

<b>Sunrise</b>	<b>Sunset</b>	<b>Mercury Sets</b>	<b>Venus Rises</b>
1 <sup>st</sup> – 6:56am	1 <sup>st</sup> – 5:51pm	1 <sup>st</sup> – 7:30pm	1 <sup>st</sup> – 5:25am
10 <sup>th</sup> – 6:37am	10 <sup>th</sup> – 6:07pm	5 <sup>th</sup> – 7:23pm	10 <sup>th</sup> – 5:22am
20 <sup>th</sup> – 6:15am	20 <sup>th</sup> – 6:23pm	10 <sup>th</sup> – 6:55pm	20 <sup>th</sup> – 5:13am
30 <sup>th</sup> – 5:52am	30 <sup>th</sup> – 6:40pm		30 <sup>th</sup> – 5:01am
<b>Moon Rise</b>	<b>Moon Set</b>	<b>Moon Rise</b>	<b>Moon Set</b>
1 <sup>st</sup> – 4:21am	1 <sup>st</sup> – 12:41pm	19 <sup>th</sup> – 4:15pm (ENE)	20 <sup>th</sup> – 6:25am
2 <sup>nd</sup> – 5:07am	2 <sup>nd</sup> – 1:35pm	20 <sup>th</sup> – 5:40pm	21 <sup>st</sup> – 6:50am
3 <sup>rd</sup> – 5:45am	3 <sup>rd</sup> – 2:34pm	21 <sup>st</sup> – 7:03pm (E)	22 <sup>nd</sup> – 7:15am (E)
4 <sup>th</sup> – 6:17am	4 <sup>th</sup> – 3:37pm	22 <sup>nd</sup> – 8:25pm	23 <sup>rd</sup> – 7:39am
5 <sup>th</sup> – 6:44am (ESE)	5 <sup>th</sup> – 4:41pm (WSW)	23 <sup>rd</sup> – 9:44pm	24 <sup>th</sup> – 8:05am (WSW)
6 <sup>th</sup> – 7:07am	6 <sup>th</sup> – 5:46pm	24 <sup>th</sup> – 11:00pm (ESE)	25 <sup>th</sup> – 8:34am
7 <sup>th</sup> – 7:28am	7 <sup>th</sup> – 6:51pm	26 <sup>th</sup> – 12:12am	26 <sup>th</sup> – 9:08am
8 <sup>th</sup> – 7:48am (E)	8 <sup>th</sup> – 7:58pm(W)	27 <sup>th</sup> – 1:18am	27 <sup>th</sup> – 9:48am
9 <sup>th</sup> – 8:07am	9 <sup>th</sup> – 9:05pm	28 <sup>th</sup> – 2:16am	28 <sup>th</sup> – 10:34am
10 <sup>th</sup> – 8:27am	10 <sup>th</sup> – 10:13pm	29 <sup>th</sup> – 3:05am	29 <sup>th</sup> – 11:27am
11 <sup>th</sup> – 8:49am	11 <sup>th</sup> – 11:22pm (WNW)	30 <sup>th</sup> – 3:46am	30 <sup>th</sup> – 12:25pm
12 <sup>th</sup> – 9:15am (ENE)	13 <sup>th</sup> – 12:33am	31 <sup>st</sup> – 5:20am	31 <sup>st</sup> – 2:26pm
13 <sup>th</sup> – 9:47am	14 <sup>th</sup> – 1:42am	-----	-----
14 <sup>th</sup> – 10:26am	15 <sup>th</sup> – 2:49am	<b>Summer Time Starts</b>	<b>New Moon - 6<sup>th</sup></b>
15 <sup>th</sup> – 11:16am	16 <sup>th</sup> – 3:48am	On the night of the 30 <sup>th</sup>	<b>First Quarter - 14<sup>th</sup></b>
16 <sup>th</sup> – 12:18pm	17 <sup>th</sup> – 4:39am	the clocks go	<b>Full Moon 21<sup>st</sup></b>
17 <sup>th</sup> – 1:31pm	18 <sup>th</sup> – 5:21am	forward 1 hour	<b>Last Quarter - 28<sup>th</sup></b>
18 <sup>th</sup> – 2:51pm	19 <sup>th</sup> – 5:56am (WNW)		
A useful site: <a href="http://www.heavens-above.com">www.heavens-above.com</a>	A S Zielonka		

An occultation of Saturn by the Moon on the 1<sup>st</sup> occurs in the evening and will be visible over the central Pacific Ocean and Mexico.

On the 1<sup>st</sup> at 6:00am low in the south east Venus is 4 degrees above the horizon. Saturn is 12 degrees to the right of it with the crescent Moon 6 degrees to the right of Saturn. The star Pi Sagittarii (2.8 Mag) in Sagittarius is within 2 degrees to the upper right of Saturn too.

