

MKAS Sky Notes February 2021

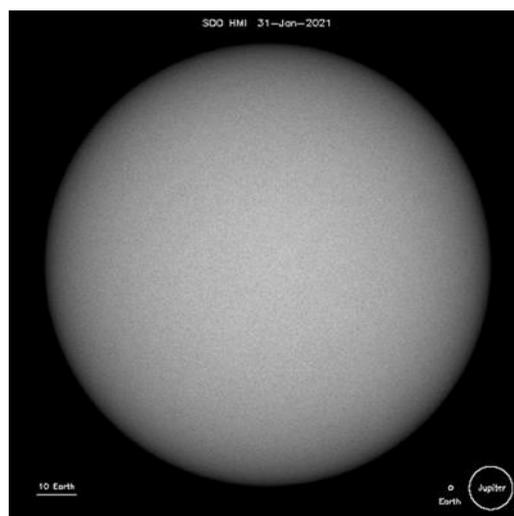
The Sun

During January the Sun was very quiet in terms of sunspot appearances however the Sun is still active, a BAA alert was issued in late December with a later alert issued on '25/01/2021 at 23:17(GMT) advising of a coronal hole impact which started at 0100UT 25th Jan 2021, and is now showing a negative field with a wind speed of 528 Kps. Resulting in Aurora showing on both Shetland web cams at 2300UT. Expected to be visible as far south as central Scotland, and could go further as the night progresses'.

We can only hope of more sunspot activity as we enter the Sun Spot Cycle 25, the twenty fifth since astronomers began keeping records, as we head towards a solar maximum of sunspots in July 2025. The solar cycle was discovered in 1843 by Samuel Heinrich Schwabe, who after 17 years of observations noticed a periodic variation in the average number of sunspots. According to NASA and the NOAA, the cycle 25 is expected to be a quiet maximum, with a sunspot peak of only around 115.

But the situation can so very easily change so keep on observing however, remember the golden rule of NEVER viewing the Sun through any optical device without suitable and proven fitted filters in fact the best way is to observe the Sun is by the projection method!

Follow this link <http://solar-center.stanford.edu/observe/> for an excellent guide on how to observe the Sun safely.



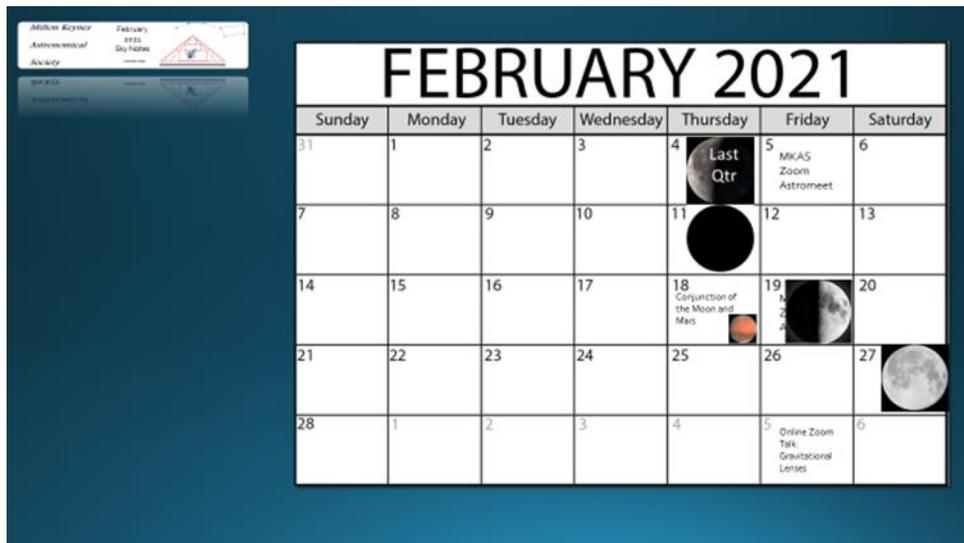
<https://sohowww.nascom.nasa.gov/sunspots/>
Image taken by the SOHO Telescope on 31st January 2021

The Moon in February 2021

As we go in February we find the 19.75 days old moon in a waning gibbous phase rising at 21.33(LT) by Last Quarter on the 4th of February when it achieves 50% illumination phase, the moon begins rising over Milton Keynes after midnight. Followed 7 days later by a new moon on the 11th of the month. 1st Qtr. (50% illuminated 8 days old) this month is on the 19th when it will rise at 10:13hrs (LT) setting just after midnight as viewed from Milton Keynes.

