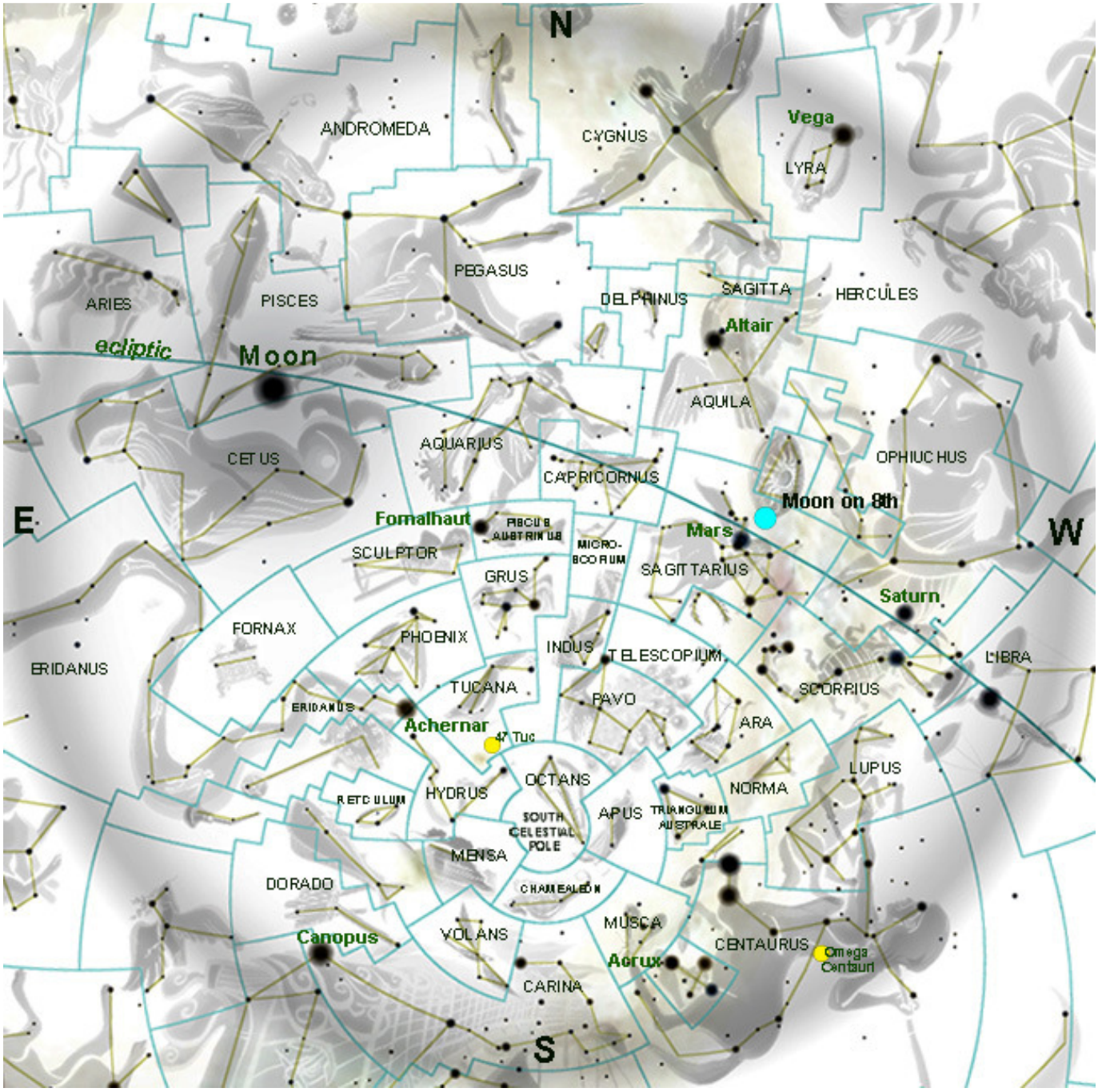
Hermanus
Astronomy Centre

Sky Maps

OCTOBER 2016

1. SKY MAPS

EVENING SKY MID OCTOBER at 21^{h}00



PLEASE NOTE: All events predicted below are as observed from **Hermanus, Western Cape, South Africa**

