

## MKAS Sky Notes April 2020

As we move into April following the spring forward into [BST] British Summer Time those of you who have been observing the Sun looking for Sunspots you will unfortunately have been very disappointed! So why not look for another target produced by the sun just after sunset.....the ISS.

All sightings will occur within a few hours before or after sunrise or sunset. This is the optimum viewing period as the sun-light reflects off the space station and so contrasts the ISS against the darker sky. The ISS looks very much like an airplane or bright star moving across the sky at speed only it doesn't have flashing lights or change direction. Typically airplanes fly at about 600 mph the Space Station flies at 17,500mph!

The chart below shows when the ISS is visible this month but you will need a good clear horizon as the station will be very low in the sky only achieving a maximum elevation of 29° on the Thursday 2<sup>nd</sup>.

**DATE & TIME** is when the sighting opportunity will begin in your local time zone. All sightings will occur within a few hours before or after sunrise or sunset. This is the optimum viewing period as the sun reflects off the space station and contrasts it against the darker sky.

**VISIBLE** is the maximum time period the space station is visible before crossing back below the horizon.

**MAX HEIGHT** is measured in degrees (also known as elevation). It represents the height of the space station from the horizon in the night sky. The horizon is at zero degrees, and directly overhead is ninety degrees. If you hold your fist at arm's length and place your fist resting on the horizon, the top will be about 10 degrees.

**APPEARS** is the location in the sky where the station will be visible first. This value, like maximum height, also is measured in degrees from the horizon. The letters represent compass directions -- N is north, WNW is west by northwest, and so on.

**DISAPPEARS** represents where in the night sky the International Space Station will leave your field of view.

Date	Visible	Max Height*	Appears	Disappears
Wed Apr 1, 8:03 PM	< 1 min	12°	12° above ESE	12° above ESE
Wed Apr 1, 9:34 PM	3 min	21°	10° above W	20° above SSW
Thu Apr 2, 8:48 PM	4 min	29°	18° above WSW	14° above SSE
Fri Apr 3, 9:38 PM	< 1 min	10°	10° above SW	10° above SW
Sat Apr 4, 8:50 PM	4 min	15°	10° above WSW	10° above S

Thursday 2<sup>nd</sup> April offers the best sighting opportunity visible to the naked eye, it looks like a fast-moving plane only much higher and but traveling thousands of miles an hour faster!

