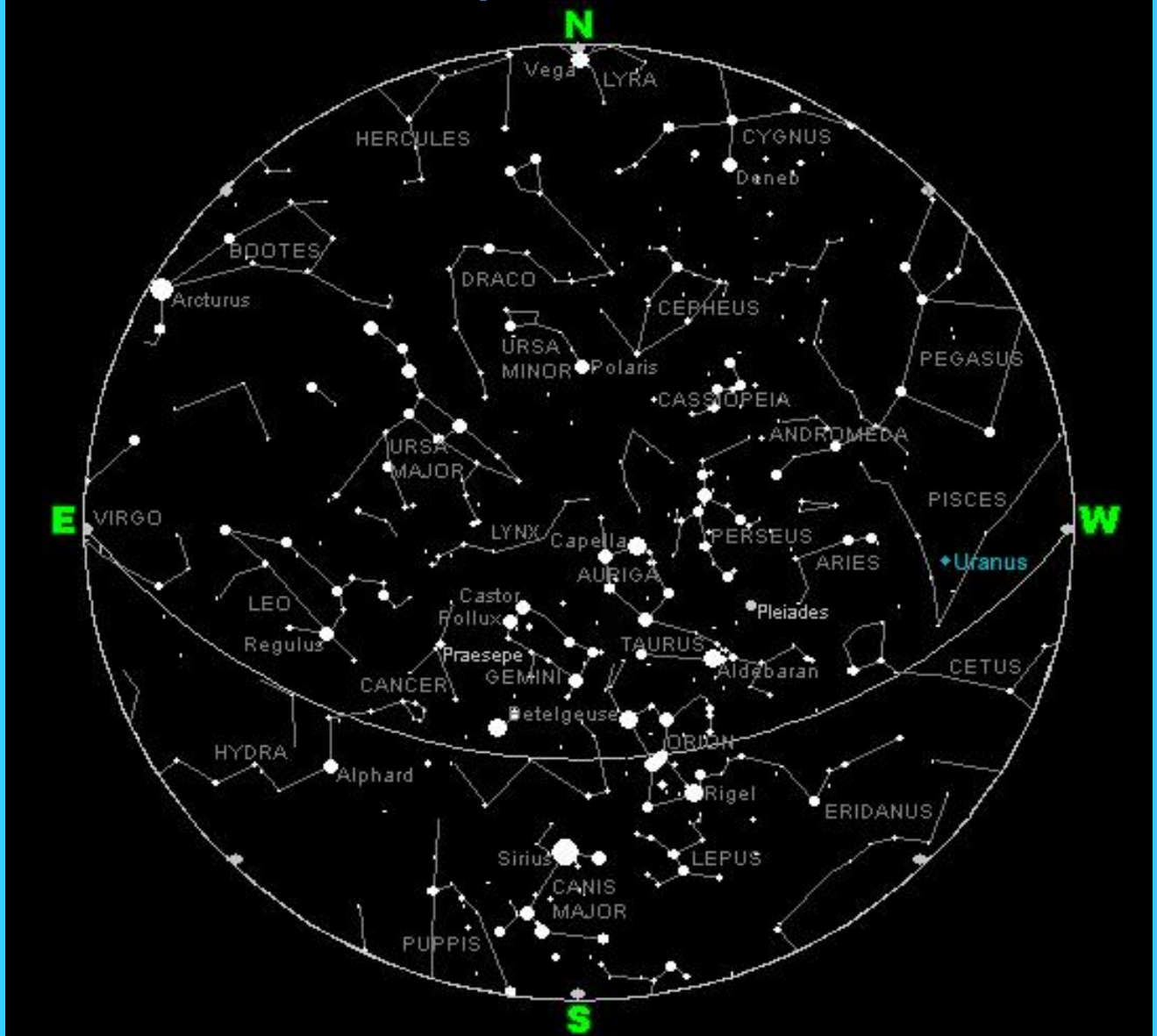
WOLVERHAMPTON ASTRONOMICAL SOCIETY

THE WINTER NIGHT SKY

By Simon Barnett



The above star chart shows the aspect of the sky from Wolverhampton on

2018 January 16 at 23:00UT.

The Winter Night Sky covers the period from December 2017 through to the end of February 2018. All times given below (mainly for sunrise, sunset, occultations, and eclipses) are Universal Time (UT) unless otherwise stated, so please remember to add one hour for when British Summer Time (BST) is in force. The times of sunrise, sunset, eclipses and those of occultations are correct for Wolverhampton.

THE SUN

The principle times of sunrise and sunset during the winter are given in the table below, together with the solar diameter, altitude that the Sun transits the meridian on that day, seen from Wolverhampton, and the constellation in which the Sun appears on that day:

