

# Space News

looking back over

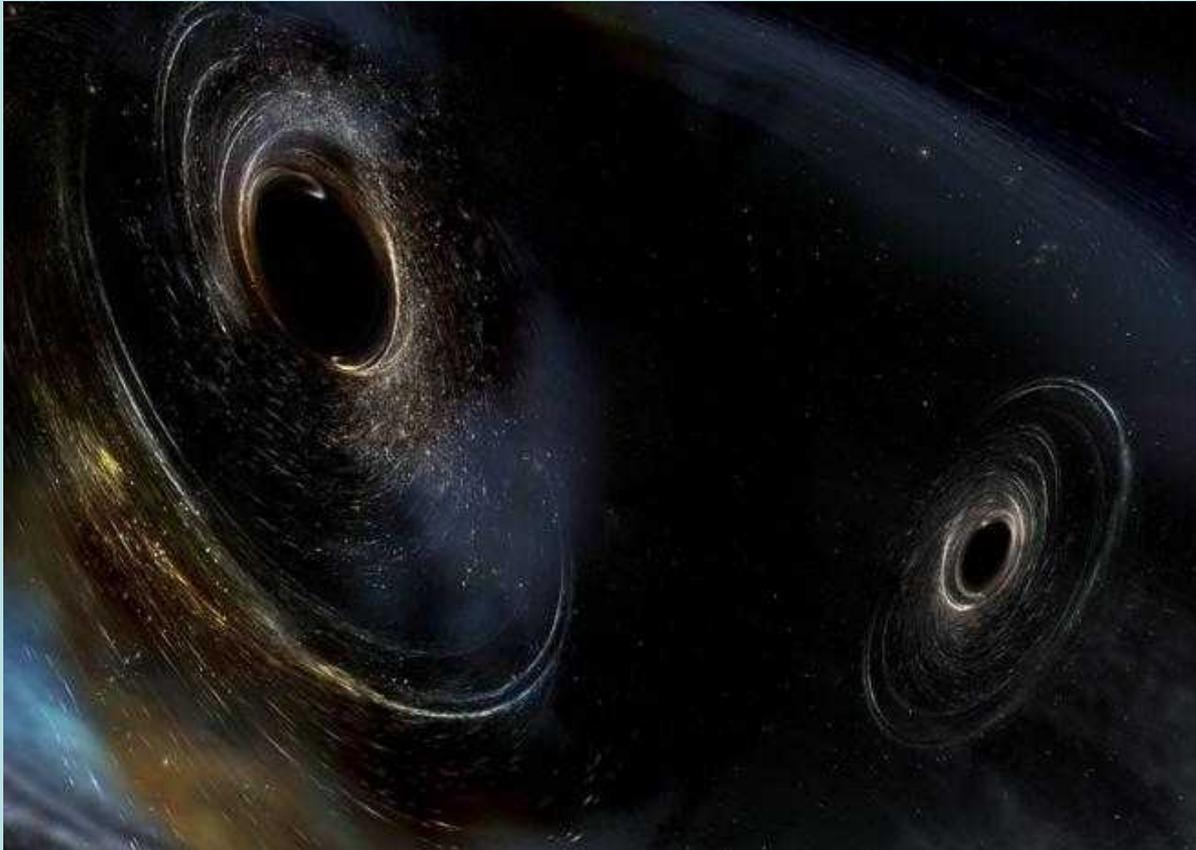
December 2018

# Joint Mercury Mission tests its unique Ion Engines



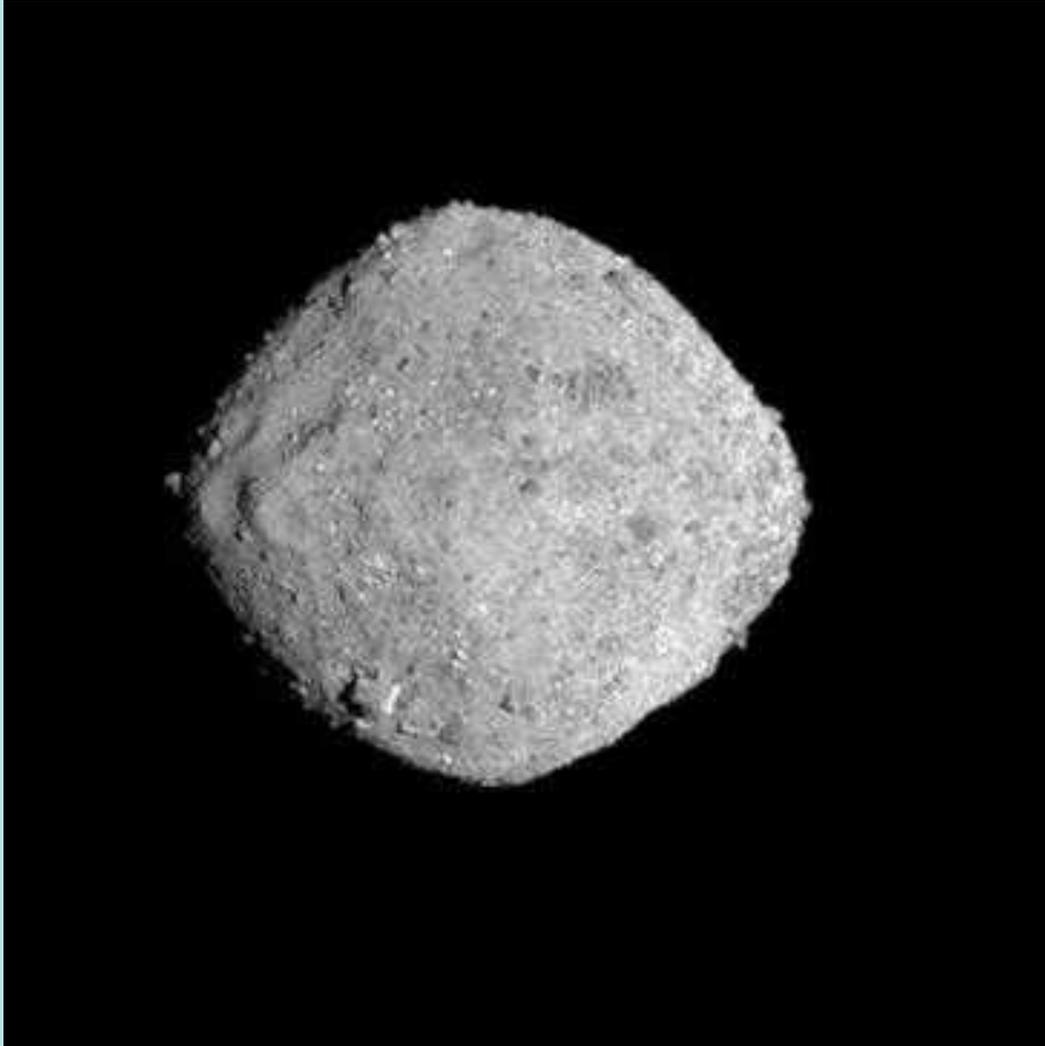
**2<sup>nd</sup> December:** The BepiColombo mission travelling to Mercury is powered by *ion thruster engines* built into the Mercury Transfer Module. The spacecraft used two of its ion thrusters to make its first manoeuvre after weeks of careful testing. In mid-December, the thrusters began a series of 22 long ‘burns’ that will be necessary for it to reach Mercury by 2025 – a total journey of 5.6 billion miles that will involve 9 fly-bys (1 of Earth, 2 of Venus and 6 of Mercury).

