

# Space News

looking back over

## September 2018

[ Note that 'PDF' version of this is not able to display animations/GIF images ]

# Spitzer's Impressive Record



**NASA's Spitzer Space Telescope** has spent **15 years** in space. Launched into a solar orbit in August 2003, Spitzer trails behind Earth and has been gradually drifting farther away. Spitzer was the last of NASA's four Great Observatories to reach space. Initially scheduled for a minimum 2.5-year mission, Spitzer has lasted far beyond its expected lifetime. For a gallery of its 15 greatest discoveries, see <https://www.jpl.nasa.gov/news/news.php?feature=7221>

# Strange Visitor from Outer Space – but where from?



Ever since October last year, '**Oumuamua: 1I/2017 U1**' has offered more questions than answers. Now having back-tracked its trajectory and making use of the latest GAIA star position data, four possible stars are suggested as the origin of our long slender visitor – **Red Dwarf** HIP 3757, Sun-like star HD 292249, and two other stars without any manageable nicknames as yet. They would have to have at least one 'gas giant' but this has to be confirmed...

# Ariane has it's 100<sup>th</sup> Launch



Europe's **Ariane 5** rocket has completed its **100th mission**. On Tuesday 25th it lifted two big satellites into orbit from its operating base in French Guiana. Conceived originally to launch a **European space shuttle**, the rocket was adapted to put up heavy telecommunications spacecraft - a market it has dominated for many years. It's replacement **Ariane 6** should make its debut in mid-2020. Two of Ariane-5's remaining missions include sending Europe's **BepiColombo** probe to **Mercury** next month, and putting up the \$10bn **James Webb Space Telescope** in **2021**.

# Collecting the Info from Space



**26<sup>th</sup> September:** As ESA celebrates the 100th Ariane 5 launch, the Agency's worldwide ground station network is also marking **ten years** of providing vital tracking services to launchers soaring out of Kourou.

ESA's Earth-orbiting satellites and probes out in the Solar System are all ultimately dependent on this network.

# Russia's First Civilian Spaceport



**VOSTOCHNY Space Centre** has been established as Russia's first **civilian** space centre. As such it will have to provide independent access for a whole range of space-related tasks. VOSTOCHNY is a 21st century space centre representative of Russia's new philosophy. It will give a new lease of life for the whole Far East of the country. It is made up of the space centre, an airport and the new town of **TSIOLKOVSKY** that will become the technological centre of the future space cluster, with new opportunities for youth, and over 80,000 jobs for the Far Eastern Region. "Another step towards a more accessible and understandable space, and closer international cooperation".