DATE	SUNRISE	TRANSIT	TRANSIT ALTITUDE	SUNSET	SUN'S DIAMETER	CONSTELLATION
DEC 3	08:00 UT	11:58 UT	15.3º	15:57 UT	32.5'	Ophiuchus
DEC 8	08:06 UT	12:00 UT	14.7º	15:55 UT	32.5'	Ophiuchus
DEC 13	08:12 UT	12:03 UT	14.2º	15:54 UT	32.5'	Ophiuchus
DEC 18	08:16 UT	12:05 UT	14.0º	15:55 UT	32.5'	Sagittarius
DEC 23	08:18 UT	12:08 UT	14.0º	15:57 UT	32.5'	Sagittarius
DEC 28	08:20 UT	12:10 UT	14.2º	16:01 UT	32.5'	Sagittarius
JAN 2	08:19 UT	12:13 UT	14.5º	16:06 UT	32.5'	Sagittarius
JAN 7	08:18 UT	12:15 UT	15.1º	16:12 UT	32.5'	Sagittarius
JAN 12	08:15 UT	12:17 UT	15.8º	16:19 UT	32.5'	Sagittarius
JAN 17	08:10 UT	12:19 UT	16.7º	16:27 UT	32.5'	Sagittarius
JAN 22	08:05 UT	12:20 UT	17.8º	16:36 UT	32.5'	Capricornus
JAN 27	07:58 UT	12:21 UT	19.0º	16:45 UT	32.5'	Capricornus
FEB 1	07:51 UT	12:22 UT	20.4º	16:54 UT	32.5'	Capricornus
FEB 6	07:42 UT	12:23 UT	21.9º	17:04 UT	32.4'	Capricornus
FEB 11	07:33 UT	12:23 UT	23.5º	17:13 UT	32.4'	Capricornus
FEB 16	07:23 UT	12:23 UT	25.2º	17:23 UT	32.4'	Aquarius
FEB 21	07:13 UT	12:22 UT	26.9º	17:32 UT	32.3'	Aquarius
FEB 26	07:02 UT	12:21 UT	28.8º	17:42 UT	32.3'	Aquarius

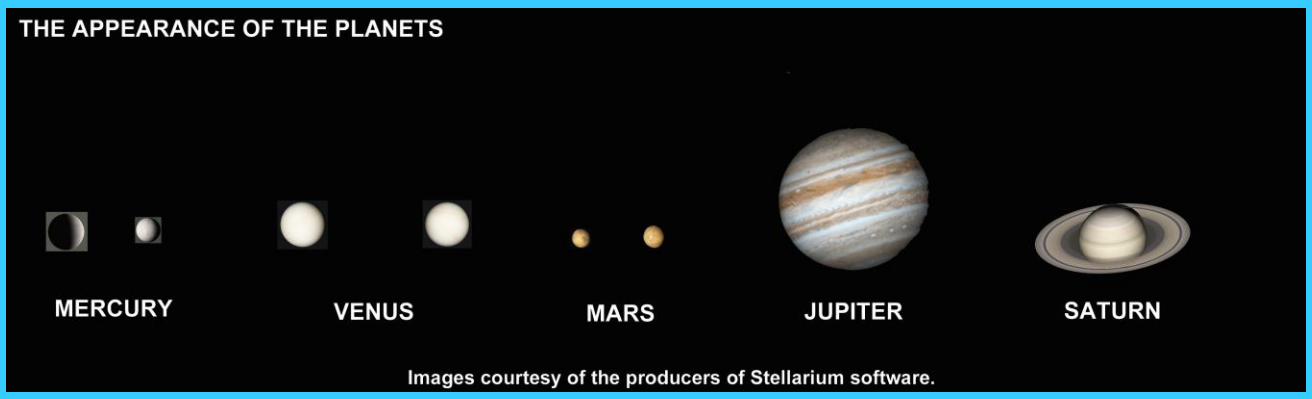
THE MOON

The principle phases of the Moon during the winter are given in the table below, together with the lunar diameter, altitude that the Moon transits the meridian on that day, seen from Wolverhampton, and the constellation in which the Moon appears on that day:

	PHENOMENON	DATE	TIME	TRANSIT ALTITUDE	MOON'S DIAMETER	CONSTELLATION
○	Full Moon	DEC 3	15:47 UT	54.1º	33.3'	Taurus
◑	Last Quarter	DEC 10	07:51 UT	43.7º	31.7'	Leo
●	New Moon	DEC 18	06:30 UT	17.2º	29.3'	Sagittarius
◐	First Quarter	DEC 26	09:20 UT	35.0º	30.8'	Pisces
○	Full Moon	JAN 2	02:24 UT	56.9º	34.0'	Gemini
◑	Last Quarter	JAN 8	22:25 UT	33.7º	30.5'	Virgo
●	New Moon	JAN 17	02:17 UT	17.7º	29.1'	Sagittarius

	PHENOMENON	DATE	TIME	TRANSIT ALTITUDE	MOON'S DIAMETER	CONSTELLATION
◐	First Quarter	JAN 24	22:20 UT	44.9º	31.8'	Cetus
○	Full Moon	JAN 31	13:27 UT	53.5º	33.0'	Cancer
◑	Last Quarter	FEB 7	15:54 UT	24.5º	29.8'	Libra
●	New Moon	FEB 15	21:05 UT	23.3º	29.7'	Capricornus
◐	First Quarter	FEB 23	08:09 UT	52.7º	31.8'	Taurus
○	Full Moon	MAR 2	00:51 UT	46.2º	32.9'	Leo

THE PLANETS



The illustrations above show the planets as they appear this winter. The images are to scale, with Mercury, Venus, and Mars on the 1st December, and 16th January respectively. Jupiter and Saturn have only single illustrations, taken on 16th January.

Mercury – begins December reaching inferior conjunction on 13th December. Mercury quickly emerges in the south-east in the bright dawn sky by Christmas, reaching greatest western elongation (23°) on 1st January, when the planet will rises a good 1¾ hours before the Sun.

