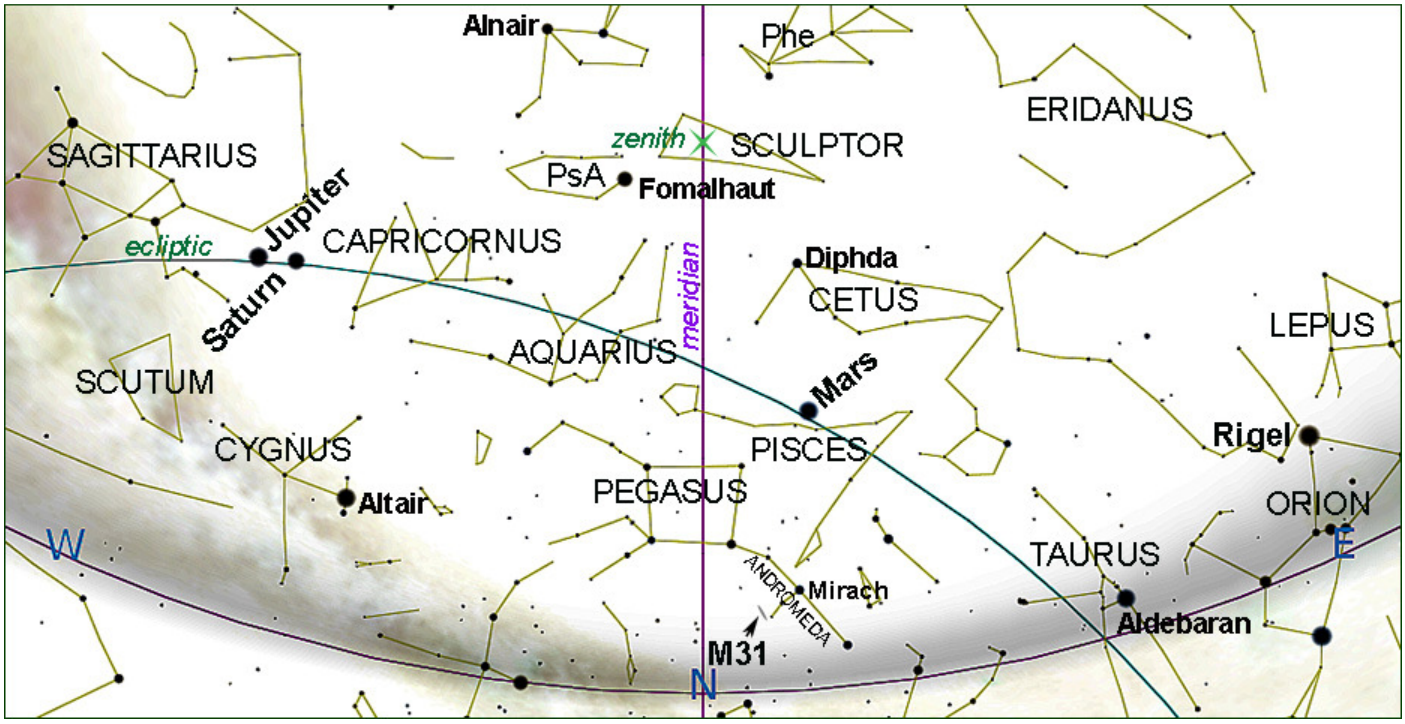
SKYNOTES from Hermanus

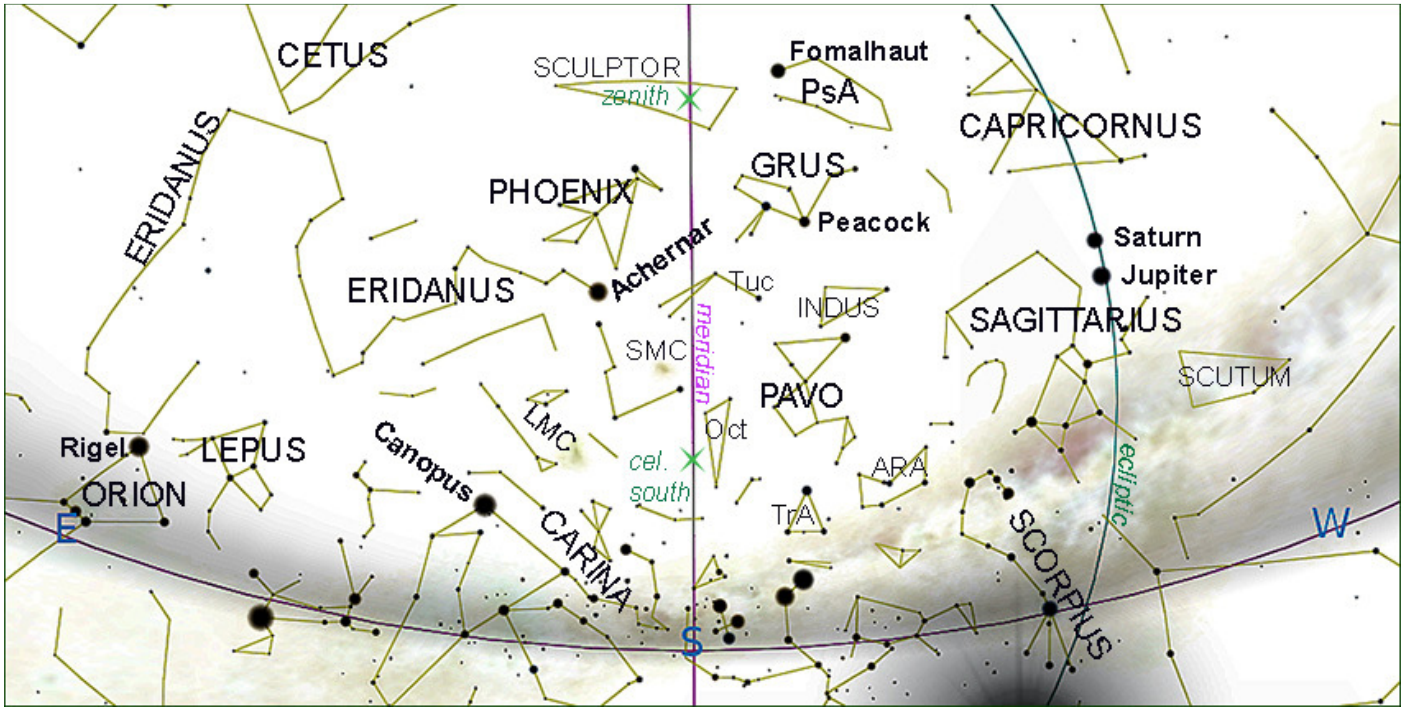
NOVEMBER 2020

1. SKY CHARTS

EVENING SKY 12th NOVEMBER at 21h00 (NORTH DOWN)



EVENING SKY 12th NOVEMBER at 21h00 (SOUTH DOWN)



PLEASE NOTE: All events predicted are as observed from **Hermanus, Western Cape, South Africa. Times are South African Standard Time (UTC +2).** *Also please note*: with the exception of **Pluto** (magnitude +14.4), all events predicted are visible with the naked eye.

2. THE SOLAR SYSTEM

Date	*Time*	*Item*
2		**Mercury** at perihelion *
3		**Mercury** stationary
		Moon near **Aldebaran**
5	21h30	**Moon** furthest north (+24.8º)
6	20h12	**Moon** passes 3.5º south-east of **Pollux**
7	22h06	**Moon** 2.7º north-west of the **Beehive** (M44)
8	15h46	**Last quarter Moon**
		Juno in conjunction with the **Sun**
9		**Moon** near **Regulus**
10	18h59	**Mercury** at greatest elongation (19.1º)
12	23h32	**Jupiter** passes 0.7º south-west of **Pluto**
		Mercury greatest latitude north
13	01h04	**Moon** passes 3.5º north-west of **Venus**
		Moon, Venus, Mercury and **Spica** grouped before sunrise
14	13h48	**Moon** at perigee (357 800 Km)
15	07h07	**New Moon**
		Mars stationary
16		**Moon** near **Antares**
18	13h27	**Moon** furthest south (-24.9º)
19		**Moon, Jupiter, Saturn** and **Pluto grouped** early morning
21		**Venus** greatest latitude north
22	06h45	**First quarter Moon**
23		**Moon** near **Neptune**
26	02h41	**Moon** passes 3.7º east of **Mars**
27	19h45	**Moon** passes 2.8º south of **Uranus**
	09h29	**Moon** at apogee (405 900 Km)
29		**Neptune** stationary
30	11h30	**Full Moon**

* **Mercury**, a few facts

Mercury is named after the Greek god **Hermes** (Ερμής), translated into the Latin **Mercurius**, god of commerce, messenger of the gods and mediator between gods and mortals.