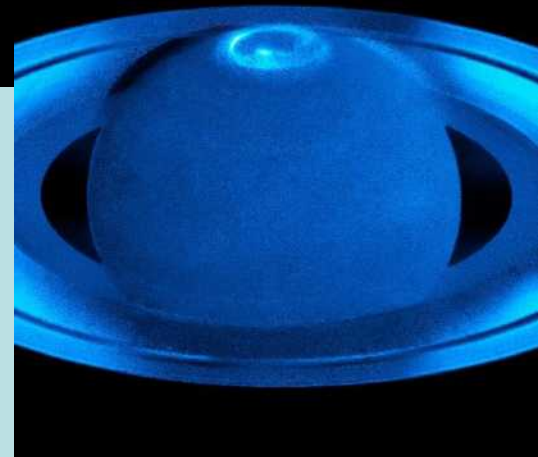
# Saturn has invisible UV Aurorae



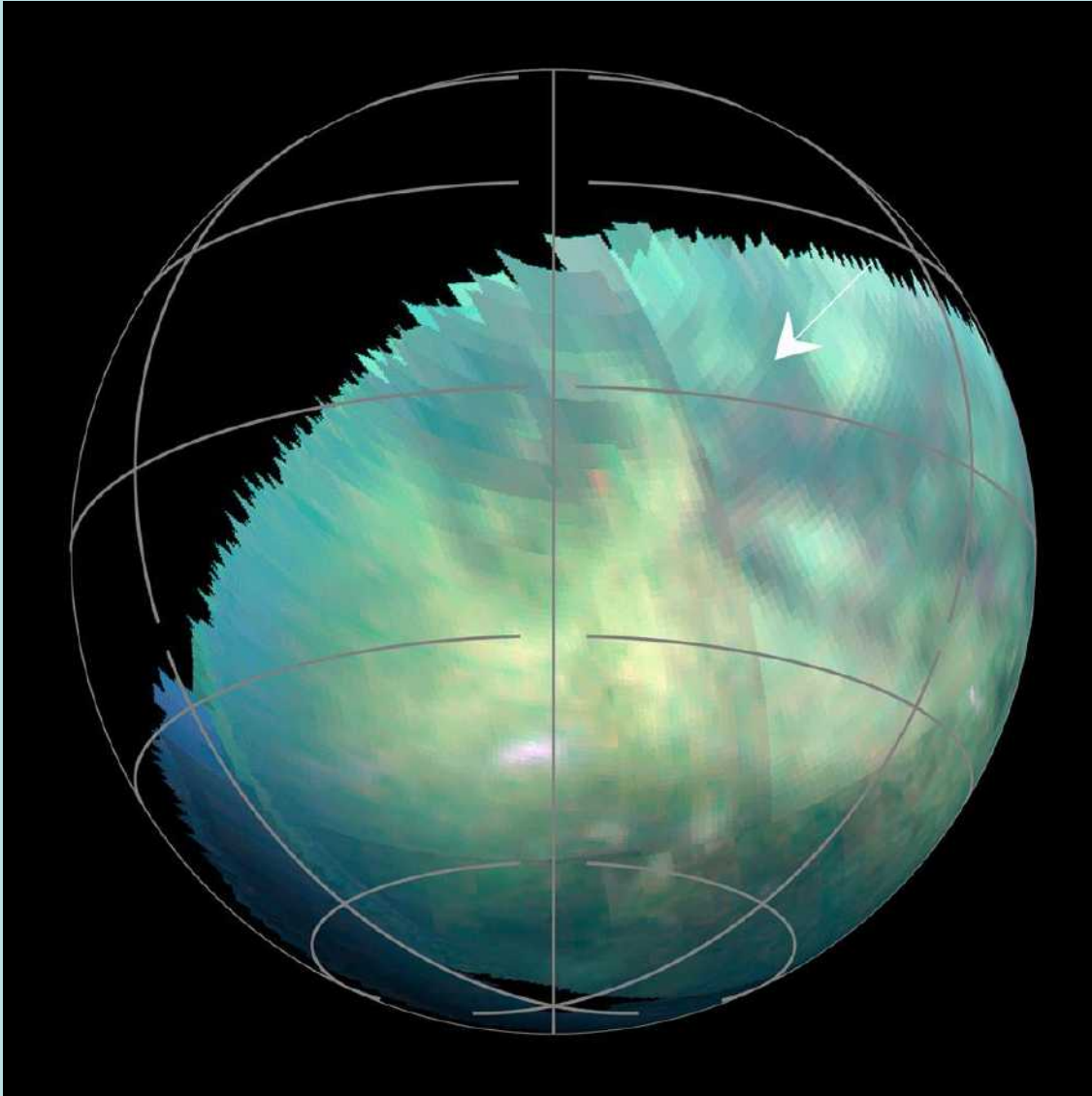
Composite of a visible light image from Cassini with the Hubble UV image below.

New images from **Hubble** show Saturn's ultraviolet aurorae swirling at the planet's north pole in the months before and after the northern summer solstice.

Scientists used the UV spectrograph on Hubble during the solstice because it's the best time to view the planet's north pole, and to coincide with observations by Cassini. UV light results from the Solar Wind interacting with **Hydrogen**



