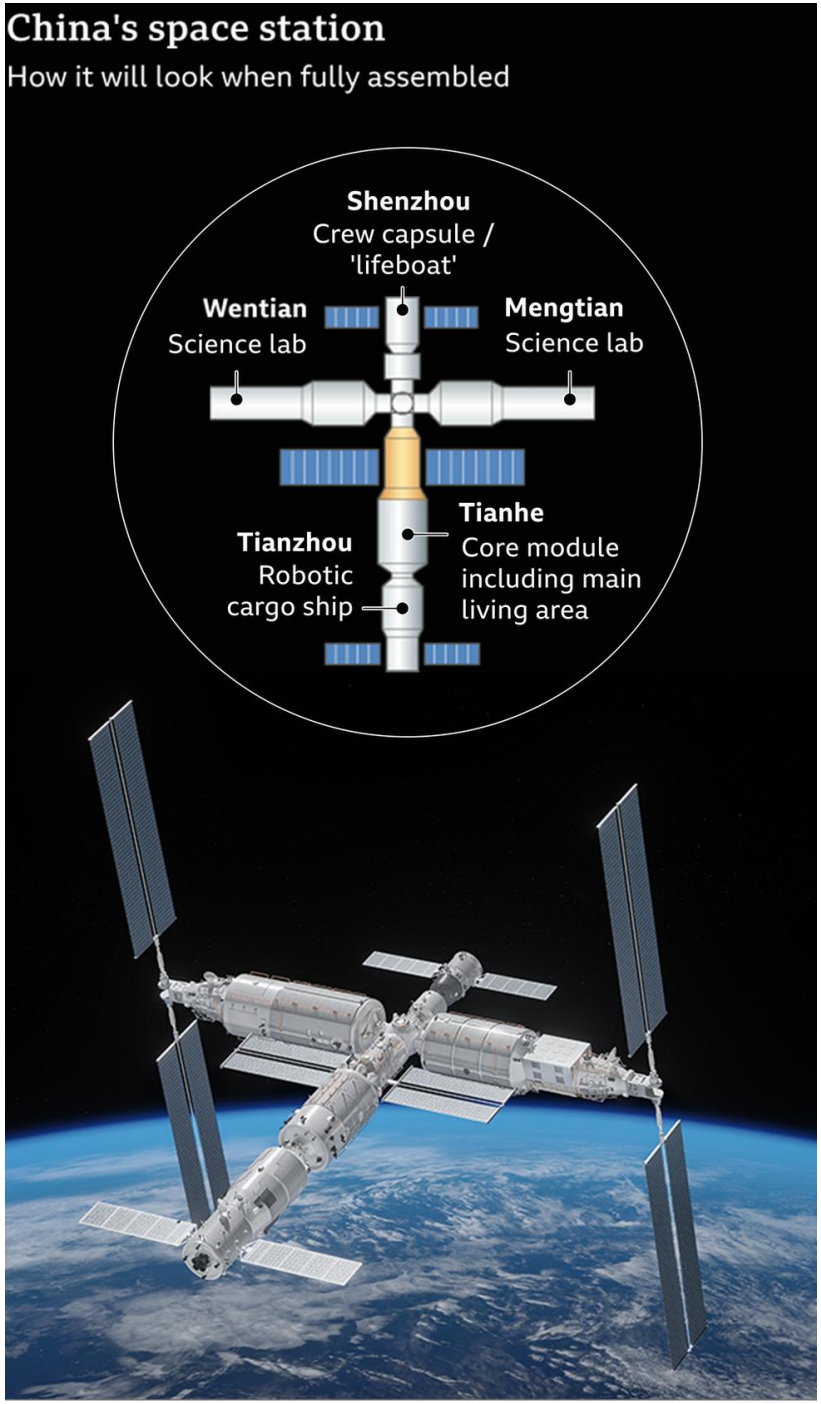
- The Boeing CST-100 Starliner unmanned spacecraft launched on a ULA Atlas 5 rocket on 19th May, docked a day later
  - two thrusters malfunctioned during the approach but a back-up sufficed
  - the craft carried out approach/retreat/hold manoeuvres to check out various docking procedures, then docked automatically