It is the smallest and innermost planet in the Solar System with an orbit varying between 46,001,200 km (perihelion) and 69,816,900 km (aphelion, next 16th December) and orbits the Sun in just 87.97 earth days, the shortest year of all the planets in the Solar System.

Its proximity to the Sun means the planet can only be seen near the western horizon after sunset or eastern horizon before sunrise. It may appear as a bright star-like object but is generally far more difficult to observe than Venus. The planet telescopically displays the complete range of phases, similar to Venus and the Moon, as it moves in its inner orbit relative to Earth which recurs over its synodic period of approximately 116 days.

Mercury rotates in a way that is unique in the Solar System. It is tidally locked with the Sun in a 3:2 spin–orbit resonance which means that, relative to the fixed stars, it rotates on its axis exactly three times for every two revolutions it makes around the Sun. As seen from the Sun, in a frame of reference that rotates with the orbital motion, it appears to rotate only once every two Mercurian years. An observer on Mercury would therefore see only one day every two Mercurian years.

Mercury's surface appears heavily cratered and is similar in appearance to the Moon's, indicating that it has been geologically inactive for billions of years.

NOVEMBER 2020			*1st November*	*1st December*	*Visibility*
Sun Length of day	Libra to Ophiuchus 13h31 to 14h17	Rises: Transit: Sets:	05h41 12h27 19h12	05h24 12h32 19h41	***Never look at the sun without SUITABLE EYE PROTECTION!***
Mercury Magnitude Phase Diameter	Virgo to Libra +1.4 to -0.8 16% to 96% 9" to 5"	Rises: Transit: Sets:	05h11 11h38 18h05	04h50 11h49 18h50	**low in the east before sunrise**
Venus Magnitude Phase Diameter	Virgo to Libra -4.0 82% to 89% 13" to 12"	Rises: Transit: Sets:	04h16 10h20 16h25	06h59 10h41 17h24	**The morning star**
Mars Magnitude Phase Diameter	Pisces -2.1 to -1.1 98% to 92% 20" to 15"	Rises: Transit: Sets:	17h11 22h59 04h52	15h19 21h02 02h49	**Initially all night, latterly evening**
Jupiter Magnitude Diameter	Sagittarius -2.2 to -2.0 37" to 34"	Rises: Transit: Sets:	10h22 17h29 00h40	08h49 15h53 22h57	**Evening**
Saturn Magnitude Diameter	Sagittarius +0.6 16"	Rises: Transit: Sets:	10h47 17h51 00h58	09h00 16h02 23h05	**Evening**
Uranus Magnitude Diameter	Aries +5.7 4"	Rises: Transit: Sets:	18h59 00h26 05h49	16h56 22h20 03h48	**All night**
Neptune Magnitude Diameter	Aquarius +7.8 to +7.9 2"	Rises: Transit: Sets:	14h59 21h16 03h37	13h00 19h17 01h38	**Evening**
Pluto Magnitude	Sagittarius +14.4	Rises: Transit: Sets:	10h28 17h36 00h49	08h33 15h41 22h59	**Evening**

Phase: In a telescope, the inner planets (Mercury, Venus and Mars) appear to us in phases, depending on the angle of the Sun's illumination, as does the Moon. The **angular diameter** is given in arc seconds ("). This is the apparent size of the object as we see it from Earth.

Magnitude: we are accustomed to hearing stars described in terms of 'magnitude'. For example, the planet Jupiter at magnitude -2.0 is considerably brighter than the star Antares (in Scorpius) at +1.05. The scale is 'inverse'; the brighter the object, the lower the number. A 'good' human eye on a clear night can see down to a magnitude of about +6.