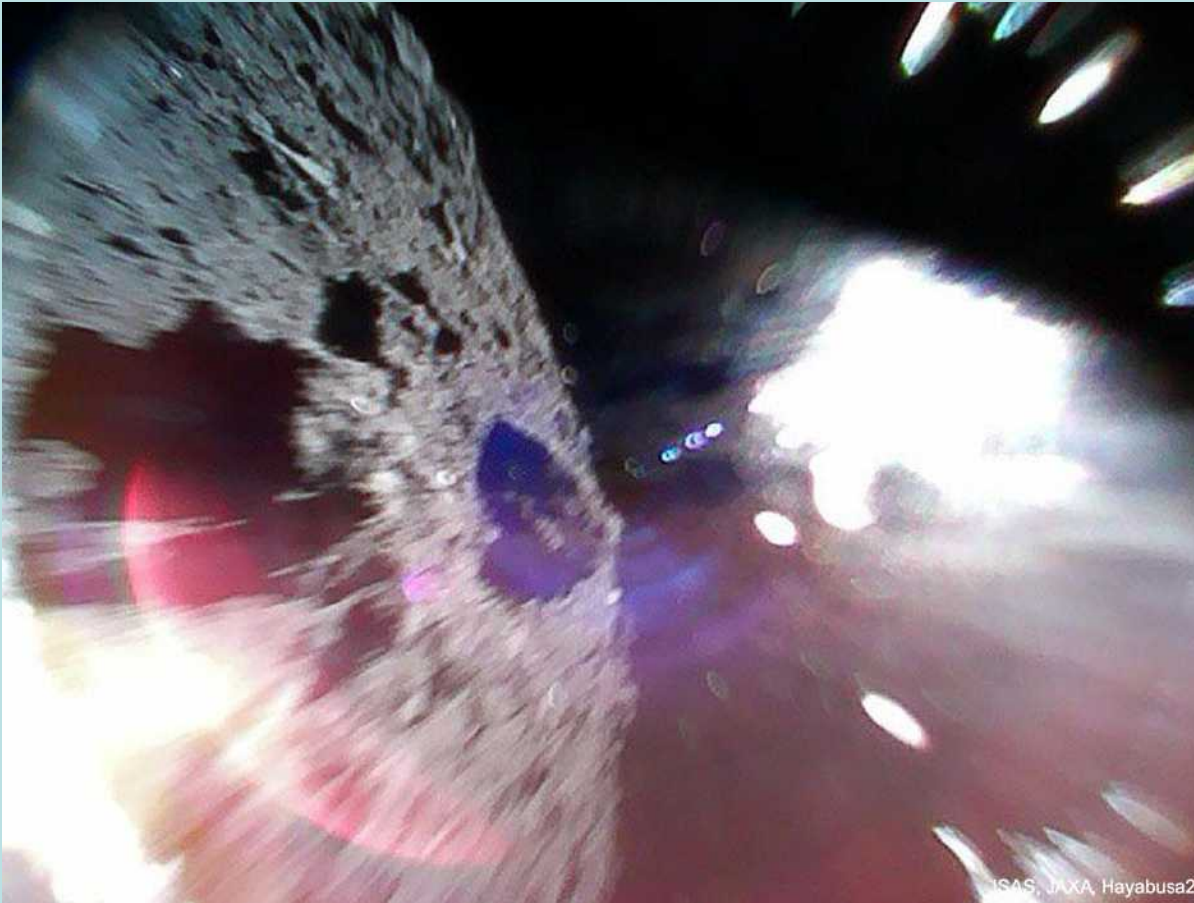
# Titan now the third body with Dust Storms... ??



Data from Cassini spacecraft has revealed what appear to be giant dust storms in equatorial regions of Saturn's moon Titan. The discovery, described on Sept. 24 in *Nature Geoscience*, makes Titan the third Solar System body, in addition to Earth and Mars, where dust storms have been observed. So we can add another analogy with Earth and Mars. Titan already has been shown to have lakes, rivers, rain and an atmosphere – but of cold hydrocarbon molecules.



# Asteroid 'Ryugu' has its first visitors



Japan's space agency (JAXA) has made history by successfully landing two robotic explorers on the surface of an asteroid. The two small "rovers", which were despatched from the Hayabusa-2 spacecraft on Friday 21<sup>st</sup> Sept, will move around the 1km-wide space rock known as Ryugu.

The asteroid's very low gravity means they can **hop** across it, capturing surface temperatures and random images. JAXA proudly tweeted pictures from the rovers, which reached Earth via the spaceship Hayabusa-2. On 3<sup>rd</sup> October, the **MASCOT** lander will be despatched to the surface of the asteroid.

# Dawn's Mission is drawing to a Close...



...after **11 years** of breaking new ground in planetary science, gathering breathtaking images, and performing unprecedented feats of spacecraft engineering. Dawn's mission was extended several times, outperforming expectations in its exploration of Ceres and Vesta. Now the spacecraft is about to run out of its key fuel, **hydrazine**. When that happens, sometime between mid-Sept and mid-Oct, Dawn will lose its ability to communicate with Earth. It will remain in a silent orbit around Ceres for decades.

## Long, Dark Night – for Opportunity . . .



The dust has cleared enough for NASA's Mars rover **Opportunity** to be spotted from space. On Thursday 20<sup>th</sup> Sept, the MRO snapped an image of the silent, stationary Opportunity in Perseverance Valley, on the rim of the Red Planet's 14-mile-wide Endeavour Crater. At the time the MRO was about 166 miles above the Martian surface.