Credit: NASA

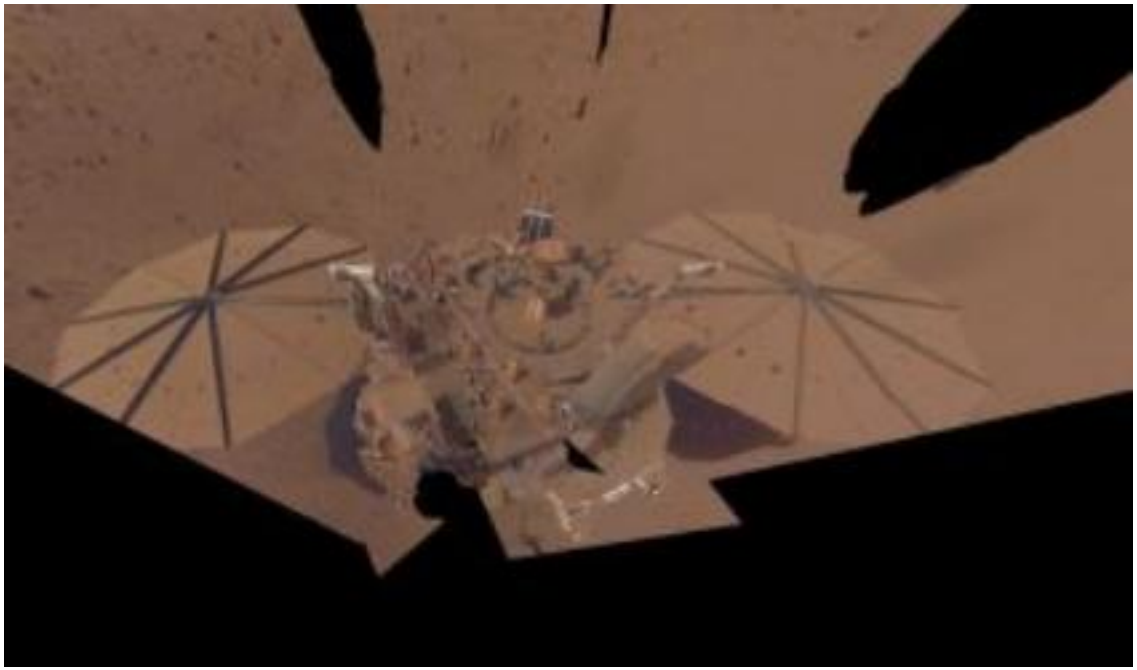
- Carried some 600 lbs of cargo as well as “Rosie The Rocketeer” a dummy kitted out with instrumentation
- The ISS crew boarded to inspect and retrieve cargo
- Weds 25th the capsule undocked, carrying another 500lb of used equipment etc, and returned to Earth, landing under parachutes and airbags at White Sands, New Mexico

New Crew at Tiangong

- Three Chinese cosmonauts launched and boarded the Tiangong 2 Space Station on 4th June for six month mission
  - Shenzhou 14 launched by Long March 2F
- The Tianhe core module will be joined during this mission by two more 20 ton modules, tripling the current size of the space station
  - Wentian (July) : Life Sciences
  - Mengtian (Oct): Materials Science
- Crew will perform EVAs via airlock on Wentian



