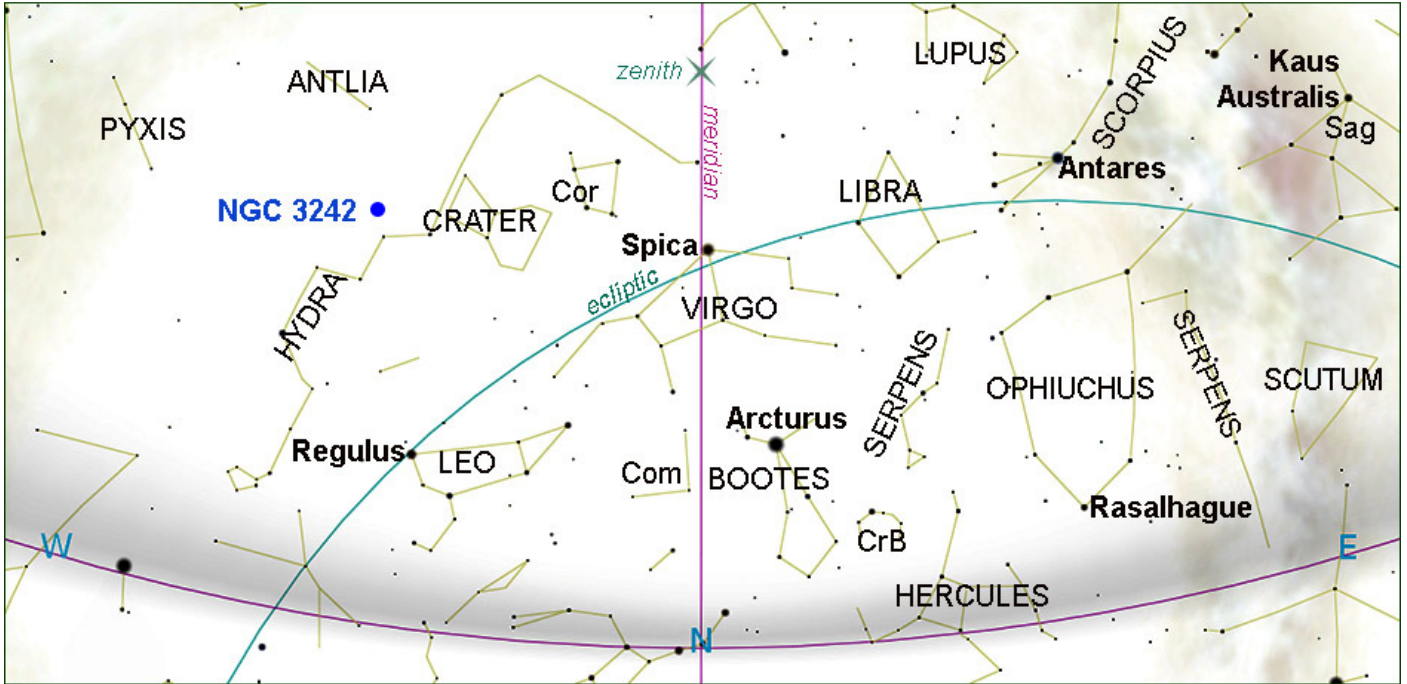
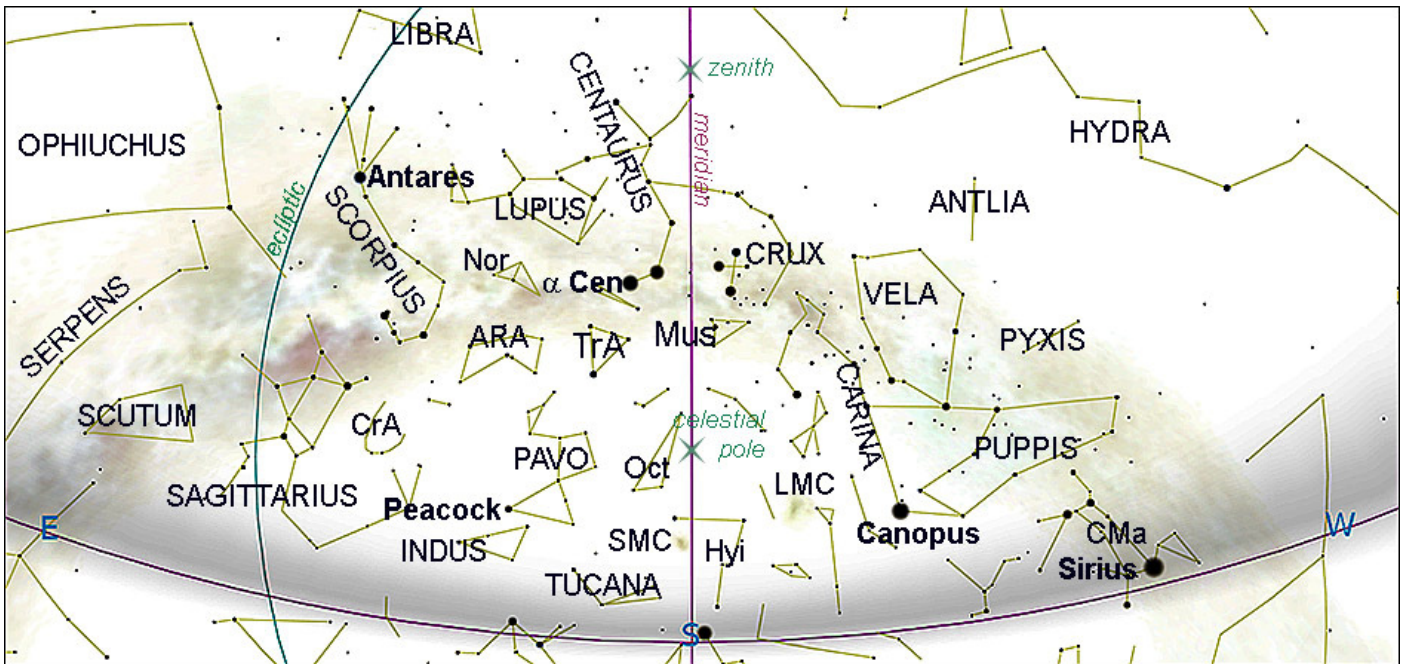