# Monster Black Hole merger detected



**3<sup>rd</sup> December:** LIGO scientists re-analysing old data now say their 3 laser labs sensed the ripples in space-time emanating from a massive collision on 29<sup>th</sup> July 2017 at least five billion light-years away. Two black holes, weighing more than 50 and 34 times the mass of our Sun, united to produce a single object over 80 times our solar mass. Total 'events' now up to 11.

# Osiris-Rex probe arrives at Asteroid Bennu

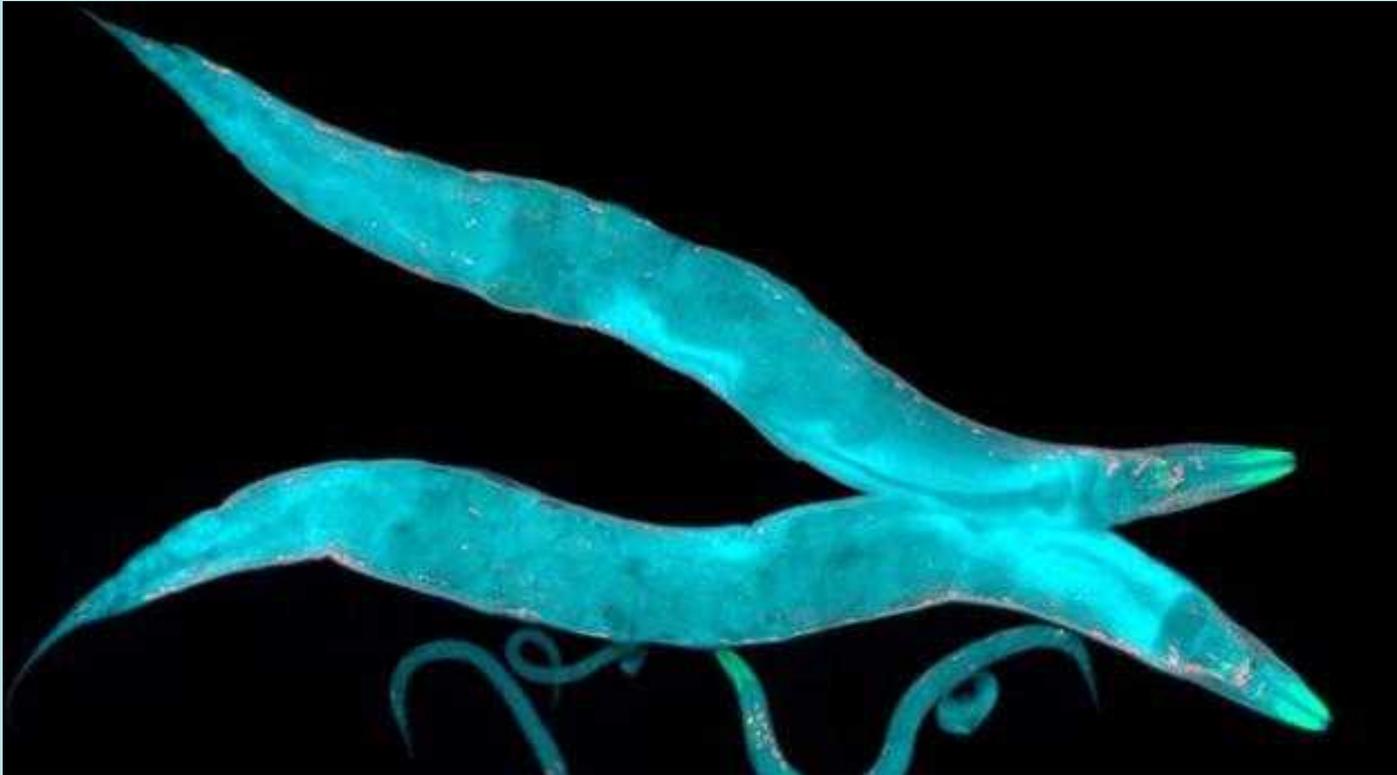


**December 3<sup>rd</sup>:** NASA's Osiris-Rex probe has drawn up alongside Asteroid **Bennu** after a two-year, two-billion-km journey.

The mission will spend 2.5 years at the 500m rock, mapping its surface and studying its composition.

In mid-2020, scientists will direct Osiris-Rex to drop down to the object and grab at least 60g of regolith, or "top soil". This will be packed away in a sterile capsule to be returned home in 2023.

