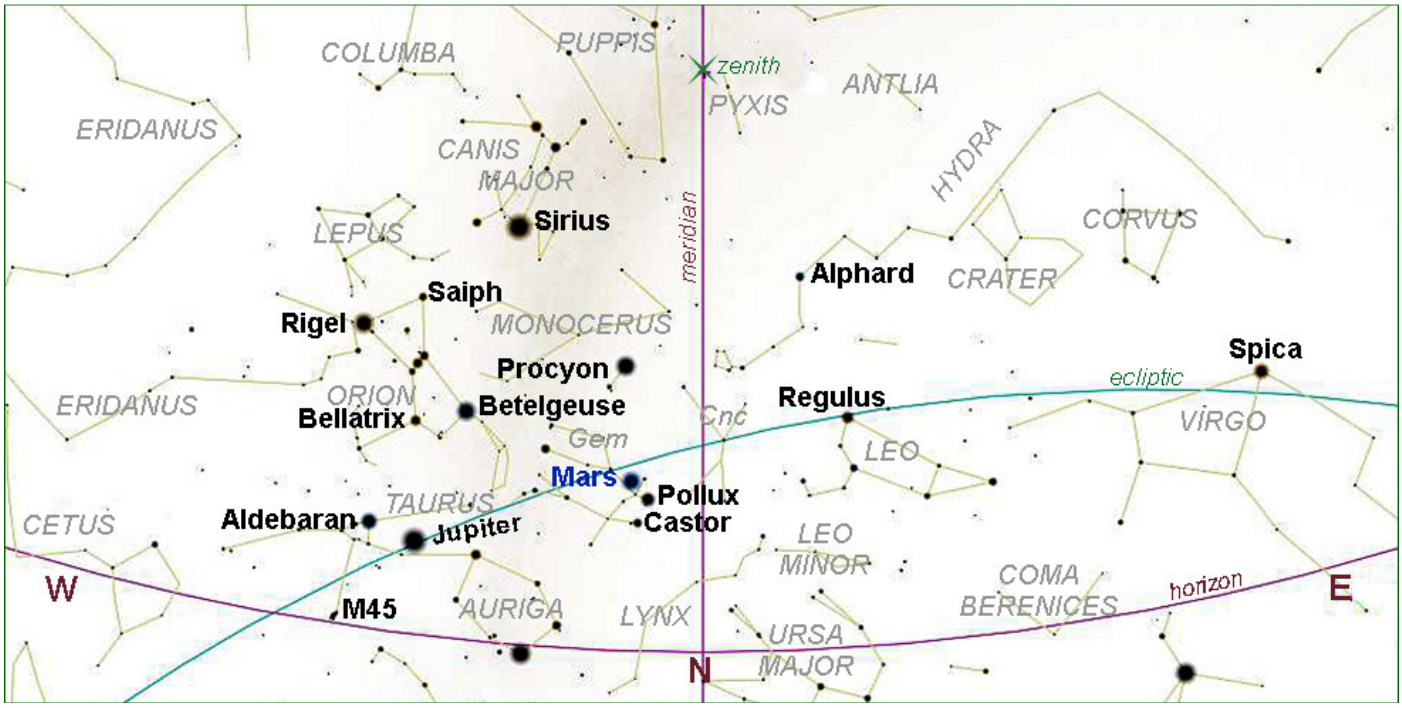
SKYNOTES from Hermanus

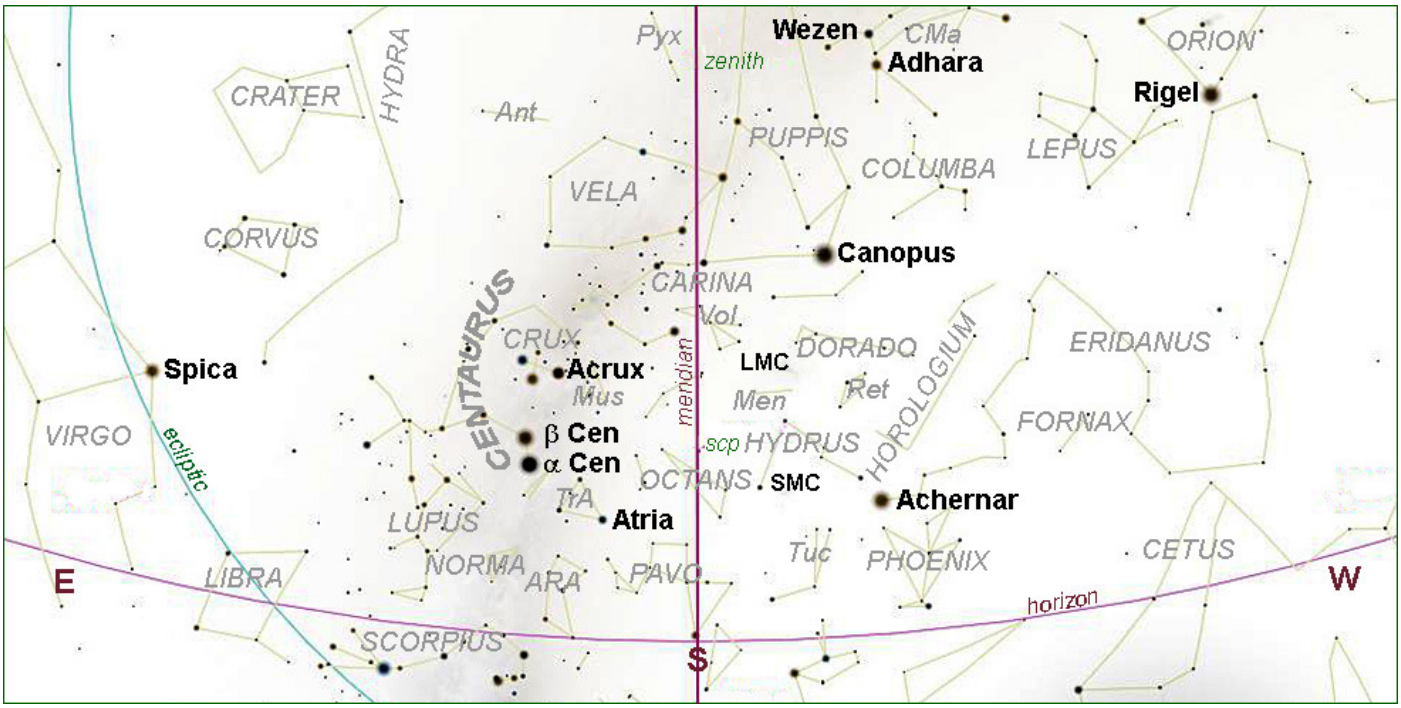
MARCH 2025

SKY CHARTS

EVENING SKY – MARCH 25th at 21h00 (NORTH DOWN)



EVENING SKY – MARCH 25th at 21h00 (SOUTH DOWN)



SUGGESTED EVENING OBSERVATION WINDOW

(Lunar observations notwithstanding)

Date	*Moon*		*Dusk end*
March 21	*Rises*	**22h52 (60%)**	**20h17**
to **March 31**	*Sets*	**19h48 (6%)**	**20h02**

THE SOLAR SYSTEM

PLEASE NOTE: all events are as viewed from **HERMANUS**, Western Cape, South Africa.

MARCH HIGHLIGHTS from the 2025 SKY GUIDE

Date	*Time (SAST)*	*Item*
1	07h40	**Moon** at ascending node
	23h18	**Moon** at perigee (361 967 km)
		Callisto at maximum from **Jupiter** (9')
4		Mercury at perihelion
5		**Moon** (39%)
6	18h32	**First quarter Moon**
	22h19	**Moon** near **Jupiter** and **Aldebaran** as the **Pleiades** (M45) set
7		**Moon** northernmost (+28.7º)
8		**Mercury** at eastern elongation (18.2º)
	24h00	**Moon** (71º) near **Mars**, **Pollux** and **Castor**
10		**Callisto** at maximum from **Jupiter** (9')
12		**Saturn** at conjunction and furthest from **Earth** (10.602 au)
14	08h55	**Full Moon** (eclipse not visible in southern Africa)
	15h45	**Moon** at descending node
		Mercury stationary
16	20h00	**Moon** (96%) and **Spica** rise together
17	18h37	**Moon** at apogee (405 754 km)
18		**Callisto** at maximum from **Jupiter** (9')
20	11h01	*MARCH EQUINOX*
	22h10	**Moon** (69%) rises 10 minutes after **Antares**
		Neptune at conjunction and furthest from **Earth** (30.888 au)
22	13h30	**Last quarter Moon**, southernmost (-28.7º)
		Venus closest to **Earth** (0.281 au)
23		**Saturn** without rings *
		Venus at inferior conjunction
26		**Callisto** at maximum from **Jupiter** (8')
28	18h29	**Moon** at ascending node
29	12h58	**New Moon**
30	07h26	**Moon** at perigee (358 127 km)