Mercury is at superior conjunction on 17th February, and becomes an evening object thereafter. By the end of February, Mercury sets almost 1 hour after the Sun, being close to the much brighter Venus in the western sky.

DATE	R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec 3	17h 57m	– 24 46	0.31	+ 0.4	8.3"	0.813
8	17h 48m	– 23 21	0.10	+ 2.1	9.4"	0.718
13	17h 23m	– 21 27	0.00	+ 5.2	9.9"	0.678
18	16h 57m	– 19 52	0.10	+ 2.1	9.4"	0.714
23	16h 48m	– 19 26	0.31	+ 0.5	8.4"	0.804
28	16h 55m	– 20 03	0.50	– 0.1	7.4"	0.913
Jan 2	17h 13m	– 21 07	0.64	– 0.2	6.6"	1.019
7	17h 37m	– 22 11	0.74	– 0.2	6.0"	1.113
12	18h 05m	– 23 01	0.80	– 0.2	5.6"	1.194
17	19h 35m	– 23 26	0.85	– 0.3	5.3"	1.260
22	19h 07m	– 23 23	0.89	– 0.3	5.1"	1.313

DATE		R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Jan	27	19h 40m	– 22 48	0.92	– 0.4	5.0"	1.354
Feb	1	20h 13m	– 21 40	0.95	– 0.5	4.9"	1.382
	6	20h 47m	– 19 57	0.97	– 0.7	4.8"	1.399
	11	21h 21m	– 17 39	0.98	– 1.0	4.8"	1.402
	16	21h 56m	– 14 44	0.99	– 1.4	4.8"	1.391
	21	22h 31m	– 11 16	0.99	– 1.5	4.9"	1.360
	26	23h 05m	– 7 15	0.96	– 1.4	5.1"	1.307

Venus – is a morning object during December, but is too close to the Sun in the sky to be visible. Venus reaches superior conjunction on 9th January, and very slowly emerges as an evening object. Not far from Mercury, Venus is much the brighter of the two, and also slightly higher and further from the Sun in the sky. By the end of February, Venus sets about 1 hour after the Sun.

Venus passes barely 4 arcminutes south of Neptune on the evening of 27th January.

DATE		R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec	8	16h 27m	–21 13	0.99	– 3.8	9.9"	1.688
	18	17h 20m	–23 03	0.99	– 3.8	9.8"	1.700
	28	18h 15m	– 23 42	0.99	– 3.8	9.8"	1.707
Jan	7	19h 10m	– 23 09	1.00	– 3.8	9.7"	1.711
	17	20h 04m	– 21 25	0.99	– 3.8	9.8"	1.710
	27	20h 56m	– 18 37	0.99	– 3.8	9.8"	1.706
Feb	6	21h 46m	– 14 56	0.99	– 3.8	9.8"	1.698
	16	22h 34m	– 10 34	0.98	– 3.8	9.9"	1.685
	26	23h 21m	– 5 44	0.98	– 3.8	10.0"	1.669

Earth - The Earth is at perihelion on 3rd January 2018 at 05:35UT, with a distance of 147,097,233km (91,401,983miles) from the Sun. Consequently, the Sun reaches a maximum angular diameter of 32.5 arcminutes in our sky.

The Winter Solstice occurs on 21st December at 16:28UT. On this day, from Wolverhampton the Sun transits the meridian with a maximum altitude of only 14.0 degrees above the southern horizon.

However, from Wolverhampton the earliest sunset occurs on 13th December at 15:54UT, and the latest sunrise occurs on 30th December at 08:20UT, due to the effects of the Equation of Time.

At the time of the solstice, the Sun lies in Sagittarius. However, as the winter progresses, the Sun moves north, passing from Sagittarius through Capricornus and on into Aquarius by the end of February.

Mars - is a morning object in Libra, brightening all the time as it approaches opposition in late July. The red planet is moving rapidly direct, and lies not far from the much brighter Jupiter, which lies to its north-west. Mars rises around at 03:27UT during mid-January.

The wide waning crescent Moon passes north of Mars & Jupiter on the morning of 11th January. The wide waning crescent Moon again passes nearly 4 degrees north of Mars on the morning of 9th February. Also, Mars passes 12.8 arcminutes south of Jupiter on the early morning of 7th January.

DATE		R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec	8	13h 50m	– 10 12	0.94	+ 1.7	4.3"	2.155
	18	14h 14m	– 12 24	0.94	+ 1.6	4.5"	2.075
	28	14h 38m	– 14 27	0.93	+ 1.5	4.7"	1.991

DATE		R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Jan	7	15h 03m	– 16 20	0.92	+ 1.4	4.9"	1.903
	17	15h 28m	– 18 02	0.92	+ 1.3	5.2"	1.812
	27	15h 53m	– 19 32	0.91	+ 1.2	5.4"	1.719
Feb	6	16h 19m	– 20 48	0.90	+ 1.1	5.8"	1.624
	16	16h 44m	– 21 49	0.89	+ 1.0	6.1"	1.528
	26	17h 10m	– 22 37	0.89	+ 0.9	6.5"	1.431

Jupiter – is a morning object in Libra, steadily brightening as it heads towards opposition in late spring. At the beginning of December, Jupiter rises at 05:16UT. By the end of February 2017 the giant planet rises as early as 00:33UT.

