Space News March 2022

After a long break…

looking back over

Last 3-4 Months…

Next Moon visit delayed by a Year → 2025

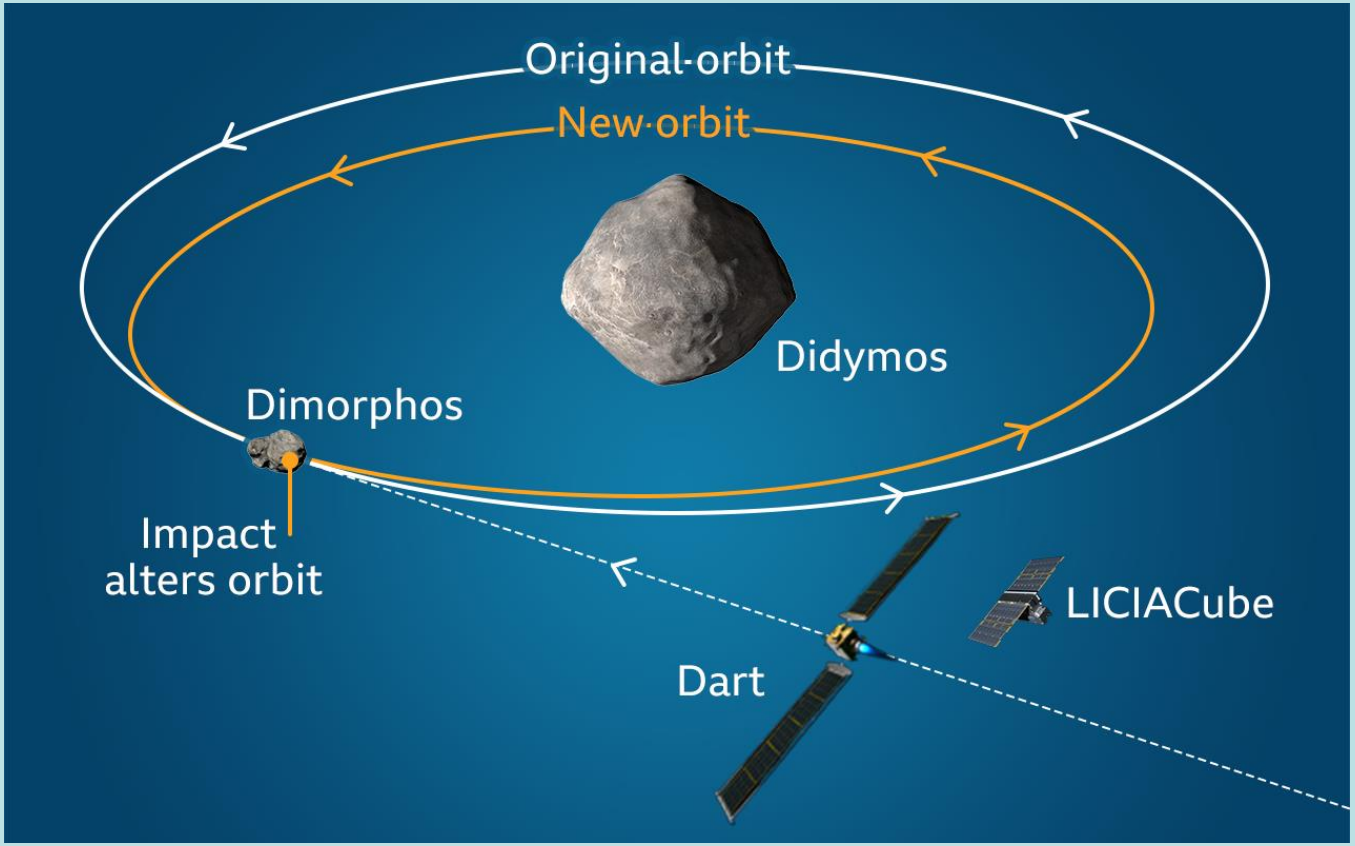
10th November: NASA's 2024 target date was in trouble, with a shortage of funds and legal arguments over the lander… Chief Bill Nelson announced the new date of 2025 at a press conference about the ARTEMIS programme. In the meantime preparatory missions will involve testing the hardware in both unmanned and manned missions, including non-landing orbits of the Moon.

Get your 'NEW' Kit on for Space

Spacex suits for use within the Crew DRAGON spacecraft on trips to ISS

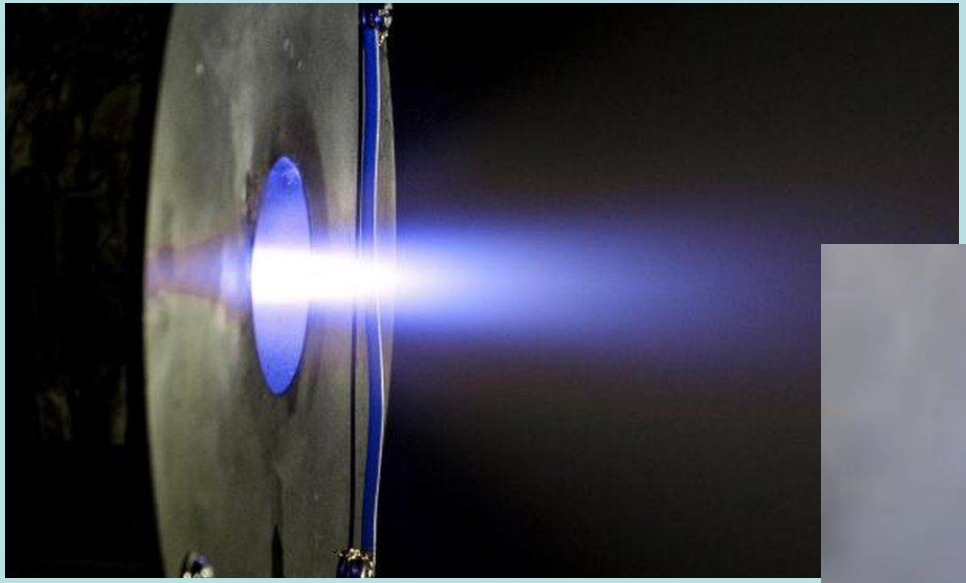
26th November: Space suits have not changed very much over the last ~40 years, the first spacewalk from the Challenger Shuttle. NASA has spent over $400m with little success. Now NASA wants industry help to build its new *Exploration Extravehicular Mobility Unit* (xEMU) and the *Orion Crew Survival System* and has up to $1bn in the budget within the ARTEMIS programme.