* for more on **Saturn's** rings**,** see **2025 Sky Guide** pages 17 and 19

SOLAR SYSTEM VISIBILITY

2025 MARCH 25th				*When visible?*
Sun	Pisces	Rise:	06h50	**Never look at the sun without *SUITABLE EYE PROTECTION!***
Length of day	11 hours 57 minutes	Transit:	12h49	
		Set:	18h47	
Mercury	Pisces	Rise:	06h51	Too close to the Sun
Magnitude	+5.0	Transit:	12h40	
Phase	1%	Set:	18h29	
Diameter	11”			
Venus	Pisces	Rise:	06h40	Low in the east before sunrise
Magnitude	-4.1	Transit:	12h22	
Phase	1%	Set:	18h01	
Diameter	59”			
Mars	Gemini	Rise:	15h15	Evening
Magnitude	+0.3	Transit:	20h05	
Phase	91%	Set:	00h57	
Diameter	9”			
Jupiter	Taurus	Rise:	12h28	Evening
Magnitude	-2.1	Transit:	17h25	
Diameter	37”	Set:	22h22	
Saturn	Aquarius	Rise:	05h57	Low in the east before sunrise
Magnitude	+1.2	Transit:	12h10	
Diameter	16”	Set:	18h24	
Uranus	Taurus	Rises:	10h50	Evening
Magnitude	+5.8	Transit:	15h59	
Diameter	3”	Set:	21h07	
Neptune	Pisces	Rise:	06h27	Too close to the Sun
Magnitude	+8.0	Transit:	12h32	
Diameter	2”	Set:	18h37	
Pluto	Capricornus	Rise:	01h49	Morning
Magnitude	+14.5	Transit:	08h58	
		Set:	16h06	

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 stars described in terms of ‘magnitude’. For example, the planet Jupiter at magnitude -1.8 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 down to a magnitude of about +6.

THE MOON

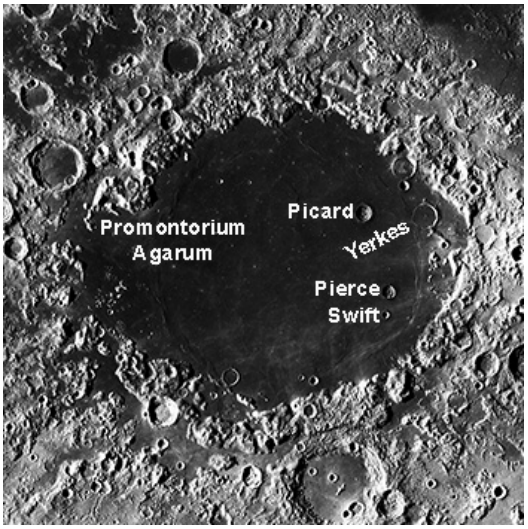
MARE CRISIUM (Sea of Crises)

Clearly shown on Thomas Harriot's Luna map of 1609 (it's too often forgotten that Harriot was the first telescopic viewer of the Moon months before Galileo) and was named by Giovanni Riccioli in 1651.

Diameter: north south 450 km, east west 560 km.

Age: between 3.8 and 4.6 billion years

The basin is relatively flat and darker than the surrounding areas. The craters on the floor are Picard (diameter 23 km), a normal impact crater with a maximum depth of about 2.5 km and Pierce (18 km), bowl-shaped with several interior ridges and hills. The walls are terraced and in the centre of the floor there is a low hill - a useful test for small telescopes. To its north is Swift (10 km) which is circular and well marked. It was originally named Pierce B and then Graham until given its present name by the Internal Astronomical Union.



