

Stars Over Surrey

Astronomy & Spaceflight News

1st March 2019

BROOKLANDSRADIO

ONLINE

The Sound of Surrey



Japanese Probe Captures Asteroid Material

- Hyabusa 2 successfully managed a touch-and-go landing on asteroid Ryugu on 21st February
- It navigated using a previously deployed target marker so it could autonomously manage its landing, avoiding boulders
- Once down it fired a small 5 gramme projectile into the surface, collecting dust grains in a sampling horn
 - sample then sealed into return capsule
- Spent only a few minutes on surface before ascending, but will repeat this twice more at differing locations on surface
 - will depart back to Earth at end of year
 - returning in December 2020



Picture shows Hyabusa's shadow just moments after lift off, from a height of 30 metres. Note marks on surface from ascent thrusters firing.

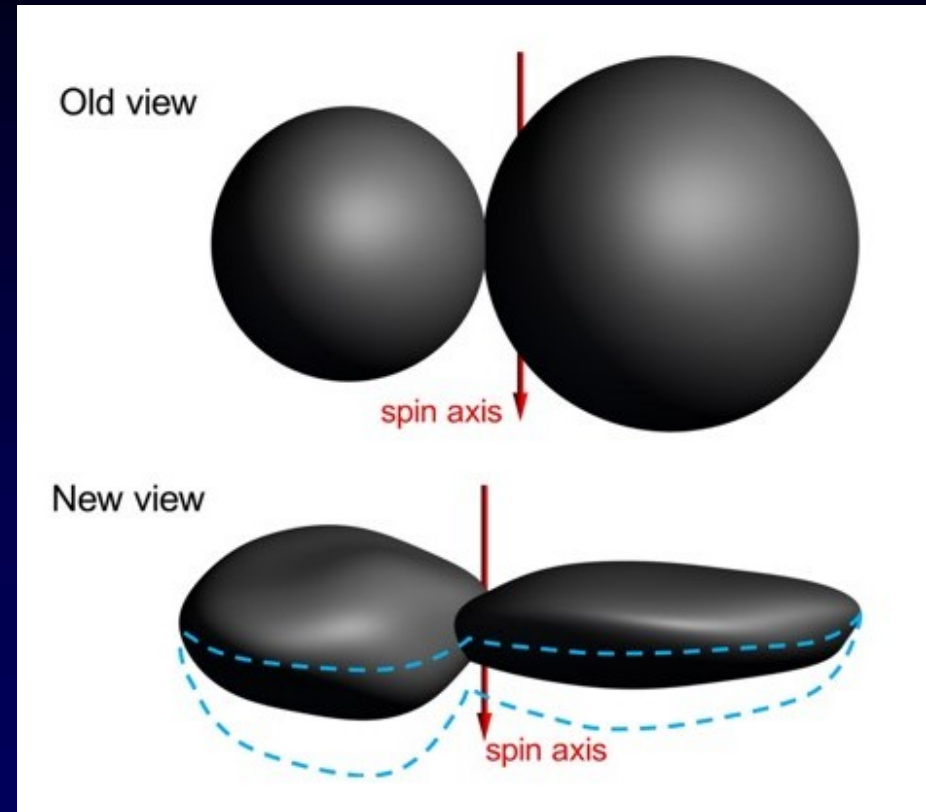
Ultima Thule : Improved Image

- More data returned from New Horizons probe following its flyby
- A higher res image has now been received from the craft's Long Range Reconnaissance Imager camera
 - resolution of 33 metres / pixel
 - pass speed of 32,000 mph!
- New: dark pits & bright circular patches
 - impactors?
 - sublimation pits?
 - collapse pits?



