**Night Sky 2018 – January**

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| **Moon Phases** | **Sunrise** | **Sunset** | **Mercury Rises** |

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| Full Moon – 2nd  Last Quarter – 8th  New Moon – 17th  First Quarter – 24th  Full Moon – 31st | 1st – 8:14am  10th – 8:12am  20th – 8:03am  30th – 7:51am | 1st – 4:15pm  10th – 4:26pm  20th – 4:41pm  30th – 4:58pm | 1st – 6:29am  5th – 6:37am  10th – 6:51am  15th – 7:05am  20th – 7:17am |

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| **Moon Rise (New-Full)** | **Moon Set (New-Full)** | **Moon Rise (Full-New)** | **Moon Set (Full-New)** |
| 1st – 4:02pm  2nd – 5:07pm **(Full)**  - - - - - - - - - -  18th – 8:47am  19th – 9:17am  20th – 9:44am  21st – 10:09am  22nd – 10:32am  23rd – 10:55am  24th – 11:19am **(FQ)**  25th – 11:46am  26th – 12:18pm  27th – 12:56pm  28th – 1:44pm  29th – 2:42pm  30th – 3:51pm  31st – 5:08pm **(Full)**  ------------------  A useful site: [www.heavens-above.com](http://www.heavens-above.com/) | 1st – 7:08am  2nd – 8:14am **(Full)**  - - - - - - - - - -  18th – 6:12pm  19th – 7:16pm  20th – 8:21pm  21st – 9:28pm  22nd – 10:37pm  23rd – 11:47pm  24th – **(No MS) (FQ)**  25th – 1:00am  26th – 2:14am  27th – 3:29am  28th – 4:43am  29th – 5:52am  30th - 6:52am  31st - 7:41am **(Full)**  ------------------    Adrian S Zielonka | 3rd – 6:21pm  4th – 7:39pm  5th – 8:57pm  6th – 10:12pm  7th – 11:25pm  8th – **(No MR) (LQ)**  9th – 12:34am  10th – 1:42am  11th – 2:47am  12th – 3:51am  13th – 4:52am  14th – 5:50am  15th – 6:43am  16th – 7:30am  17th – 8:11am**(NEW)**      ------------------ | 3rd – 9:09am  4th – 9:53am  5th – 10:28am  6th – 10:58am  7th – 11:24am  8th – 11:48am **(LQ)**  9th – 12:11pm  10th – 12:34pm  11th – 1:00pm  12th – 1:28pm  13th – 2:01pm  14th – 2:40pm  15th – 3:24pm  16th – 4:15pm  17th – 5:11pm**(NEW)**      ------------------ |

From the **26th Dec** – **15th Jan** the **ISS** will be visible in the early morning sky. Please visit the website above for further details.

**Mercury** reaches greatest western elongation from the **Sun** on the **1st**.

 On the morning of the **2nd**, **Comet 24P Schaumasse** (12 magnitude as on 11th Dec) will be just inside the constellation of **Virgo** and less than **1 degree** from the **3.87 magnitude** star **mu Virginis**. (for further details please visit website above)

 From the **3rd – 6th Comet C/2016 R2 Panstarrs** will be passing very close to the **3.65 magnitude** star **gamma Tauri** in the constellation of **Taurus**. On the **5th** it will be at its closest to the star and **2.088 AU** from the **Earth**. It was at 10 magnitude on 11th Dec. A star chart and four daily positions will show its location for **9:00pm**. This will be sent separately to this newsletter as **2/3**. It is at perihelion in June 2018. (Strong binoculars or telescope will be best for viewing this)

**Comet C/2017 T1 Heinze** is at its closest to the **Earth** on **3rd/4th**. It will be just **0.223AU** from us which is less than a quarter of the distance to the **Sun**. It was at 14th magnitude on the 11th Dec. It may brighten somewhat as it approaches the Sun. This month it will pass through the constellations of Lynx, Camelopardalis, Cassiopeia, Andromeda, Lacerta and Pegasus in the northern hemisphere. It will reach perihelion on the 21st February. (For further details please visit website above)

 The **Quadrantid** meteor shower reaches its peak on the night of the **3rd/4th**. The full Moon may be a hindrance to all but the bright ones.

 In the mornings between the **3rd** and the **10th**, **Mars**and **Jupiter** will be no more than **2 degrees**apart. At **6:30am**they will be in the **SSE**.

 There is a planned launch on the **4th**\*from Kennedy Space Centre, Florida of the **Falcon 9 Zuma** rocket. The **Falcon 9** first stage will attempt a return to launch site for a propulsive landing at Cape Canaveral's Landing Zone 1.

 On the**4th** at midnight the bright star **Regulus** will be just 4 degrees to the lower left of the **Moon**.