The waning wide crescent Moon passes to the north of Jupiter on the early morning of 11th January. Again, the almost Last Quarter Moon passes to the north of Jupiter on the morning of 8th February.

DATE		R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec	8	14h 41m	– 14 37	0.99	– 1.6	31.6"	6.229
	18	14h 49m	– 15 11	0.99	– 1.6	32.1"	6.128
	28	14h 56m	– 15 42	0.99	– 1.6	32.8"	6.010
Jan	7	15h 03m	– 16 09	0.99	– 1.7	33.5"	5.877
	17	15h 09m	– 16 32	0.99	– 1.7	34.3"	5.732
	27	15h 14m	– 16 52	0.99	– 1.8	35.3"	5.577
Feb	6	15h 19m	– 17 07	0.99	– 1.9	36.4"	5.416
	16	15h 22m	– 17 17	0.99	– 1.9	37.5"	5.254
	26	15h 24m	– 17 23	0.99	– 2.0	38.7"	5.093

Saturn - is in conjunction on 22nd December, and is consequently out of view at the beginning of winter. By mid-January, however, the ringed planet has become a morning object in Sagittarius, rising about 1½ hours before the Sun. By the end of February, Saturn rises at 04:13UT.

The razor-thin waning crescent Moon passes north of Saturn on the morning of 15th January, and again the waning crescent Moon passes north of Saturn on the morning of 11th February.

DATE		R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec	8	17h 54m	– 22 30	0.99	+ 0.5	15.0"	11.023
	18	17h 59m	– 22 31	1.00	+ 0.5	15.0"	11.046
	28	18h 04m	– 22 32	1.00	+ 0.5	15.0"	11.043
Jan	7	18h 09m	– 22 32	0.99	+ 0.5	15.0"	11.014
	17	18h 14m	– 22 31	0.99	+ 0.6	15.1"	10.959
	27	18h 19m	– 22 29	0.99	+ 0.6	15.2"	10.880
Feb	6	18h 23m	– 22 27	0.99	+ 0.6	15.4"	10.779
	16	18h 27m	– 22 25	0.99	+ 0.6	15.5"	10.659
	26	18h 31m	– 22 22	0.99	+ 0.6	15.7"	10.521

Uranus - is an evening object on the border of Pisces and Aries. The planet sets at 04:18UT at the beginning of December, and at 22:28UT at the end of February.

The waxing gibbous Moon passes to the south of Uranus on the nights of 17th and 18th December. Again, the First Quarter Moon passes to the south of Uranus on the late evening of 14th January.

DATE	R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec 8	01h 33m	+ 9 05	0.99	+ 5.7	3.6"	19.272
Jan 17	01h 32m	+ 9 02	0.99	+ 5.8	3.5"	19.912
Feb 16	01h 35m	+ 9 19	0.99	+ 5.9	3.4"	20.400

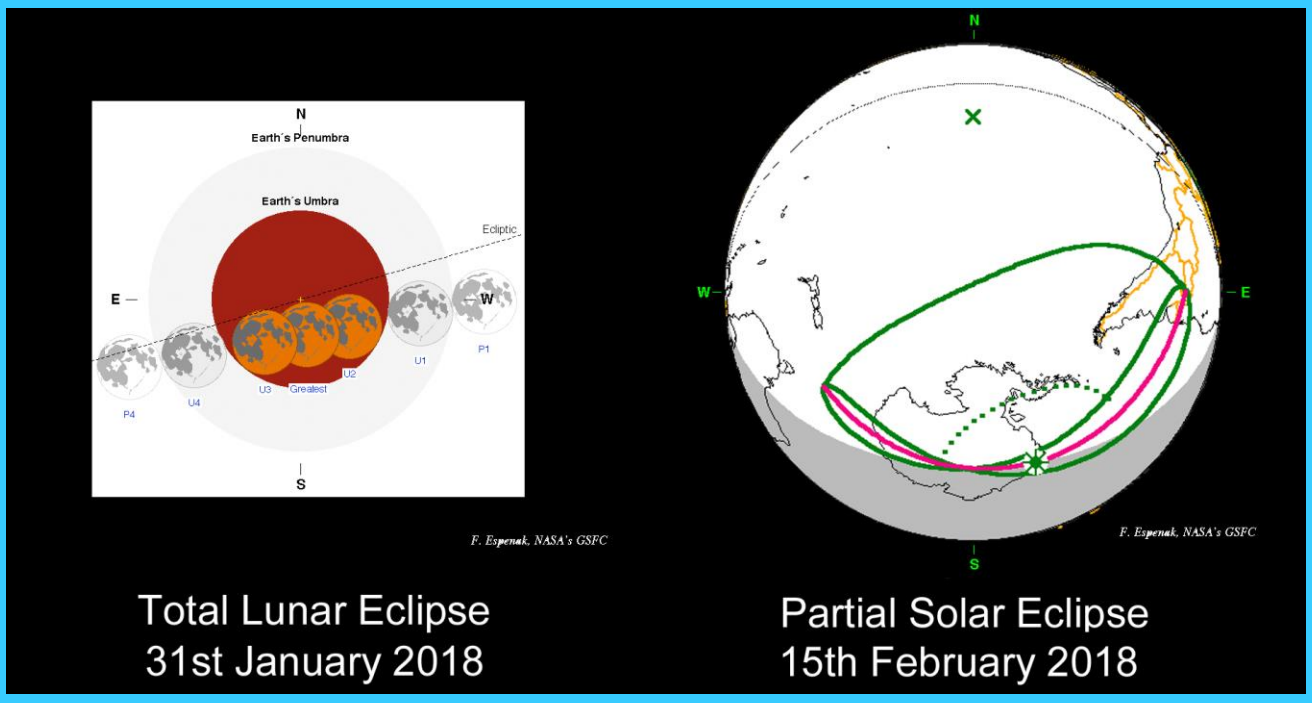
Neptune - is also evening object, but in Aquarius. Neptune sets at 00:09UT at the beginning of December, and becomes lost in the bright evening twilight by late January. Neptune is in conjunction on 4th March.