<https://spotthestation.nasa.gov>

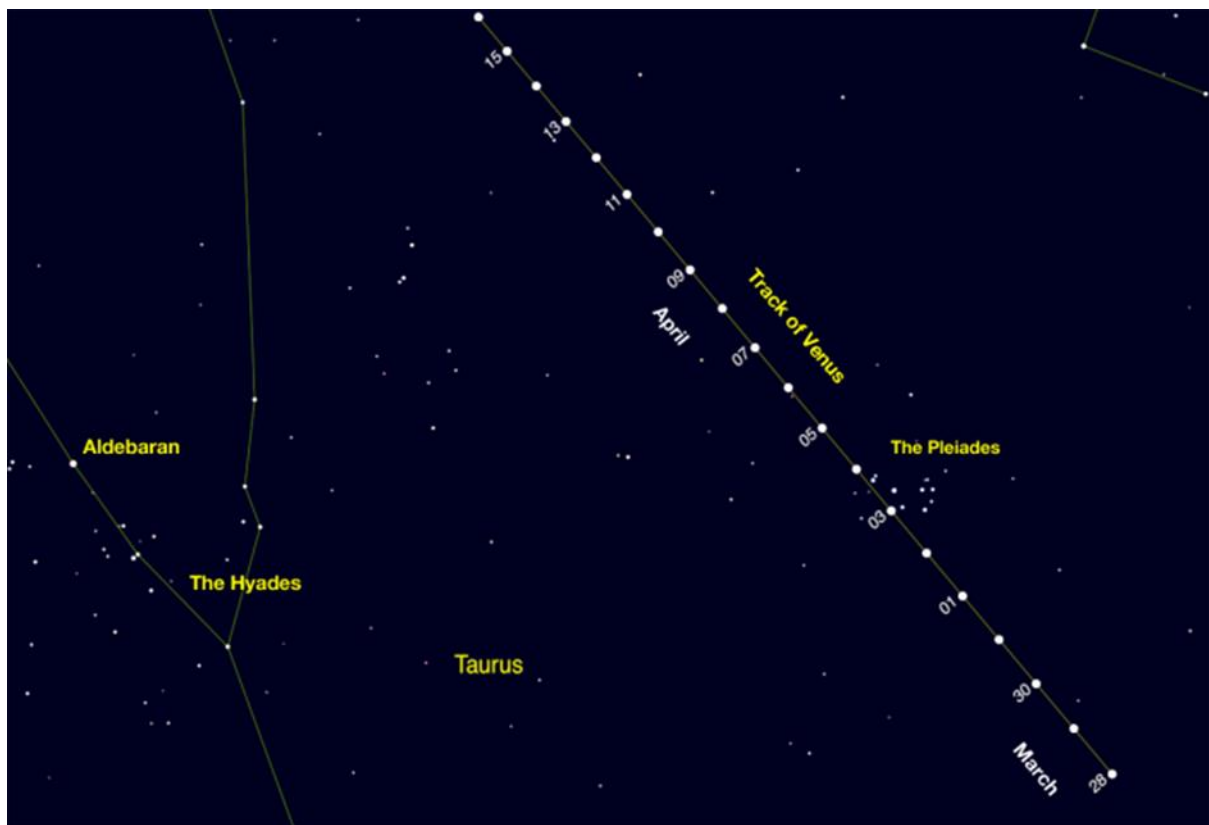
## The Planets of the Solar System this month

### Mercury

The closest planet to the Sun rises before the Sun in the first half of April, but the angle of its orbit to the horizon means it will be too low to see from northern latitudes. The situation is very different from the southern hemisphere, where Mercury will be visible above the eastern horizon before dawn during the first two weeks of the month. Its elevation in pre-dawn twilight is as much as  $15^\circ$  at the start of April, and is still  $10^\circ$  or so during the second week. Mercury sinks back towards the Sun after this, as it heads towards superior conjunction, when it will lie on the far side of the Sun,

### Venus

The second planet from the Sun, and our inner neighbour in the Solar System, continues to shine brilliantly in the evening sky. It stands high in the west as soon as the sky darkens at dusk from northern locations, and is lower in the evening sky, but still easily visible, from the southern hemisphere. The highlight of the current apparition of Venus comes on April 3 when the planet will lie in front of the famous and bright star cluster the Pleiades, commonly known as the Seven Sisters.



Position of Venus tracking through M42 from 28<sup>th</sup> March to 15<sup>th</sup> April 2020

### **Mars**

Mars is in the morning sky, and gradually distancing itself from the Sun, despite racing eastwards from day to day as it travels in its 687-day orbit. It brightens from magnitude 1 to magnitude 0.6 over the course of the month. Mars spends April in Capricornus. The red planet is still too far away to show any detail on its surface in a small telescope. See the waning crescent Moon pass close to Mars in the sky on April 16

### **Jupiter**

It is now easy to see Jupiter, in the morning sky, because it rises more than two and a half hours before the Sun from mid-northern latitudes at the start of April, and earlier still by month's end. From these locations, such as the USA and Europe, Jupiter will remain low in the sky because it is currently in the southernmost zodiacal constellation of Sagittarius. If you are in the southern hemisphere, for example Australia, New Zealand, South Africa, or South America, Jupiter will be much higher in the sky, making it easier to observe as it shines at a bright magnitude -2.2. Even a small telescope will reveal the cloud belts on Jupiter and its four main moons, the Galilean satellites Io, Europa, Ganymede and Callisto. The planet Saturn lies a little to the east of Jupiter, and the waning crescent Moon will lie close to both on April 1

### **Saturn**

Saturn is another morning planet, shining at magnitude 0.7, and currently close to Jupiter in the sky. It, too, is in the constellation of Sagittarius, meaning that it will remain low in the sky from northern latitudes. See additional notes for Wednesday 1<sup>st</sup> April.