# Are Cube-Sats just the thing for deep space ?



This summer, NASA has been flying the first two next-generation CubeSats to deep space. **InSight** and its CubeSat tag-alongs are already more than halfway to the Red Planet.

The mini-mission, Mars Cube One, has already proved this class of spacecraft can survive the deep-space environment. It will also test the use of miniaturized communications to relay data when InSight attempts to land in November.

# BepiColombo Science Orbiters Stacked for loading

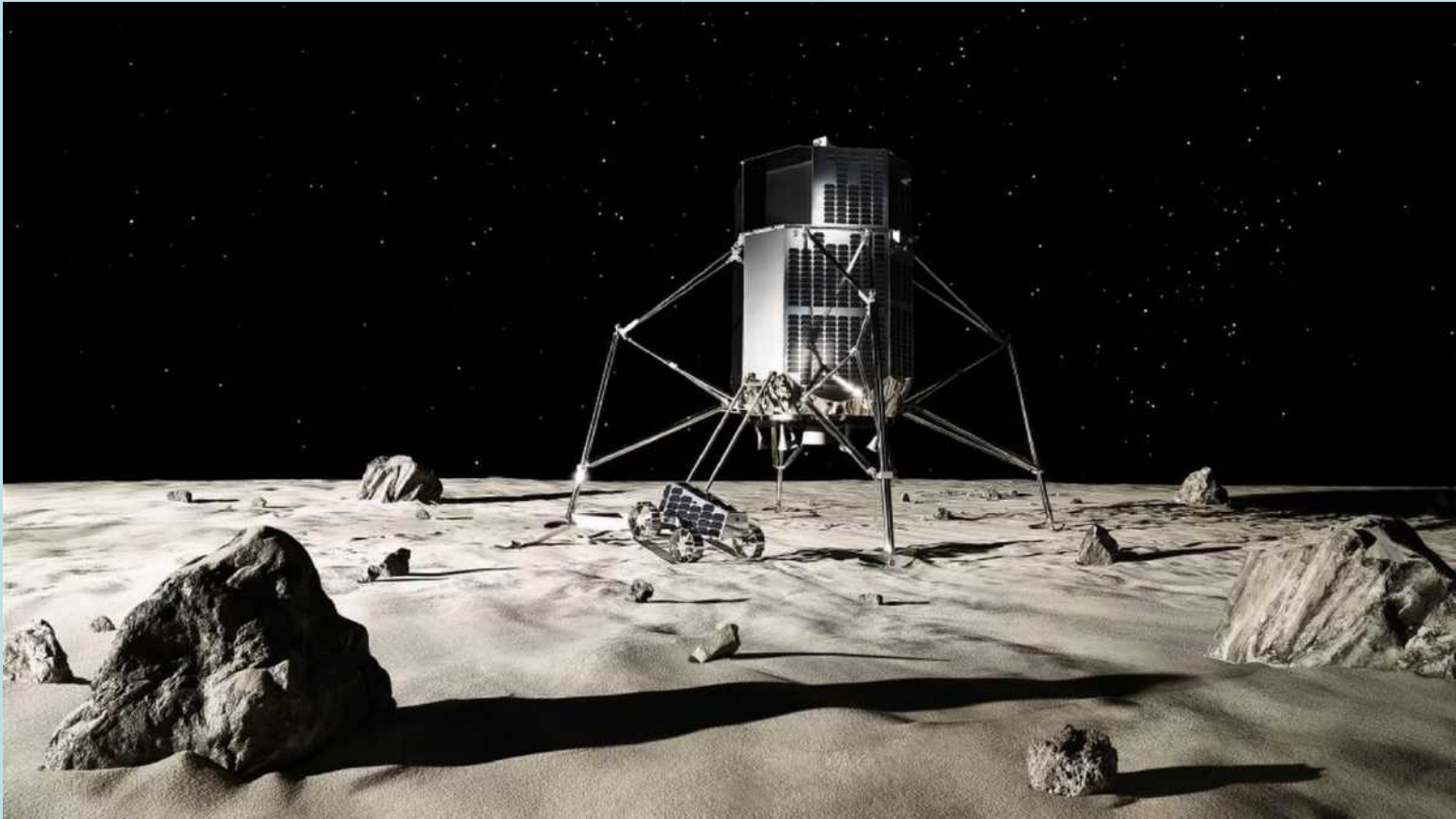


The two science orbiters of the joint ESA-JAXA **BepiColombo** mission are now connected in their launch configuration and the European science orbiter and transport module have been given the go-ahead to be loaded with propellants.

