The PRETORIA CENTRE
of the
Astronomical Society of Southern Africa
www.pretoria-astronomy.co.za

NEWSLETTER APRIL 2025

NEXT MEETING

From January 2025 onward, we will have our monthly meetings over the Internet, and not at CBC any more.

Date and time: Wednesday 23 April at 19h00.

Programme:

- "What's up in May 2025?" by Michelle Ferreira.
- Main talk: TBA by email to members.

The web link to join the meeting is: https://meet.jit.si/ASSAPretoriaMonthlyMeeting (See the note at the bottom of page 10.)

The chairperson at the meeting will be Michelle Ferreira.

NEXT OBSERVING EVENING

It would have taken place on Friday 18 April from sunset onwards at the usual place, but was cancelled because of inclement weather. Watch your inbox for a new date for this event.

TABLE OF CONTENTS

Editor's chatter: Exoplanets

The first planets outside the solar system were discovered in 1992. They are planets orbiting a pulsar, where planets were not expected to exist. A pulsar is an ultradense star composed of neutrons and is what remains behind after a supernova explosion. Any planets that were orbiting the precursor star before the explosion were expected to have been destroyed by the blast. Yet there they were!

The first planet orbiting an ordinary star (besides the Sun) was discovered in 1995. It has at least half the mass of Jupiter, and is orbiting the star 51 Pegasi, which is very similar to the Sun. It was great news then. Since then, many more "exoplanets" – as they are now called – have been discovered. When another exoplanet is discovered nowadays, it is not newsworthy any more, because so many have been discovered. As of 26 March 2025, there are 5867 confirmed exoplanets in 4377 planetary systems, with 985 systems having more than one planet.

There is great variety among exoplanets. Exoplanets have different compositions, sizes, and masses**;** they are so different that some are extremely hot while others are completely frozen or covered by water.There are:

Super-Earths: Rocky planets more massive than Earth, but lighter than Neptune.
Hot Neptunes: Neptune-size planets in tight orbits around their stars.
Mini-Neptunes: Roughly Neptune-size planets thought to have solid inner cores and dense helium-hydrogen atmospheres.
Ultra-hot Jupiters: Jupiter-like gas giant planets orbiting so close to their stars that their temperatures exceed 3000 degrees Fahrenheit, hot enough to vapourize most metals.
Super Puffs: Young planets with the density of cotton candy. Their hydrogen/helium atmospheres are so bloated they are nearly the size of Jupiter, but their mass is only several times that of Earth.

There is also great variety in the eccentricity (e) of the orbits of exoplanets. The e of a planet's orbit is a measure of how elliptical (elongated) it is. Low e means that the orbit is nearly circular, while high e means that it is elongated. An exoplanet with high e moves close by its host star at periastron, and far from it at apastron half of its year later.

Exoplanets have also been discovered around different types of stars**:** main sequence stars with different temperatures and masses, and also red giants and white dwarfs.

The two main methods of finding exoplanets are Transit photometry and Doppler spectroscopy. Most exoplanets have been found by these two methods. But both methods can only detect exoplanets of which the ecliptic planes are nearly parallel with the line of sight from Earth.

A star forms when a cloud of gas and dust contracts under the influence of gravity. The picture that is becoming clear is that planets are a typical byproduct when a star forms.

The latest estimate of the number of galaxies in the observable Universe is 2 trillion (= 2 X 10^{12}). With on the average 100 billion (= 1 X 10^{11}) stars per galaxy, it gives an estimared (2 X 10^{12}) X (1 X 10^{11}) = 2 X 10^{23} stars in the observable Universe, many more than the number of sand grains on Earth. (Geologists estimate that there are 7**.**5 X 10^{18} sand grains on Earth.) And just about every star has planets orbiting it**……. Ω**