Insight's Power Dwindles

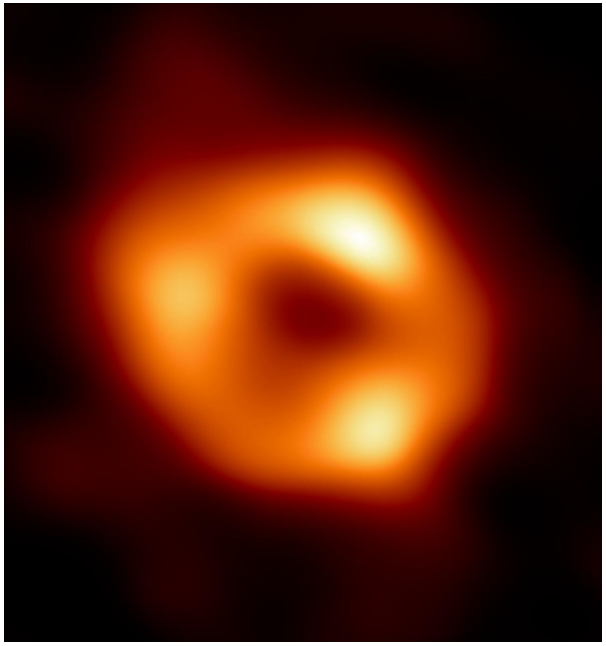


Credit: NASA /JPL-Caltech

- Insight's solar panels are now so thickly covered in Martian dust that it is winding down its science mission
  - this is its final "selfie" as it is now operating at just 10% its capacity
- It relies on breezes or passing dust devils to clear the dust
- Maybe if one cleans some off it can continue a bit longer but its expected to shut down later in the summer.

Milky Way's Black Hole Imaged

- Sagittarius A* is the supermassive Black Hole at the galaxy's centre
  - 26,000 LY from Earth
  - 4 million Solar masses
- The image was captured by the same team that took the first black hole image in 2019 (in M87)
  - that one was further away at 55 M LY but is massive, 6.5 billion Solar masses



Credit: Event Horizon Team

- The Event Horizon Team comprises eight radio telescopes across the world forming a virtual Earth-sized dish
- The bright doughnut is light emitted by particles racing round the black hole at nearly the speed of light.
- The black centre is the shadow of the "event horizon"

Misc Spaceflight News

- Space X launches three Falcon 9s on Starlink deployment missions in five days
  - two from Cape Kennedy and one from Vandenburg AFB, California
  - they now have 2,500+ of the Starlink mega-constellation in place
- NASA will return their massive Space Launch System back to the launch pad at Kennedy Space Centre to complete the “wet dress rehearsal” necessary as a benchmark in preparation for an unmanned test launch around the Moon later this summer.
  - A stuck valve in the rocket’s upper stage was identified as the problem which caused the failure of March’s test month mission
  - 730,000 gallons of supercold fuel is to be loaded/unloaded
- James Webb Space Telescope’s optics are now “perfect” and instrument calibration continues, the first images to be released to the public are expected mid-July.

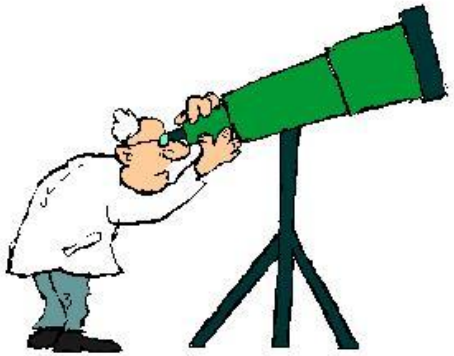
Misc Spaceflight News

- Blue Origin launches it's 5th "crewed" sub-orbital mission
  - June 4th flight included the first Mexican-born woman in space and a chap who's flown over both poles and to the deepest ocean rift.
- ESA's Rosalind Franklin Rover - options:
  - Prof Andrew Coates from MSSL says 2028 is now most likely date for launch, either by Ariane 6 or SpaceX.
  - Lander provision though could be ESA from scratch or modify an existing US tech such as that which landed Pereverance
- UK-Danish company Orbex plan Europe's first vertically launched micro satellites late 2022/early 2023 using Orbex Prime, a 2-stage rocket from Space Hub Sutherland
  - powered by bio-fuel/bio-propane (from Calor UK)
  - study by Uni of Exeter shows 96% less emission than similarly sized rockets using fossil fuels

Stars Over Surrey

What's Up!