Just a little TAP – may save the World



24th November: Nasa's **Dart** mission was launched to see how difficult it would be to stop a sizeable space rock from hitting Earth. The spacecraft will crash into an object called *Dimorphos* to see how much its speed and path can be altered. Although only 160m across, an object this size could still cause substantial devastation. The experiment is planned to take place in September at 6.7 million miles from Earth.

Tidy-up Space with Solid-State Plasma Thrusters



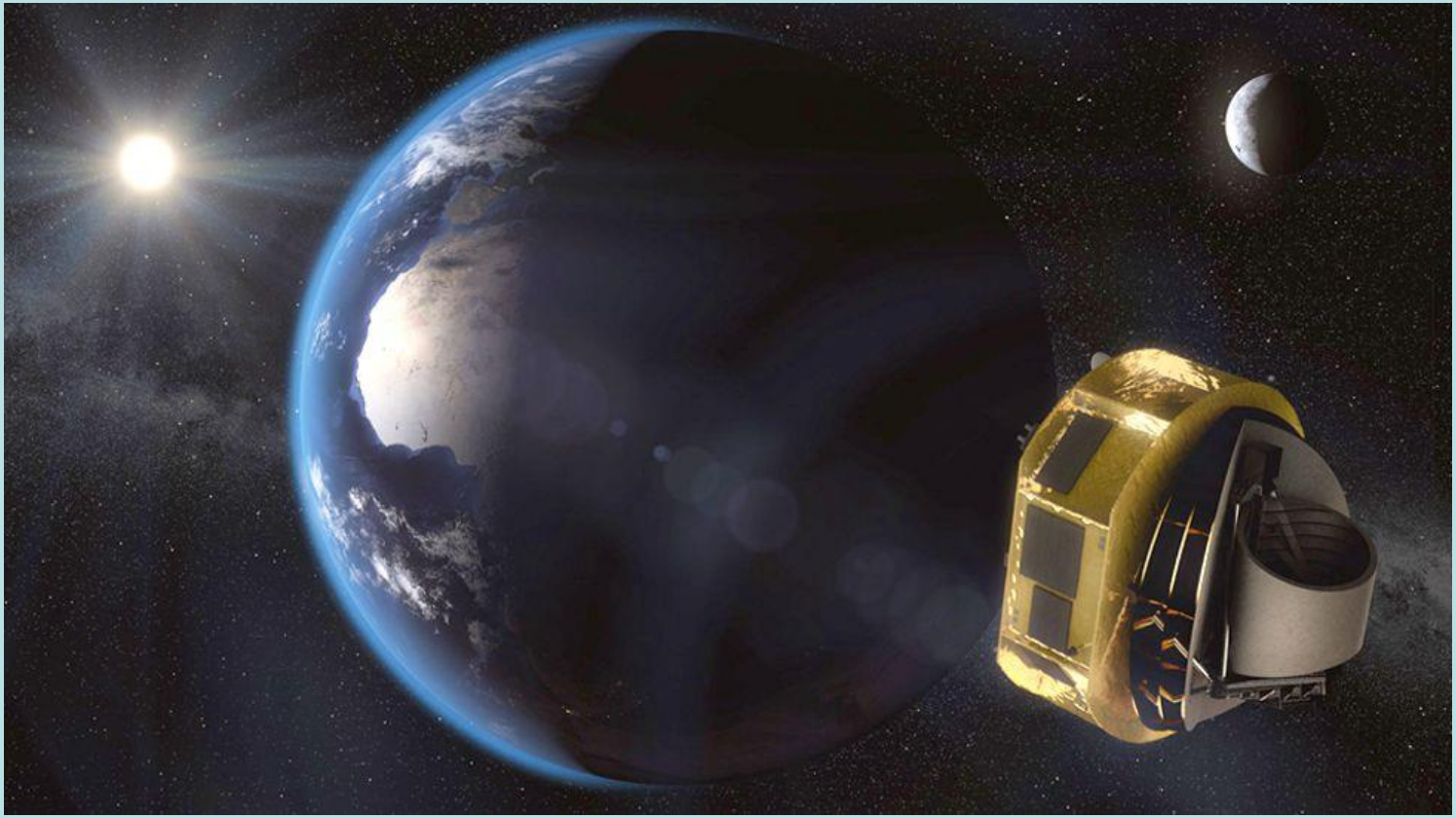
3rd Aug: 'Hypernova' of South Africa has developed a miniature plasma drive based on vaporising a *solid metal*. These could be added to nanosatellites to give them control over their position – either to adjust orbit or to de-orbit when no longer useful. The over 3,000 nanosatellites in orbit are but the start of many more, most lacking any means of manoeuvrability to avoid collisions.