 An occultation of the **Regulus** by the **Moon**occurs on the morning of the **5th** starting at **7:50am** and would be visible from Somerset except that the sky will be beginning to brighten just beforehand. If you arise in the morning before it’s too light, do look towards the western sky to see the **Moon** slowly getting closer to **Regulus**.

 Around **6:00am** on the **7th** look for **Jupiter** and **Mars** in the south eastern sky. There are in an extremely close conjunction together. In fact they may seem to touch one another. At **6:30am** they will be in the **SSE** and **20 degrees** above the horizon.

 At **11:35pm** on the 7th the **Moon** will be just **1 degree** above the horizon and due **East**.

**Pluto** is at superior conjunction with the**Sun**on the**9th**.

**Venus** is in conjunction with the **Sun** on the **9th** and is not visible this month.

On the night of the **10th**, **Comet 62P Tsuchinshan** will be in the **Virgo** constellation. At **2:00am** it will be in a straight line with **1st magnitude** star **Spica** and the **3.38 magnitude** star **zeta Virginis**. It will be about **3 degrees** to the upper left of **zeta Virginis**. In **mid-February** it will be at its closest to**Earth**at a distance of**1.025AU**. It was at 12 magnitude on 11th Dec. (A telescope will be best for viewing this) For further details please visit website above.

On the **10th** at **6:30am**, **Jupiter** will be **13 degrees** to the lower left of the Moon with **Mars** **1½** **degrees** lower left of **Jupiter**.

 At **6:30am** on the **11th**, the **Moon**will be in **SSE**. **Jupiter** and **Mars** will be just **1½ degrees** apart and below the **Moon**. **Jupiter** being **3½ degrees** and **Mars** **4½ degrees** away from the **Moon**.

 On the **12th** at **6:30am**, **Mars** will be **9½ degrees** to the right of the crescent **Moon** with **Jupiter**, **2 degrees** to the upper right of **Mars**.

 On the **13th at** **6:13am** the crescent **Moon** will be due south east. At **7:30am**, **Saturn** and **Mercury** are in close conjunction and due south east, and **4 degrees** above the horizon.**Mercury** will be **½ degree**below **Saturn**.

 On the **14th** at **7:00am** the thin crescent **Moon** will be in the **SE** with **Saturn** just **1 degree** above the horizon and **9 degrees** to the lower left of the **Moon**. At **7:15am**, **Saturn**will be **3 degrees** above the horizon with **Mercury**,**2 degrees**to the lower left of it.

 At **7:15am**on the **15th** a very thin crescent **Moon** will be **3 degrees** above the south eastern horizon with **Saturn** **3½ degrees** to the right of it and **Mercury**, **2 degrees** midway below them, forming a nice triangle.

 On the evening of the **16th**\* between **9:00pm** and **9:35pm** there is a scheduled launch of **Epsilon Asnaro 2**from **Uchinoura Space Centre**, **Japan**. With a mass of 570 kilograms, it can deliver all-weather, round-the-clock radar imagery at a ground sample distance of one metre and an observable width of 10km.

 On the **18th** a very thin crescent **Moon** will be seen low in the south western sky from around **5:20pm** till it sets soon after **6:00pm**.

 At **5:16pm** on the **19th** the **Moon** will be due south west.

 On the **20th** at **5:45pm**, **Neptune** will be **3 degrees** directly above the **Moon** and **1** degree to the above left of the **3.74 magnitude** star **Hudoor (Ekchusus)** in the constellation of **Aquarius.**

 At **7:30pm** on the **23rd**, **Uranus** will be **7 degrees** directly above the **Moon**.

**Venus** reaches aphelion (its most distant from the **Sun** in its orbit) on the **23rd**.

 On the **24th** at **6:45pm**, **Uranus** will be **10½ degrees** directly to the right of the **Moon**.

 At **7:00pm** on the **25th** the **Moon** will be due south.

 On the **25th**\* there is a planned launch of an **Ariane 5 ECA** rocket from the **Guiana Space Centre** in **French Guiana**. It will carry a pair of commercial satellites **(SES 14**&**Al Yah 3)** into Geostationary Transfer Orbit. **SES 14**is an all electric satellite built by **Airbus Defence and Space**and carries **NASA's** **Global-Scale Observations of the Limb and Disk (GOLD)** instrument designed to study the interactions of Earth's thermosphere with the solar wind. **Al Yah 3**, built by **Orbital ATK**, hosts a powerful Ka-Band payload delivering 58 spot beams to deliver broadband services to Africa and Brazil.

 On the **27th** at **6:00pm** the bright star **Aldebaran** in **Taurus** will be **5 degrees** to the upper right of the **Moon**. An occultation of **Aldebaran** by the **Moon** occurs this day but will only be seen from **Alaska** and most of **Asia**.