For June 2022



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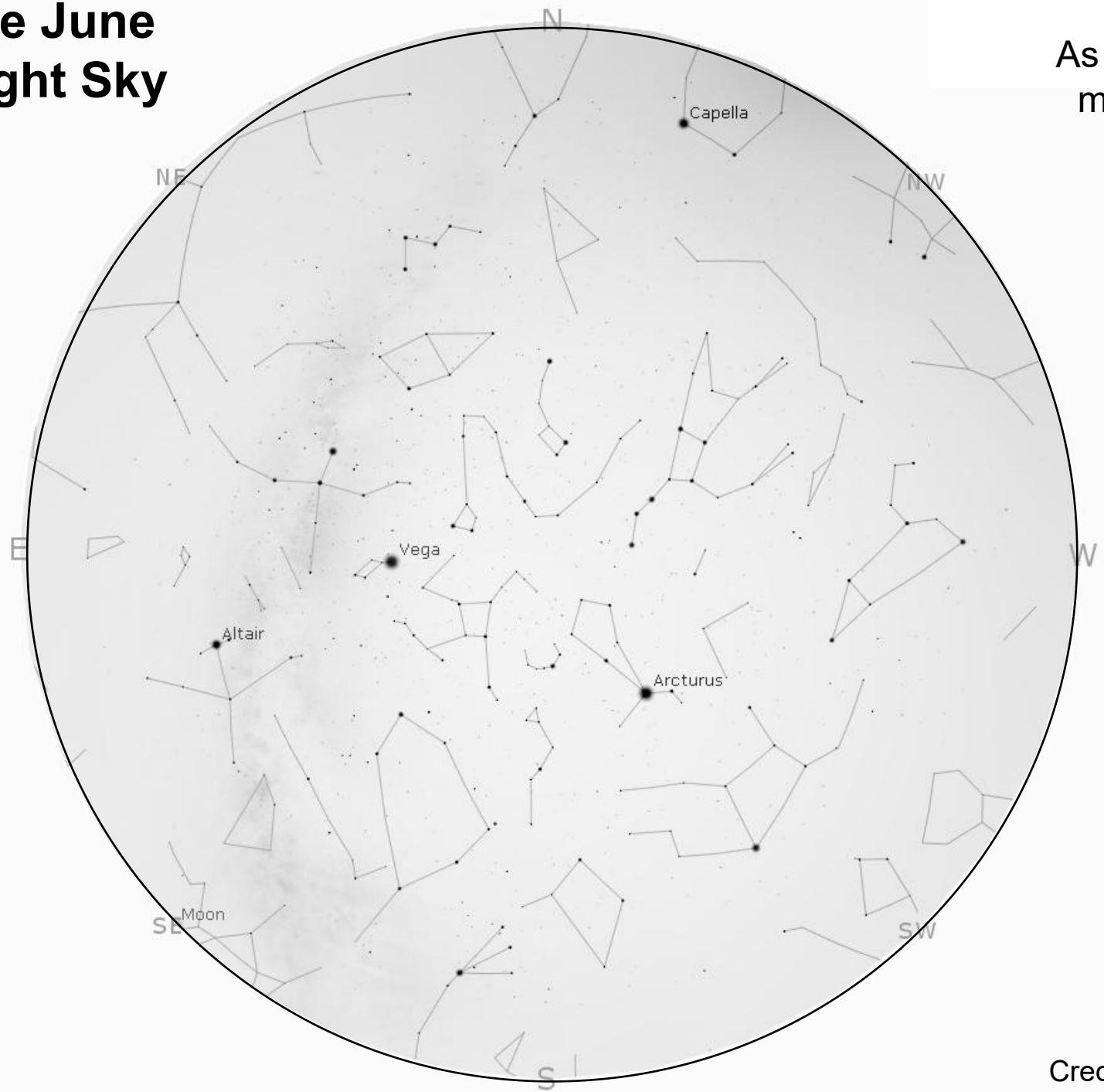
The June Night Sky