The First Quarter Moon passes to the south of Neptune on the evening of 4th December. Again, the nearly First Quarter Moon passes to the south of Neptune on the evening of 31st December. Yet again, the wide waxing crescent Moon passes to the south of Neptune on the evening of 28th January. Very close to the very-much brighter Venus on the evening of 27th January.

DATE	R. A.	DEC.	PH.	MAG.	DIAM.	Δ
Dec 8	22h 53m	– 8 05	0.99	+ 7.9	2.2"	30.004
Jan 17	22h 56m	– 7 47	0.99	+ 7.9	2.2"	30.623
Feb 16	23h 00m	– 7 24	0.99	+ 8.0	2.2"	30.891

ECLIPSES

During the winter, there will be two eclipses. A Total Lunar Eclipse on 31st January, and a Partial Solar Eclipse on 15th February.



1. Total Lunar Eclipse – 31st January

A total lunar eclipse occurs on the 31st January. This eclipse, belonging to Saros 124, is visible from the Pacific Ocean, eastern Asia, China, Japan, Australia and New Zealand. The eclipse is not visible in the British Isles.

The eclipse begins at 11:48UT, with totality beginning at 12:52UT. Maximum eclipse occurs at 13:31UT, when the eclipse reaches a maximum magnitude of 1.3155. Totality ends at 14:08UT, with the eclipse ending at 15:11UT. The Moon will be well below the horizon at this time from Wolverhampton.

Saros 124 occurs near the ascending node of the Moon's orbit. The series began in 1152, turning umbral in 1513. The series became total in 1657, and is now in its latter total phase. The series becomes partial again in 2162, and finally, becomes penumbral in 2306. The series ends in 2450.

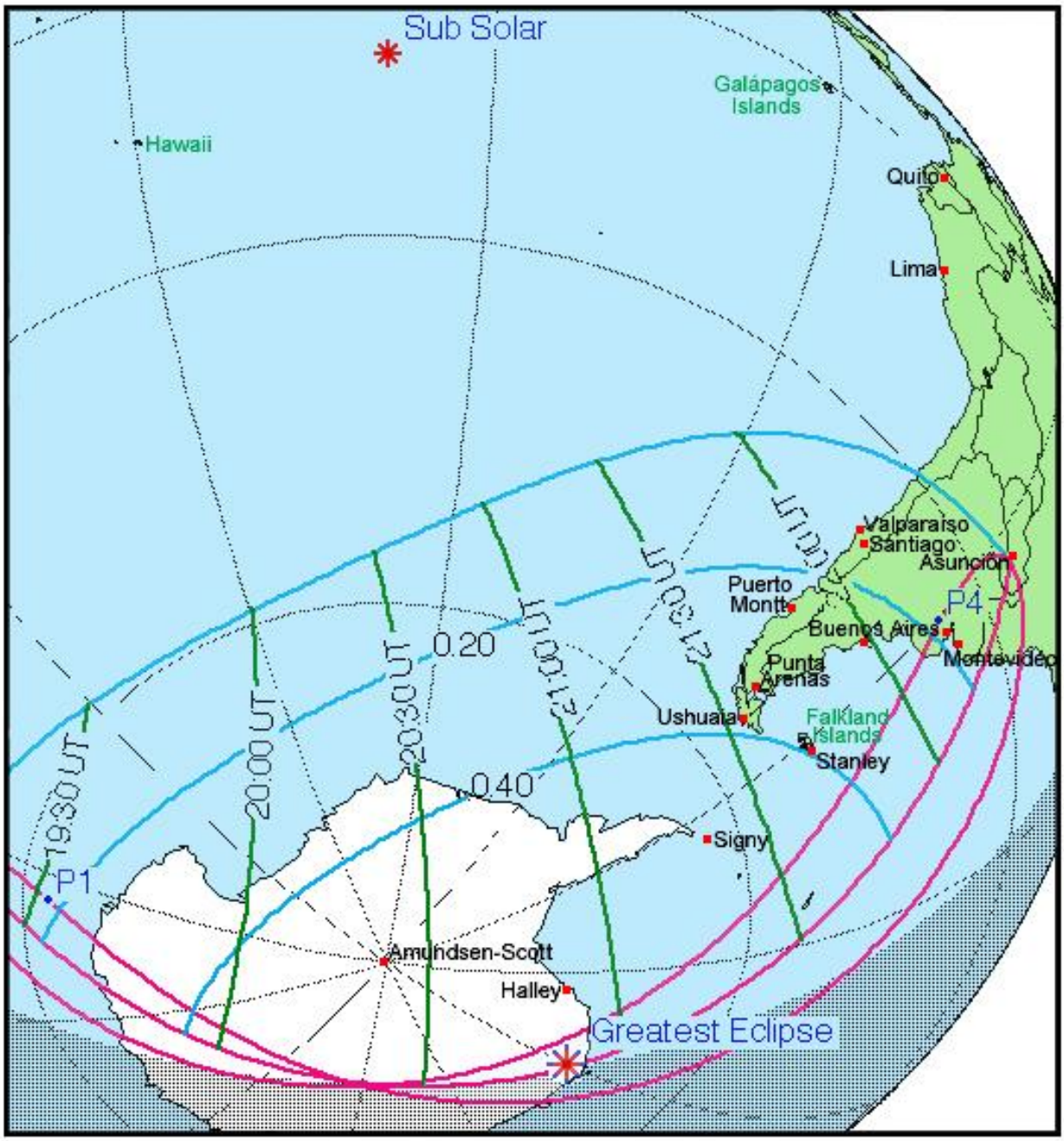
2. Partial Solar Eclipse – 15th February