2. THE SOLAR SYSTEM

Sun & Planets	*OCTOBER 2016*		*1st*	*30th*
Sun		Rises:	06h20	05h43
Constellation	Virgo to Libra	Transits:	12h33	12h27
Length of day	12h27 to 13h29	Sets:	18h47	19h12
Mercury ϕ	6" to 5"	Rises:	05h42	05h51
phase	64% to 100%	Transits:	11h31	12h37
Constellation	Leo to Libra	Sets:	17h21	19h23
Magnitude	-0.7 to -1.1			
Venus ϕ	12" to 14"	Rises:	07h45	07h45
phase	85% to 78%	Transits:	14h21	15h01
Constellation	Libra to Ophiuchus	Sets:	21h15	22h17
Magnitude	-3.9 to -4.0			
Mars ϕ	9" to 7"	Rises:	10h53	10h36
phase	85% to 86%	Transits:	18h13	17h46
Constellation	Sagittarius	Sets:	01h34	00h58
Magnitude	+0.1 to +0.4			
Jupiter ϕ	31"	Rises:	06h16	04h35
Constellation	Virgo	Transits:	12h20	10h46
Magnitude	-1.7	Sets:	18h25	16h57
Saturn Diameter	16" to 15"	Rises:	09h40	07h52
Constellation	Ophiuchus	Transits:	16h42	14h55
Magnitude	+0.6	Sets:	23h44	21h59
Uranus ϕ	4"	Rises:	19h47	17h43
Constellation	Pisces	Transits:	01h29	23h23
Magnitude	+5.7	Sets:	07h08	05h07
Neptune ϕ	2"	Rises:	16h21	14h20
Constellation	Aquarius	Transits:	22h46	20h47
Magnitude	+7.8	Sets:	05h16	03h17
Pluto		Rises:	12h00	13h03
Constellation	Sagittarius	Transits:	19h04	17h08
Magnitude	+ 14.2	Sets:	02h12	00h16

'Beginner's guide' to the table above.

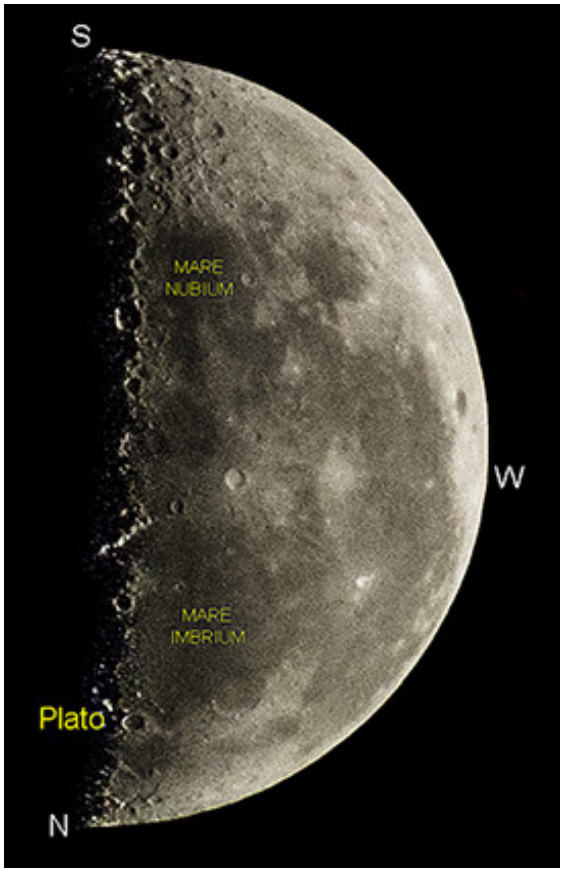
Phase: In a telescope, the inner planets (Mercury, Venus and Mars) appear to us in phases, depending on the angle of the Sun's illumination, as does the Moon. The **angular diameter** (ϕ) is given in arc seconds ("). This is the apparent size of the object as we see it from Earth. To illustrate this point, consider the average binoculars through which we see about 7º of sky. Therefore, for example, Mars at 19" on 1st October would cover approximately 1/1300th of the field of view.