Mars will make a close approach to the moon in the constellation of Aries on the 19th. The pair will be too widely separated to fit within the field of view of a telescope, but will be visible to the naked eye or through binoculars.

Eight days later a 16 day old moon will achieve 99% phase reaching Full moon rising over Milton Keynes at 18.05 and setting on the 28th at 07.28 (LT)



Moon phase for February 2021 along with date of Conjunction of Mars and moon.
Tranquillity Base



The Planets of the Solar System this month

As with the Sun the planets are quiet from an observational point of view this month, as most are from this area unobservable except for Mars and Uranus both of which have been well placed for local observers. The other planets as detailed below are unobservable as they either rise over our horizon very near to sun rise so are obscured by its brightness or will have set by or near to dusk.

Mercury

Recently passed in front of the Sun at inferior solar conjunction. From Milton Keynes, it is not readily observable since it is very close to the Sun, at a separation of only 11° .

Venus

The planet will soon pass behind the Sun so from Milton Keynes, it is not observable and will reach its highest point in the sky during daytime and is 2° below the horizon at dawn.

Mars

The Red Planet however, is currently an early evening object, from Milton Keynes, it will become visible around 17:55 (LT/GMT) as the dusk sky fades, 56° above your southern horizon. It will then sink towards the horizon, setting at 01:22.

Jupiter

The largest planet in our solar system has passed behind the Sun at solar conjunction. From Milton Keynes, it is not observable as it reaches its highest point in the sky during daytime and is 1° below the horizon at dawn.

Saturn

The ringed gas giant has also recently passed behind the Sun at solar conjunction. So again, from Milton Keynes it is not observable as with Jupiter, Saturn will reach its highest point in the sky during daytime and is 1° below the horizon at dawn.

Uranus

As with Mars the icy world of Uranus again is currently an early evening object, now receding into evening twilight. From Milton Keynes, it will become visible around 18:32 (GMT) as the dusk sky fades, 45° above your south-western horizon. It will then sink towards the horizon, setting at 23:58.

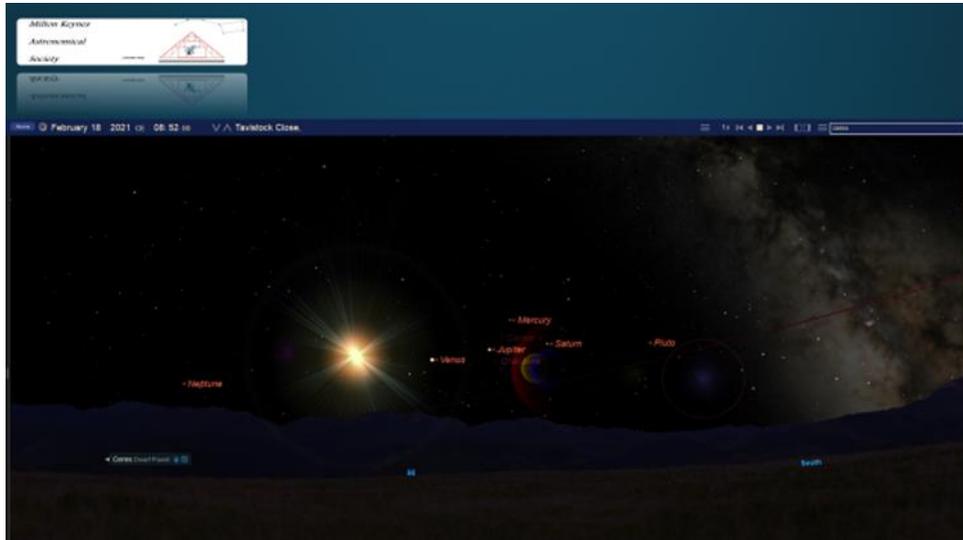
The first planet found with the aid of a telescope, Uranus was discovered in 1781 by astronomer William Herschel, although he originally thought it was either a comet or a star. Two years later the object was universally accepted as a new planet, in part because of observations by astronomer Johann Elert Bode. Herschel tried unsuccessfully to name his discovery Georgium Sidus after King George III. Instead the scientific community accepted Bode's suggestion to name it Uranus, after the Greek god of the sky. The radioactive element Uranium was named after Uranus when it was discovered in 1789, just eight years after the planet was discovered.

Neptune

The most distant of our planets will also soon pass behind the Sun at solar conjunction. From Milton Keynes, it is not observable as it reach its highest point in the daytime sky and is no higher than 7° above the horizon at dusk.

