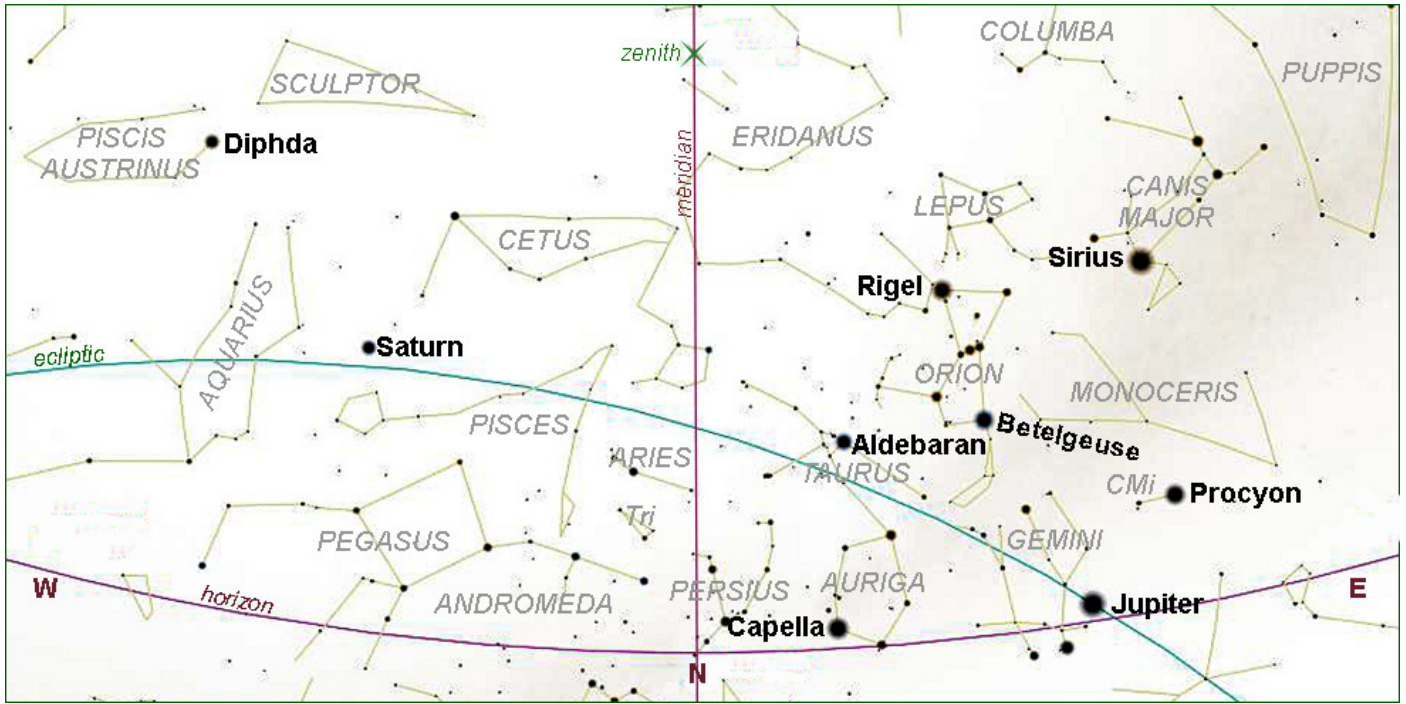