Astronomy related articles on the Internet

- Most famous spacecraft. Discover the fate of history's 26 most famous spacecraft
- New telescope. SPHEREx telescope promises revelations on infrared light
- Oxygen discovered in unexpected place. Oxygen discovered in most distant galaxy ever seen: 'It is like finding an adolescent where you would only expect babies' | Space
- The JWST is used to study dwarf planets in the Kuiper belt. Read about it and see video clips. How the James Webb Space Telescope is helping size up tiny dwarf planets | Space
- Euclid discovers dwarf galaxies. Euclid 'dark universe detective' spacecraft discovers 2,674 new dwarf galaxies | Space
- A mathematical model predicts that some comets in the inner Oort cloud form a long lasting spiral shaped structure. NASA supercomputer finds billions of comets mimicking the Milky Way's shape: 'The universe seems to like spirals!' | Space
- A bit of astronomy history**:** on 24 February 1968, graduate student Jocelyn Bell Burnell discovered the first pulsar. Fifty Years Ago, a Grad Student's Discovery Changed the Course of Astrophysics | Smithsonian
- April 14, 1981: 1st space shuttle mission lands.
On this day in space! April 14, 1981: 1st space shuttle mission lands | Space
- The Royal Greenwich Observatory site is at risk. Preserving astronomy history - The fight is on to save iconic Royal Greenwich Observatory site | Space
- Tiniest galaxy ever found. It's a millionth the size of the Milky Way. Scientists discover smallest galaxy ever seen — 'It's like having a perfectly functional human being that's the size of a grain of rice' | Space
- JWST finds massive galaxy. JWST finds spiral galaxy about 5 times more massive than Milky Way — scientists call it 'Big Wheel' | Space
- Lunar eclipses. 7 fascinating facts about lunar eclipses | Space

The Great Galaxy in constellation Andromeda

Give your imagination free rein – by Pierre Lourens

- Interstellar travel.
[Beam me to the stars: Scientists propose wild new interstellar travel tech | Space]

[This NASA Scientist Is Developing a Spacecraft for Interstellar Travel. Is It the Warp Drive We've Been Waiting For?]

- First contact.
[We're Not Ready for First Contact With Extraterrestrial Life, Experts Say.]

- Intelligent aliens may exist all over.
[Intelligent Aliens Could Be Evolving All Across the Universe]

- Some aliens may need sulfuric acid.
[Life as we don't know it: Some aliens may need sulfuric acid like we need water | Space]

- Is the Universe inside an unfathomably huge black hole? (Recall Carl Sagan's words: *"Somewhere, something incredible is waiting to be known.")*
[Is our universe trapped inside a black hole? This James Webb Space Telescope discovery might blow your mind | Space]

- Nonhuman "intelligence" is hiding in the world's oceans, ex navy admiral says.
[Are UFOs Hiding Underwater? Yes, Says a Retired U.S. Navy Admiral] **Ω**

Comet Hale-Bopp seen above the ancient stone circle of Stonehenge in England on March 28, 1997.