NASA's batch – Possible Lunar-nauts

From L-R: Nichole Ayers; Christopher Williams; Luke Delaney; Jessica Wittner; Anil Menon; Marcos Berríos; Jack Hathaway; Christina Birch; Deniz Burnham and Andre Douglas

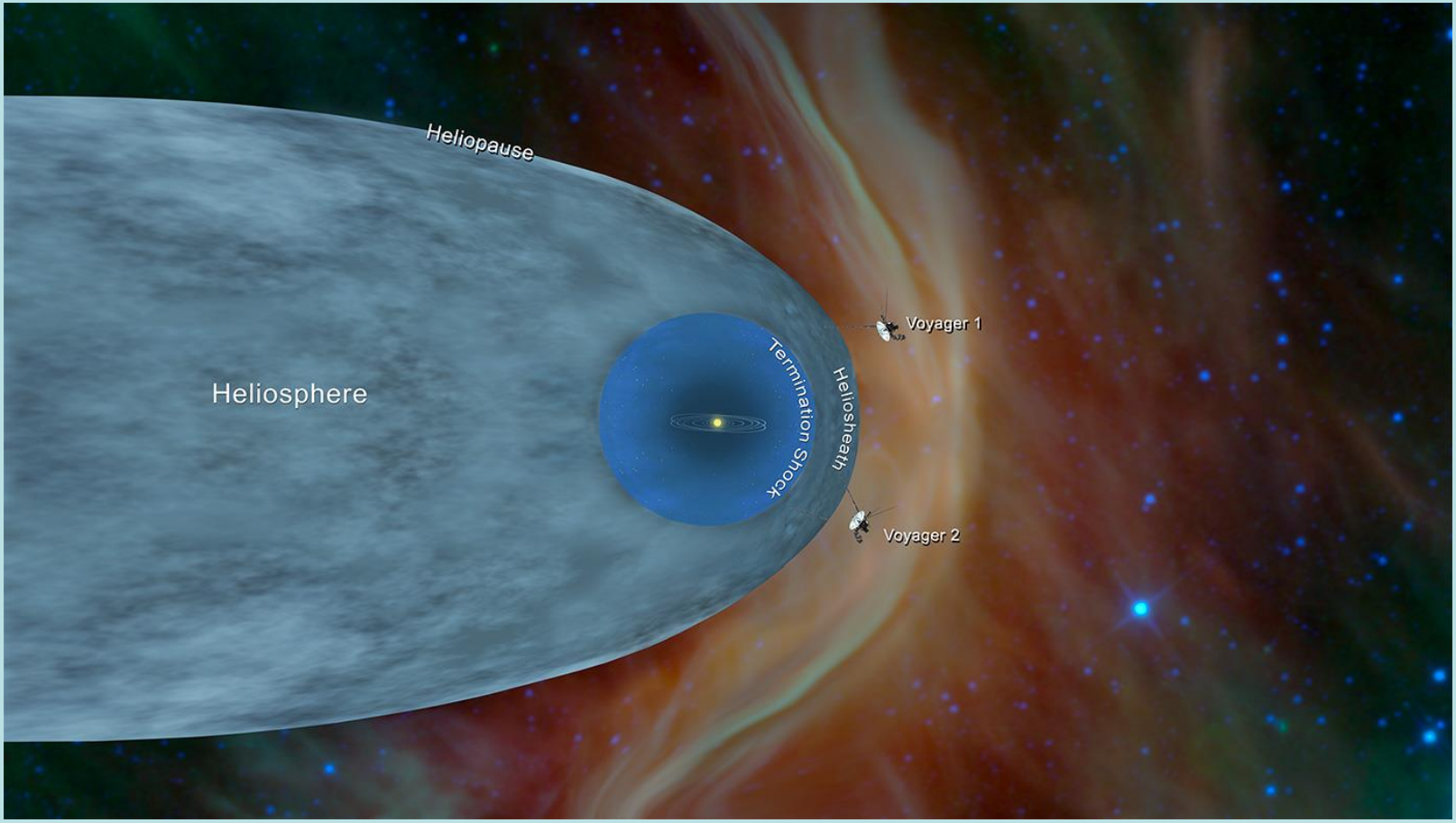
5th December: NASA presented its new class of astronaut candidates, who could fly to the **ISS** and on future missions to the **Moon**. They have gone through a selection process with several rounds; and these six men and four women were selected from a pool of about 12,000 applicants.