# Space Worms in the search for a Cure for MD



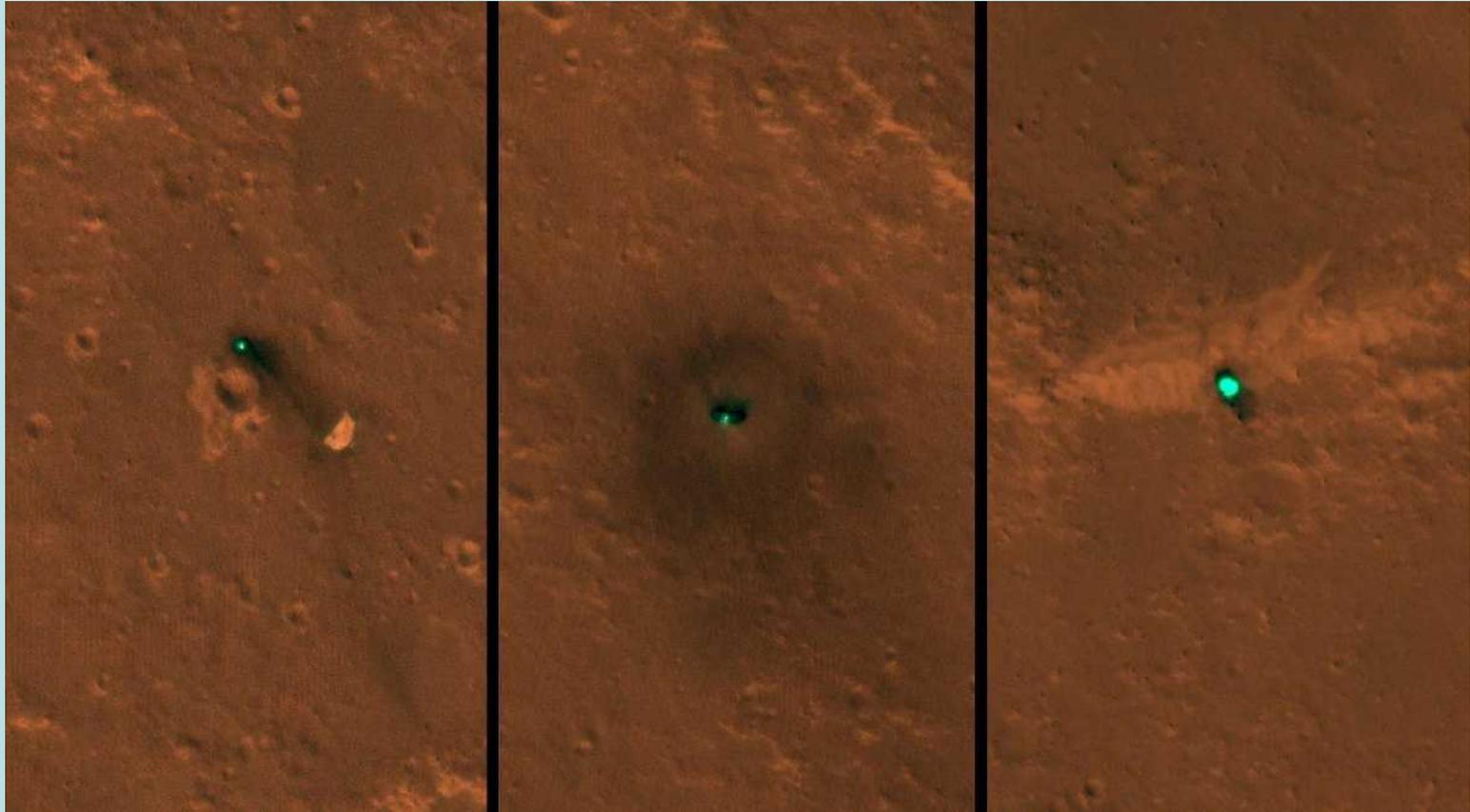
**5<sup>th</sup> December:** Thousands of these nematode worms have been sent to the ISS so that scientists can learn how their muscles work in zero gravity. They hitched a ride on a SpaceX Falcon 9 from Cape Canaveral at 18:16 GMT. *The flight was delayed for 24 hours after mouldy food was found within the rocket.* **Exeter, Nottingham and Lancaster Universities** are hoping the results may lead to new treatments for **muscular dystrophy**.

# NEW Ariane 6 Rocket provides several launch combinations



**6<sup>th</sup> December:** With a variety of nose-cone fairings and sizes, the next version of Ariane will offer a wide selection of launch configurations to satellite customers – from a single payload to many. With a first test flight scheduled for 2020 when development is completed, it will become the newest member in the Ariane launch vehicle family. The final design is a liquid-fuelled core with large solid rocket boosters. The motivation for Ariane 6 is to replace Ariane 5 at half the cost, and allow double the number of launches each year.

# MRO Images InSight on the Plain

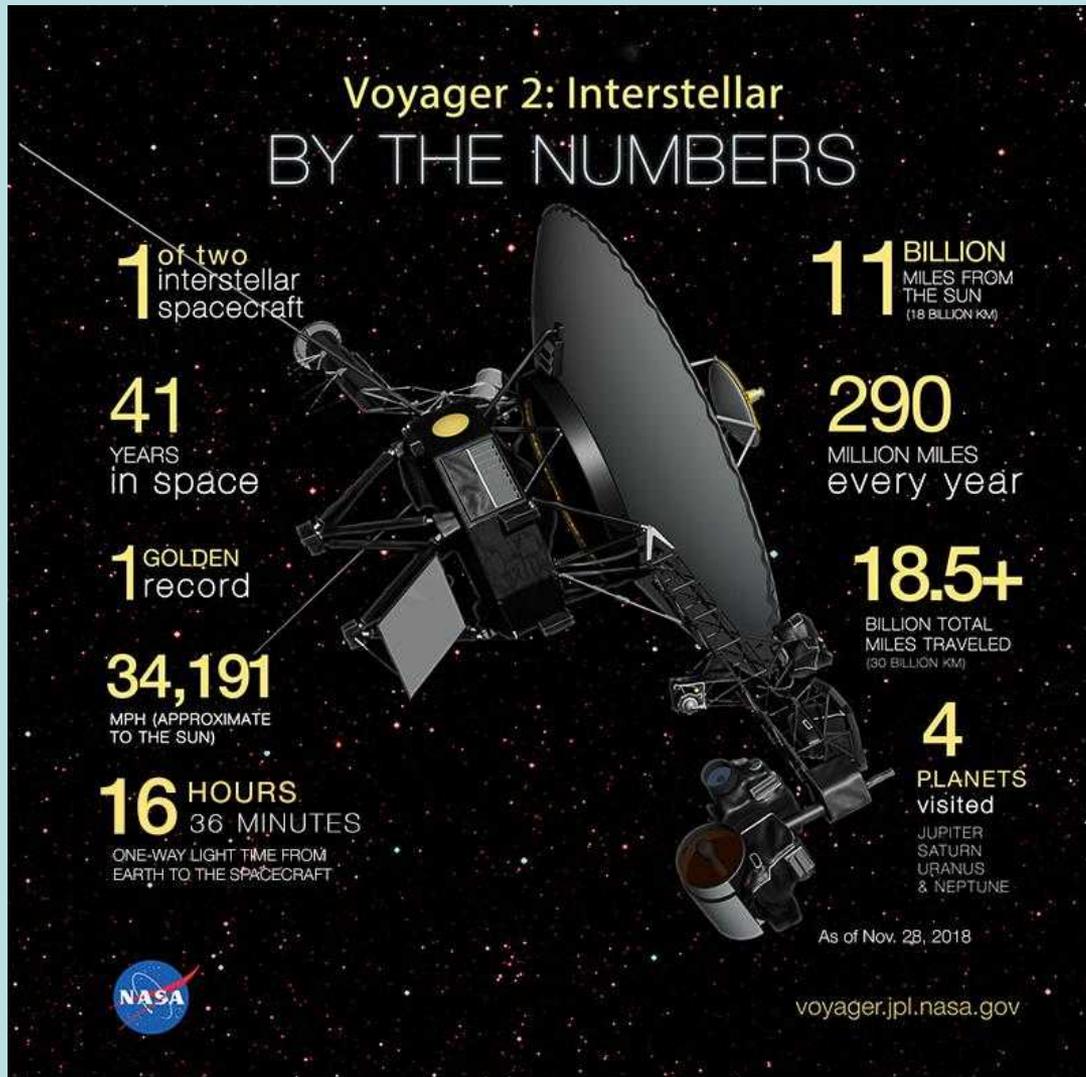


**December 6<sup>th</sup>: Mars Reconnaissance Orbiter was able to identify the components of the InSight Lander after the dust had settled.**