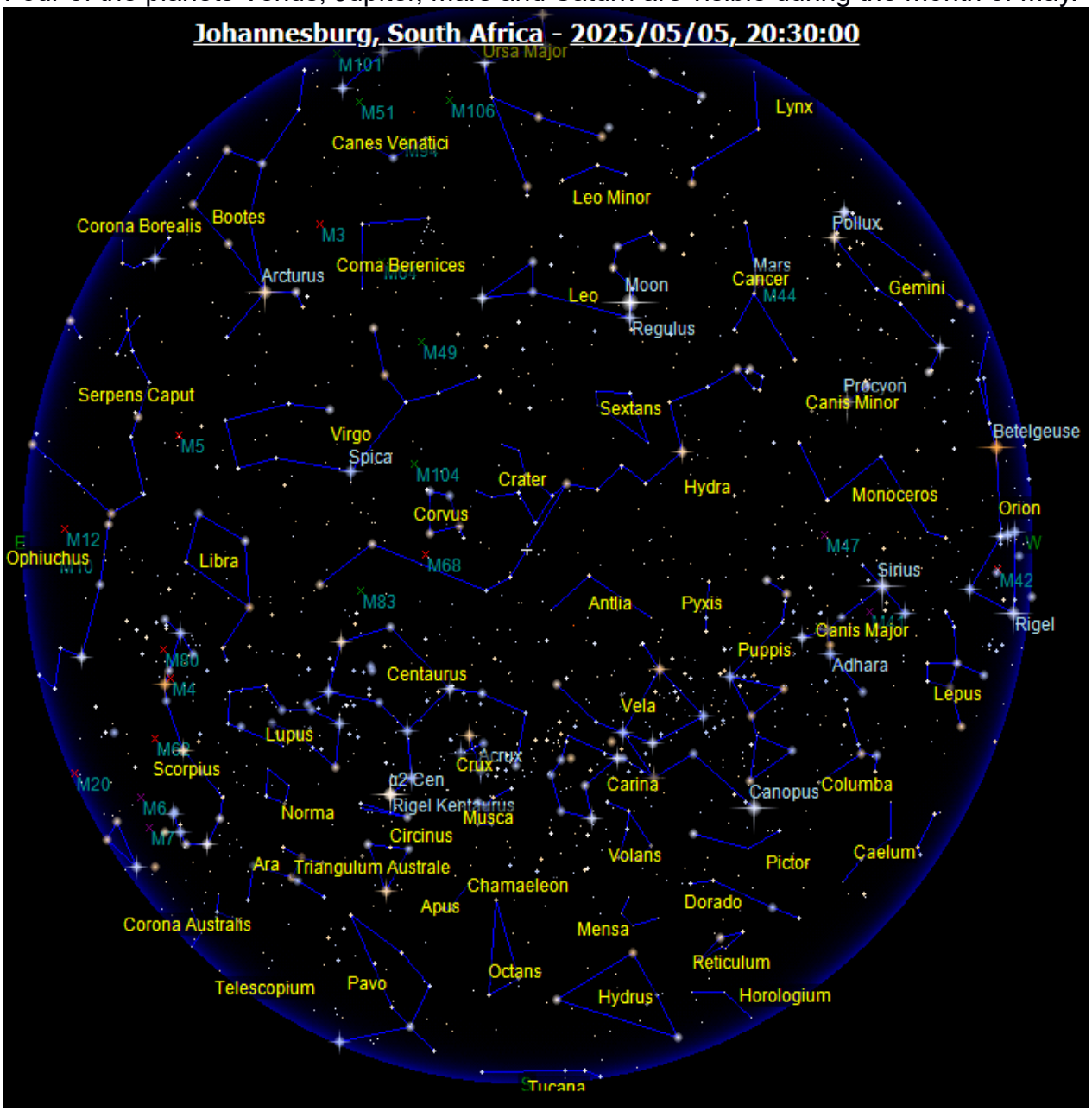
What's up in May 2025 - by Michelle Ferreira

The Phases of the Moon for May will be:

1st quarter on 4th May (15:52).
Full Moon on 12th May (18:56).
Last Quarter Moon on 20th May (13:59) occults sigma Cap.
New Moon on 27th May (05:02).
Up to 1st Quarter and after Last Quarter would be the best dates to do darker sky observations.

Planets that are visible in May

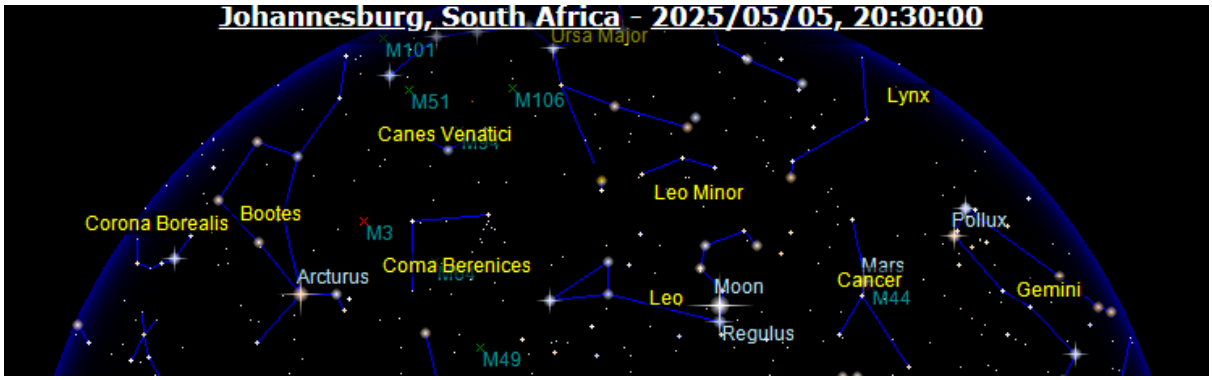
Four of the planets Venus, Jupiter, Mars and Saturn are visible during the month of May.