Magnitude: we are accustomed to hearing stars described in terms of 'magnitude', for example **Antares** (in Scorpius) at +1.05 and the planet **Jupiter**, at magnitude -1.9. The latter is considerably brighter than Antares as 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 to the horizon directly south.

PLANET VISIBILITY

Mercury	Initially visible low in the east before sunrise but becoming too close to the sun to be observed
Venus	The "Evening Star"
Mars	Visible in the evening sky
Jupiter	Initially too close to the sun to be observed, latterly low in the east before sunrise
Saturn	Visible in the evening sky
Uranus	Visible throughout the night
Neptune	Initially visible throughout the night, latterly visible in the evening sky
Pluto	Visible in the evening sky



THE MOON.

October *Lunar Highlight* from the *Sky Guide Africa South:*

Plato

Type: crater with dark floor.

Diameter: 104 km.

Best seen: one day after first quarter and at last quarter.

Location: near the Moon's northern limb, sunk about 2km deep into the western heights of the lunar alps.

Notes: Five small craters are scattered across Plato's floor; all traces of its original central elevations have been wiped out by lava flows. Transient lunar phenomena have been reported with Plato.

Eclipses (visible from Southern Africa)

There are no eclipses in October 2016.

METEOR SHOWERS

Name	*Date & Time of Max*	*Duration*	*Radiant*	*ZHR*	*vel.*	*Observing Prospect*
Orionids	21st October 00h00 to 04h00	2nd October to 7th November	Between Betelgeuse and γ Geminorum	30	68	Poor – moonrise at midnight on 21st!

3. OCTOBER HIGHLIGHTS FROM THE SKY GUIDE

Date	*Time*	*Item*
1	02h12	**New Moon**
2		**Moon** to **Spica 5.5º** south
3	19h30	**Moon** to **Venus** 5.6º south
4 to 10		WORLD SPACE WEEK
4	13h02	**Moon** at apogee (406 100 km)
6	10h04	**Moon** to **Saturn** 4.2º south
8		INTERNATIONAL OBSERVE THE MOON NIGHT [1]
8	08h03	**Moon** furthest south (-18.5º)
9	06h33	**Moon First Quarter**
11		**Mercury** and **Jupiter** 47.5' apart (12º west of the **Sun**
13		**Moon** to **Neptune** 1.1º south
15	12h15	**Uranus** at opposition
16	06h23	**Full Moon**
16		**Moon** to **Uranus** 2.7º north
17	01h36	**Moon** at perigee (357 900 km)
19	08h18	**Moon** to **Aldebaran** 0.3º south
21	01h38	**Moon** furthest north (+18.6º)
21		**Ceres** at opposition
21		**Orionid** meteor shower (see METEOR SHOWERS above)
22	21h14	**Moon last quarter**
25	06h01	**Moon** to **Regulus** 1.7º north
26	12h54	**Venus** to **Antares** 3.1º north
27	17h53	**Mercury** at superior conjunction
26 to 31		SPRING SOUTHERN STAR PARTY [2]
28	11h33	**Moon** to **Jupiter** 1.6º south
29		**Moon** to **Spica** 5.5º south
30	19h38	**New Moon**
30	03h47	**Venus** to **Saturn** 3º north
31	21h29	**Moon** at apogee (406 700 km)
31		**Moon** to **Mercury** 4.2º south

[1] **HAC** is registered at Gearing's Point, Hermanus. Through InOMN, audiences gain access to NASA subject matter experts, are inspired to learn more about science and exploration and are provided with the resources and opportunities to see themselves as citizens of the solar system.

•Since 2010, approximately 450,000 people have participated in an InOMN event in one of 3,284 events throughout 98 countries and 49 U.S. States (+DC). International Observe the Moon Night (InOMN) is an annual world-wide public engagement program that encourages observation, appreciation, and understanding of our Moon and its connection to NASA planetary science and exploration. Everyone on Earth is invited to join the celebration by hosting or attending an InOMN evening.

[2] **SPRING SOUTHERN STAR PARTY**

Spring SSP: extended dates. The *Spring Southern Star Party* — the 12th SSP — will be held at Night Sky Caravan Park, Bonnievale, from 26 to 31 October *2016*. If you wish to attend, please visit the web address for more information: http://www.southernstarparty.org/spring_2016.html

4. STARGAZING

The next stargazing evening is scheduled for ***Friday 30th September,*** *if the weather be good of course.*

Forecast is good as of today, Tuesday 27.