There is a planned launch on the 2<sup>nd\*</sup> from Kennedy Space Centre. This will be the first uncrewed test flight of the Commercial Crew Program and will provide data on the performance of the Falcon 9 rocket, Crew Dragon spacecraft, and ground systems, as well as on-orbit, docking and landing operations. The flight test also will provide valuable data toward NASA certifying SpaceX's crew transportation system for carrying astronauts to and from the International Space Station.

There is an occultation of Pluto on the 2<sup>nd</sup> during the early hours of the morning. This is visible from north eastern Africa across southern Asia to China.

At 6:00am on the 2<sup>nd</sup> the thin crescent Moon will be due south east with Venus 6½ degrees to the left, and Saturn 6 degrees to the upper right of the Moon.

On the 3<sup>rd</sup> at 6:15am in the south east Venus will be 6½ degrees above the horizon. A very thin crescent Moon is 4½ degrees to the lower left of Venus and just 3 degrees above the horizon.

At 6:25am on the 4<sup>th</sup> there may be a chance to see a very thin crescent Moon on the horizon at 120 degrees azimuth in the SE.

From the 7<sup>th</sup> – 9<sup>th</sup> Comet C/2018 Y1 Iwamoto will be near the star Iota Aurigae (2.6 Mag) in Auriga constellation. It was at magnitude 7 on the 11<sup>th</sup> Feb. (For further information please visit the 'Comet' section in the website above)

On the 7<sup>th</sup> at 6:30pm a very thin crescent Moon will be 2½ degrees above the horizon in the west (258 degrees azimuth). Mercury is 9 degrees above right of the Moon, and sets at 7:15pm.

Neptune is in conjunction with the Sun on the 7<sup>th</sup>.

The early evening on the 8<sup>th</sup> will show a thin crescent Moon with Mercury 14 degrees below right of it. Mercury is due west and 3½ degrees above the horizon at 6:48pm.

On the 9<sup>th</sup> at 7:00pm Uranus is 9 degrees above the crescent Moon. The star Nu Piscium (4.4 Mag) in Pisces is 2¾ degrees above left of the Moon.

At 7:00pm on the 10<sup>th</sup> Uranus is 7 degrees right and 1½ degrees below from the crescent Moon. Mars is 12 degrees above the Moon.

On the 11<sup>th</sup> at 7:00pm Mars is 6 degrees to the upper right of the crescent Moon.

From the 12<sup>th</sup> - 14<sup>th</sup> Venus passes very close to the star Theta Capricorni (4.0 Mag). On the 13<sup>th</sup> at 6:00am the star will be less than ½ a degree below the Moon.

At 7:00pm on the 12<sup>th</sup> the star Lambda Tauri (3.4 Mag) in Taurus is 3½ degrees below left of the Moon.

On the 13<sup>th</sup> at 7:00pm the bright star Aldebaran (0.8 Mag) in Taurus is 5 degrees to the lower right of the Moon. At 7:00pm on the 14<sup>th</sup> the star Zeta Tauri (2.9 Mag) in Taurus is just 3½ degrees to the right of the Moon.

There is a planned launch on the 15<sup>th</sup>\* at 10:14am\* from the Baikonur Cosmodrome in Kazakhstan to the International Space Station (ISS). NASA astronauts Nick Hague and Christina Hammock Koch and Alexey Ovchinin of the Russian space agency Roscosmos are to launch aboard a Soyuz spacecraft as members of Expeditions 59 and 60. (See February's notes for details)

Mercury is at inferior conjunction on the 15<sup>th</sup>.

The Eta Virginids meteor shower reaches its peak around 5:00am.

On the 15<sup>th</sup> at 8:00pm the star Mekbuda (4.0 Mag) in Gemini is 2 degrees to the left of the Moon.

On the 16<sup>th</sup> & 17<sup>th</sup> at 6:00am Venus passes to within 1½ degrees above the star Iota Capricorni (4.2 Mag).

At 8:00pm on the 16<sup>th</sup> the star Kappa Geminorum (3.5 Mag) in Gemini is just 5 degrees to the upper right of the Moon.... and at 11:45pm the bright stars Castor and Pollux point the way to the Moon in the west.

On the 18<sup>th</sup> at 8:30pm the bright star Regulus in Leo is 3 degrees below the Moon with the star Eta Leonis 2½ degrees to the upper left of the Moon.

From the 19<sup>th</sup> - 22<sup>nd</sup> around 5:45am Venus will be passing to within 2 degrees above the stars Nashira (3.6 Mag) and Delta Capricorni (2.8 Mag).