ESA's Signs €200m contract for ARIEL Observatory



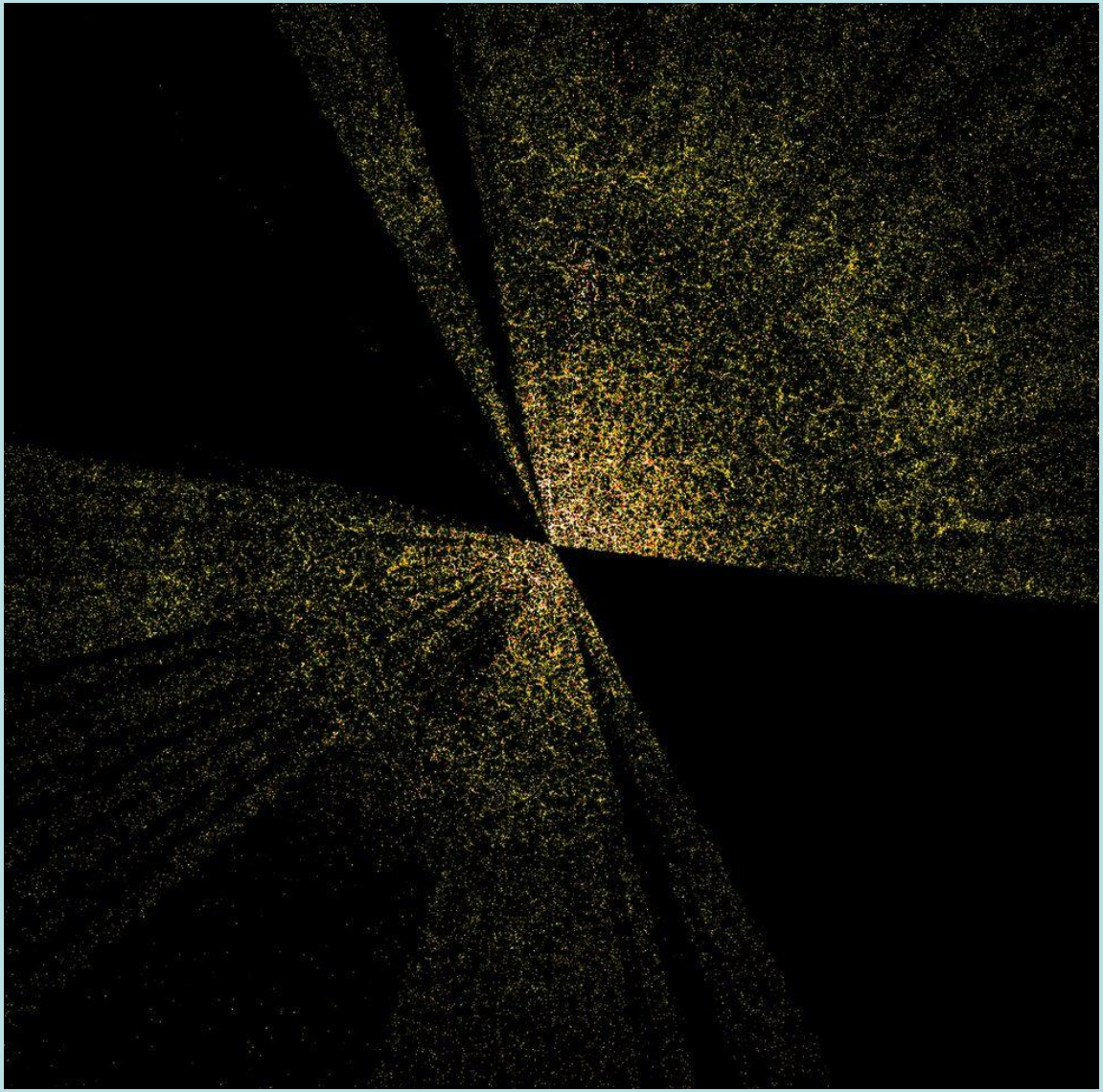
7th December: Ariel is an acronym for Atmospheric Remote-Sensing Infrared Exoplanet Large-survey. The spacecraft will be despatched to an observing position about 1.5 million km from Earth, with a planned launch in 2029. The new contract enables **Airbus** and its 60 industrial partners to push forward the design and to finalise the necessary technologies. Ariel will detect infrared emissions from exoplanets to catalogue their atmospheres.

Second spacecraft has left the Solar System



10th December: For the second time in history, a human-made object has reached the space between the stars. NASA's Voyager 2 probe now has exited the heliosphere to join twin Voyager 1. Although it is 11 billion miles from earth, its instruments are still working and sending data back home over a 16.5 hour each-way radio link.