### **Uranus**

The closer of the two ice giants in the Solar System is disappearing into the bright evening twilight this month before reaching conjunction, on the far side of the Sun, on April 26. It is therefore unobservable this month.

### **Neptune**

The outer ice giant, Neptune, passed through conjunction with the Sun last month and so is now in the morning sky, though to all practical purposes, too immersed in the dawn twilight to be observed by the amateur astronomers

## Notable astronomical events to mid-April 2020

### Wednesday 1<sup>st</sup> April

#### Moon at 1<sup>st</sup> Qtr.

**The Moon** will be prominent in the evening sky, setting around midnight. From Milton Keynes, it will become visible around 19:57 (BST) as the dusk sky fades, 60° above your southern horizon. It will then sink towards the horizon, setting at 03:40 on 2<sup>nd</sup>. At this time in its monthly cycle of phases, it appears almost exactly half illuminated. The Moon will set later each day, becoming visible for more of the night. By the time it reaches full phase, it will be visible for much of the night, rising at around dusk and setting at around dawn

#### From Wednesday 1<sup>st</sup> April 2020 at 20:48 BST

See the ISS visibility chart see page 1 for other sighting opportunities this month

### Friday 3<sup>rd</sup> April

**Venus and M45** will make a close approach, passing within 0°15' of each other. From Milton Keynes, the pair will become visible around 20:00 (BST) as the dusk sky fades, 36° above your western horizon. They will then sink towards the horizon, setting at 00:27. Venus will be at mag -4.4; and M45 will be at mag 1.3. Both objects will lie in the constellation Taurus. They will be close enough to fit within the field of view of a telescope, but will also be visible to the naked eye or through a pair of binoculars.

#### Tuesday 7<sup>th</sup> April, at 9:08 BST

**The Moon** will reach the closest point along its orbit to the Earth and will appear slightly larger than at other times. The Moon's distance from the Earth varies because its orbit is not perfectly circular – it is instead slightly oval-shaped, tracing out a path called an ellipse. As the Moon traverses this elliptical path around the Earth each month, its distance varies by around 10%, between 363,000 km and 405,000 km. Its angular size also varies by the same factor, and its brightness also changes, though this is hard to detect in practice, given the Moon's phases are changing at the same time. The exact period of the Moon's cycle between perigee (closest approach), apogee (furthest recess) and back again is 27.555 days – a period of time called an *anomalistic month*. This is very close to the Moon's orbital period (27.322 days), but slightly longer. This perigee will coincide closely with the time of month when the Moon is at full phase, so the full moon this month will appear fractionally larger and brighter than usual. On this occasion the Moon will pass within a distance of 356,000 km of the Earth, and appear with an angular diameter of 33.46 arcmin. This may be compared to its average size of 31.07 arcmin. The position of the Moon at the moment of perigee will be:

Object	Right Ascension	Declination	Constellation	Angular Size
The Moon	12h55m40s	-00°36'	<u>Virgo</u>	33'27"

The coordinates above are given in J2000.0

#### Wednesday 8<sup>th</sup> April 020 at 03:35 BST

#### Full Moon

**The Moon** will reach full phase. At this time in its monthly cycle of phases, the Moon lies almost directly opposite the Sun in the sky, placing it high above the horizon for much of the night. This month's full moon will take place unusually close to the time of month when the Moon also makes its closest approach to the Earth – called its *perigee*. This means the moon will appear slightly larger and brighter than at other times, though any difference is imperceptible to the unaided eye. Perigee full moons such as this occur roughly once every 13 months. The sequence of full moons through the year