## 1. SKY CHARTS

### EVENING SKY 7<sup>th</sup> JUNE at 21h00 (NORTH DOWN)



### EVENING SKY 7<sup>th</sup> JUNE at 21h00 (SOUTH DOWN)



## 2. THE SOLAR SYSTEM

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 to the naked eye.

### HIGHLIGHTS FROM THE SKY GUIDE

<i>Date</i>	<i>Time</i>	<i>Item</i>
1	10h57	<b>Moon</b> near <b>Jupiter</b>
2	09h24	<b>Last quarter Moon</b>
8	04h28	<b>Moon</b> at apogee (406 228 Km)
9		<b>Moon</b> near <b>Aldebaran</b>
	18h42	<b>Moon</b> at ascending node
10	12h53	<b>New Moon</b>
		<b>Moon</b> near <b>Mercury</b>
11	03h03	<b>Mercury</b> at inferior conjunction
12	08h44	<b>Moon</b> near <b>Venus</b>
	06h11	<b>Moon</b> northernmost (+25.6°)
13	21h52	<b>Moon</b> near <b>Mars</b>
		<b>Moon</b> near <b>Pollux</b>
14		<b>Moon</b> near <b>Beehive</b>
16		<b>Moon</b> near <b>Regulus</b>
18	05h54	<b>First quarter Moon</b>
20		<b>Moon</b> near <b>Spica</b>
21	05h32	<i>WINTER SOLSTICE</i>
	17h57	<b>Venus</b> 5.2° south of <b>Pollux</b>
		<b>Jupiter</b> stationary
23		<b>Moon</b> near <b>Antares</b>
	08h07	<b>Moon</b> at descending node
	11h59	<b>Moon</b> at perigee (359 959 Km)
		<b>Mars</b> near the <b>Beehive</b> (M44)
24	20h40	<b>Full Moon</b> (361 560 Km, 33')
25	07h49	<b>Moon</b> southernmost (-25.6°)
26		<b>Neptune</b> stationary
27		<b>Moon</b> near <b>Saturn</b>
28	22h38	<b>Moon</b> passes 4.0° south of <b>Jupiter</b> (9° above eastern horizon)
30		<i>INTERNATIONAL ASTEROID DAY *</i>
		<i>ASSA FINANCIAL YEAR END</i>

\* *ASTEROID DAY* is an annual global event which is held on the anniversary of the Siberian Tunguska event that took place on June 30, 1908, the most harmful known asteroid-related event on Earth in recent history. The United Nations has proclaimed it be observed globally on June 30 every year.