Yerkes to the west is 36 km across, a crater that has been so inundated by lava that the walls are discontinuous and the colour and albedo of the floor are similar to the adjacent surface.

The next lunar eclipse, visible from southern Africa, is predicted for 28th August 2026

METEOR ACTIVITY

From SGSA2025	*Maximum Date/Time*	*Moon on max Date/Time*	*Duration*	*Radiant*	*ZHR**	*Velocity Km/sec*
γ Normids	Mar 14 00h00 – 04h30	100%	February 25 to March 28	West of **Antares**	5	56

Observation prospects look poor for this shower.

* ZHR is an ideal value. It is, by definition, the number of meteors a single observer could possibly see during a shower's peak with the radiant directly overhead on a clear, dark night. Most observers, however, will not see as many meteors as the ZHR suggests. Also, the presence of a bright moon, atmospheric conditions and the shower's proximity to the horizon can seriously diminish the observation of meteor activity.

COMETS, ASTEROIDS AND METEORS

From Tim Cooper

The latest observing circular, CAMNotes2025 No.1, is online and gives details of observations required for January to March.

https://assa.saao.ac.za/wp-content/uploads/sites/23/2024/12/ASSA-CAMnotes-2025-Number-1.pdf

OBJECT OF THE MONTH

Mars looms large in this mosaic based on images from NASA's Viking orbiter. The linear feature is Valles Marineris, the largest canyon in the solar system, which cuts across nearly a quarter of the planet's circumference. NASA/JPL-Caltech

MARS

Description	Planet of the Solar System
Distance from Earth	161 689 M km (March 25)
Distance from Sun	1.52 au, 228 M km
Current magnitude	+0.3 (March 25)
Diameter	6 792 km
Apparent size	8.7 arcsec (March 25)
Phase	91% (March 25)
Orbit	687 Earth days
Mass	10% of the Earth's mass
Surface Gravity	38% of the Earth's surface gravity

Visibility on March 25th 2025

Rises	*Transits*	*Sets*
15h15	20h05	00h58
Naked Eye	*Binoculars*	*Telescopes*
Yes	Yes	Yes

J2000 Dec/RA	+24°02'04" / 7h34m14s
Alt/Az	+27°44'15" / 338°03'53"

OBSERVATION

Mars is a planet with delicate elusive features, and the experienced eye will see much more than the beginner's. Mars has a great many features, but you will not catch them all on your first night's viewing. Experience is crucial and the key to getting the most out of your observations of Mars is to view the planet as many times as you can.

Backyard observers who are patient and continue to watch Mars over many hours will see darkish markings move across the disc, gradually slipping out of sight as the Martian day passes by. Over the months leading up to opposition, you can see Mars' features at ever better resolution as its globe grows and your eye becomes more practiced. *(extract from the Skywatcher's Handbook)*

DISCOVERY

Ancient Mayans observed and documented Mars as early as 650 BC.

Much like Venus, the first person to see Mars through a telescope was astronomer **Galileo Galilei**. He took the first accurate observations of the planet in 1610.

The planet was named after Mars, the Roman god of war, because its reddish colour was reminiscent of blood.

EXPLORATION

Mars is one of the most explored bodies in our solar system and it's the only planet where we've sent rovers to explore the alien landscape.

The surface of the planet is orange-red because it is covered in iron(III) oxide dust, giving it the nickname "the Red Planet". Mars is among the brightest objects in Earth's sky, and its high-contrast albedo features have made it a common subject for telescope viewing.

Explore Mars with Us about Why Do We Go?

CLIMATE

It has a thin atmosphere with an average surface temperature ranging from -153ºC to +20ºC. Atmospheric composition: 95.3 % carbon dioxide, 2.7% nitrogen and 1.6% argon with traces of oxygen, carbon dioxide, carbon monoxide and water vapour. NASA missions have found evidence that Mars was much wetter and warmer billions of years ago, with a thicker atmosphere, and experiences violent dust storms lasting for months and has seasons, polar ice caps, volcanoes and canyons.