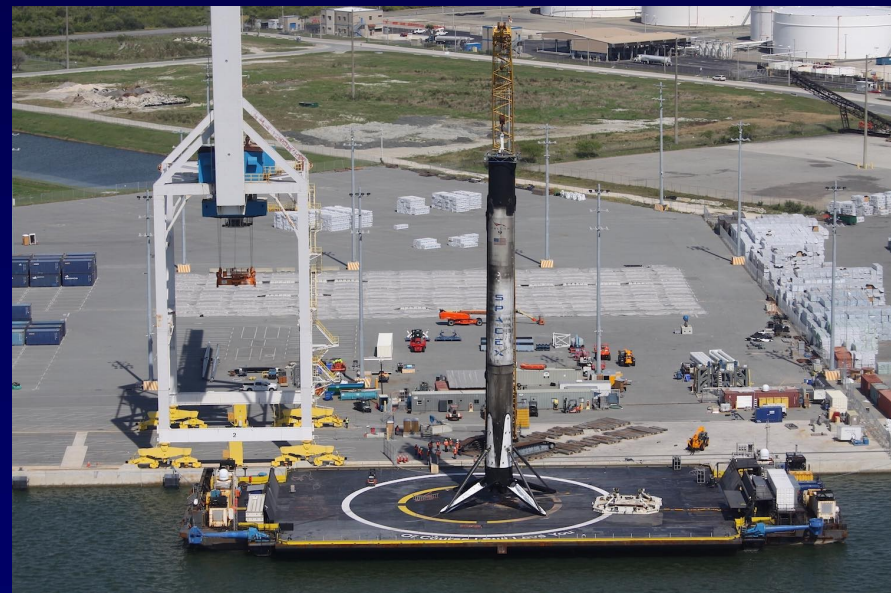
Ultima Thule : Snowman Flattened

- What had thought to be roughly spherical lobes turn out to be flattened.
- As the craft flew past it imaged from a different angle, UT in own shadow
- image blurry as exposure increased to increase camera signal strength
- Shape indicated by occultation of background stars
 - uncertainty indicate in blue
- Scientists admit surprise at how something that shape could have evolved



Space X - misc news

- NASA clears Crew Dragon Test for 2nd March
 - Falcon 9 will launch Crew Dragon to ISS from Canavarel
 - exact rehearsal for 2 man flight in June
 - will be a single mannequin in 7 seater craft
- Falcon 9 used to launch Moon lander had been launched twice before
- Landed safely on barge
 - *“Of Course I Still Love You”*
- Will be flown one last time



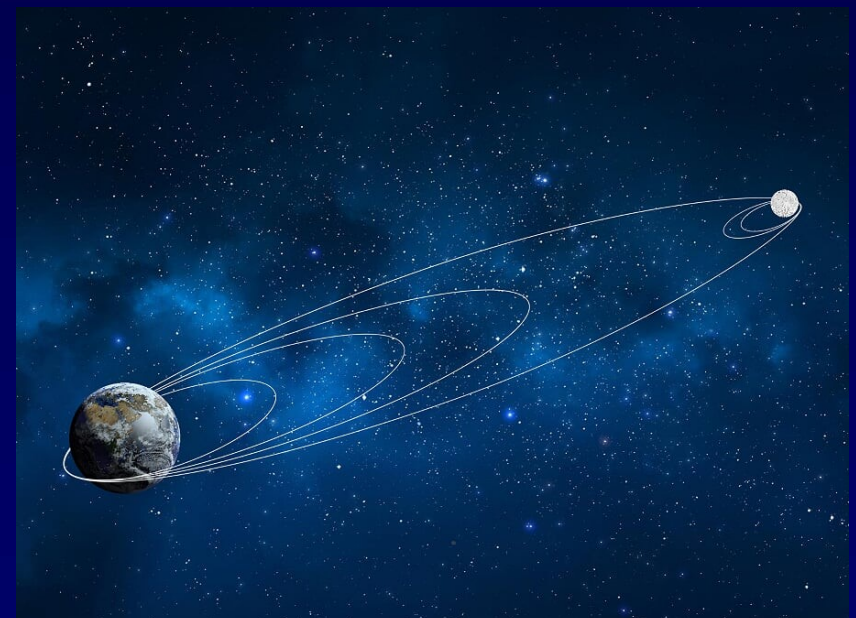
1st “Passenger” Into “Space” for Branson