**Comet185P Petriew** will be at perihelion on the **27th** and will travel through the constellations of **Capricornus** and **Aquarius** this month. It will be nearest to earth **mid-February**. This is currently a very faint object. (If I notice that this or the other comets change brightness I will try to let you know)

 At **6:15pm** on the **30th** the **Moon** will be in a straight line with the bright stars **Castor** and **Pollox** in **Gemini**.

 A **“Total Eclipse of the Moon”** occurs on the **31st**. Unfortunately it will not be seen here in the **UK**, **Western Europe**or **South America**. At **5:30pm** the **Full Moon** will be **2 degrees** above the horizon and due **ENE**.

 By the **31st**, **Venus** sets just 17 minutes after the **Sun** so its likely to be seen this month until early to **mid-February** when the planet will become more evident in the evening sky as dusk sets in. It seems a long time since we had some bright planets to view during the evenings.

 \* = Dates and times are subject to change.

 There are other launches planned this month from **Satish Dhawan, India; Mahia, New Zealand; Vandenberg Air Force Base, California; Cape Canaveral, Florida; Jiuquan, China; Kwajalein Atoll in the Republic of the Marshall Islands**.

**Fact:** **Enki Catena** is a chain of 13 impact craters on **Ganymede**, caused by a fragmented space body. This chain was probably formed by a comet which was pulled into pieces by **Jupiter's** gravity as it passed too close to the planet. Soon after the breakup, the fragments crashed onto **Ganymede** in rapid succession. There are at least 20 catenas or catenae on the surface of our **Moon**. (photo of **Enki Catena**will be sent separately as **3/3**)

**News:** The first interstellar object spotted passing through the solar system, called **'Oumuamua'**, may have been more like a comet in disguise.

Professor Alan Fitzsimmons from the Queen's University Belfast, Northern Ireland says there is much more “icy stuff than rocky stuff in the solar system, making it more likely for emissaries from other systems to also be icy, if other solar systems evolved the same way.

“We know that our solar system has ejected many more icy bodies than rocky bodies” says Fitzsimmons.

As our solar system formed, planets made of gas and ice near the outer edges of the solar system ejected trillions of objects, Fitzsimmons said. In addition, the mass of small icy bodies at the outermost reaches of the solar system, known as the Oort cloud, has lost objects over billions of years due to gravitational disruption from other stars. It was therefore logical for astronomers to expect that the first interstellar visit they would see should be a comet.

Given that this object passed relatively close to our Sun as it was travelling through our solar system, one would expect any ices on the surface to basically be heated and it should behave like a comet.

Astronomers observing it with their telescopes have concluded that the object must be rocky in nature – an asteroid. However, when Fitzsimmons and his colleagues examined data on the surface of the object more closely, they found it doesn't look like a typical asteroid either.

“We didn't see any signs of typical spectroscopic signatures that you would expect from the minerals on the surface of an asteroid we see in our solar system”, Fitzsimmons said. “ It rather seems to resemble the (icy) objects that are there in the outer solar system. That kind of got our head scratching. If the object had, originally at least, ice in it, what's happened to it?

Fitzsimmons and his colleagues looked at older studies and laboratory experiments that tried to find out what happens to icy bodies, such as comets, that are exposed for a long time to energetic particles and cosmic rays. These studies suggest that the ice from the surface layers of such bodies evaporates because of the cosmic enviroment.

“What gets left transforms itself into a relatively rigid and dessiccated surface held together by carbon compounds, which at the same time gives a sort of a reddish, pinkish colour”, Fitzsimmons said. “And thats what we saw in our spectra”.

Researchers studying the interstellar object said that it might have an icy core concealed by a rocky, protective crust.

The astronomers ran a series of computer experiments to model the behavior of the now icy 'Oumuamua'. They found that if the object's crust was only 20 inches thick, it would protect the ice at the object's core from the heat of the Sun, thus preventing it from displaying the telltale signs of gas and dust leaving the comet.

In a separate paper that will be published in the Astrophysical Journal Letters the end of December 2017, Fitzsimmons colleague Michele Bannister, also from Queen's University, looked at further properties of 'Oumuamua' in the near-infrared spectrum and compared the data with those on similar objects in the outer solar system. She found staggering similarities.

“We've discovered that this is a planetesimal with a well-baked crust that looks a lot like the tiniest worlds in the outer regions of our solar system”, Bannister said in a statement.

While Oumuamua's arrival has been one of the most significant astronomical events of 2017, Fitzsimmons and Bannister expect that such occurrences will become rather common in the future. Similar objects likely make it into the solar system fairly regularly, the astronomers said, but they are usually too faint to spot with current telescopes. As telescope technology advances, Fitzsimmons said he expects that astronomers in the not so distant future will be able to study such interlopers perhaps every year.