The mission completed its QAR (Qualification Acceptance Review) in the last week of Sept, to confirm it is on track for its 19<sup>th</sup> October launch on an Ariane 5 from Kourou (with the launch window remaining open until 29 November). Arrival at **Mercury** is due in 2025 for a 3-year mission.



# Japan Start-up to go to the Moon Soon



26<sup>th</sup> September: A Japanese company that aims to help humanity explore and settle the moon will fly its first **two lunar missions** with SpaceX.

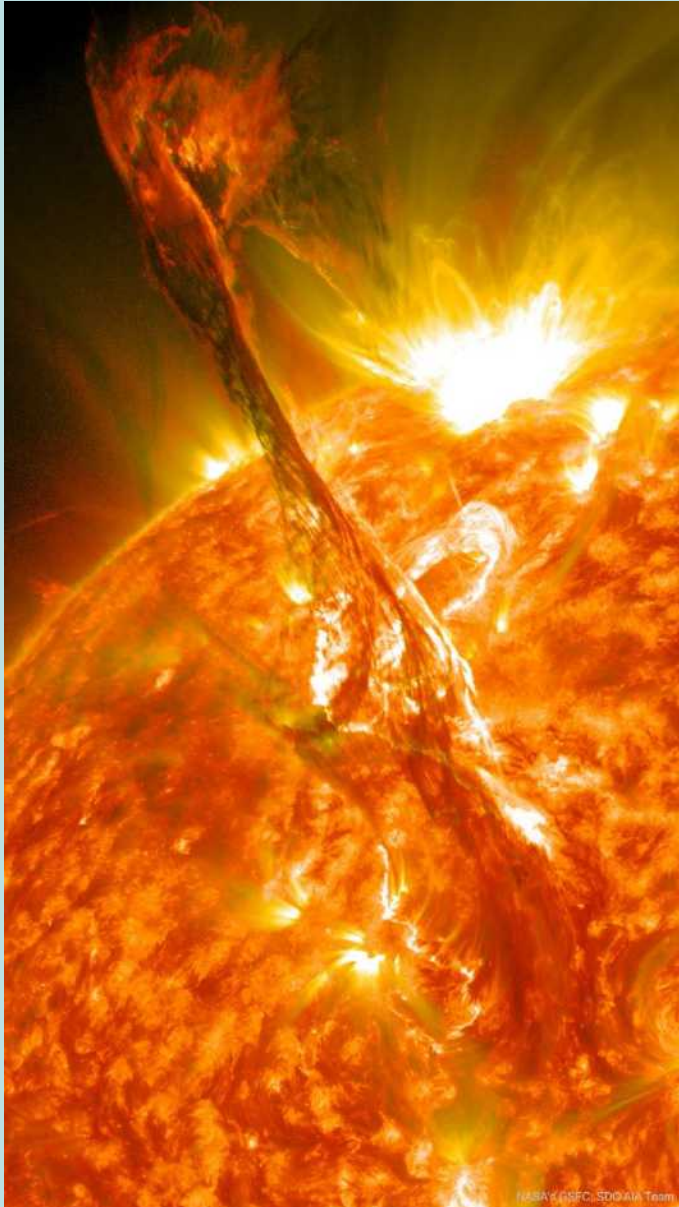
Tokyo-based start-up **ispace** has contracted to launch its lunar lander and mini-rovers as secondary payloads on SpaceX's Falcon 9 rockets in 2020 and 2021. **ispace** is a spin-off from one of the entrants from the now defunct Google Lunar X-Prize.

# “LEGO” bricks from Moon Dust



This picture shows a 1.5 tonne ‘Lego brick’ made from a ‘Moon Dust Substitute’. This type of building block could be the basis for a permanent solid moon base. In addition, being made of volcanic silicates it is ~40% Oxygen and therefore a possible source of this gas for lunarnauts/lunatics. 3-D printing could be the technology used to assemble walls and roof from dust. ESA astronaut Samantha Cristoforetti is in charge of the programme, called “Spaceship EAC”.