Transit: When an object crosses the **local meridian** it is said to **'transit'**. The local meridian is an imaginary line from the horizon directly north passing overhead (through *zenith,* see charts on page 1) to the horizon directly south.

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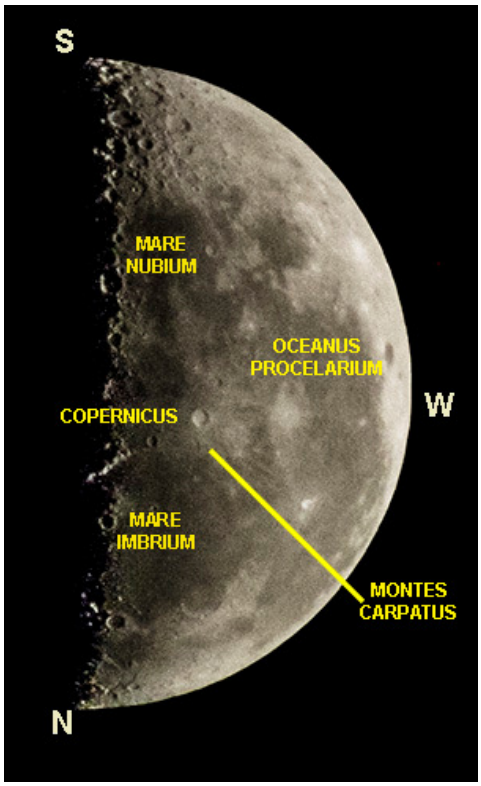
THE MOON

Montes Carpatus

Location : forms the southern edge of **Mare Imbrium** on the Moon. The selenographic coordinates of this range are 14.5° N, 24.4° W.



Best seen : two days after first quarter and one day after last quarter.

Description : This rugged range generally stretches from west to east. The western end begins in the vicinity of the crater T. Mayer, although a few low ridges curve northwards towards Euler crater. At the eastern extreme is a wide gap where Mare Imbrium in the north joins Mare Insularum to the south. Starting at the east side of this gap are the Montes Apenninus, another mountainous range that curves towards the northeast.

Most of the Carpatus range consists of a series of peaks and rises, separated by valleys that have been penetrated by lava flows. None of the peaks have received individual names. The surface to the north of the range is nearly level lunar mare, broken only by the occasional wrinkle ridge or minor impact crater. The region south of the range is somewhat rougher, although still covered by lava flows. About 100 kilometres south of the mountains is the well-known ray crater Copernicus and the irregular outer ramparts of this crater stretch almost to the foothills of the Carpatus range. Also of note is the smaller crater Gay-Lussac, which is attached to the southern part of the range.

Diameter : 361 km

Name : Johann Heinrich von Mädler after the Carpathian Mountains in Central Europe.

Lunar and Solar eclipses: None predicted for this month

METEOR SHOWERS

Name	*Date & Time of Max*	*Duration*	*Radiant*	*ZHR*	*velocity*	*Observing prospects*
Southern Taurids	5 November 21h30 – 03h30	1 October – 25 November	15º west of **Aldebaran**	10	29	Good until midnight
Northern Taurids	12 November 21h30 – 03h30	1 October – 25 November	3º east of **The Pleiades**	5	31	Good
Leonids	17 November 03h00 – 04h00	12 - 21 November	3º north-west of **Algieba (γ Leo)**	5-10	70	Good

For more details regarding meteor watching, please see the Sky Guide Africa South (SGAS), pages 86- 87

Guide to the table above:

ZHR – zenithal hourly rate
vel. - velocity in km per second

3. LOOKING UP ...

SUGGESTED OBSERVATION SCHEDULE for **NOVEMBER** *(Lunar observations notwithstanding)*

Date	*dusk end*	*moonrise*	*moonset*
5th	20h50	23h49 (86%)	
18th	21h07		22h14 (6%)

STARGAZING . *With regret, we have had to suspend all our stargazing functions owing to the current situation.*

Please consult our website for updates:
http://www.hermanusastronomy.co.za.