A Partial solar eclipse occurs on 15th February. This eclipse, belonging to Siros 150, is visible from Antarctica, the extreme southern Pacific Ocean, Chile, Argentina, and the Falkland Islands.

The point of maximum eclipse lies on the far coast of Antarctica, to the south of South Africa. From this point, the eclipse reaches a maximum magnitude of 0.5986 at 20:51UT. The Moon's angular diameter in the sky is considerably smaller than that of the Sun. Had this eclipse been central, it would have been annular.

A map showing the visibility of the eclipse and local circumstances follow on the next page.

Partial Solar Eclipse of 2018 February 15
Visibility in South America and Antarctica



F. Espenak, NASA's GSFC
eclipse.gsfc.nasa.gov
2014 Feb 22

Local Circumstances of the Eclipse

Santiago **Buenos Aires** **Punta Arenas** **Port Stanley**

Above: Maximum eclipse from various locations in South America & the South Atlantic.
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Local Circumstances in Chile

Location	Mag.	Obsc.	Eclipse Begins	Alt.	Maximum Eclipse	Alt.	Eclipse Ends	Alt.
Valparaíso	0.063	0.018	21:52:25	21°	22:16:58	16°	22:40:43	11°
Santiago	0.076	0.024	21:49:25	21°	22:16:18	15°	22:42:12	10°
Puerto Montt	0.189	0.094	21:17:57	28°	22:01:16	20°	22:41:55	13°
Punta Arenas	0.348	0.229	20:40:58	30°	21:37:45	22°	22:30:44	14°

Local Circumstances in Uruguay

Location	Mag.	Obsc.	Eclipse Begins	Alt.	Maximum Eclipse	Alt.	Eclipse Ends	Alt.
Punta Del Diablo	0.178	0.086	21:35:40	10°	22:12:01	2°	00:00:00	0°
Montevideo	0.181	0.088	21:34:21	12°	22:11:38	5°	00:00:00	0°

Local Circumstances in Argentina

Location	Mag.	Obsc.	Eclipse Begins	Alt.	Maximum Eclipse	Alt.	Eclipse Ends	Alt.
Buenos Aires	0.165	0.077	21:36:21	11°	22:12:44	6°	00:00:00	0°
Puerto Madryn	0.256	0.146	21:12:17	23°	21:59:21	15°	22:43:40	7°
Rio Gallegos	0.341	0.222	20:45:42	29°	21:41:24	21°	22:33:20	12°
Ushuaia	0.379	0.258	20:37:00	29°	21:34:54	20°	22:29:13	13°

Local Circumstances in the Falkland Islands

Location	Mag.	Obsc.	Eclipse Begins	Alt.	Maximum Eclipse	Alt.	Eclipse Ends	Alt.
Goose Green	0.394	0.273	20:46:18	23°	21:42:01	14°	22:34:04	6°
RAF Mount Pleasant	0.397	0.275	20:46:20	22°	21:42:01	14°	22:34:03	6°
Port Stanley	0.398	0.277	20:46:42	22°	21:42:15	13°	22:34:11	5°

Local Circumstances in Antarctica

Location	Mag.	Obsc.	Eclipse Begins	Alt.	Maximum Eclipse	Alt.	Eclipse Ends	Alt.
Amundsen-Scott Bs.	0.508	0.390	19:24:57	12°	20:23:09	12°	21:21:19	12°
Signy Base	0.513	0.396	20:24:58	17°	21:23:30	10°	22:18:53	3°
Halley Base	0.579	0.469	19:52:15	12°	20:51:33	9°	21:49:12	6°

This eclipse, belonging to Saros 150 occurs near the Moon's descending node, and is moving northwards on the Earth's surface. The series began in 1729 with the first small partial eclipse in the Antarctic. The series is quickly producing partial eclipses of ascending magnitude, and will produce a non-central annular eclipse in 2126. The next eclipse in 2144 will be fully central with the annular phase occurring in the far southern Pacific Ocean.

The longest eclipse of this series occurs in December 2522, when the point of maximum eclipse occurs just off the northern coast of Papua New Guinea, with a duration of 7m 58s of annularity.