From L to R: The Parachute, the Lander and its Heat Shield.

Note the darkening of the soil in the centre picture – caused by the retro-rockets firing to cushion the landing.

# Voyager 2 – Successful by any Measure



**December 10<sup>th</sup>:**  
**Voyager 2 continues to provide data as it leaves the Heliosphere.**

The graph below shows changes in radiation and solar wind as it moved into interstellar space.

Still in regular contact with Earth – even though the signals take over 16 hours to arrive.



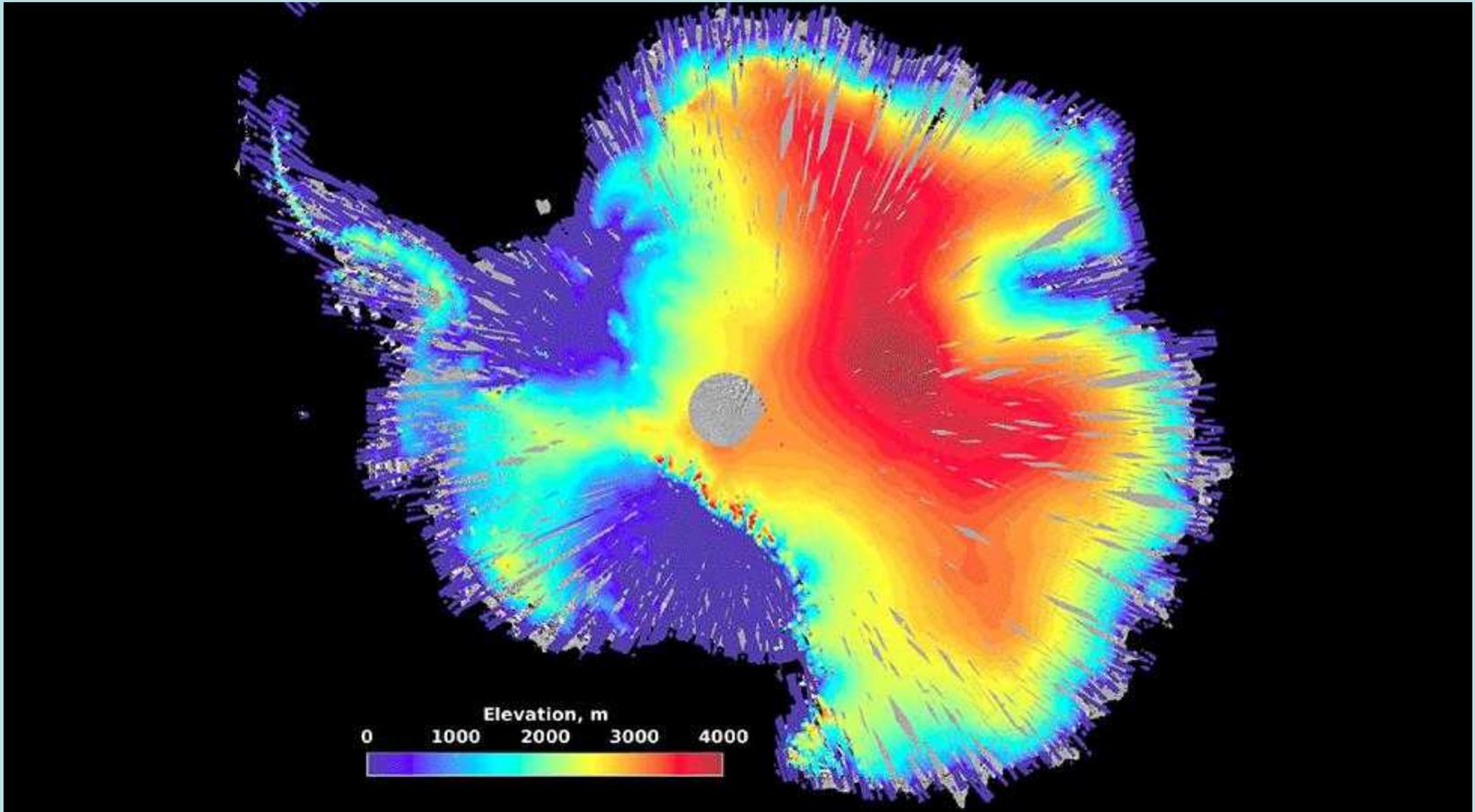
See: <https://www.jpl.nasa.gov/news/news.php?feature=7301>