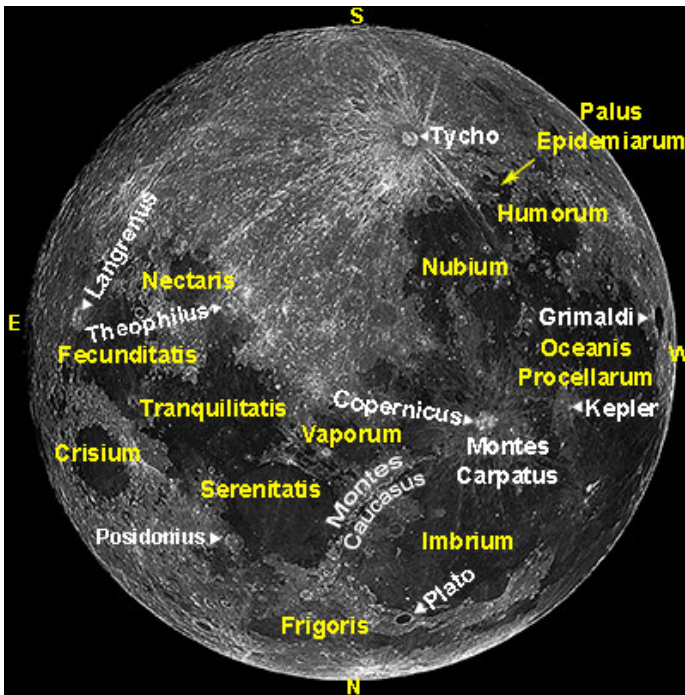
JUNE 2021			1st June	1st July	Visibility
<b>Sun</b> Length of day	Taurus to Gemini 10h00 to 9h54	Rises:	07h41	07h50	<b>Never look at the sun without SUITABLE EYE PROTECTION!</b>
		Transit:	12h41	12h47	
		Sets:	17h41	17h44	
<b>Mercury</b> Magnitude Phase Diameter	Taurus +3.0 to +0.9 7% to 29% 11" to 9"	Rises:	08h43	06h10	<b>Low in the west after sunset to low in the east before sunrise</b>
		Transit:	13h38	11h18	
		Sets:	18h34	16h25	
<b>Venus</b> Magnitude Phase Diameter	Taurus to Cancer -3.9 95% to 90% 10" to 11"	Rises:	09h05	09h32	<b>Low in the west after sunset</b>
		Transit:	13h57	14h36	
		Sets:	18h48	19h40	
<b>Mars</b> Magnitude Phase Diameter	Gemini to Cancer +1.7 to +1.8 96% to 97% 4"	Rises:	10h50	09h54	<b>Evening</b>
		Transit:	15h46	15h05	
		Sets:	20h42	20h15	
<b>Jupiter</b> Magnitude Diameter	Aquarius -2.4 to -2.6 41" to 45"	Rises:	23h41	21h45	<b>Morning</b>
		Transit:	06h19	04h23	
		Sets:	12h54	10h57	
<b>Saturn</b> Magnitude Diameter	Capricornus +0.6 to +0.4 18"	Rises:	22h13	20h09	<b>Morning</b>
		Transit:	05h08	03h06	
		Sets:	12h00	09h59	
<b>Uranus</b> Magnitude Diameter	Aries +5.8 3"	Rises:	05h24	03h33	<b>Morning</b>
		Transit:	10h43	08h51	
		Sets:	16h03	14h09	
<b>Neptune</b> Magnitude Diameter	Aquarius +7.9 2"	Rises:	01h27	23h26	<b>Morning</b>
		Transit:	07h40	05h42	
		Sets:	13h52	11h54	
<b>Pluto</b> Magnitude	Sagittarius +14.3	Rises:	20h48	18h47	<b>Throughout the night</b>
		Transit:	03h59	01h59	
		Sets:	11h07	09h07	

**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 -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 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.