The series produces its last annular eclipse in 2829. It then produces a series of diminishing partial eclipses in the Arctic, before finally ending in 2991. The series spends its entire adult life producing only annular eclipses, without producing a single total or hybrid eclipse.

OCCULTATIONS

During the winter, there is just one occultation of note:

1. A Lunar Occultation of α Tauri (Aldebaran) occurs on the early morning of 31st December 2017. The Moon will be a waxing gibbous phase of +0.93. α Tauri (Aldebaran) shines at magnitude +0.85.

These images have been reproduced from the Stellarium software.

Phenomenon	Date	Moon's Transit (UT)	Moon's Altitude	Azimuth
Moon Rises	Dec 30	14:14:59	– 0.8°	63.3°
Moon Transits the Meridian	Dec 30	22:00:08	53.8°	180.0°
α Tauri - Disappearance	Dec 31	01:08:26	39.4°	242.4°
α Tauri - Reappearance	Dec 31	01:57:16	32.8°	253.8°
Moon Sets	Dec 31	05:57:18	– 0.8°	300.0°

METEORS

The Geminids – These are visible between 7th December and 17th December. They reach their peak on the morning of 14th December.

The Ursids – These are visible between 17th December and 25th December. They reach their peak on the morning of 22nd December.

The Quadrantids – These are visible between 1st January and 6th January. They reach their peak on the morning of 3rd January.

EXTRA-TERRESTRIAL EVENTS

From Mercury – The apparent diameter of the Sun from Mercury varies considerably due to Mercury's irregular orbit. Mercury reaches perihelion on 12th December. As a result, the Sun's angular diameter reaches its maximum of 104.2 arcminutes, a good 3¼ times the diameter we see the Sun from Earth.

As the winter progresses, Mercury moves out from the Sun, and reaches aphelion on 25th January, when the Sun's angular diameter reaches its minimum of 68.5 arcminutes, about 2 times the diameter we see the Sun from Earth.

Of the planets, Venus is at opposition on 25th February, in the constellation of Pisces. Venus will be shining at magnitude –7.1, diameter 44.5 arcseconds, and is a splendid sight in the Mercurian night sky. Unlike from Earth, from Mercury the entire illuminated hemisphere of Venus is turned towards Mercury. This dazzling full-phase disk is easily bright enough to cast shadows across the bleak night-time Mercurian landscape.

The Earth is also at opposition, on 13th December, in the constellation of Taurus. The blue planet then shines at magnitude –4.7, diameter 25.9 arcseconds, with the Moon shining alongside, at magnitude –0.6, diameter 7.1". At this time, the Moon can elongate up to 13¼ arcminutes either side of the Earth.

Mars is also at opposition, on 4th January, in the constellation of Virgo. At this time, Mars, shines at magnitude 0.0, diameter 7.7 arcseconds. Mars can never be very bright in the Mercurian sky, and this is not the best opposition.

Jupiter is at opposition on 12th January, in the constellation of Virgo. The giant planet shines at magnitude –2.1, diameter 39.5 arcseconds.

Saturn is at opposition on 30th January, in the constellation of Sagittarius. The ringed planet shines at magnitude +0.2, diameter 17.2 arcseconds.

From Venus – Venus is at aphelion on 23rd January, and consequently the Sun's angular diameter reaches its minimum of 43.9 arcminutes, nearly 1½ times the diameter that we see the Sun from Earth.

Mercury lies to the east of the Sun in the Venusian sky. Mercury is at greatest eastern elongation (36°) on 28th January, when this bright planet shines at magnitude –0.6, diameter 11.5 arcseconds. Elongations of Mercury from Venus are generally larger than those seen from Earth, because of the much closer distance of Venus to Mercury. Mercury is at inferior conjunction on 25th February. Afterwards, Mercury then moves west of the Sun.

The Earth is in conjunction on 9th January, but very slowly emerges to the east of the Sun. The Blue Planet shines at magnitude –2.7, diameter 10.3 arcseconds, phase 0.99, with the Moon shining alongside, at magnitude +1.4, diameter 2.8 arcseconds, phase 0.99. At this time, the Moon can elongate up to 5¼ arcminutes either side of the Earth.

Mars lies to the east of the Sun n the Venusian sky, shining at magnitude +1.3, diameter 5.0 arcseconds. The Red Planet continues to fade during the winter, as it approaches conjunction next March.

Jupiter also lies to the east of the Sun n the Venusian sky, shining at magnitude –1.9, diameter 36.6 arcseconds. The Giant Planet continues to fade during the winter, as it approaches conjunction next March.

Saturn is yet another planet lying to the east of the Sun n the Venusian sky, shining at magnitude +0.3, diameter 17.5 arcseconds. The Ringed Planet continues to fade during the winter, as it approaches conjunction next April.

Uranus is visible in the constellation of Aries. The ice planet then shines at magnitude +5.8, diameter 3.5 arcseconds.

Neptune is visible in the constellation of Aries. The ice planet then shines at magnitude +7.9, diameter 2.3 arcseconds.

From Mars – Mars, having been at aphelion in October 2017, is now moving sunwards. As a result, the angular diameter of the Sun is slowly increasing in the Martian sky. By mid-January the apparent diameter of the Sun will be 19.8 arcminutes, about two-thirds the diameter we see the Sun from Earth.