# Another “Carrington Event”? - Best Avoided!



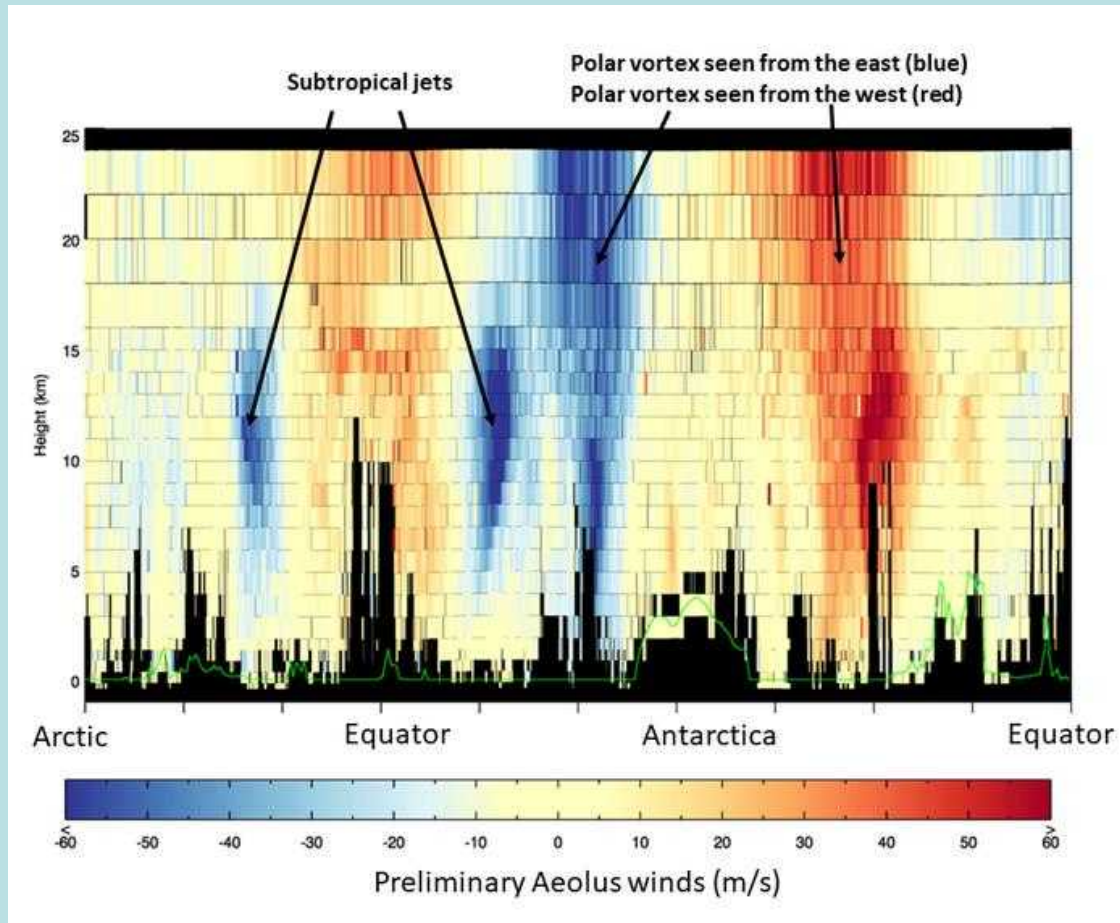
The solar storm of 1859 (**The Carrington Event**) was a powerful geomagnetic solar storm during solar cycle 10 (1855–1867). A coronal mass ejection hit Earth's magnetosphere and induced one of the largest geomagnetic storms on record, September 1–2, 1859.

A solar storm of this magnitude occurring today would cause widespread electrical disruptions, blackouts and damage due to extended outages of the electrical grid. The cost of such damage is likely to run into many trillions of \$.

The solar storm of 2012 was of similar magnitude, but it passed Earth's orbit without striking the planet, missing by 9 days. **Whew!!**