are often assigned names according to the seasons in which they fall. This month's will be the first to fall in spring 2020 – and is named in North America as the Egg Moon. Over the nights following 8<sup>th</sup> April, the Moon will rise around an hour later each day, becoming prominent later in the night. Within a few days, it will only be visible in the pre-dawn and early-morning sky. By the time it reaches last quarter, a week after full moon, it will rise at around midnight and set at around noon. At the exact moment when the Moon reaches full phase, it will lie at a declination of  $-02^{\circ}46'$  in the constellation Virgo, and so will appear high in the sky at all but the most extreme latitudes. It will be visible at all latitudes between  $77^{\circ}\text{N}$  and  $82^{\circ}\text{S}$ . Its distance from the Earth will be 357,000 km.

**The exact position of the Moon at the time it reaches full phase as seen from Milton Keynes will be:**

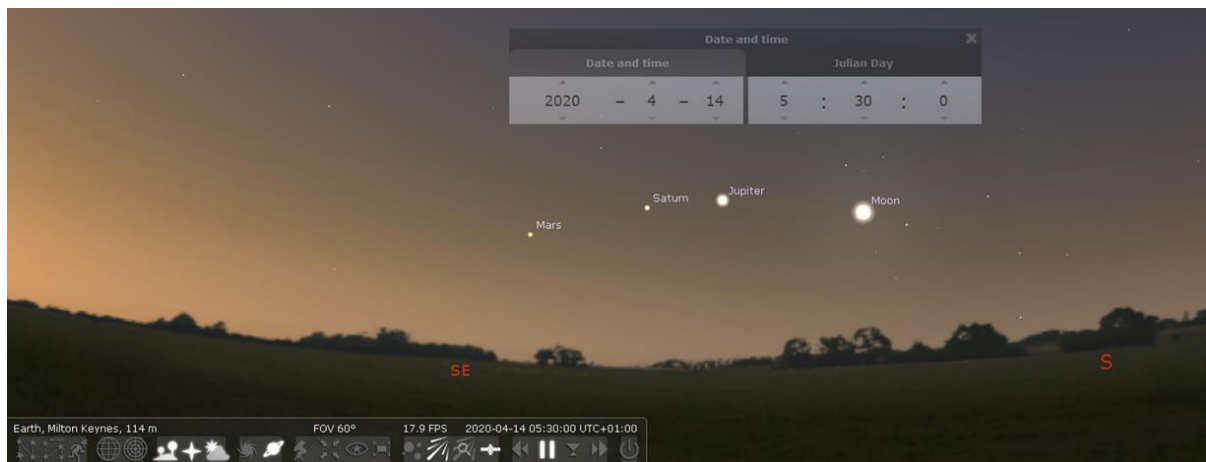
Object	Right Ascension	Declination	Constellation	Angular Size
The Moon	13h15m20s	$-02^{\circ}46'$	Virgo	33'27"

**The coordinates above are given in J2000.0.**

**Thursday 09<sup>th</sup> April 2020 at 08:02 BST**

Jupiter and **134340 Pluto** [Pluto minor planet designation: **134340 Pluto** is an icy dwarf planet in the Kuiper belt, a ring of bodies beyond the orbit of Neptune. It was the first Kuiper belt object to be discovered and is the largest known dwarf planet]. will share the same right ascension, with Jupiter passing  $0^{\circ}44'$  to the north of 134340 Pluto. From Milton Keynes, the pair will be difficult to observe as they will appear no higher than  $12^{\circ}$  above the horizon. They will be visible in the dawn sky, rising at 03:40 (BST) – 2 hours and 40 minutes before the Sun – and reaching an altitude of  $12^{\circ}$  above the south-eastern horizon before fading from view as dawn breaks around 05:57. Jupiter will be at mag -2.2, and 134340 Pluto at mag 15.1, both in the constellation Sagittarius. The pair will be a little too widely separated to fit comfortably within the field of view of a telescope, but will be visible through a pair of binoculars.