# THE MOON



(north down) with east to the left.

Keeping the image (left) very basic hopefully allows us to memorise the main features, particularly the maria (in yellow).

The Moon, given its close proximity, is arguably the most spectacular of all the solar system objects when viewed through binoculars or telescope. Without an atmosphere, there is no veiling of surface features.

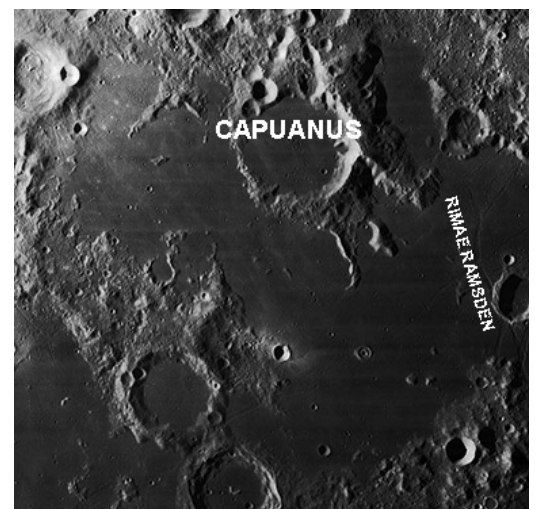
The features of this month are the Moon itself, the ten maria, an “ocean” and a “marsh” and some of the most prominent craters, notably **Tycho** with its huge “splash”. Note the ray extending all the way to the NNE through Mare Serenitatis.

Up to modern times, lunar drawings and photographs taken from the northern hemisphere, aided by a telescope (with inverted image), showed south at the top. However, modern convention, again from the perspective of the northern hemisphere, is to put north at the top (south down) and east to the right. So we in the southern hemisphere put south at the top

**Mare Imbrium** (Sea of Showers) is a vast lava plain within the Imbrium Basin and is one of the larger craters in the Solar System. The Imbrium Basin formed from a collision with a 250 Km proto-planet during the Late Heavy Bombardment. Basaltic lava later flooded the giant crater to form the flat volcanic plain we see today. The basin's age has been estimated at 3.9 billion years using uranium–lead dating methods. The Moon's maria (plural of mare) have fewer features than other areas of the Moon because molten lava pooled in the craters and formed a relatively smooth surface. Mare Imbrium is not as flat as once thought as later events altered its surface. A broad, shallow valley within the formation about 50 km north of Fra Mauro crater served as the site of the Apollo 14 manned lunar landing in February 1971. On two separate Moon walks, Apollo astronauts Alan Shepard and Edgar Mitchell collected samples of what was believed to be ejected rock. In later radiometric analysis back on Earth, this material was found to have been thermally shocked about 3.9 billion years ago, presumably by the cataclysmic event that created Imbrium.

**Palus Epidemiarum** (Marsh of Epidemics) is a small lunar mare in the south-western part of the Moon's near side. This feature forms a rough band of lava-flooded terrain that runs generally west–east, with a northward extension near the western end. It spans a shallow trough extending 300 by 120 km. The average thickness of the basalt is 200–250 m, with a maximum depth of 750 m. The feature lies to the southwest of Mare Nubium, and southeast of Mare Humorum.

This mare is notable for a system of rilles in the western end named the **Rimae Ramsden**, and for the wide **Rima Hesiodus** that extends from near the midpoint to the east-northeast roughly 300 Km. The flooded crater **Capuanus** occupies the southern centre of the Palus Epidemiarum and is attached to the southern edge. Near the western end is the flooded crater **Ramsden**, after which the Rimae Ramsden are named. The crater **Cichus** forms the eastern end of the mare.



The northern extension of the mare reaches the outer rims of the crater pair **Campanus** and **Mercator**. A narrow valley between these craters joins Palus Epidemiarum with Mare Nubium, and a rille from the Rimae Ramsden follows the course of this cleft. The small double-walled crater **Marth** lies at the southern midpoint of this northern extension.