- 2nd trip into Space for Virgin Galactic's VSS Unity on Friday 22nd
- Crew of two pilots joined this time by VG's chief astronaut trainer
 - Dave Mackay & Mike Masucci, plus Beth Moses
- Faster & higher than before
 - Mach 3.04 and 55 miles up (for USAF & NASA space is 50 miles)
 - NB for everyone else space starts at the Kármán Line
 - 100 km or 62 miles
- Five minutes of weightlessness
 - Beth floated free and moved around spaceship to evaluation test points
- Branson hopes to fly on 20th July



Israeli Moon Lander

- Beresheet launched by Space X Falcon 9 on 22nd Feb
- Will be first privately funded Moon Lander (\$100M)
 - private philanthropists
 - non-profit making organisation
 - technology demonstrator
- UK-made rocket engine
 - Leros, made by Nammo, Bucks
 - gradually extending orbit until captured by Moon on 4th April
 - scheduled to land on 11th April
- Will conduct magnetic field measurement at M.Serenitas
- carries NASA laser reflector



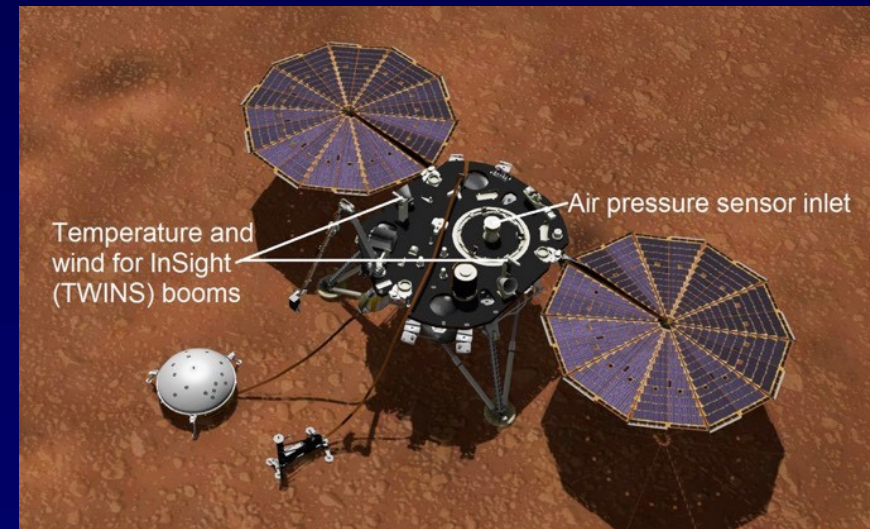
ESA's Exo Mars gets a new name



- ESA's Exo Mars will land at Oxia Planum on Mars in 2020
- Name chosen after 36,000 suggestions in Europe-wide poll
- Mission will search for past or present life, so naming it after someone so closely associated with DNA is most apt
- Tim Peake announce name at Airbus Stevenage, where rover is being assembled.