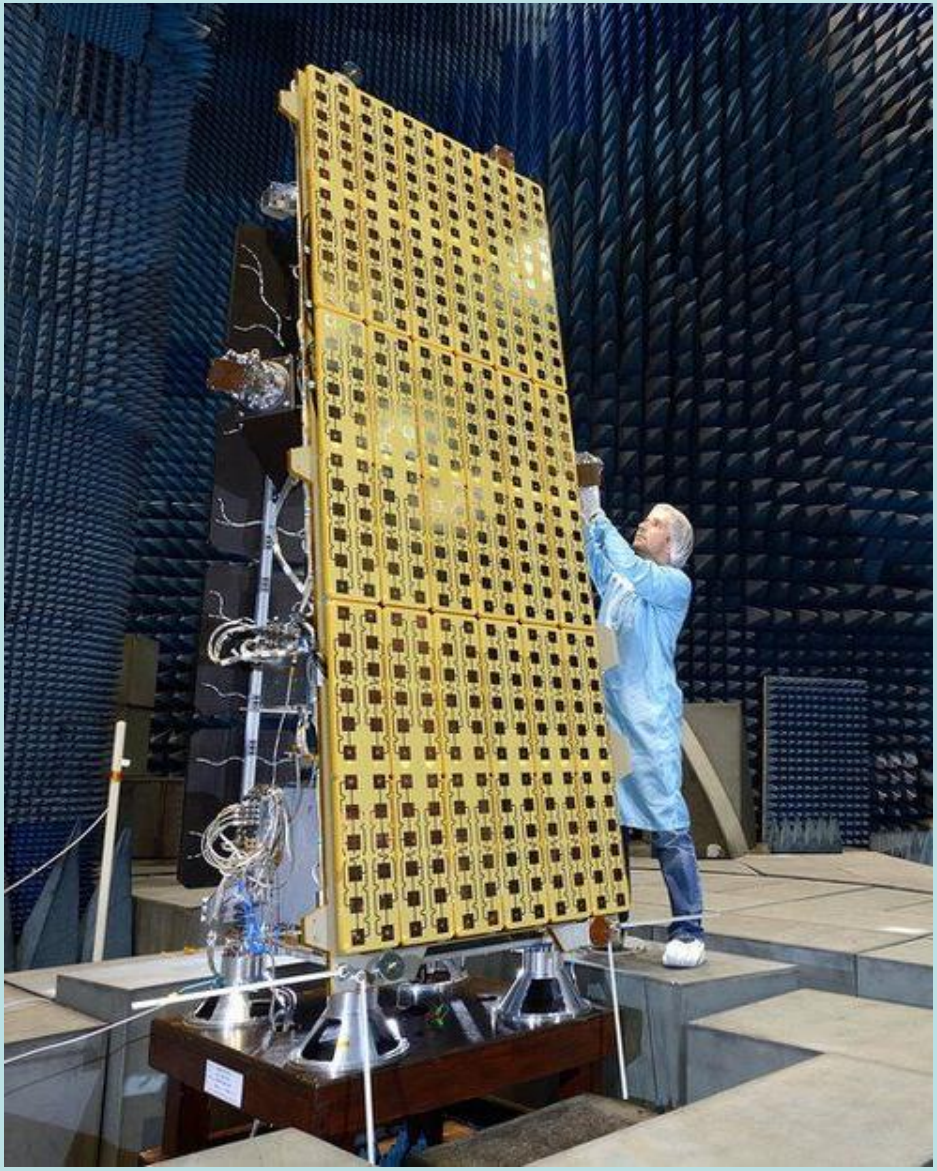
New Map of Universe from Durham University



13th Jan: Durham Univ has developed DESI - a Dark Energy Spectroscopic Instrument which has broken all 3D galaxy survey records.

A component built by the Durham team increases the telescope's field of view by using 5,000 optical fibres. This system splits light from galaxies, stars and a bright variety of galaxy known as quasars into narrow bands of colour, which reveals their chemical make-up, how far away they are and how fast they are travelling.

Orbiting “Cheese Grater” does Radar Imaging



19th Jan: The NovaSAR satellite was built by Surrey Satellite Technology (SSTL) in Guildford, who also own and operate it. Using Radar it can view the Earth both through cloud and at night.

It’s resolution is such that each pixel of an image is only 50m x 50m, so it can pick out buildings, roads and other features such as individual farm fields and the crops grown there.

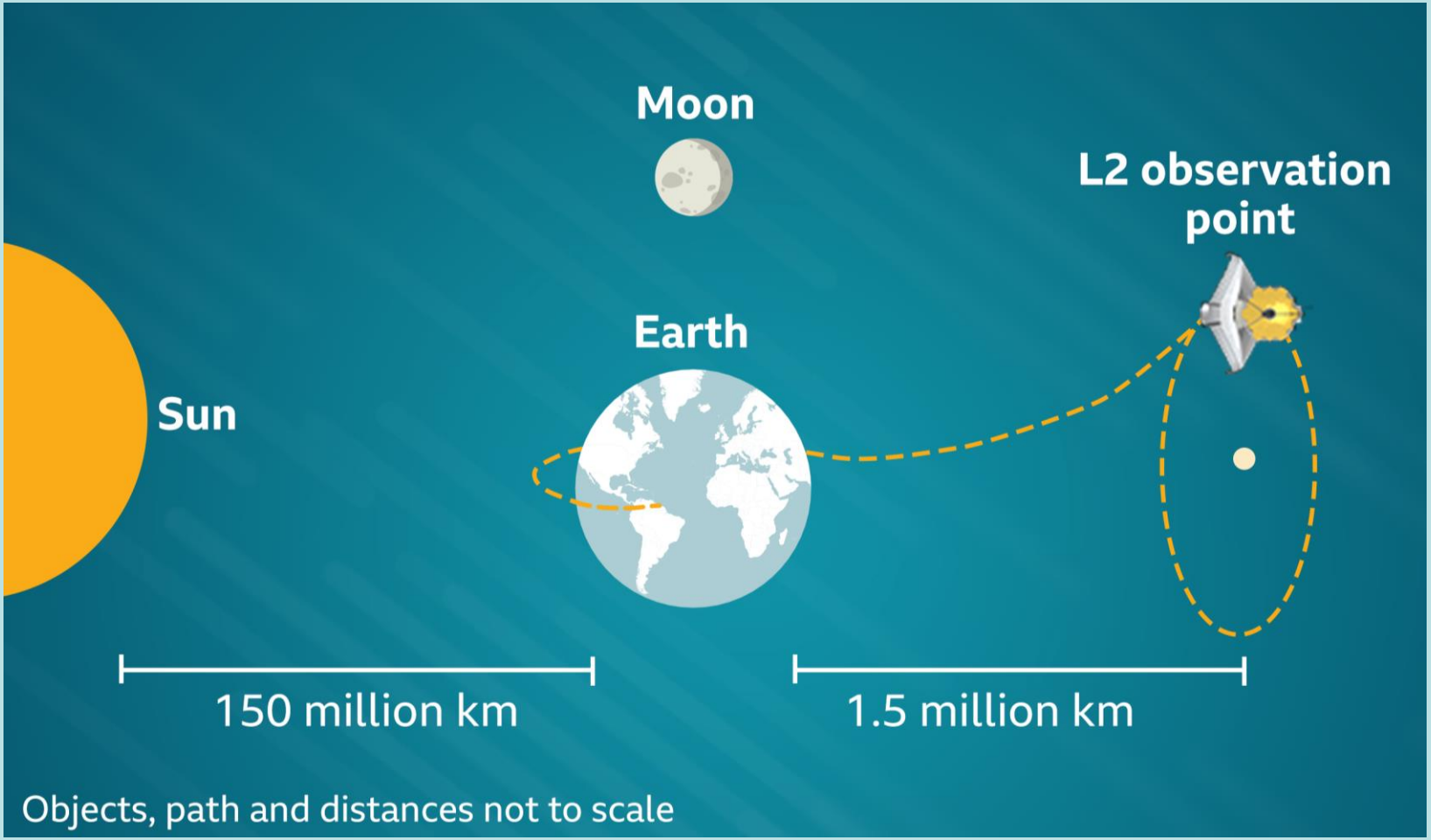
[SAR = Synthetic Aperture Radar]