The selenographic coordinates of this feature are 32.0° S, 28.2° W, and it is enclosed within a diameter of 286 km. Altimetry data from the Clementine spacecraft shows that this feature slopes downward from west to east, with a height difference of 2 Km from end to end.

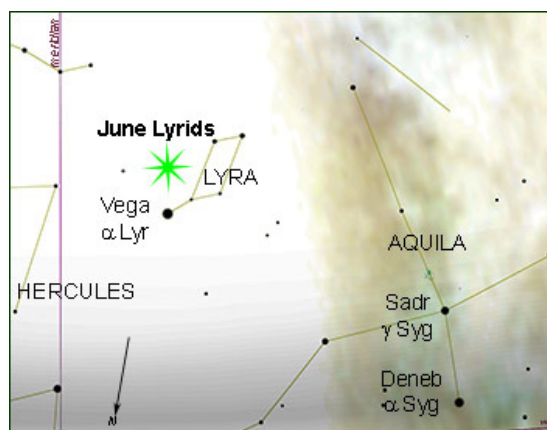
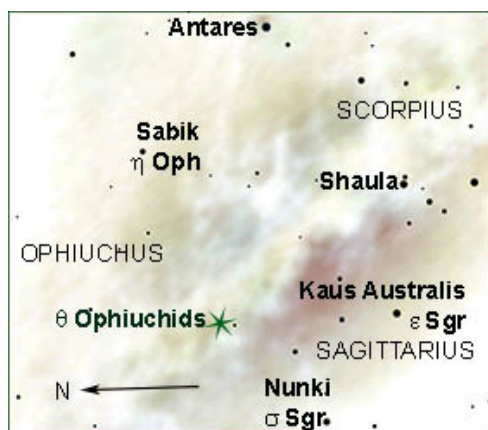
**Oceanus Procellarum** (the Ocean of Storms) is a vast lunar mare on the western edge of the near side of the Moon. It is the only one of the lunar maria to be called an "Oceanus" (ocean), owing to its size. Oceanus Procellarum is the largest of the maria, stretching more than 2,500 km across its north–south axis and accounts for 10.5% of the total lunar surface area.

Like all lunar maria, Oceanus Procellarum was formed by ancient volcanic eruptions resulting in basaltic floods that covered the region in a thick, nearly flat layer of solidified magma. Basalts in Oceanus Procellarum have been estimated to be as young as one billion years old. Unlike the other lunar maria, however, Oceanus Procellarum may or may not be contained within a single, well-defined impact basin.

Around its edges lie many minor bays and seas, including **Sinus Roris** to the north, and Mare Nubium and Mare Humorum to the south. To the northeast, Oceanus Procellarum is separated from Mare Imbrium by the **Carpathian Mountains**. Prominent ray-crater **Copernicus** lies within the eastern edge of the mare, distinct with its bright ray materials sprawling over the darker material.

**Lunar and Solar eclipses : none visible from southern Africa.**

<u>Meteor Showers</u>	<i>Max Date/Time</i>	<i>Observing Prospects</i>	<i>Duration</i>	<i>ZHR</i>	<i>Vel</i>	<i>Radiant.</i>
<b>θ Ophiuchids</b>	13 <sup>th</sup> /14 <sup>th</sup> June 20h00 – 05h30	Good - moon 8% sets 20h14	8 <sup>th</sup> – 16 <sup>th</sup> June	5	27	See charts below
<b>June Lyrids</b>	16 <sup>th</sup> /17 <sup>th</sup> June 23h30 – 02h00	Good - moon sets 23h15	11 <sup>th</sup> – 21 <sup>st</sup> June	5	31	



*ZHR - zenithal hourly rate  
Vel. – velocity in Kms per second*

***For more details regarding meteor watching,  
please see the 2021 Sky Guide Africa South, pages 86- 87.***

## 1. LOOKING UP

### SUGGESTED OBSERVATION SCHEDULE for JUNE

(Lunar observations notwithstanding)

Date	dusk end		Moon
31 <sup>st</sup> May	19h10	<i>rises</i>	23h01 (71%)
13 <sup>th</sup> June	19h19	<i>sets</i>	20h14 (8%)



CLUB STARGAZING – sorry, still no organised physical club gatherings. However, we do encourage our members to dust off telescopes, binos, cameras and eyes and observe from home or your favourite darkest, rural, cloudless spots.