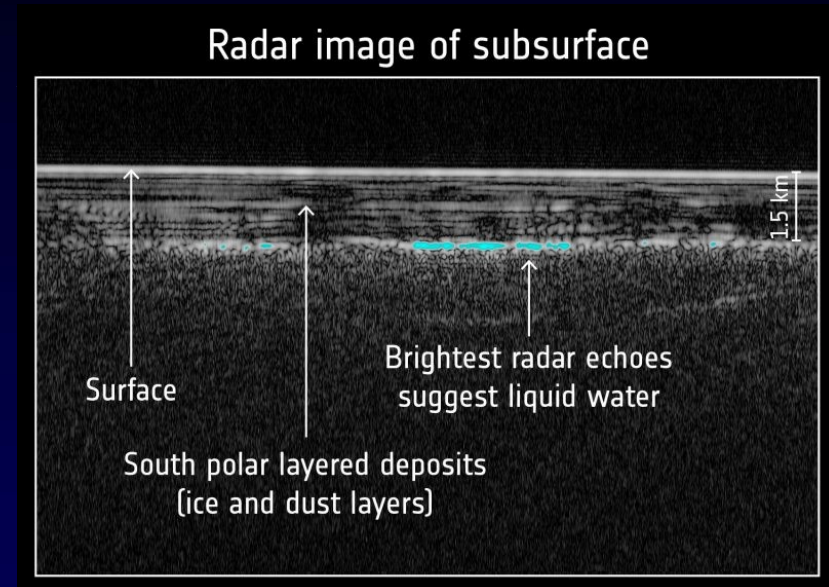
Misc from Mars

- 13th Feb - NASA finally signs off on Opportunity
 - landed in 2004
 - 90 day design lifetime
 - traversed 28 miles
 - lasted until June 2018
 - defeated by global dust storm
 - what a hero!
- Insight lander deploys its sensors onto surface
 - mole begins work this week
- It is now reporting Mars weather on a daily basis
 - has already reported dust-devil activity nearby



Misc from Mars

- Mars has the largest volcanoes in Solar System
 - But these ceased activity millions of years ago
- But might there be some residual volcanic activity deep underground?
- ESA's Mars Express orbiter has detected liquid water under the South Polar ice cap
- A US study team state that no matter what type of salts exist in the ices, it would not melt in Martians conditions
- So, for it to be liquid, there must be a heat source
 - Magma chamber within 10 Km would suffice
 - Liquid water plus heat increases chance of microbial life



Rethink on Milky Way Shape

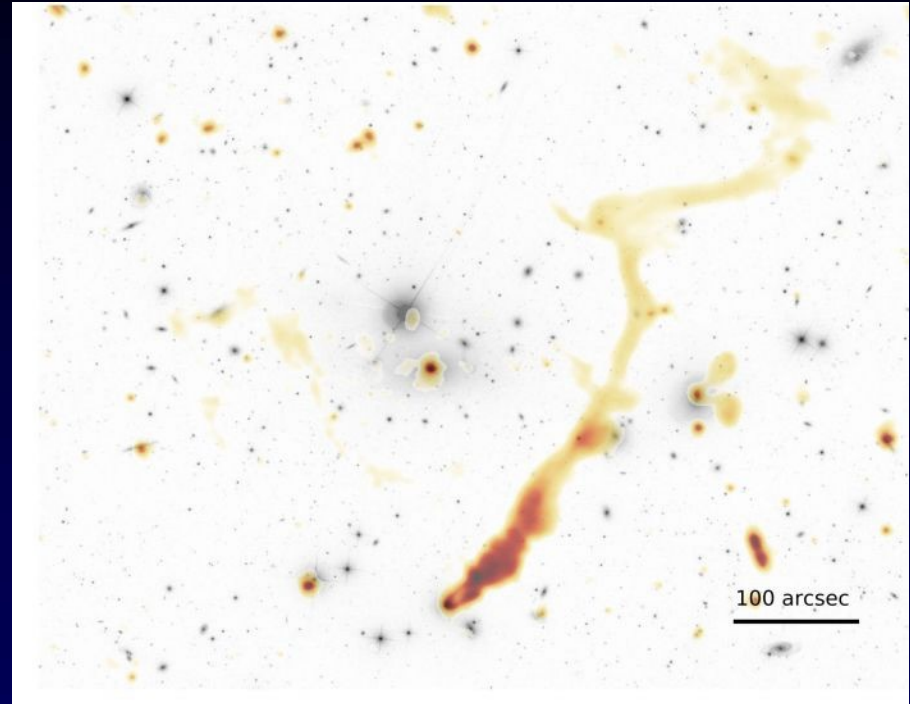
- Had been thought to be a flat spiral, just like M31 in Andromeda
- Recent studies by an Australian/Chinese team used 1,339 Cepheid Variables to produce a 3-D map of the Milky Way
- It indicates that the galaxy is increasingly warped the further away from the core.