THE MOONS

The moons of Mars are named Phobos and Deimos. Both moons are small and are thought to be captured asteroids. Phobos, the larger moon, orbits Mars three times a day. The smaller Deimos orbits Mars two and a half times further away than Phobos.

One August night in 1877, Asaph Hall, an American astronomer, was about to give up his frustrating search for a Martian moon but his wife Angelina urged him on. He discovered Deimos the next night and Phobos six nights after that. Ninety-four years later, NASA's Mariner 9 spacecraft got a much better look at the two moons from its orbit around Mars. The dominant feature on Phobos, it found, was a crater 10 km wide—nearly half the width of the moon itself. Phobos is gradually spiralling inward, drawing about 1.8 meters closer to the planet each century. Within 50 million years, it will either crash into Mars or break up and form a ring around the planet.

Scientists have discussed the possibility of using one of the Martian moons as a base from which astronauts could observe the Red Planet and launch robots to its surface, while shielded by miles of rock from cosmic rays and solar radiation for nearly two-thirds of every orbit.

Natural History

Main article: Geological history of Mars

Scientists have theorized that during the Solar System's formation, Mars was created as the result of a random process of run-away accretion of material from the protoplanetary disk that orbited the Sun. Mars has many distinctive chemical features caused by its position in the Solar System. Elements with comparatively low boiling points, such as chlorine, phosphorus and sulphur, are much more common on Mars than on Earth; these elements were probably pushed outward by the young Sun's energetic solar wind.

After the formation of the planets, the inner Solar System may have been subjected to the so-called Late Heavy Bombardment. About 60% of the surface of Mars shows a record of impacts from that era, whereas much of the remaining surface is probably underlain by immense impact basins caused by those events. However, more recent modelling has disputed the existence of the Late Heavy Bombardment. There is evidence of an enormous impact basin in the Northern Hemisphere of Mars, spanning 10 600 by 8 500 km or roughly four times the size of the Moon's South Pole–Aitken basin, which would be the largest impact basin yet discovered if confirmed. It has been hypothesized that the basin was formed when Mars was struck by a Pluto-sized body about four billion years ago. The event, thought to be the cause of the Martian hemispheric dichotomy, created the smooth Borealis basin that covers 40% of the planet.

A 2023 study shows evidence, based on the orbital inclination of Deimos, that Mars may once have had a ring system 3.5 billion years to 4 billion years ago. This ring system may have been formed from a moon, 20 times more massive than Phobos, orbiting Mars billions of years ago; and Phobos would be a remnant of that ring.

The geological history of Mars can be split into many periods, but the following are the three primary periods:

- Noachian period: Formation of the oldest extant surfaces of Mars, 4.5 to 3.5 billion years ago. Noachian age surfaces are scarred by many large impact craters. The Tharsis bulge, a volcanic upland, is thought to have formed during this period, with extensive flooding by liquid water late in the period. Named after Noachis Terra.
- Hesperian period: 3.5 to between 3.3 and 2.9 billion years ago. The Hesperian period is marked by the formation of extensive lava plains. Named after Hesperia Planum.
- Amazonian period: between 3.3 and 2.9 billion years ago to the present. Amazonian regions have few meteorite impact craters but are otherwise quite varied. Olympus Mons formed during this period, with lava flows elsewhere on Mars. Named after Amazonis Planitia.

Geological activity is still taking place on Mars. The Athabasca Valles is home to sheet-like lava flows created about 200 million years ago. Water flows in the grabens, called the Cerberus Fossae, occurred less than 20 million years ago, indicating equally recent volcanic intrusions. The *Mars Reconnaissance Orbiter* has captured images of avalanches.

Physical characteristics

Main article: Geology of Mars

Mars is approximately half the diameter of Earth, with a surface area only slightly less than the total area of Earth's dry land. Mars is less dense than Earth, having about 15% of Earth's volume and 11% of Earth's mass, resulting in about 38% of Earth's surface gravity. Mars is the only presently known example of a desert planet, a rocky planet with a surface akin to that of Earth's hot deserts. The red-orange appearance of the Martian surface is caused by rust. It can look like butterscotch; other common surface colours include golden, brown, tan, and greenish, depending on the minerals present.

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/

With Grateful thanks to the following:

2025Sky Guide Southern Africa
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Tim Cooper
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