# Insight – I can take selfies too!



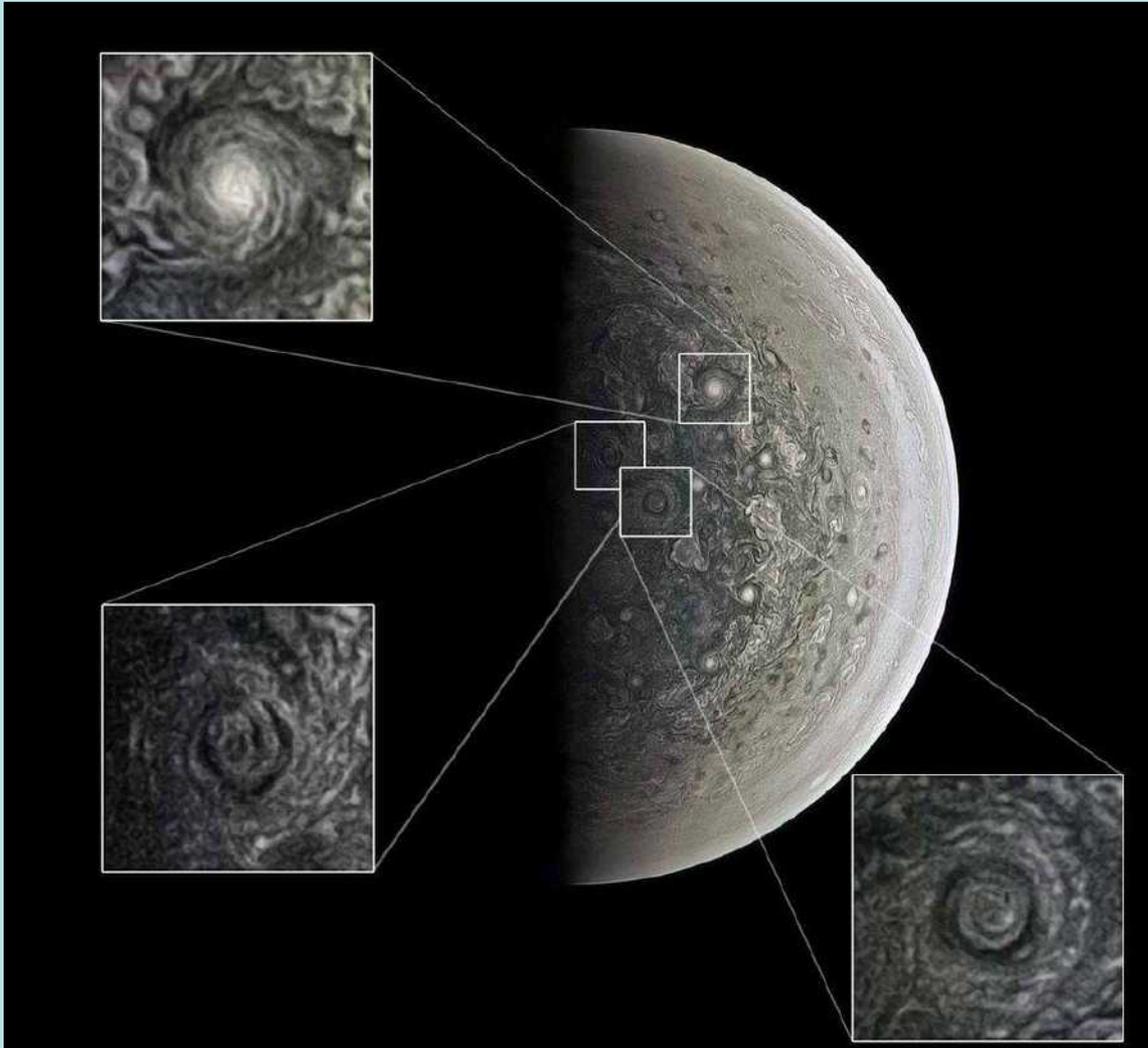
**December 11<sup>th</sup>:** Insight used a camera on its robotic arm to take its first selfie. Visible in the image are the lander's solar panel and its entire deck, including its science instruments. Mission team members have been able to view the approximately 14ft x 7ft crescent of terrain directly in front of the spacecraft where the scientific instruments will have to be placed.

# How High is Antarctica? Ask “IceSat-2”



**December 11<sup>th</sup>:** Nasa’s new ‘IceSat-2’ spacecraft is now scanning much of the Earth to an accuracy of 2cm. Its powerful 500kg laser is also able to measure the reflected beam with a horizontal accuracy of <30cm. This image of Antarctica will show over time how much the ice-sheet is shrinking from global warming.

# Jupiter's Storm Systems continue to Intrigue



## **December 13<sup>th</sup>:**

Nasa's Juno mission to the gas giant Jupiter has reached its halfway mark and has revealed new views of the cyclones at the poles.

As it orbits the planet every 53 days - Juno performs a science-gathering dive from pole to pole.

Its sensors take measurements of the magnetic and gravity fields which should also expose Jupiter's structure.

# Lovely Shower on Tenerife



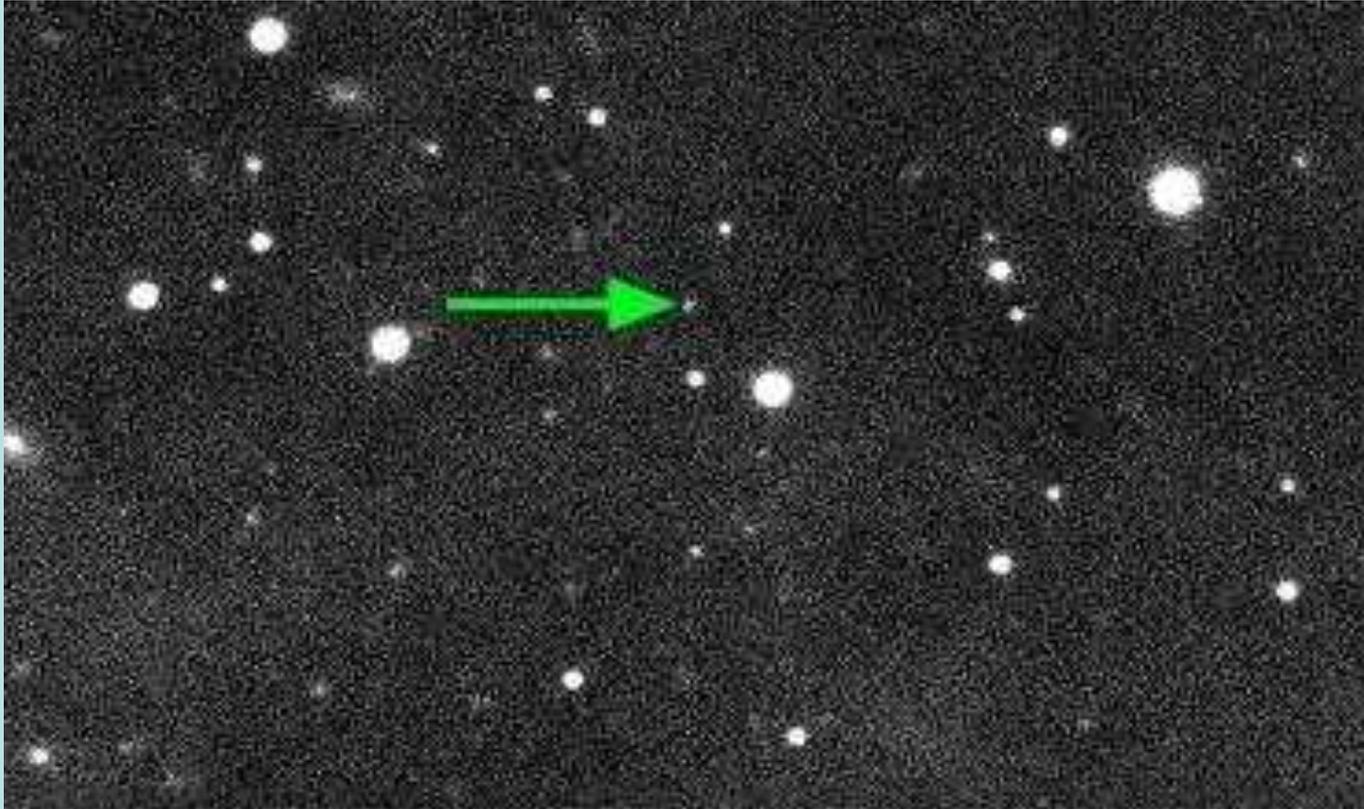
**14<sup>th</sup> December:** Holidaymakers on Tenerife may not have stayed up to watch the Geminid meteors, but the Mount Tiede observatory had at least one telescope pointed at the 'twins' overnight. This composition of 6-hours tracked exposures clearly indicates the radiant. Also in the picture are the Pleiades, Orion, Sirius, Aldebaran and the passing comet Wirtanen.