Exaggerated but illustrative

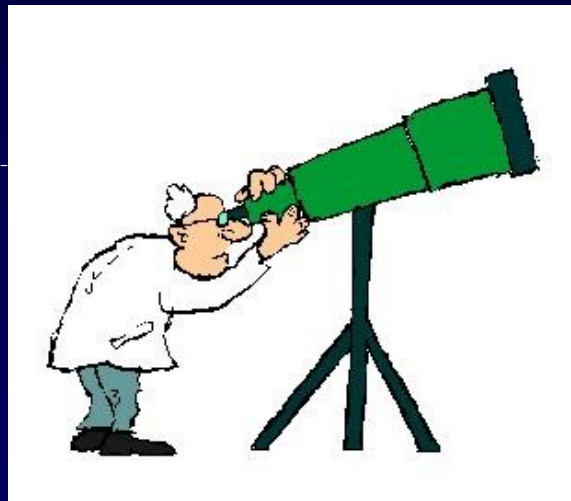
LOFAR Discovers Thousands of Galaxies

- The Low Frequency Array (LOFAR) is an array of high sensitivity radio telescopes
 - mostly in Netherlands but across Europe, inc. UK
- Currently underway charting a sky survey.
- The first 2% of survey data has revealed over 300,000 radio sources
- most are previously unknown distant galaxies
- data should help researchers learn about growth of supermassive black holes & galaxy cluster mergers



What's Up!

For March 2019



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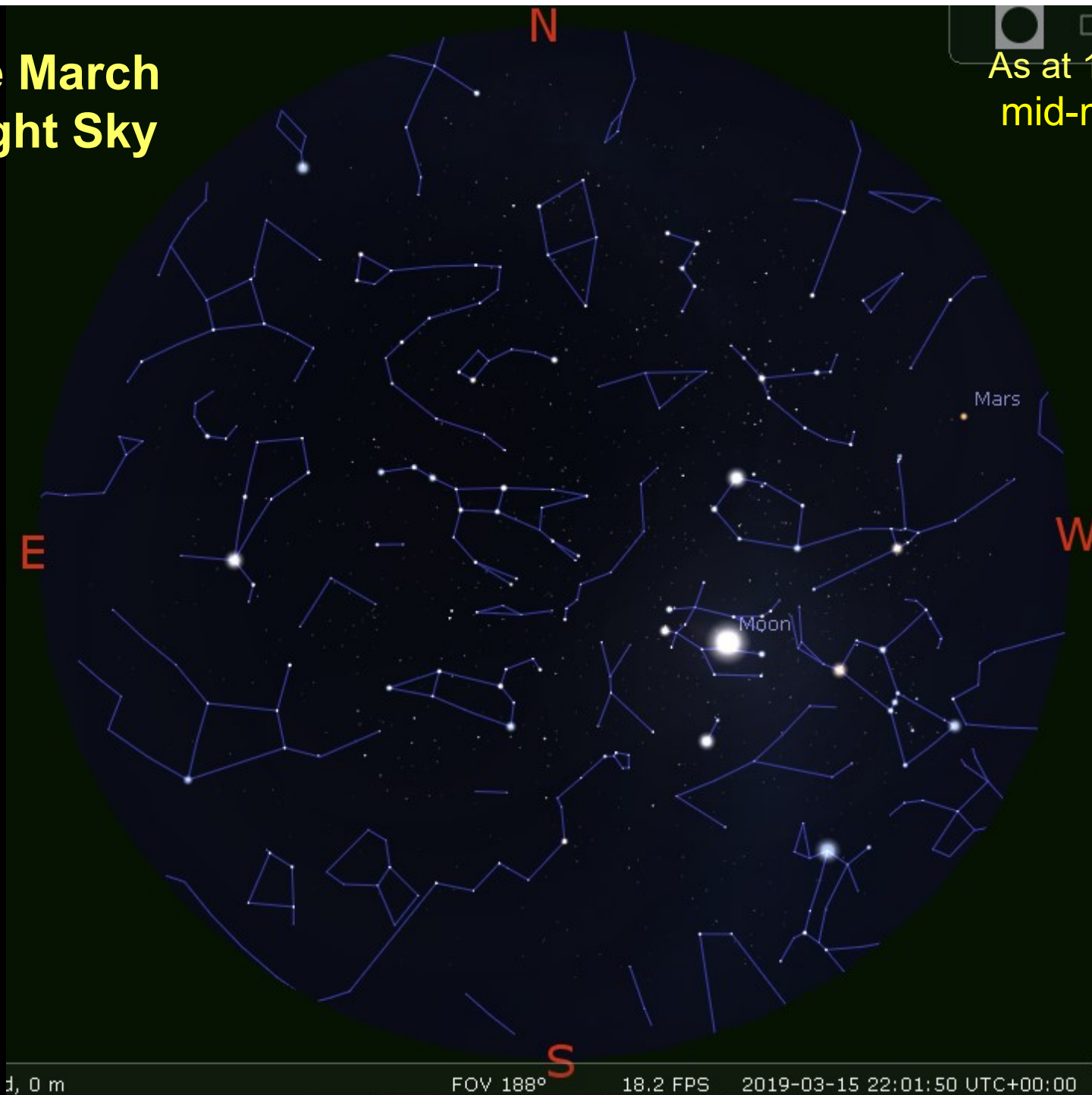
ONLINE