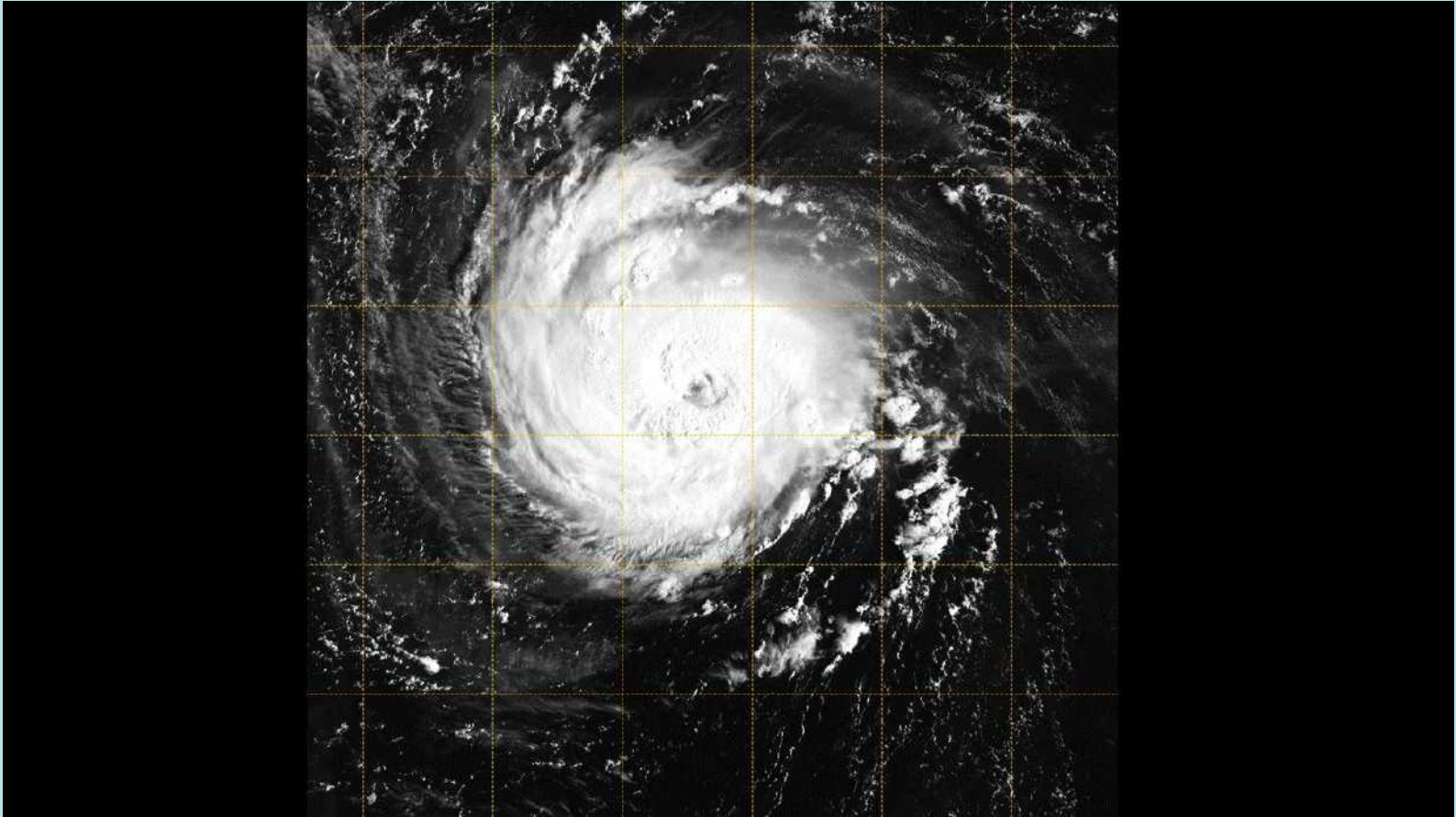
# Aeolus – Great Data after only 3 weeks!



Aeolus =  
'Keeper of the Winds'  
in Greek mythology

Launched on 22<sup>nd</sup> August, the **Aeolus** Satellite is already providing a success. This ground-breaking mission has exceeded all expectations by delivering its first data on global winds – a truly remarkable feat so early in its life in space. Aeolus looks set to provide some of the most substantial improvements to our weather forecasting than we've seen over the past decade.

# New Satellite looks inside a Storm



The brightly coloured image taken by the small, experimental satellite **TEMPEST-D** captures **Hurricane Florence** over the Atlantic Ocean. The green areas highlight the extent of the rain being produced by the storm, with the most intense rain shown in the yellow and red areas. The TEMPEST-D data is contrasted with a visible image of Florence taken by the **GOES** weather satellite, which shows the familiar cyclone-shaped clouds of the storm, but doesn't reveal what's inside.

Send anything interesting you  
spot during  
October to:

[michael@held.org.uk](mailto:michael@held.org.uk)