## Green glowing Comet passes close-by



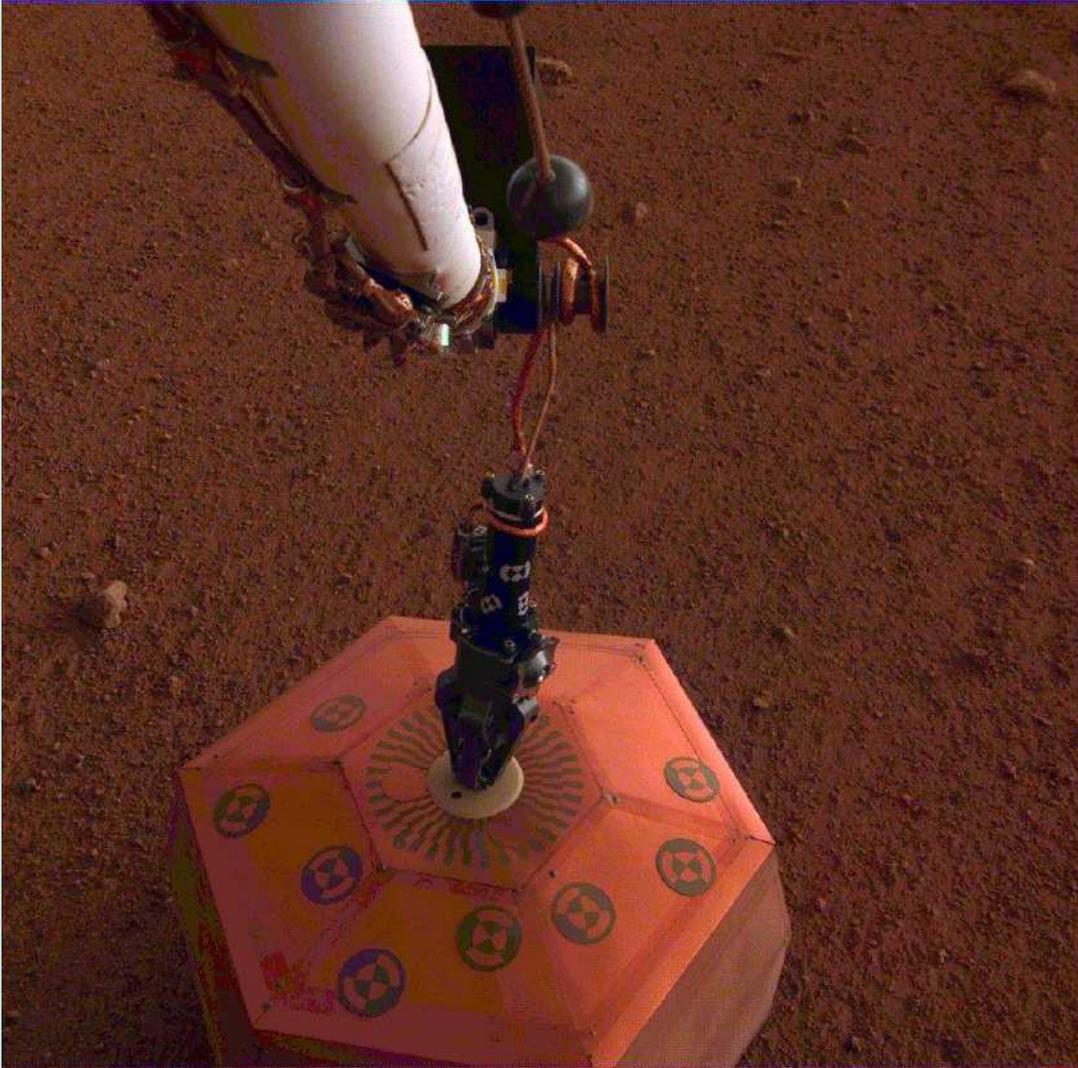
**December 14<sup>th</sup>:** **Comet 46P Wirtanen** glows eerily in this image taken from near Madrid. Comet 46P/Wirtanen is a short-period comet a period of only 5.4 years. It was the original target for the Rosetta mission but the launch window was missed so 67P was Rosetta's target instead. On 16th December it passed only 0.078 AU from Earth, reaching magnitude 4.2.

# A long way away – but it's still one of us!



**17<sup>th</sup> December:** The *Minor Planets Centre* announced the discovery of the so-far most distant object to be part of our solar system. Using telescopes in Hawaii and Chile, astronomers have identified a body provisionally named **2018 VG18**, but nicknamed '**Farout**' by its discoverers about 120 AU from the sun. It is about 500km wide, spherical and orbits the sun every 1000 years or so(?). The previous furthest known object was Eris at 96 AU.