The Sound of Surrey



The March Night Sky

As at 10 p.m.
mid-month



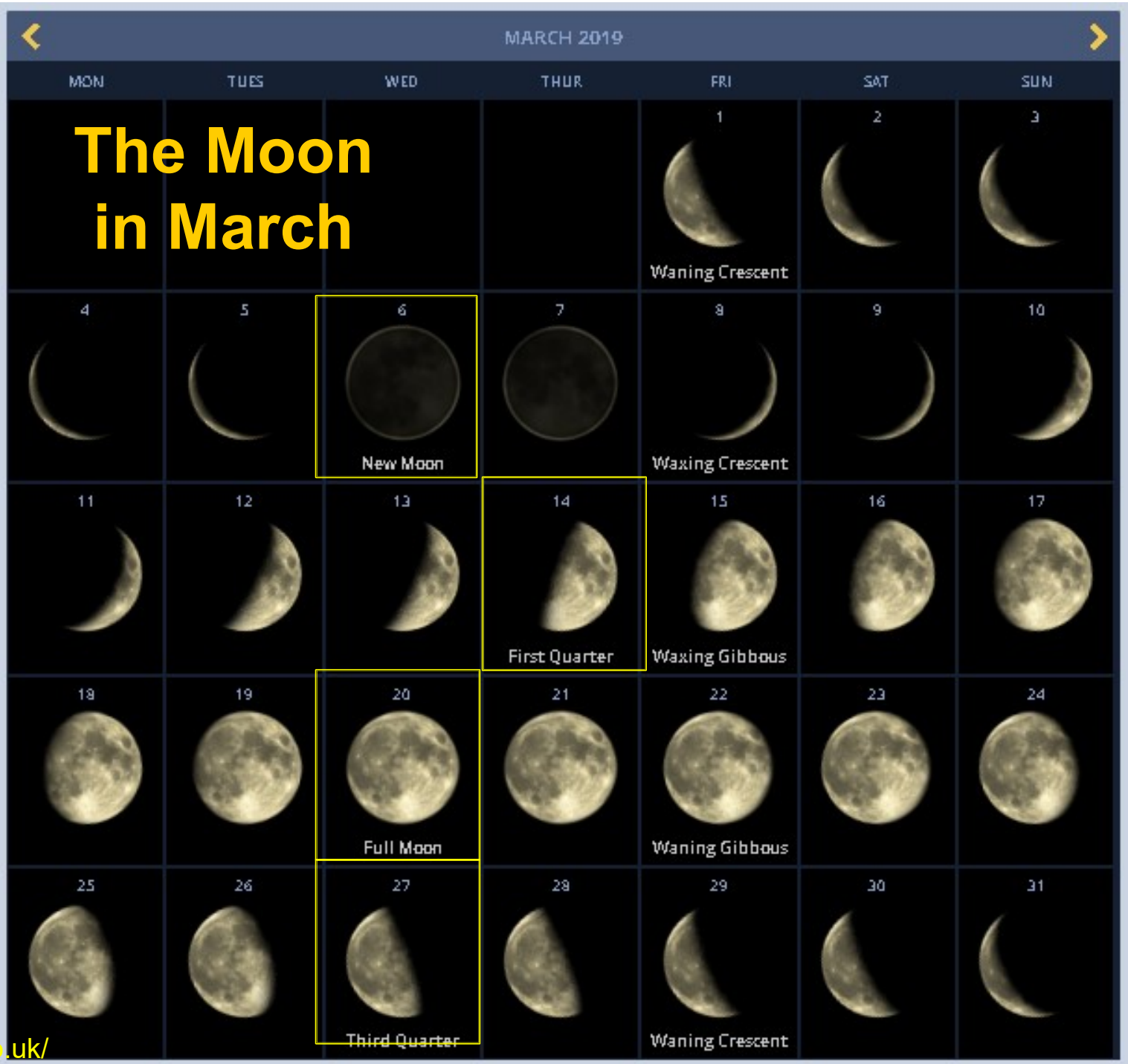
d, 0 m

FOV 188°

18.2 FPS

2019-03-15 22:01:50 UTC+00:00

The Moon in March



What's Up - Planets

- Mercury

- An evening object for the first 10 days only, in West at mag +0.2, setting about 1½ hrs after sunset at start.

- Venus

- A brilliant morning object at mag -4.0 but very low in the SE, rising about 1½ hrs before sunrise at start of month, less than an hour by end.

- Mars

- Still a good evening object in the South Western skies throughout the month. Decreasing in brightness as the month draws on and the planet recedes from us, moving from Aries into Taurus, passing close to the Pleiades.

What's Up - Planets

- Jupiter

- Rising earlier as the month draws one, a bright morning object, but quite low in the South South East. Very bright at Mag -2.1.

- Saturn

- Another morning object, improving during the month. Mag +1.0, but low in South East.




- Uranus

- Starts off still well placed in West South West but disappears into the twilight murk by the end of the month

- Neptune

- Not visible this month

Phenomena in March

- **1st** Venus, Saturn, crescent Moon, and Jupiter all nicely lined up together in SSE at 06.00 hrs 
- **2nd & 3rd** Increasingly slender Moon either side of Venus, approx 7° to West on 2nd, nearly 5° to East on 3rd
- **13th** Lunar X and V (“claire obscur” effects) at best during daylight hours, at 16.45 hrs 