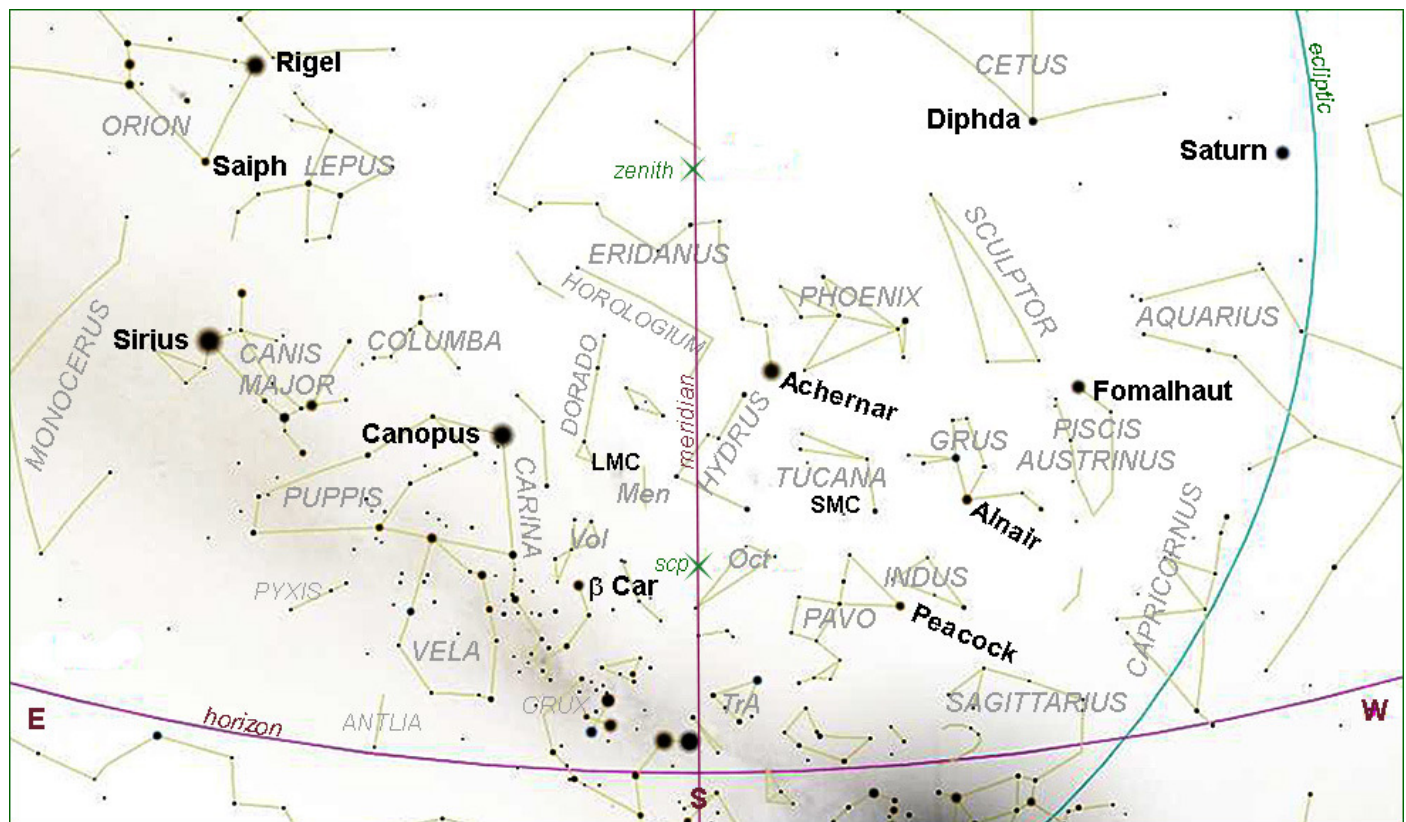