Mercury is at inferior conjunction on 4th January, and becomes a morning object in the Martian sky thereafter. Mercury reaches greatest western elongation (17°) on 31st January. This is a favourable elongation for Martians. Elongations of Mercury are small seen from Mars, and cannot exceed 17°! Also, Mercury appears to move through the sky more rapidly seen from Mars, due to Mars' slower orbital motion compared to that of the Earth, resulting is a shorter synodic period. Mercury soon reaches superior conjunction on 5th March, and quickly becomes an evening object thereafter.

Venus is a poorly-placed morning object in the Martian sky. The planet is approaching superior conjunction in March. Magnitude –2.6, diameter 8.8 arcseconds, phase 0.76.

The Earth is also a morning object, but in Taurus. The Blue Planet shines at magnitude –1.6, diameter 9.7

arcseconds, phase 0.72, with the Moon shining alongside, at magnitude +3.2, diameter 2.6 arcseconds, phase 0.73. At this time, the Moon can elongate up to 5 arcminutes either side of the Earth.

Of the outer planets, Jupiter is a morning object in Libra. Magnitude –2.6, diameter 50.1 arcseconds.

Saturn is an evening object in Ophiuchus, shining at magnitude +0.6, diameter 17.2 arcseconds.

Uranus is in conjunction on 30th January as seen from Mars, magnitude +6.0, diameter 3.3 arcseconds . Finally, Neptune is an evening object in Aquarius, mag. +8.0, diam. 2.3", diameter 2.1 arcseconds .

From Jupiter – Jupiter was at aphelion in February 2017, and consequently the apparent diameter of the Sun increases slightly; 353.5 arcseconds (5.9 arcminutes), about a fifth the diameter we see the Sun from Earth.

The inner planets are not normally covered here, as they would be too close to the Sun in the Jovian sky. Venus would elongate only 8 degrees from the Sun. The Earth would fare little better, elongating between 10 and 11 degrees, and shining at around mag. +1.5, diam. 3.3". Mars would elongate about 14 degrees from the Sun, but would be much fainter and smaller than Venus or Earth.

For instance, during our winter, the Earth is an evening object in the Jovian sky, reaching greatest eastern elongation (10°) on 10th February. The planet is obviously very close to the Sun in the sky, but might be glimpsed during a solar eclipse by one of Jupiter's many moons. Magnitude +1.0, diameter 3.1 arcseconds, phase 0.68.

The brightest planet in the Jovian sky would be Saturn, which would be about as bright as Jupiter in our skies when at opposition. However, this winter, the ringed planet is nowhere near opposition, and to any Jovian observer Saturn is a morning object in Capricornus, magnitude +1.2, diameter 21.0 arcseconds

Uranus is an morning object in Aries, magnitude +6.3, diameter 2.8 arcseconds. Finally, Neptune is also a morning object, but in Aquarius, magnitude +8.1, diameter 2.0 arcseconds.

From Saturn – Saturn is approaching aphelion in April 2018, and consequently the apparent diameter of the Sun in the Saturnian sky this winter is getting smaller; 190.7 arcseconds (3.2 arcminutes), about a tenth the diameter we see the Sun from Earth.

For instance, during our winter, the Earth is an evening object in the Saturnian sky. The planet is extremely close to the Sun in the sky, but might be glimpsed during a solar eclipse by one of Saturn's many moons. Magnitude +1.6, diameter 1.6 arcseconds, phase 0.95.

This far out, the inner planets would be totally lost in the Sun's glare. The only inferior planet on view would be Jupiter. Even this can only elongate about 10 degrees either side of the Sun when at greatest elongation as seen in Saturnian skies. However, during our winter, the giant planet is an evening object in Cancer, shining at magnitude –0.6, diameter 24.9 arcseconds, phase 0.44.

Of the outer planets, Uranus is a morning object in Aries, magnitude +6.4, diameter 2.7 arcseconds. Finally, Neptune is a morning object in Pisces, magnitude +7.8, diameter 2.3 arcseconds.

From Uranus – As seen from Uranus this winter, the Sun's apparent diameter is 96.4 arcseconds (1.6 arcminutes), about a twentieth the diameter we see the Sun from Earth.

From this ice giant, there are two inferior planets of note; Jupiter and Saturn. Jupiter is an evening object in Virgo this winter, fairly near the Sun in the sky. Jupiter shines at magnitude +1.5, diam. 7.8", phase 0.99.

Saturn is an evening object in Libra, shining much fainter than we see it, at magnitude +4.3, diam. 6.4", phase 0.86, finally, the only superior planet, Neptune, is an evening object on the Sagittarius-Capricornus border, magnitude +7.1, diam. 3.2".

From Neptune – As seen from Neptune this winter, the Sun's apparent diameter is 64.1 arcseconds (1.1 arcminutes), about a thirtieth the diameter we see the Sun from Earth.

From this far ice giant, all visible planets are inferior. Jupiter is an evening object in Leo, magnitude +2.3, diam. 5.9", phase 0.89. Saturn is an evening object in Virgo, magnitude +6.4, diam. 5.8", phase 0.52. Uranus is a morning object in Cancer, magnitude +6.2, diam. 3.4", phase 0.45.

Finally, although a Kuiper Belt object, Pluto is an evening object in Libra, magnitude +16.3, diam. 0.1".