

MARCH 2024



SKY CHARTS

EVENING SKY MARCH 7th at 21h30 (NORTH DOWN)



EVENING SKY MARCH 7th at 21h30 (SOUTH DOWN)



THE SOLAR SYSTEM

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

HIGHLIGHTS for MARCH FROM THE SKY GUIDE 2024

Date	Time (SAST)	Item
3	17h24	Last quarter Moon
		Asteroid (3) Juno (mag. +8.7) at opposition (1.69 au)
5		Moon (30%) southernmost (-28.49°), near τ Sgr
10	09h06	Moon at perigee (356 895 km)
	11h00	New Moon, near Neptune
12	03h18	Moon (6%) at ascending node
14	21h15	Jupiter sets 12.1° south of Moon (20%) with Pleiades 5.3° to north-east
17	06h11	First quarter Moon
	16h45	Moon northernmost (+28.54°)
		Mercury at perihelion
		Neptune at conjunction
19		Venus at aphelion
20	05h07	March equinox *
22		Moon (92%) near Regulus (α Leo)
		Venus near Saturn
23	17h44	Moon at apogee (406 292 km)
25	09h00	Full Moon (29.48')
		Mercury at eastern elongation (18.7°)
26	06h07	Moon at descending node, near Spica
30	21h35	Moon (79%) rises at 21h35 following Antares (α Sco), separation 3.1°

* *weather permitting*, this editor will be at GPAED to witness and photograph the sunrise at 06h51 and sunset at 18h50.

Anyone keen to join me? If so, please let me know on WhatsApp 081 212 9481 or petermh@hermanus.co.za .

SUGGESTED EVENING OBSERVATION WINDOW

(Lunar observations notwithstanding)

Date		Moon	Dusk end	
2 nd March	Rises	22h48 (60%)	20h44	
13 th March	Sets	20b57 (13%)	20h28	

SOLAR SYSTEM VISIBILITY

2024 MARCH 7

When and Where visible?

Sun Length of day	Aquarius 12 hours 55 minutes	Rise: Transit: Set:	06h36 12h54 19h11	Never look at the sun without SUITABLE EYE PROTECTION!
Mercury Magnitude Phase Diameter	Pisces -1.5 96% 5"	Rise: Transit: Set:	07h10 13h23 19h34	Early month too close to the Sun then later before sunrise
Venus Magnitude Phase Diameter	Capricornus -3.9 92% 11"	Rise: Transit: Set:	04h45 11h29 18h12	"The Morning Star"
Mars Magnitude Phase Diameter	Capricornus +1.2 97% 4"	Rise: Transit: Set:	04h14 11h03 17h53	Low in the east before sunrise
Jupiter Magnitude Diameter	Aries -2.1 36"	Rise: Transit: Set:	11h00 16h21 21h42	Evening
Saturn Magnitude Diameter	Aquarius +1.0 15"	Rise: Transit: Set:	06h05 12h32 18h59	Too close to the Sun
Uranus Magnitude Diameter	Aries +5.8 3"	Rises: Transit: Set:	11h37 16h49 22h02	Evening
Neptune Magnitude Diameter	Pisces +8.0 2"	Rise: Transit: Set:	07h23 13h31 19h39	Low in the west after sunset
Pluto Magnitude	Capricornus +14.5	Rise: Transit: Set:	02h50 09h58 17h07	Morning

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 the *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

THE TRIO OF MAGINUS, TYCHO AND CLAVIUS

<u>Maginus</u> is an ancient <u>lunar impact crater</u> located in the southern highlands to the southeast of the prominent crater <u>Tycho</u>. It is a large formation almost three quarters the diameter of <u>Clavius</u>, which lies to the southwest.

The rim of Maginus is heavily eroded, with impact-formed incisions, and multiple overlapping craters across the eastern side. The wall is broken through in the southeast by Maginus C, a worn crater. Little remains of the



original features that formed the rim of Maginus, and it no longer possesses an outer rampart. The floor is relatively flat, with a pair of low central peaks.

Coordinates	50.0°S 6.2°W
Diameter	194 km
Depth	4.3 km
Colongitude *	7° at sunrise
Eponym	Giovanni A. Magini

Tycho is a prominent lunar impact crater located in the southern lunar highlands named after the Danish astronomer <u>Tycho Brahe</u> (1546–1601). It is estimated to be 108 million years old. The surface around Tycho is replete with craters of various sizes, many overlapping still older craters. Some of the smaller craters are secondary craters formed from larger chunks of ejecta from Tycho. It is one of the Moon's brightest craters, with a diameter of 85 km and a depth of 4,800 m.