The venue: NGK, Onrusrivier

Time: 19h00 (7 pm)

Please join us for another fun-filled and instructive evening. We shall be targeting the Big 5 of the southern African skies again although, sadly, the Southern Pleiades and Eta Carinae will be too low on the horizon.

However, that does leave us with the Coalsack dust cloud (with the Jewel Box cluster nearby), the Omega Centauri globular cluster and the magnificent sweep of the Milky Way.

Also available are Venus, Mars and Saturn and the Small Magellanic Cloud. Right now, Jupiter and his troop are booked elsewhere so we must wait until the spring of next year for his next local evening performances.

BEST OBSERVATION DAYS

Unless specifically targeting the moon, *my* suggestion of the most convenient dates to plan evening stargazing for October:

1st to 4th October (moonset 21h23) and

19th (moonrise 21h48) to 30th October

5. DEEP SKY

The Small Magellanic Cloud (NGC 292)

The Small Magellanic Cloud (SMC), or Nubecula Minor, is a dwarf galaxy near the Milky Way. It is classified as a dwarf irregular galaxy. It has a diameter of about 7,000 light-years, contains several hundred million stars, and has a total mass of approximately 7 billion times the mass of the Sun. The SMC contains a central bar structure and it is speculated that it was once a barred spiral galaxy that was disrupted by the Milky Way to become somewhat irregular. At a distance of about 200,000 light-years, it is one of the Milky Way's nearest neighbours. It is also one of the most distant objects that can be seen with the naked eye.

With a mean declination of approximately −73 degrees, it can only be viewed from the Southern Hemisphere and the lower latitudes of the Northern Hemisphere. It is located mostly in the constellation of Tucana and also partly in Hydrus and appears as a hazy, light patch in the night sky about 3 degrees across, looking like a detached piece of the Milky Way. Since it has a very low surface brightness, it is best viewed from a dark site away from city lights. It forms a pair with the Large Magellanic Cloud (LMC), which lies a further 20 degrees to the east, and like the LMC is a member of the Local Group.

In the southern hemisphere, the Magellanic clouds have long been included in the lore of native inhabitants, including south sea islanders and indigenous Australians. Persian astronomer Al Sufi labelled the larger of the two clouds as Al Bakr, the White Ox. European sailors may have first noticed the clouds during the Middle Ages when they were used for navigation. Portuguese and Dutch sailors called them the Cape Clouds, a name that was retained for several centuries. During the circumnavigation of the Earth by Ferdinand Magellan in 1519–22, they were described by Antonio Pigafetta as dim clusters of stars. In Johann Bayer's celestial atlas Uranometria, published in 1603, he named the smaller cloud, Nubecula Minor. In Latin, Nubecula means a little cloud.

Between 1834 and 1838, John Frederick William Herschel made observations of the southern skies with his 14-inch (36 cm) reflector from the Royal Observatory at the Cape of Good Hope. While observing the Nubecula Minor, he described it as a cloudy mass of light with an oval shape and a bright center. Within the area of this cloud he catalogued a concentration of 37 nebulae and clusters.

From Ian Ridpath's *Star Tales*

Tucana – the Toucan

Genitive:Tucanae

Abbreviation:Tuc

Size ranking:48th

Origin:The 12 southern constellations of Keyser and de Houtman

One of the 12 southern constellations devised by the Dutch navigators Pieter Dirkszoon Keyser and Frederick de Houtman at the end of the 16th century. It represents the South American bird with a huge bill.

The Dutchman Petrus Plancius gave it the name Toucan when he first depicted it on a globe in 1598, and Johann Bayer followed suit on his atlas of 1603. But de Houtman, in his catalogue of 1603, called it Den Indiaenschen Exster, op Indies Lang ghenaemt ('the Indian magpie, named Lang in the Indies', the word 'lang' referring to the bird's long beak). De Houtman was apparently describing not a toucan but the hornbill, a similarly endowed bird that is native to the East Indies and Malaysia. This suggests that the original inventor was in fact Keyser, who had visited South America before his voyage to the East Indies and could have seen the bird there. In some depictions which used de Houtman's catalogue as a source, such as Willem Janszoon Blaeu's globe of 1603, the bird was shown as a hornbill rather than a toucan, complete with casque above its bill, but the original identification as a toucan won out.