EVENING SKY – DECEMBER 15th at 22h00 (NORTH DOWN)



EVENING SKY – DECEMBER 15th at 22h00 (SOUTH DOWN)



SUGGESTED EVENING OBSERVATION WINDOW

(Lunar observations notwithstanding)

<i>Date</i>	<i>Moon</i>	<i>Dusk end</i>
December 7	<i>Rise</i> 22h45 (94%)	20h31
to December 22	<i>Set</i> 22h03 (4%)	21h41

THE SOLAR SYSTEM

DECEMBER HIGHLIGHTS based on the 2025 SKY GUIDE

(PLEASE NOTE: all events are as observed from **HERMANUS**, Western Cape, South Africa)

<i>Date</i>	<i>Time (SAST)</i>	<i>Item</i>
4		Moon (98%) passes 1.4° east of the Pleiades
4		Callisto at maximum from Jupiter (10')
5	01h14	Full Moon (supermoon)
7		Moon (88%) passes 0.4° north-west of the Jupiter
10		Moon (63%) passes 0.8° east of the Regulus
11	22h52	Last quarter Moon
12		Callisto at maximum from Jupiter (10')
14		Moon (24%) passes 0.8° south of Spica Geminid meteor shower at maximum (see page 4)
18		Moon (2%) near Mercury and Antares
20	03h43	New Moon Callisto at maximum from Jupiter (10')
26	23h56	Moon (40%) sets 37 minutes before Saturn
27	21h10	First quarter Moon
28		Callisto at maximum from Jupiter (10')
31		Moon (88%) passes 1.1° northwest of the Pleiades

ASTRONOMICAL EPHEMERIS

4	13h06	Moon at perigee (356 962 km)
6		Moon northernmost (+28.3°)
7		Mercury at western elongation (20.7°)
11	09h35	Moon at descending node Neptune stationary
17	08h09	Moon at apogee (406 324 km)
20		Moon southernmost (-28.2°)
21	17h03	December solstice
26	00h03	Moon at ascending node

SOLAR SYSTEM VISIBILITY

2025 DECEMBER 15				When visible?
Sun	Ophiuchus	Rise:	05h35	Never look at the sun without SUITABLE EYE PROTECTION!
Length of day	14 hours 27 minutes	Transit:	12h38	
		Set:	19h52	
Mercury	Scorpius	Rise:	04h18	Low in the east before sunrise
Magnitude	-0.5	Transit:	11h17	
Phase	80%	Set:	18h17	
Diameter	6"			
Venus	Ophiuchus	Rise:	05h05	Too close to the Sun
Magnitude	-3.9	Transit:	12h15	
Phase	100%	Set:	19h26	
Diameter	10"			
Mars	Sagittarius	Rise:	05h51	Too close to the Sun
Magnitude	+1.3	Transit:	13h06	
Phase	100%	Set:	20h21	
Diameter	4"			
Jupiter	Gemini	Rise:	21h45	All night
Magnitude	-2.6	Transit:	02h48	
Diameter	46"	Set:	07h48	
Saturn	Aquarius	Rise:	12h39	Evening
Magnitude	+1.1	Transit:	18h52	
Diameter	18"	Set:	01h08	
Uranus	Taurus	Rises:	17h44	All night
Magnitude	+5.6	Transit:	22h49	
Diameter	4"	Set:	03h59	
Neptune	Pisces	Rise:	12h59	Evening
Magnitude	+7.	Transit:	19h05	
Diameter	2"	Set:	01h14	
Pluto	Capricornus	Rise:	08h16	Evening
Magnitude	+14.5	Transit:	15h27	
		Set:	22h38	

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 observed **angular diameter** is given in arc seconds.

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* to the horizon directly south.

Magnitude: we are accustomed to hearing the brightness of stars described in terms of 'magnitude'. For example, the star Sirius, at magnitude, -1.4, is considerably brighter than the star Antares (in Scorpius) at +1.05. The scale is 'inverse'; the brighter the object, the lower the value. A 'good' human eye on a clear night can see a star down to a magnitude of about +6.

THE MOON

Fracastorius is on the southern edge of Mare Nectaris. This is one of the Moon's best examples of subsidence. The Nectaris lavas were so heavy that the floor of Fracastorius actually cracked as it bent downward and allowed the Nectaris lavas to flow over its northern rim. If you're lucky and have good optics and good seeing, you might actually glimpse the unnamed rille that crosses the floor from east to west just south of the centre. There is a tiny 4 km crater right in the middle of this rille that may help you spot it.

Theophilus, **Cyrillus** and **Catharina** are also well positioned in relation to the terminator. Theophilus is a spectacular formation with all the complexities inherent in a Tycho-class crater: terraced walls, flat floor and magnificent central mountain peaks. It is 96 km in diameter. From the highest mountains, the drop from the rim to the floor below is 4.3 km.