Dark, cold and whipped by supersonic winds, ice giant Neptune is the eighth and most distant planet in our solar system. More than 30 times as far from the Sun as Earth, Neptune is the only planet in our

solar system not visible to the naked eye and the first predicted by mathematics before its discovery. In 2011 Neptune completed its first 165-year orbit since its discovery in 1846. NASA's Voyager 2 is the only spacecraft to have visited Neptune up close. It flew past in 1989 on its way out of the solar system. Neptune's Atmosphere and Colour: A giant planet, Neptune's atmosphere is made of hydrogen, helium, and methane. These components, specifically methane, are what give the planet its blue colour. This is because methane's gaseous composition absorbs red light and reflects blue light outward.



Starry Nights- Showing position of Pluto, Saturn, Mercury, Jupiter, Venus, Neptune, Moon and the Sun on the 18th February at 08:52hrs [LT].

In this image daylight has been removed

Notable astronomical observing opportunities for February 2021

Conjunction of the Moon and Mars

On Thursday, 18 FEB 2021 AT 22:45 (LT) GMT (22:45 UTC)

The Moon and Mars will share the same right ascension, with the Moon passing $3^{\circ}41'$ to the south of Mars. The Moon will be 7 days old.

At around the same time, the two objects will also make a close approach, technically called an appulse.

From Milton Keynes, the pair will become visible around 17:45 (GMT) as the dusk sky fades, 57° above your southern horizon. They will then sink towards the horizon, setting at 01:23. The Moon will be at mag -11.6 , and Mars at mag 0.8 , both in the constellation Aries. The pair will be too widely separated to fit within the field of view of a telescope, but will be visible to the naked eye or through a pair of binoculars astrophotographers could concentrate on Mars and try to and capture in their images two moon of mars Deimos and Phobos.



Conjunction of Mars and Moon on 18th February 2021 @22:45hrs Local Time from Milton Keynes

Sirius A & B

Sirius is the brightest star in the night sky. Its name is derived from the Greek word Σείριος Seirios "glowing" or "scorching". Unlike our Sun, Sirius isn't alone.

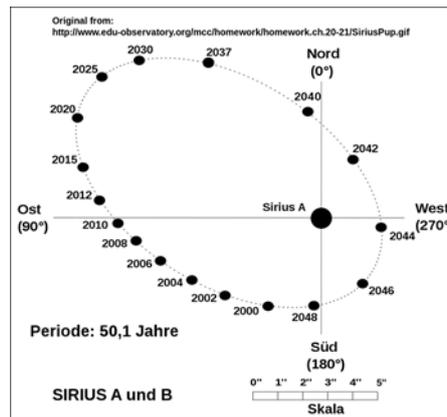
Because Sirius is so bright, it was well-known to the ancients, because it's the brightest star in the night sky. In 1844, the German astronomer Friedrich Bessel deduced from changes in the proper motion of Sirius that it had an unseen companion. On January 31, 1862, American telescope-maker and astronomer Alvan Graham Clark first observed the faint companion, which is now called Sirius B, or affectionately "the Pup".

Sirius A is about twice as massive as the Sun and has an absolute visual magnitude of +1.42. It is 25 times more luminous than the Sun, but has a significantly lower luminosity than other bright stars such as Canopus or Rigel. The system is between 200 and 300 million years old. It was originally composed of two bright bluish stars. The more massive of these, Sirius B, consumed its resources and became a red giant before shedding its outer layers and collapsing into its current state as a white dwarf around 120 million years ago.

Sirius is known colloquially as the "Dog Star", reflecting its prominence in its constellation, Canis Major (the Greater Dog) following the hunter Orion. The heliacal rising of Sirius marked the flooding of the Nile in Ancient Egypt and the "dog days" of summer for the ancient Greeks, while to the Polynesians, mostly in the Southern Hemisphere, the star marked winter and was an important reference for their navigation around the Pacific Ocean.

Sirius B is tiny white dwarf (smaller than Earth!) but of similar mass to our Sun.

The orbit of this companion star Sirius is approaching its most distance from its 'parent' so giving us over the next few years an opportunity of separating the 'pair' and observing a white dwarf. It however, a difficult task visually as a very large instrument is required even astrophotographers will find this one a challenge!



Milton Keynes
 February
 2021
 Astronomical
 Activities

Sirius A & B

Sunday 14th February 2021 AT 20:45 GMT (20:45 UTC)

Sirius is the brightest star in the night sky. Its name is derived from the Greek word $\Sigma\epsilon\iota\omega\varsigma$ Seirios "glowing" or "scorching".

Unlike our Sun, Sirius isn't alone.

Because Sirius is so bright, it was well-known to the ancients. In 1844, the German astronomer Friedrich Bessel deduced from changes in the proper motion of Sirius that it had an unseen companion. On January 31, 1862, American telescope-maker and astronomer Alvan Graham Clark first observed the faint companion, which is now called Sirius B, or affectionately "the Pup".