Tucana's brightest star, Alpha Tucanae, marking the tip of the bird's beak, is of only third magnitude, but the constellation is distinguished by two features of particular interest: firstly, the globular star cluster 47 Tucanae, rated the second-best such object in the entire sky, so bright that it was labelled in the same way as a star; and the Small Magellanic Cloud, the smaller and fainter of the two companion galaxies of our Milky Way. These features were originally part of Hydrus but were transferred to Tucana when the French astronomer Nicolas Louis de Lacaille reorganized this part of the southerm heavens in the 1750s.

Incidentally, 47 Tucanae is not a Flamsteed number; it comes from its listing in Johann Bode's catalogue called Allgemeine Beschreibung und Nachweisung der Gestirne, published in 1801 to accompany his Uranographia star atlas. It was first recorded as a star by Keyser and de Houtman. Bayer showed it on his southern star chart of 1603 within one of the coils of Hydrus, beneath the claw of the toucan, but its nebulous nature was first noted by Lacaille a century and a half later.

None of the stars of Tucana are named, and there are no legends associated with it.

HOW TO READ A STARCHART *[adapted to southern African conditions from Brian Ventrudo's "One Minute Astronomer"]*

When you're just starting out you need a good basic star chart that shows you where to find the bright stars and main constellations at a particular time and place. At first, star charts are a little confusing. So here's how to read a star chart:

On page 1 above there is a basic star chart showing the sky on 15th of the month at 21.00 from 34.4º south and 19.2º east (Hermanus).

The chart tries to represent a hemispherical sky on a flat surface. The edge of the chart represents the horizon, and the centre of the chart is supposed to represent the zenith (the point directly overhead) at 34º south. East and west are reversed compared to a map of the Earth but they will point in the right directions *when you raise the map over your head*.

To learn the night sky, you will need star charts. To read a star chart...

• Find a location that's isolated from street and house lights. Stray light will make it harder for you to see fainter stars. Also, for the same reason, try to avoid nights with a full moon or too much haze.

• Once you go outside, give your eyes 5 or 10 minutes to become adapted to the dark. And to see the star charts, use a red LED flashlight or a white flashlight covered with red plastic. The red light will preserve the sensitivity of your eye for night viewing.

• Pick a direction to face, say, South, and rotate the chart so South is at the bottom. Now raise the chart overhead. The directions on the chart will now correspond to the directions in the sky.

• Don't try to take in the whole sky at once. Choose a quarter of the map, preferably one with several bright stars or a large well-known constellation like Orion or Crux (Southern Cross). Now, look up at the quarter of the sky that corresponds to the quarter of the map. Make a connection with what you see in the sky with what you see on the map. Take your time… it's a little strange and overwhelming at first.

• Learn a few more stars at a time… don't rush. Once you've identified a few bright stars and constellations, move from what you know to what you don't know. Once you've learned most of a quarter of the sky, move to another quarter.

• While the charts are set for 9 p.m. local time, they are still useful for an hour or two on either side. The stars will appear in about the same position, except for the stars near the horizon. After 3 hours, the stars will have turned 1/8 of the way around the sky. And after 6 hours, they will have turned 1/4 of the way around the sky.

• If you see an out-of-place star near the ecliptic (and in one of the constellations of the zodiac), it's almost certainly a planet. Since the planets move around in the sky almost daily, you will need to consult an almanac or website to figure out which planet you are seeing. We also review the positions of the planets each month in the SKY THIS MONTH.

That's all there is to it. Well, that and a whole lot of practice. Be patient, and savour your personal discovery of each new star and constellation.

Please keep in touch...

Don't forget to have a look at our excellent website, edited by Derek Duckitt.
http://www.hermanusastronomy.co.za/

Also...

ASSA Deep-Sky Section

Whatsapp chat group: [074 100 7237]
Official Big 5 of the African Sky web page
Official Big 5 Facebook group
ASSA Deep-Sky Section mailing list

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

You can also find us on Facebook, Twitter, the ASSA_Info mailing list and the ASSA_Discussion mailing list.

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