NovaSar provides complete UK image in detail

Here is a detailed image of the whole of the UK. NovaSar captured all this information in only 7 passes.

This is because it can totally ignore the weather and also not wait for daylight.

Arrived safely – Got the tent up!!



24th Jan: After its Christmas Day launch and a journey of 1.5m km, the JWST arrived at L2 on Schedule, fully deployed and with its sun shield open.

Now follows 4 months of mirror alignment, detector set-up and completion of on-site testing, before it can be tasked with the next 10 years of IR observing.

Two Busy Years for Satellite Launches…

An examination of the satellite catalogues:

2021 saw **1832** new objects added to the number in Earth orbit.

That is ~ 5 every day

SpaceX (1741 to date) and **One-Web (428)** are major contributors with their constellations of space-based internet systems.

On 1st January this year there were >**4,500 active satellites** in orbit.

Quite a lot of them are 'micro- or nano-satellites', less than 10kg mass.

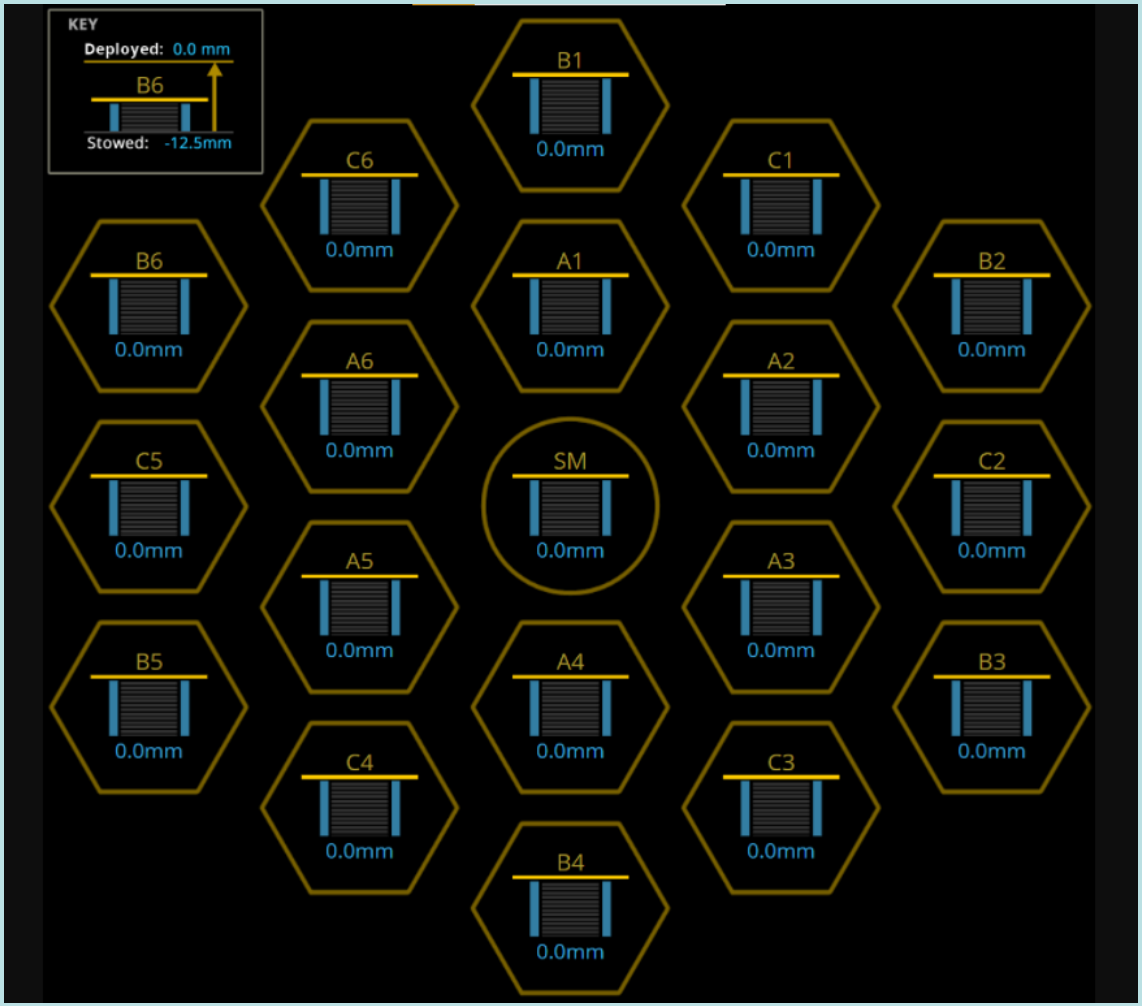
Some objects really shouldn't be there – like upper-stages of launch vehicles or failed satellites = JUNK!!