As at 11 p.m.
mid-month



Credit: Stellarium

Sun & Moon in June

- **First Quarter 7th**
- **Full Moon 14th**
- **Third Quarter 21st**
- **New Moon 29th**

		Sun	Moon
1st	Rise	04.51	05.47
	Set	21.08	24.34
15th	Rise	04.45	23.10
	Set	21.20	06.18*
30th	Rise	4.49	05.27
	Set	21.21	22.55

all times BST

* following day

The Planets in June

Mercury

A morning planet but not well in the first few days of the month, but brightens and rises earlier as month progresses. Best on 30th June when it rises 70 mins before the Sun and shines at mag -0.6 in North East.

Venus

Venus is a brilliant morning object shining at mag -4.0 low in the ENE, rising approx 80mins hour before the Sun at start of month, 100 mins by month end.

Mars

Another morning object, low in the ESE; at start of the month it rises about 2hrs before the Sun.

The Planets in June

Jupiter

Yet another morning planet, shining brightly at mag -2.1 in the SE

Saturn

At 22^{o} above the Southern horizon Saturn is the highest of the morning planets, but at mag +0.7 it will be affected by the morning twilight.

Uranus

Not visible this month

Neptune

Not visible this month.

Astronomical Phenomena in June

1st	Mars (mag +0.7) and Jupiter (mag -2.1) can be seen just 1.6° apart. Look about 03.30 hrs, low in East.
6th	The Lunar X and V claire-obscura effect can be seen tonight
21st	Summer Solstice
23rd	Before sunrise the waning crescent Moon sits approx 4° to the East of Mars
26th	The thin waning crescent Moon and Venus form a splendid pair approx 2° apart, look about 03.00 hrs
27th	It's Mercury's turn to be visited by the Moon, now a very slender crescent' some 3° ,away, look for them low in the NE about 04.00 hrs
	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. Most are now returning to physical meetings, but one continues 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.waltonastrogroup.co.uk/

Meetings at Local Societies

- **Ewell AS** *Nonsuch High School for Girls, Cheam*
  - Friday 10th June, 20.00 hrs
  - *"The Rebel Star - Great Mysteries of the Sun"*
    - Colin Stuart

Meetings at Local Societies

- **Croydon AS** *Trinity School, Croydon*
  - Friday 10th June, 19.30 hrs
    - *subject and speaker not yet announced*
  - Friday 24th June, 19.30 hrs
    - ***"Nuclear Fusion - latest developments"***
      - Dr Mark R. Smith FRAS

Meetings at Local Societies

- **Farnham AS** *Aldershot Cricket Club*
  - Tuesday 14th June, 7.30 pm
  - ***"Dyson Spheres - Would You Want To Live On One?"***
    - Dr David Lewes (Farnham AS)

- **Guildford AS**
  - 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.

On-lineTalks

- You can pay £3.00 to watch these on-line talks run by **GoSpaceWatch**: (book via Eventbrite)
  - ***"To The Mountains Of The Moon - Apollo 16 50th Anniversary"***
    - Ben Evans
    - Wednesday 15th June, 7.30 - 9.30 pm
      - Ben Evans

www.gospacewatch.co.uk

Astronomy on TV

The Sky at Night

"The Astronomer Royal At 80"

Professor Martin Rees has held the position of the UK's Astronomer Royal since 1995. Today, he is known as a worldwide authority on the subject of cosmology, the future of spaceflight and the prospect of finding life beyond Earth. To celebrate his 80th birthday, in this episode he looks back over the biggest discoveries and achievements over 50 years of astronomy.

Monday	13th June	BBC 4, 10.00 pm
Thursday	16th June	BBC 4, 7.30 pm


That's all Folks!