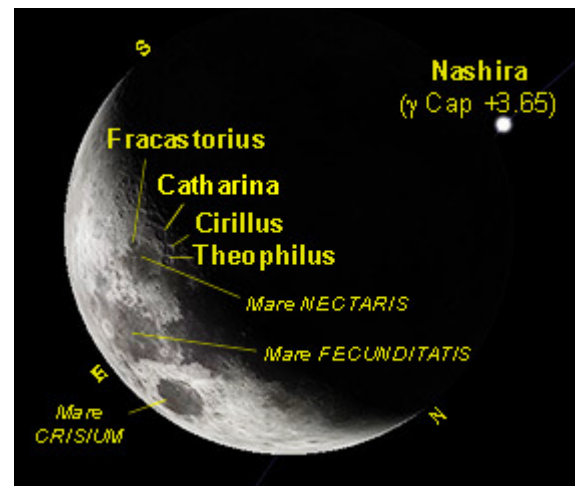
For an observer on top of the mountain looking down, the view must be breathtaking! Observers have reported that the shape of the central mountain appears to change as the lunation progresses, presumably due to shadow play. Notice how Theophilus's floor is much smoother than Cirillus's and Catharina's. When the impact that produced Theophilus occurred, much of the excavated material shot upwards. When it came back in the form of molten rocks and boulders the size of mountains, it oozed down the smooth floor in the form of lava. There is also impact melt around the outside of the crater that can easily be seen with backyard telescopes.

Take advantage of this, as there aren't many places on the Moon where you can see such a thing. Most of this impact melt occurs northeast of the crater and flows into Sinus Asperitatis. Lunar scientist Charles Wood points out that this is because the south rim is higher. Shortly after the impact, the terraces located to the southwest collapsed into the lake of molten lava below. Do not forget that these terraces are more than 4 km high; imagine this colossal amount of rubble falling on the molten lava and forming gigantic waves of hot lava rushing towards the opposite side. As the north rim is lower, these waves crashed against the wall, rose its edges, overflowed to the outside of the crater and accumulated to the northeast. Why does this area attract so much interest from observers? Perhaps because it includes the second best visible crater on the Moon (after Copernicus). This means that the entire interior of Theophilus crater is clearly visible, with its wide flat floor and huge central mountains.

These three craters illustrate different stages of degradation. Cyrillus crater is older than Theophilus as it is noted that its rim was modified by the impact that formed Theophilus. Catharina crater is certainly the oldest of the three, both because it is more worn out and because it has been modified by several later impact craters, and a large crater can even be seen on its northern edge, in addition to being much shallower than the others. This means it was probably filled with ejecta from the Imbrium Basin. Perhaps there are additional reasons to make this a privileged spot for observation: a sea, a flooded basin cut by mountain ranges and three magnificent craters. When you are aware of all these factors, you may see the Moon with different eyes!

Text and adaptation: Avani Soares

Best seen about **24th December** (20%).