There is a planned launch on the 21<sup>st</sup>\* from Baikonur Cosmodrome, Kazakhstan. A Russian government-operated Proton-M rocket without upper stage will launch the Nauka Multi-Purpose Laboratory Module into orbit to become a permanent part of the International Space Station and give its Russian Segment a state-of-the-art laboratory. Providing work and living space, Nauka is the final major addition planned for ISS with launch first planned in 2009 but ending up delayed by a full decade by a string of fiascos involving the module's processing including repeated trouble with its propulsion system needed for maneuvering it to the Space Station. The module's design is largely based on the FGB Zarya module, the first component of ISS launched into orbit back in 1998.

At 9:30pm on the 21<sup>st</sup> the star Porrima (2.7 Mag) in Virgo is 3½ degrees to the upper right of the Moon.

On the 22<sup>nd</sup> at midnight the star Spica (0.9 Mag) in Virgo is 8 degrees to the right of the Moon.

At midnight on the 23<sup>rd</sup> the star Zubeneshamali (2.6 Mag) in Libra is 4 degrees to the lower right of the Moon.

On the 25<sup>th</sup> at 5:00am the star Acrab (2.5 Mag) in Scorpius is 4½ degrees to the lower left of the Moon.

At 5:00am on the 26<sup>th</sup> Jupiter is 11½ degrees to the left of the Moon.

On the 27<sup>th</sup> at 2:00am when the Moon is 4 degrees above the SE horizon Jupiter is just 1 degree to the lower right of it.

At 5:00am on the 28<sup>th</sup> in the SSE Saturn is 11½ degrees to the left of the Moon with Jupiter 14 degrees to the right.

On the 29<sup>th</sup> at 5:00am Saturn will be just 1 degree above the Moon. An occultation of Saturn by the Moon around the same time but will only be visible from southern Africa and Madagascar.

From the 29<sup>th</sup> March - 2<sup>nd</sup> April at 8:00pm Venus passes to the lower left, and to within 3 degrees of the visible star cluster Pleiades.

An occultation of Pluto by the Moon occurs on the 29<sup>th</sup>. This will be visible across the northern half of South America up to Mexico.

There is a planned launch on the 30<sup>th</sup> \*from Baikonur Cosmodrome, Kazakhstan. A Russian Soyuz 2-1A rocket will launch the crewed Soyuz MS-12 spacecraft into orbit for a same-day rendezvous with the International Space Station to bring the Expedition 59/60 crew to their orbital home and workplace for a half-year mission. Its crew are Oleg Skripochka and Andrei Babkin of Roscosmos and Shannon Walker of NASA (See below for details). The mission will be the first crewed launch of the Soyuz 2-1A that will operate for nine minutes to deliver the spacecraft into a 200-Kilometer orbit from where it will maneuver up into the Station's orbit of 400 Kilometers for a fully automated link-up. The 7,200-Kilogram Soyuz MS-12 spacecraft will remain docked to the Poisk Module throughout the crew's stay on ISS to act as life boat and return them to Earth at the end of their flight via parachute-assisted landing in Kazakhstan.

From the 31<sup>st</sup> March - 4<sup>th</sup> April there is a very close conjunction between Mercury and Neptune. By 6:30am they are a couple of degrees above the horizon and lost in the mornings glow from the Sun. On the 2<sup>nd</sup> & 3<sup>rd</sup> they are ½ a degree apart. On the 31<sup>st</sup> Neptune is in a very close conjunction with the star Phi Aquarii (4.2 Mag) in Aquarius.

On the 31<sup>st</sup> at 6:00am the Moon will be only 4 degrees above the south east horizon. The star Theta Capricorni (4.0 Mag) in Capricornus is just 2 degrees above left of the crescent Moon.

\* = Dates and times are subject to change.

Fact: Ed White (1930-1967) became the first American to make a walk in space on June 3<sup>rd</sup> 1965. He found the experience so exhilarating that he was reluctant to terminate the EVA at the allotted time, and had to be ordered back into the spacecraft. While he was outside, a spare thermal glove floated away through the open hatch of the spacecraft, becoming an early piece of space debris in low earth orbit, until it burned up upon re-entry into the Earth's atmosphere.

#### **ISS News:**

Oleg Skripochka (b.1969) has been on two missions to the ISS and as participated in three spacewalks during his stay aboard the space station as an Expedition 25 and 26 Flight Engineer. In total he has spent 331 days in space.

Andrei Babkin (b.1969) is a Russian engineer and Cosmonaut who was selected in April 2010.

Shannon Walker (b.1965) is an American scientist and a NASA astronaut, whose first space mission was Expedition 24 on the International Space Station (ISS) in June 2010. She is married to fellow NASA astronaut, the Australian-born Andy Thomas.