Sirius B is tiny white dwarf (smaller than Earth!) but of similar mass to our Sun

Brilliant Sirius A and its faint white dwarf companion, Sirius B. Imaged by Gabriela and Pablo Carvalho

<https://kyandthelescope.org/>

Asteroid Hunting

Asteroid 18 Melpomene

Tuesday 02 February 2021 at 21:34 GMT or LT (21:34 UTC) Asteroid 18 Melpomene at opposition. From Milton Keynes, the asteroid will be visible between 19:31 and 04:50. It will become accessible around 19:31, when it rises to an altitude of 21° above your eastern horizon. It will reach its highest point in the sky at 00:13, 49° above your southern eastern horizon. Setting around 04:50 when it sinks your western horizon. A challenge especially for visual observers as a large instrument will be needed to used and from a dark site! Melpomene (minor planet designation: 18 Melpomene) is a large, bright main-belt asteroid discovered by J. R. Hind on June 24, 1852 named after Melpomenē, the Muse of tragedy in Greek mythology. It is classified as an S-type asteroid and is composed of silicates and metals.

Towards the end of the month

Asteroid 29 Amphitrite reaches opposition on Monday, 22 Feb 2021 at 16:46 GMT (16:46 UTC)

From Milton Keynes, it will be visible between 19:34 and 05:11. Amphitrite will become accessible around 19:34, when it rises to an altitude of 21° above your eastern horizon. It will reach its highest point in the sky at 00:24, 51° above your southern horizon. It will become inaccessible around 05:11 when it sinks below 21° above your western horizon. Shining among the stars of Leo, at the start of February near the elliptical galaxy M105. Amphitrite will be at mag. +9.6: it's dimmest for the month. The asteroid then brightens to mag. +9.1 by 20 February. Remaining at this level until 24th February before dimming back to mag. +9.2 by the end of February.

How to see asteroid Vesta shining at its brightest in 2021



All month during February the brightest asteroid, Vesta, is beginning to put on a show in the night sky. You can easily see Vesta for yourself with binoculars. Vesta is currently in the distinctive constellation of Leo, the lion, and it will remain there over the next few weeks, making the asteroid easy to find. Vesta was shining at magnitude 7, making it a target for your binoculars. It also showed up easily in images taken with a digital camera. Vesta will achieve opposition on:

Thursday, 04 MAR 2021 AT 23:58 GMT (23:58 UTC).

From Milton Keynes, Vesta will become visible around 19:34, reaching its highest point in the sky at 00:37, 53° above your southern horizon. It will be lost to dawn twilight around 05:21, 24° above your western horizon. Over the next few weeks, Vesta will brighten until it reaches a point called opposition, because it is on the opposite side of the sky to the Sun. Vesta will be about two and a half times brighter, and shine at magnitude 5.8. This is theoretically just within the limits of naked-eye visibility, though you would need an exceptionally clear, dark sky to see it with just your eyes and no optical aid. Vesta will lie at a distance of 204 million km from Earth (127 million miles) when it is at opposition.

Vesta is the brightest of the asteroids, becoming brighter even than the largest of these bodies, Ceres, which is now classed as a dwarf planet. Like Ceres, Vesta has been studied in detail by NASA's Dawn mission.



Dawn mission Key Mission Events

- 2007 — Launch (September)
- 2009 — Mars Gravity Assist (February)
- 2011 — Vesta Arrival (July)
- 2012 — Vesta Departure (September)
- 2015 — Ceres Arrival (March)
- 2016 — End of prime mission (June)
- 2016 — Start of first extension (July)
- 2017 — Start of second extension (November)
- 2018 — End of mission (October)

From Milton Keynes Vesta will appear as a point of light; when Dawn studied Vesta from July 2011 to September 2012 two notable features were revealed. The images of Vesta showed a set of three craters now known as the "snowman" and a towering mountain at the South Pole, a mountain estimated to be more than twice the height of Mount Everest.

Good luck and keep observing.

Wishing you all Clear Skies

Sky Notes for February 2021 compiled by Tranquillity Base. E & OE..
For ease of use all times given are for local time [LT] Central Milton Keynes.

Sources:

Dominic Ford. <https://in-the-sky.org/> BAA. <https://britastro.org/> : 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: Sky & Telescope <https://skyandtelescope.org/> Nasa: www.nasa.gov/centers/hq/home/index.html Paul Sutherland <https://www.skymania.com>: ISS for regular updates please see <https://spotthestation.nasa.gov/> :