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

### DEEP SKY HIGHLIGHTS

## THE GHOST OF JUPITER NGC 3242, C59, Eye Nebula

<i>Description</i>	Planetary Nebula			
<i>Constellation</i>	Hydra			
<i>Distance</i>	3.6 Kly, 1.1 Kpc	<i>Rise</i>	<i>Visibility</i> <i>Transit</i>	<i>Set</i>
<i>Magnitude</i>	+7.7	11h08	18h04	01h03
<i>Absolute mag</i>	-2.91			
<i>Apparent size</i>	0.7 x 0.6 arcmin	<i>Naked Eye</i>	No	
<i>Actual size</i>	0.7 ly, .2 pc	<i>Binoculars</i>	Yes, just	
<i>Altitude/Azimuth *</i>	+47° 56', 280° 13'	<i>Telescope</i>	Yes	
<i>J2000 coordinates</i>	-18° 38' 00" / 10h 24' 48"			

### **Discovery**

Observed from England by William Herschel on 7th February 1785. He described it as “a beautiful, very brilliant globe of light ... the colour of Jupiter.” It was subsequently observed by his son John in the 1830s from the Cape of Good Hope, who numbered it as h3248 and in 1864 in the General Catalog as GC2102. This became NGC 3242 in J. L. E. Dreyer's New General Catalogue of 1888.

### **Description**

**The Ghost of Jupiter** can easily be observed with an amateur telescope. It appears as a blue-green oval about 16” by 26”. Larger telescopes show the nebula's bright inner disc embedded in a much larger faint halo measuring about 21 arcmin.

With a diameter of about 40”, it is similar in apparent size to our own giant planet. John Herschel, while at the Cape some 50 years later, described it as having “a decided pale blue colour.” Other observers have reported it as appearing green! Through high-power binoculars or a small telescope, NGC 3242 appears as a bloated star and can be easily picked out from the surrounding star field.

A fair bit of careful star-hopping is required to pin down this “ghostly” apparition but seeing conditions need to be very good and preparation should be thorough.

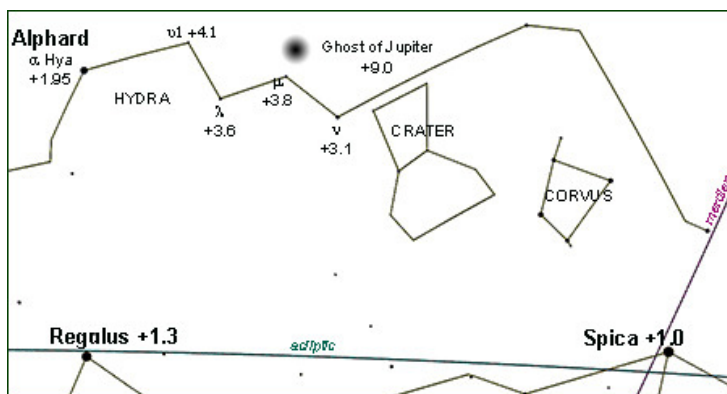
If you are not experienced in star hopping, I strongly recommend reference to **Johan Retief's** notes on "**Star Hopping**" (see e-mail attachment).

[by the way, a useful rule of thumb - a fist at arm's length is about  $15^\circ$  arc across the sky].

Referring to the chart (right), using **Spica** and **Regulus** as guide stars, locate **Alphard** ( $\alpha$  Hya, magnitude +1.95).

From **Alphard**, move east  $17^\circ$  to  $\mu$  Hya (mag. +3.8). Thence south-south-east  $1.8^\circ$  to **The Ghost of Jupiter** (mag. +9.0).

Best of luck with this challenge. I, for one, shall be doing my best and hoping for "good seeing"



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## Please keep in touch...

Have a look at our excellent website, edited by Derek Duckitt.

<http://www.hermanusastronomy.co.za/>

Also...

### **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!](#)

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[Official Big 5 of the African Sky web page](#)

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[ASSA Deep-Sky Section mailing list](#)

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