- **27th** Jupiter just 1° south of waning gibbous Moon shortly after they rise at 01.45 hrs
- **29th** Moon just less than 1° north of Saturn 
- **31st** Mars is 3° south of M45 Pleiades

Meetings at Local Societies

- **Guildford AS** *Lecture Theatre L, Uni of Surrey*
 - Thursday 7th March, 7.30 p.m.
 - **How Clumpy Is Dark Matter In the Milky Way?**
 - » Dr Denis Erkal
 - » Dept of Physics, University of Surrey

Meetings at Local Societies

- **Farnham AS Aldershot Cricket Club**
 - Tuesday 12th March, 7.45 p.m.
 - **Clock Drive Update**
 - Danny Thomas
 - » Farnham AS
 - **An Observatory Disguised As A Shed**
 - John Price
 - » Farnham AS

Meetings at Local Societies

- **Croydon AS** *Royal Russell School, Coombe Lane, Croydon*
 - Friday 8th March, 19.45 hrs
 - The Search For Extra Terrestrial Intelligence
 - Jonathan Tennyson
 - Friday 22nd March 19.45 hrs
 - TBA

Meetings at Local Societies

- **Ewell AS** *Nonsuch High School for Girls, Cheam*
 - Friday 8th March, 19.45 hrs
 - **Journey To The Centre Of The Earth**
 - Dr David Whitehouse

University of Surrey

- **Department of Physics**

- Wednesday 20th March
19.00 hrs

- Lecture Theatre D

- **Talk**

- title & speaker tbc

- **Stargazing (if clear)**

- or

- **Night Sky Talk**

- Free event, but booking
required, via web site

- **Astronomy Evenings**



Astronomy on TV

- **The Sky at Night**

- Not airing this month

- Back in April



"That's all Folks!"