**Tuesday 14<sup>th</sup> April 2020 at 05:30 BST**



With a clear SE horizon Mars Saturn and Jupiter can be seen to the East of the 4<sup>th</sup> Qtr. Moon.

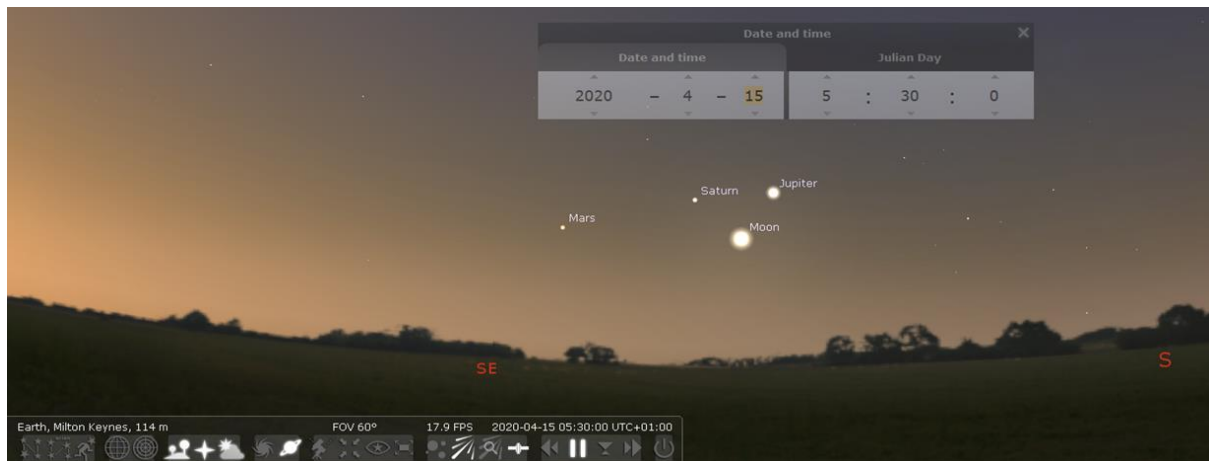
Now compare the above image to the view tomorrow 15<sup>th</sup> April at the same time in the next image

**Tuesday 14<sup>th</sup> April 2020 at 23:56 BST**

## Moon at 4<sup>th</sup> Qtr.

**The Moon** will be prominent in the dawn sky, rising at around midnight. From Milton Keynes, it will be difficult to observe as it will appear no higher than 11° above the horizon. It will be visible in the dawn sky, rising at 03:30 (BST) – 2 hours and 40 minutes before the Sun and fading from view as dawn breaks around 05:46. The Moon's path in coming days will see it rise later each day, so that it is visible for less time before sunrise and it less far above the eastern horizon before dawn. By the time it reaches new moon, it will rise at around dawn and set at around dusk, making it visible only during the daytime.

## Wednesday 15<sup>th</sup> April at 05:30 BST



Here we can see the 4th Qtr. Moon has moved and is now sitting between Saturn and Jupiter.

**Q : Where will the moon be sitting tomorrow Thursday 16<sup>th</sup> April at 05:30hrs and what do we call this phase of the moon?**

**Answers to:** [director.observe@mkas.org.uk](mailto:director.observe@mkas.org.uk)

## Wishing you all Clear Skies

For ease of use all times given are for local time [LT] i.e. BST [British Summer Time] Central Milton Keynes.

SKY NOTES FOR MARCH 2020 COMPILED BY TRANQUILLITY BASE. E & OE.

Sources;

Dominic Ford In The Sky.Org. BAA. Sky at Night. R.J.Bartlett Astronomical Year Book. Images NASA & Wikipedia

Star charts produced using Stellarium <https://stellarium.org> and Starry Nights <https://starrynight.com/> planetarium software

ISS for regular updates please see <https://spotthestation.nasa.gov/>