Or other little BITS!!

Since the start of this year **442** new objects added to the catalogue.

That is 7.5 every day.

James Webb – Mirror Alignment



6th Feb: Each of the 18 mirror segments and also the secondary mirror are shown here, with their IDs and height after full deployment from stowed position.

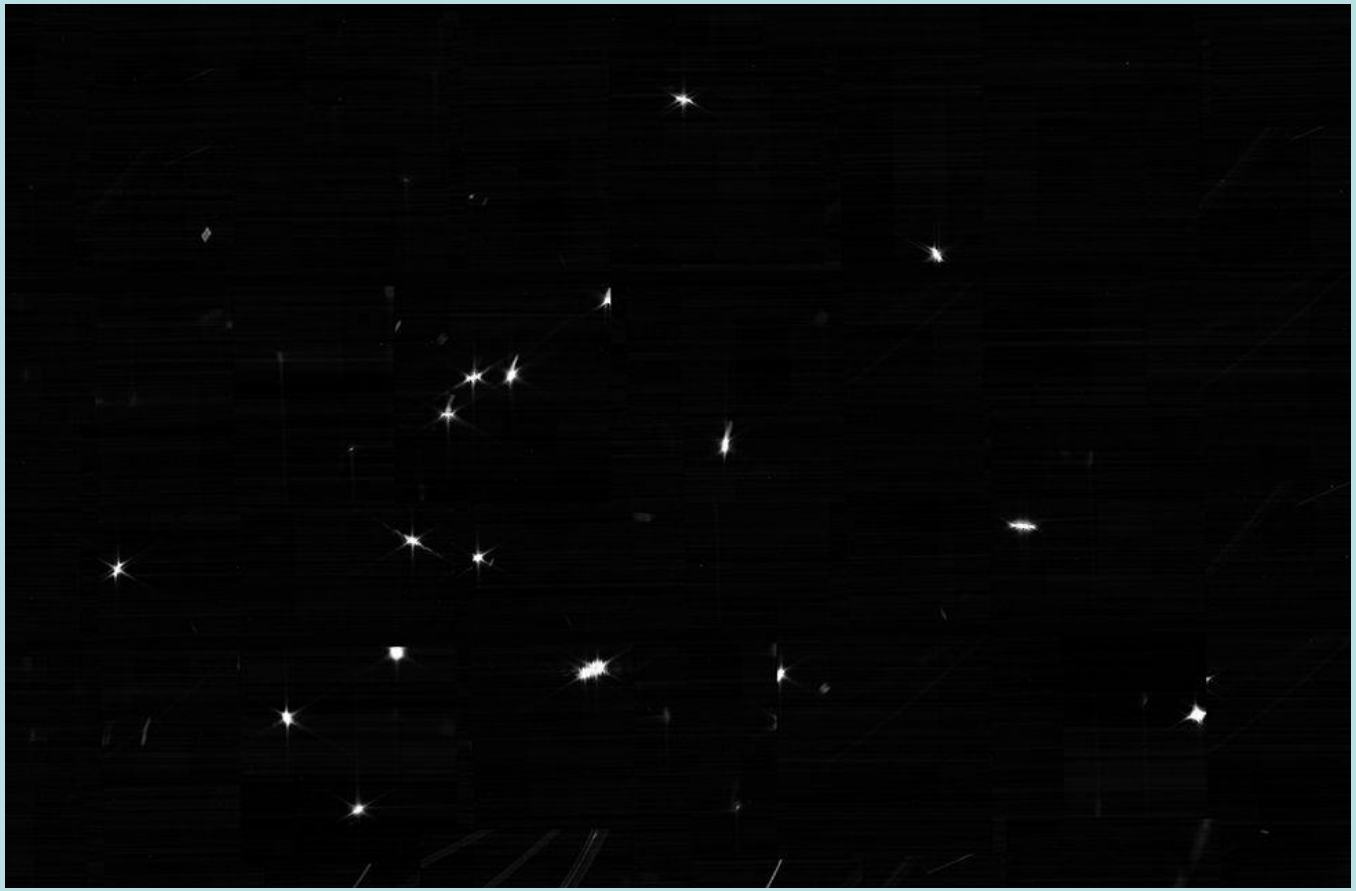
Each mirror will be moved by tiny increments roughly equal to the wavelength of light ~50 nanometres.

It will take ~4 months to finally have a fully focussed telescope and camera system.

See website for details:

https://jwst.nasa.gov/content/webbLaunch/deploymentExplorer.html

How to Focus a Multi-mirror Telescope



11th Feb: Each of the 18 points of light is the SAME star seen by JWST before the process of collimation. Each of the 18 mirrors has to be moved by less than a millimetre at a time to bring its reflection onto the same point as the others. First problem – which point comes from which mirror??

Kernow Spaceport opened by Minister

25th Feb: Cosmic Girl is a converted Boeing 747 that carries **Launcher One**, an air-launched 2-stage rocket that carries payloads up to 300kg into space. Cosmic Girl and Launcher One are owned by *Virgin Orbit*, who plan to use Cornwall as their UK Base. The Business Secretary cut the turf to start building the £5.6m Centre for Space Technologies at Newquay Airport, from where the first satellite is due to be launched in the summer.