DEEP SKY HIGHLIGHTS

THE ANDROMEDA GALAXY
M31, NGC 224

Description	Spiral galaxy
Distance	2 500 Kly, 780 Kpc
Visual magnitude	+3.4
Apparent size	178 x 70 arcmin
Actual size	131.3 Kly, 40.2 Kpc
Alt/Azimuth	+13º 04' 17" / 11º 01' 02"
J2000 lat/long	0h42m42s / +41º16'00"
Location	Constellation **Andromeda**, from guide star **Mirach,** 7.7º to north-west

Visibility on 12th November :

Rise	*Transit*	*Set*
17h58	21h34	01h13

Naked eye:	A faint smudge on moonless nights
Binoculars	Yes
Telescopes	Yes

Discovery and History

The earliest known record of the Andromeda Galaxy was made in 964 CE by Persian astronomer **Abd al-Rahman al-Sufi**. He described it as "The Little Cloud" in his book of fixed stars. But it must have been known to Persian Astronomers at Isfahan as early as 905 AD. It also appeared on a Dutch star map in 1500.

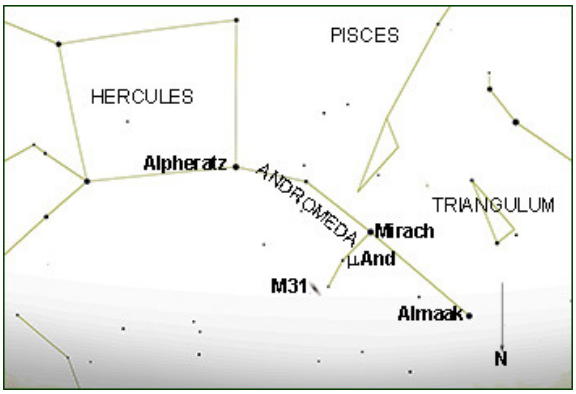
The first telescopic description of M31 was given by **Simon Marius** in 1612 without claiming its discovery. Apparently unaware of al-Sufi's and Marius' observations, **Giovanni Batista Hodierna** independently rediscovered this object in 1654. **Edmond Halley**, in his 1716 treatise, credits the discovery of this 'nebula' to French astronomer **Ismail Bouillard**, who observed it in 1661.

In 1764, **Charles Messier** catalogued the object as number 31. Unaware of al-Sufi's earlier work, Messier incorrectly credited Marius with its discovery.

The "Great Andromeda Nebula" was long believed to be one of the nearest gaseous nebulae. In 1785, **William Herschel** wrote (incorrectly) that, based on its colour and magnitude, its distance "would not exceed 2000 times that of Sirius" – about 17 000 ly. **William Huggins**, the pioneer of spectroscopy, observed the spectrum of M31in 1864. The "nebula" displayed a star-like continuous spectrum, unlike the line spectra of gaseous nebulae.

Observing

Physical Properties



The Andromeda Galaxy was formed roughly 10 billion years ago from the collision and subsequent merger of smaller protogalaxies.

With an apparent magnitude of +3.4, the Andromeda Galaxy is one the brightest Messier objects. It is visible to the naked eye from areas of moderate light pollution and can even be seen from urban areas with binoculars.

Although the apparent size of the galaxy is about 3 x 1 degrees – six times the size of the full moon! – only the bright central region is visible to the naked eye. M31 harbours a dense and compact nucleus at its centre, giving the visual impression of a star embedded in the more diffuse surrounding bulge.

Astrophotographers can gather the fine, faint detail in the spiral arms. M31 is classified as an "SA(s)b" spiral galaxy, with arms moderately wound up in a clockwise direction. Andromeda's galactic plane is oriented approximately 13º to our line of sight and is therefore seen nearly edge-on.

Like the Milky Way, the Andromeda galaxy has satellite galaxies. Charles Messier found the two brightest, M32 and M110, both visible in binoculars and conspicuous in small telescopes.

keep in touch...

Please have a look at our excellent website, edited by Derek Duckitt.
http://www.hermanusastronomy.co.za/

Also...

ASSA website http://assa.saao.ac.za
ASSA Deep-Sky Section
Whatsappchat group: [074 100 7237]
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Edited by Peter Harvey
e-mail: petermh@hermanus.co.za
Tel: 081 212 9481