Coordinates	43.31°S 11.36°W
Diameter	86 km
Depth	4.8 km
Colongitude *	12° at sunrise
Eponym	Tycho Brahe

Clavius is one of the largest crater formations on the Moon and the second largest crater on the visible near side (very close in size to <u>Deslandres</u>). It is located in the rugged southern highlands of the Moon, to the south of the ray crater <u>Tycho</u>. It is named for the Jesuit priest <u>Christopher Clavius</u>. Clavius' location toward the southern limb of the Moon causes it to appear oblong due to foreshortening. Its great size makes it visible to the unaided eye as a prominent notch in the terminator about one to two days after the Moon reaches first quarter.

Coordinates	58.4°S 14.4°W
Diameter	231 Km
Depth	3 500 m
Colongitude *	15° at sunrise
Eponym	Christof Klau

* **Colongitude** – the longitude of the morning terminator (division between illuminated and dark regions) as measured in degrees west of the prime meridian.

The Selenographic Coordinate System

(from Wikipedia)

Selenographic coordinates are used to refer to locations on the surface of Earth's moon.

Any position on the lunar surface can be referenced by specifying two numerical values, which are comparable to the latitude and longitude on Earth. The latitude gives a position north or south of lunar equator while longitude the indicates a position east or west of the Moon's prime meridian, the line passing from the lunar north pole through the point on the lunar surface directly facing Earth to the lunar south pole. This can be thought of as the midpoint of the visible Moon as seen from the Earth. Both of these coordinates are given in degrees.

Astronomers defined the fundamental location in the selenographic coordinate system by the small, bowl-shaped satellite crater 'Mösting A'. The coordinates of this crater are defined as:

South 3° 12' 43.2''

West 5° 12' 39.6"

The coordinate system has become precisely defined by the *Lunar Laser Ranging Experiment*.

Anything past 90°E or 90°W would not be seen from Earth but for **libration**, which makes 59% of the Moon visible.

No eclipses, lunar or solar, will be visible from southern Africa in March 2024

METEOR ACTIVITY

<u>From SGAS</u> <u>2023</u>	Maximum Date/Time	Moon on max Date/Time	Duration	Radiant	ZHR*	Velocity Km/sec
w Normida	Mar 14	sats 21h24	Feb 25 to	1° north-east of	5	56
γnormas	00h00 to 04h30	sets 211154	Mar 28	ζSco		

* A word of caution regarding predicted Zenithal Hourly Rates:

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 of the shower's proximity to the horizon can seriously diminish the observation of meteor activity.

For more meteor watching details, please see SGSA 2023, pages 86-87.



LOOKING UP

47 TUCANAE

	NGC	, 104, C 100			
Description	Globular cluster	Visib	bility on March 7 th 2024		
Constellation	Tucana				
Distance	13.4 kly, 4.1 kpc	Rises	Transits	Sets	
Magnitude	4.1	Does not rise	14h06	Does not set	
Apparent size	30'				
Actual size	120 ly	Naked Eye		Yes	
J2000 Dec/RA	-72°04'53" / 0h24m05s	Binoculars Yes		Yes	
Alt/Az	+26°20'43" / 198°46'36"	Telescopes		Yes	

DISCOVERY AND HISTORY

A conspicuous naked-eye object, 47 Tuc lies very far south at declination -72° (18° from the South Celestial Pole). It was not discovered by European observers until 1751 when **Nicholas de Lacaille** catalogued it in his list of southern nebulous objects. He initially suspected it was the nucleus of a bright comet. Next to observe and catalog it were **James Dunlop** in 1826 and **John Herschel** in 1834.

DESCRIPTION

47 Tucanae, a Flamstead designation, is the second brightest and largest globular cluster in the sky after **Omega Centauri**. It is included in the Caldwell catalogue as C 106. The cluster is about 13 400 light years away and is approaching



us at roughly 19 km/sec. Spread over a diameter of nearly 120 light years, it is home to a number of exotic xray binary star systems. The cluster may contain an <u>intermediate-mass black hole</u>. A search for Jupiter-sized planets in 47 Tuc, carried out by a team of astronomers using the **Hubble Space Telescope**, came up emptyhanded. The work involved checking 34 000 stars in the cluster for signs of large transiting planets. *The absence of any positive results strengthens the argument that planets are rare or nonexistent in globular clusters because of their very low concentration of heavy elements*. Though it appears adjacent to the <u>Small</u> <u>Magellanic Cloud</u>, the latter is some 60 kpc (200 000 ly) distant, being over fifteen times further than 47 Tuc.



AMATEUR OBSERVATION

At magnitude 4.1, this cluster looks like a misty star to the unaided eye. Under ideal conditions, the cluster appears 30' across in the sky - roughly the size of the full Moon. Binoculars clearly show an increase in brightness toward the centre. A telescope of at least 100 mm aperture resolves some of its roughly one million member stars with a very bright and dense core.

For more details, please see https://en.wikipedia.org/wiki/47_Tucanae.

Please keep in touch...

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

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

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Sky Guide Southern Africa 2024 Sky Safari Stellarium Wikipedia

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