“Cape Lamba Ness” given go-ahead

RS1 rocket chosen by Lockheed Martin as their launch vehicle

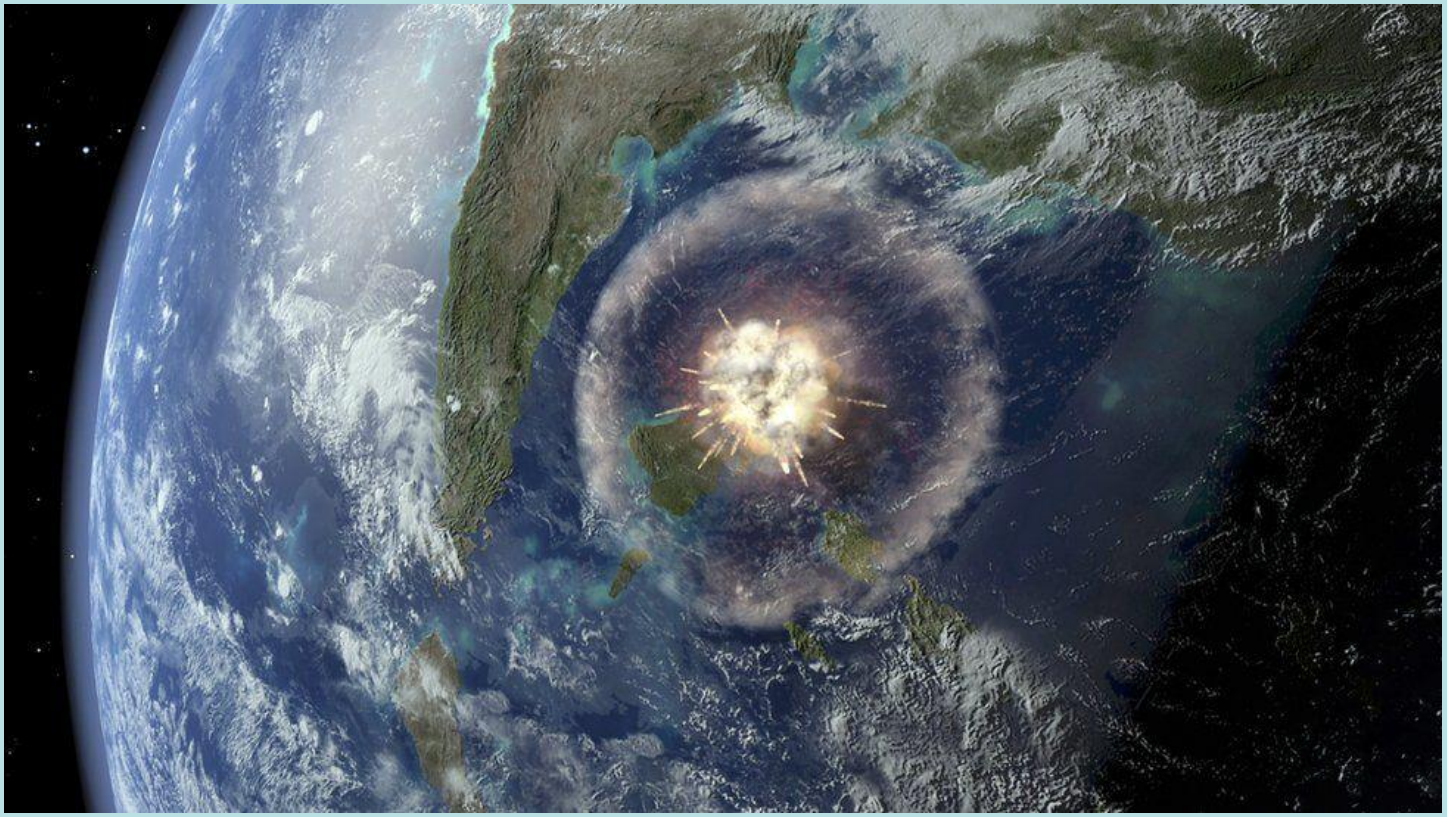
28th Feb: Construction of a *Scottish spaceport* could finally get under way next month after planning permission was granted by Shetland Islands Council, who say work to prepare the **Saxavord Spaceport** can proceed provided Scottish ministers don't call the project in for review.

Three rocket pads would be built at the Lamba Ness peninsula in Unst, with a first launch of what's likely to be a meteorological satellite before year-end.

Gloucestershire Meteorite worth a fortune £££££

24th Feb: A bean-sized fragment of the meteorite that fell in a fireball on the town of Winchcombe in February last year has sold at auction for more than 120 times its weight in gold. The **1.7g** lump of blackened rock exceeded its pre-sale estimate, fetching £9,256. It is the most important space rock ever to fall and be recovered in Britain, dating back to the very beginning of the Solar System, some 4.6 billion years ago.

DEATH in Springtime…



24th Feb: We don't know what the year was – but it was almost certainly a springtime death for the Dinosaurs!! That is a northern Spring – when many plants and animals have awakened from hibernation and prepare to make homes and raise young, a very vulnerable time. This evidence comes from TANIS, a site in N Dakota, where the land was suddenly buried following tidal waves from the impact on the Yucatan Peninsula, 3000km away.

Look for "Dinosaurs: The Final Day" with David Attenborough on BBC shortly

Send anything interesting you spot during March to:

michael@held.org.uk