# First Instrument placed on Martian Surface

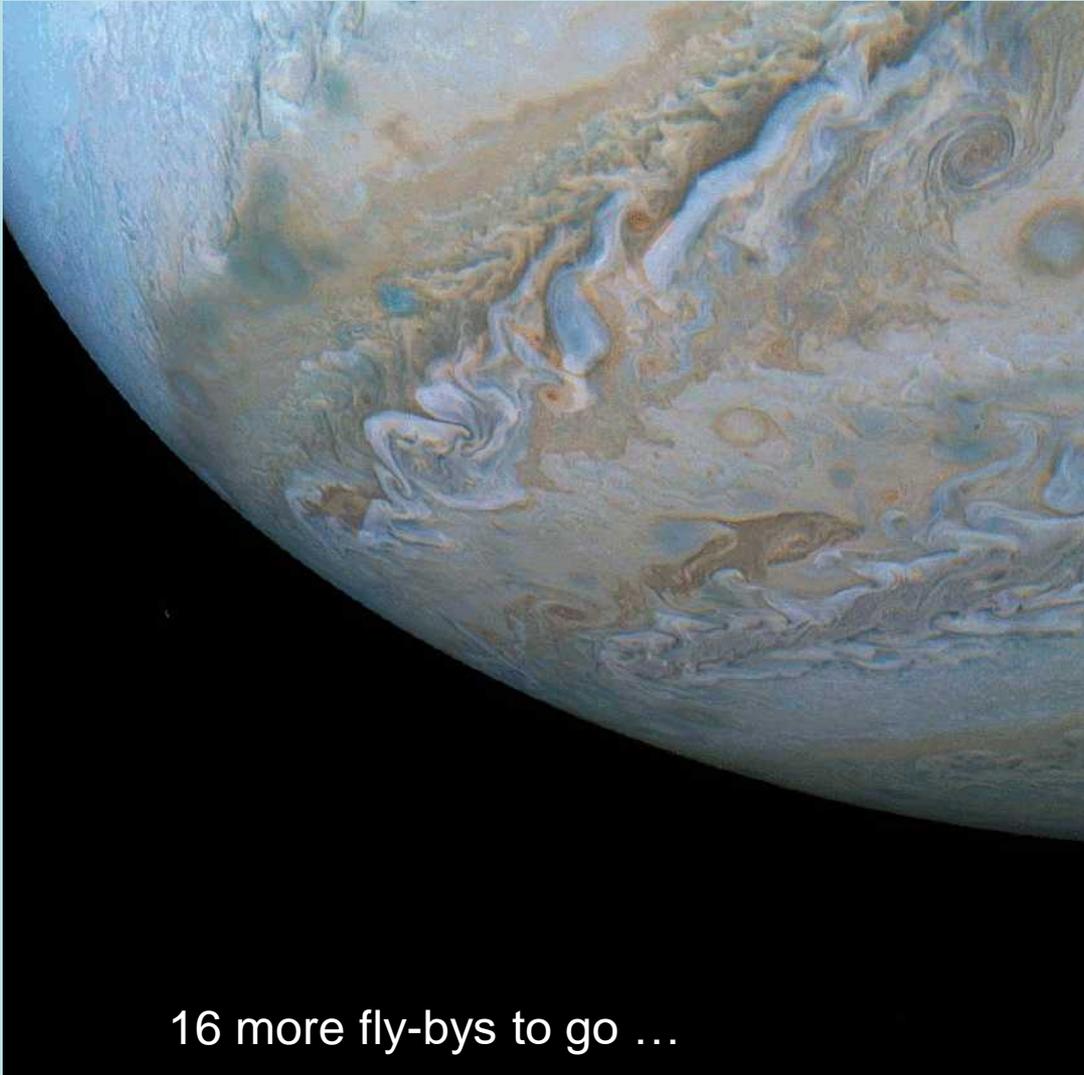


**December 19<sup>th</sup>:** The most important bit of equipment – the seismometer is now in place in front of InSight on the surface where it will be detecting the faint vibrations coming from within the planet. Placing this tool in the best spot is critical for the majority of the science mission.

Next – to decide where to place the tunnelling mole to explore underground !



# Juno makes its 16<sup>th</sup> pass from pole to pole



**December 21<sup>st</sup>:** at 06:49 a.m. GMT NASA's Juno spacecraft was 3,140 miles above Jupiter's cloud tops and hurtling by at a healthy 128,802 mph.

This was the 16th science pass of the gas giant and will mark the solar-powered Juno's *halfway point* in data collection.

This concludes global coverage of Jupiter, with polar passes separated by 22.5 degrees of longitude.

# Mars' Visitors may need Skis



**December 21<sup>st</sup>:** ESA's 'Mars Express' Orbiter took this image of Korolev Crater at Mars' north pole. No sign of Santa's Martian Workshop – but it could be the setting for the Martian Winter Olympics. The crater is 50 miles across, and filled with ice 1.8km thick.

It was named after rocket engineer and spacecraft designer Sergei Korolev, the architect of the Soviet Union's space programme from Sputnik onwards.

## Hubble's "Mother" & NASA's first Chief Astronomer



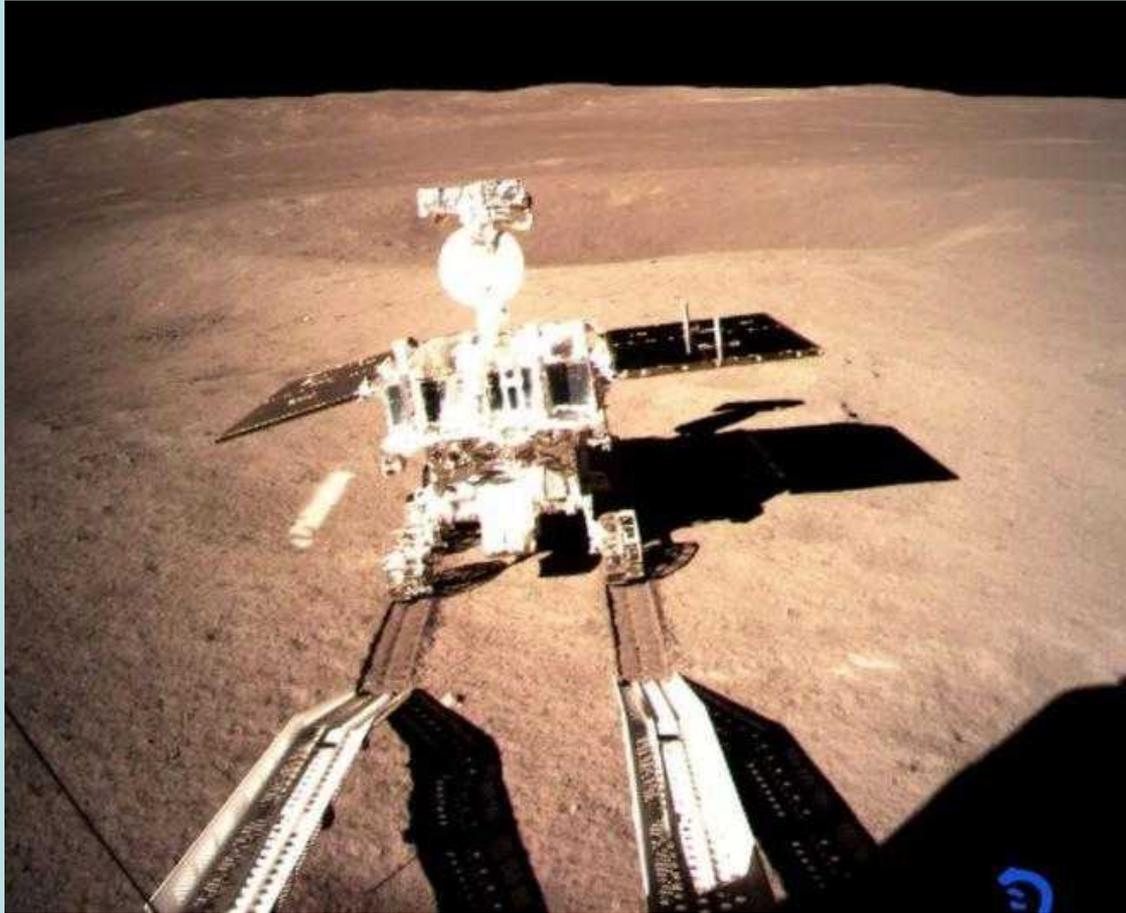
**December 26<sup>th</sup>:** Dr Nancy Grace Roman, the first woman to hold an executive position at NASA died in Maryland on Boxing Day at the age of 93. Known as "Mother of the Hubble" for her work on the early stages of the Hubble Space Telescope, NASA said her most important legacy was the advancement of women in the sciences and the generations of young scientists she inspired.