Lunar occultation of γ Cap

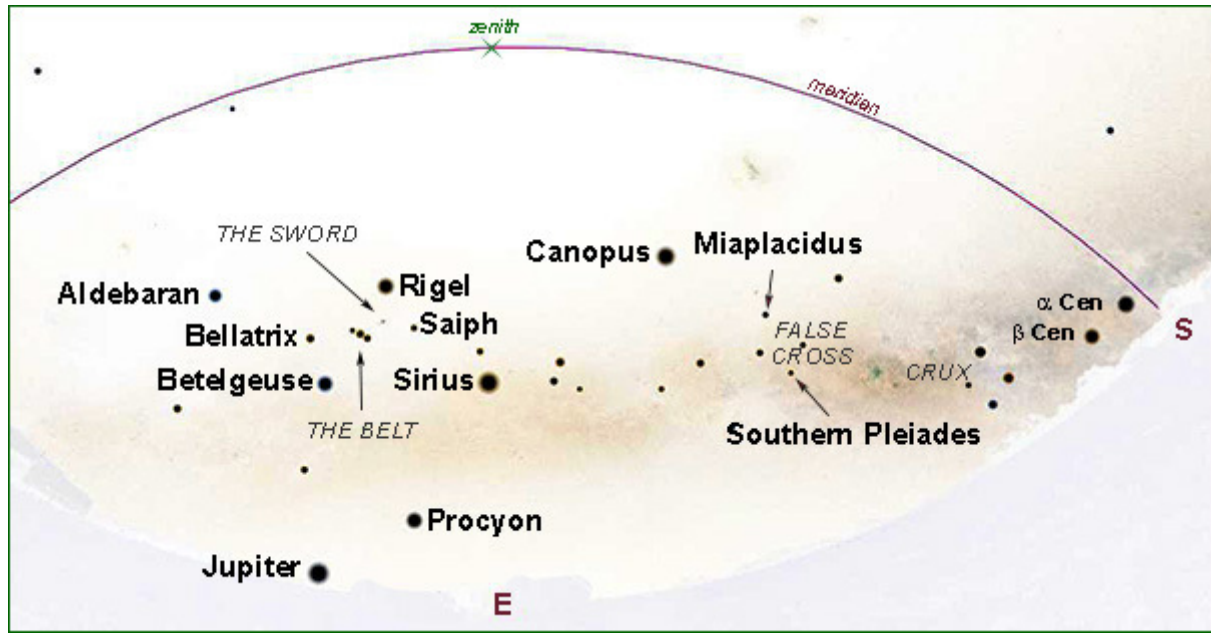
No eclipses, lunar or solar, will be visible from southern Africa in December 2025

COMETS, ASTEROIDS AND METEORS

The link to the latest Comet, Asteroid and Meteor Section from Tim Cooper: <https://assa.saao.ac.za/wp-content/uploads/sites/23/2025/09/ASSA-CAMnotes-2025-Number-4.pdf>

NO 'SCOPE REQUIRED

Recline in a comfortable deckchair with *toes pointed East* and a beverage of choice!



Herewith some basic information on the stars depicted in the chart above, commencing with **Aldebaran** (M45) working roughly north to south:

<i>object</i>	<i>magnitude</i>	<i>description</i>	<i>colour</i>	<i>colour index</i>
THE STARS				
Aldebaran	+0.85	Double variable	Red	1.55
Bellatrix	+1.6	Double	Light blue	-0.22
Betelgeuse	+0.45	Double pulsating variable	Red	1.52
Rigel	+0.15	Double pulsating variable	White	-0.03
Procyon	+0.4	Double	Yellow	0.44
Saiph	+2.05	Star	Light blue	-0.15
Sirius	-1.45	Double	White	0.00
Canopus	-0.065	Star	White	0.16
Miaplacidus	+1.65	Star	White	0.07
β Cen	+0.55	Double pulsating variable	Blue-white	0.15
α Cen	0.10	Double	Yellow	0.60

THE GROUPS

Orion's Belt Left to right: **Mintaka Alnilam Alnitak.**

His Sword The centre 'star' is **the M42 nebula.**

The False Cross **Miaplacidus** at the top with the **Southern Pleiades** at bottom.

And then comes **Jupiter**, peeping above the horizon just north of East to join our summer skies.

THE BORTLE SCALE

The brightness of the night sky and the impact of light pollution is measured by a nine-level classification system. The scale is used to evaluate the quality of a location for stargazing and astrophotography.

Below is a list of the heading of each grade:

- | | |
|------------------------------|------------------------------|
| 1. EXCELLENT DARK | 5. SUBURBAN |
| 2. TYPICAL TRULY DARK | 6. BRIGHT SUBURBAN |
| 3. RURAL | 7. SUBURBAN/URBAN TRANSITION |
| 4. BRIGHTER RURAL | 8. CITY |
| 4.5 SEMI-SUBURBAN/TRANSITION | 9. INNER CITY |

The full description of the Bortle Scale is attached as a .pdf.

Please keep in touch...

Have a look at our excellent website, edited by Derek Duckitt: <https://www.hermanusastronomy.co.za/>

Contact ASSA - Get in touch with officers of the Society - we're real people with a passion for astronomy, **so contact us and let's talk!**

<http://www.mnassa.org.za/>

Acknowledgements to the following:

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Wikipedia

Edited by Peter Harvey - petermh@hermanus.co.za