# Dirty-Grey Snowman?



**January 1<sup>st</sup>** : In the dim light at 6.5 billion km from the Sun, the **New Horizons** spacecraft captured these two frames 38 minutes apart as it sped toward this Kuiper belt object on at 51,000 kph. A *contact binary*, the two lobes of **Ultima Thule** rotate together every 15 hours or so. The larger lobe Ultima, is about 19 km in diameter. Smaller Thule is 14 km across.  
*Data returning slowly...*

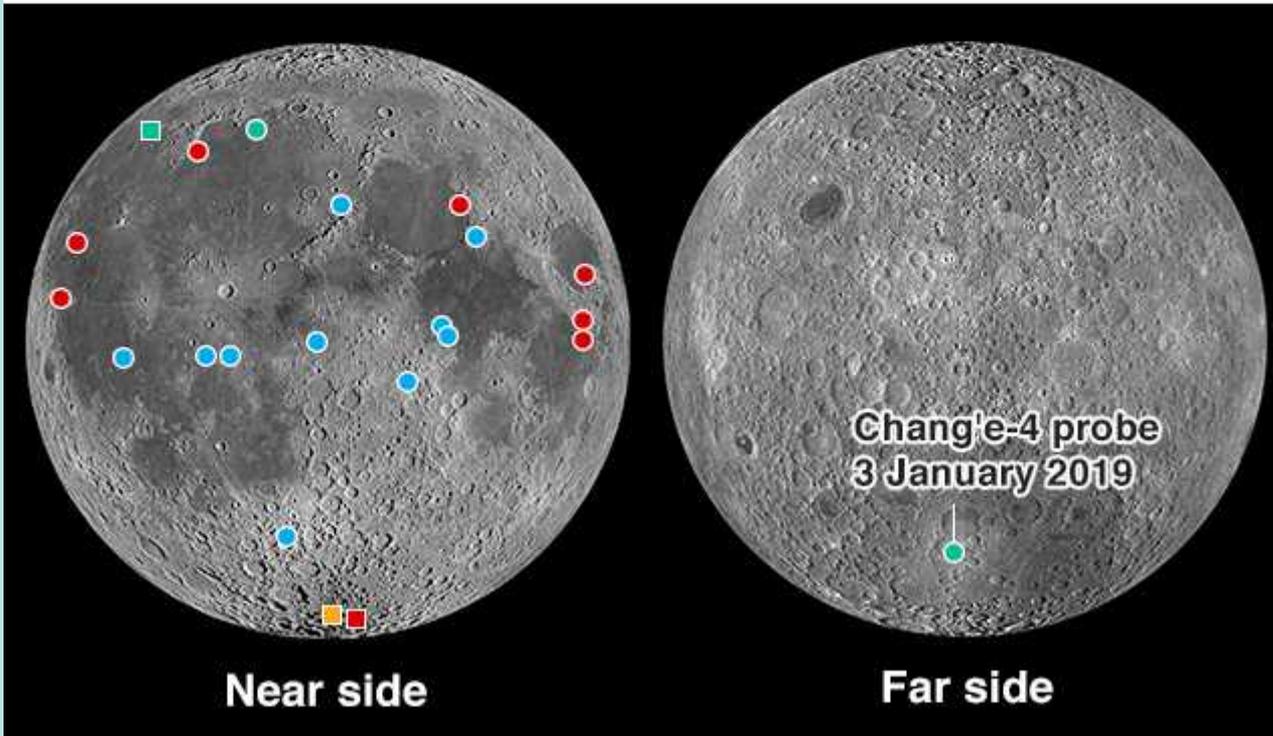
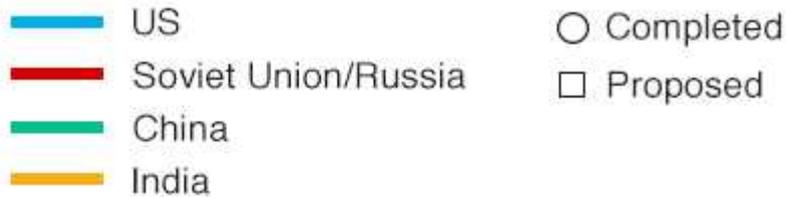
# What's Round the Backside?



**January 3<sup>rd</sup>:** Yutu 2 (White Rabbit) rolls off Chinese Lander **Chang'e-4** probe after it touched down softly on the far side of the moon. Also part of this mission is a relay satellite '**Queqiao**' positioned at a Lagrange point beyond the Moon, which allows communication between the lander and the Beijing control centre.

# 'Good' Lunar Landings to Date

## Sites of successful Moon landings



Source: NASA

BBC

**January 4<sup>th</sup>:** A wide range of lunar sites have been explored over the last 52 years – the majority have been static visits, but a few have involved mobile rovers and even 6 pairs of US Astronauts.

The Chinese probe now on the surface may be the start of new explorations of the mostly unknown far or 'dark' side.

Send anything interesting you  
spot during  
January to:

michael@held.org.uk

**2018:** Total 112 Successful Launches to Orbit

[https://space.skyrocket.de/doc\\_chr/lau2018.htm](https://space.skyrocket.de/doc_chr/lau2018.htm)