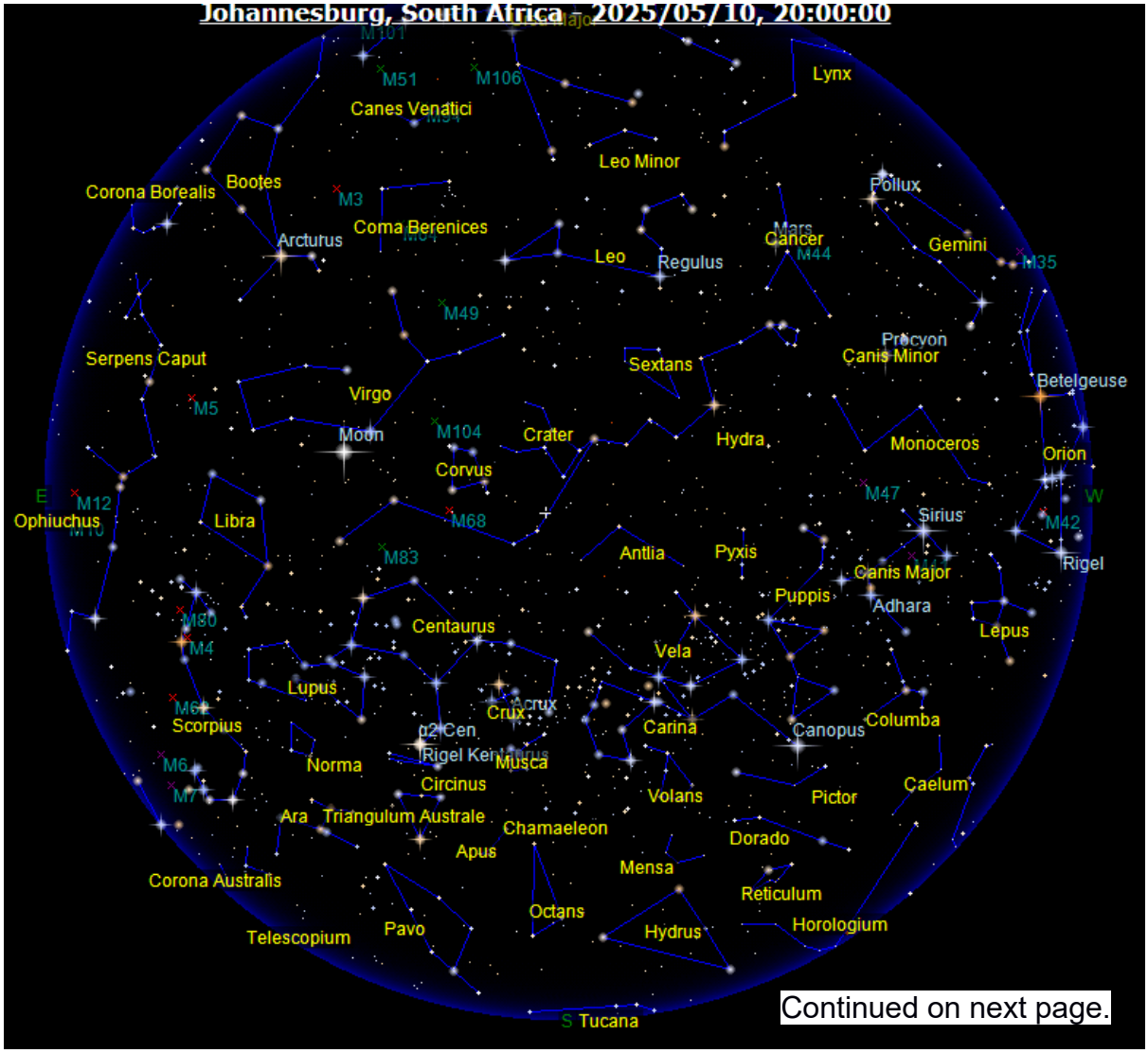


(Continued on next page.)

(Continued from previous page.)

When we look at the sky after First Quarter Moon, on the 5th May we find the Moon near Regulus …
… and Mars within star cluster Messier 44 (the Beehive).
From the 3rd to the 6th of May, Mars scoots past this large open cluster, the Beehive.

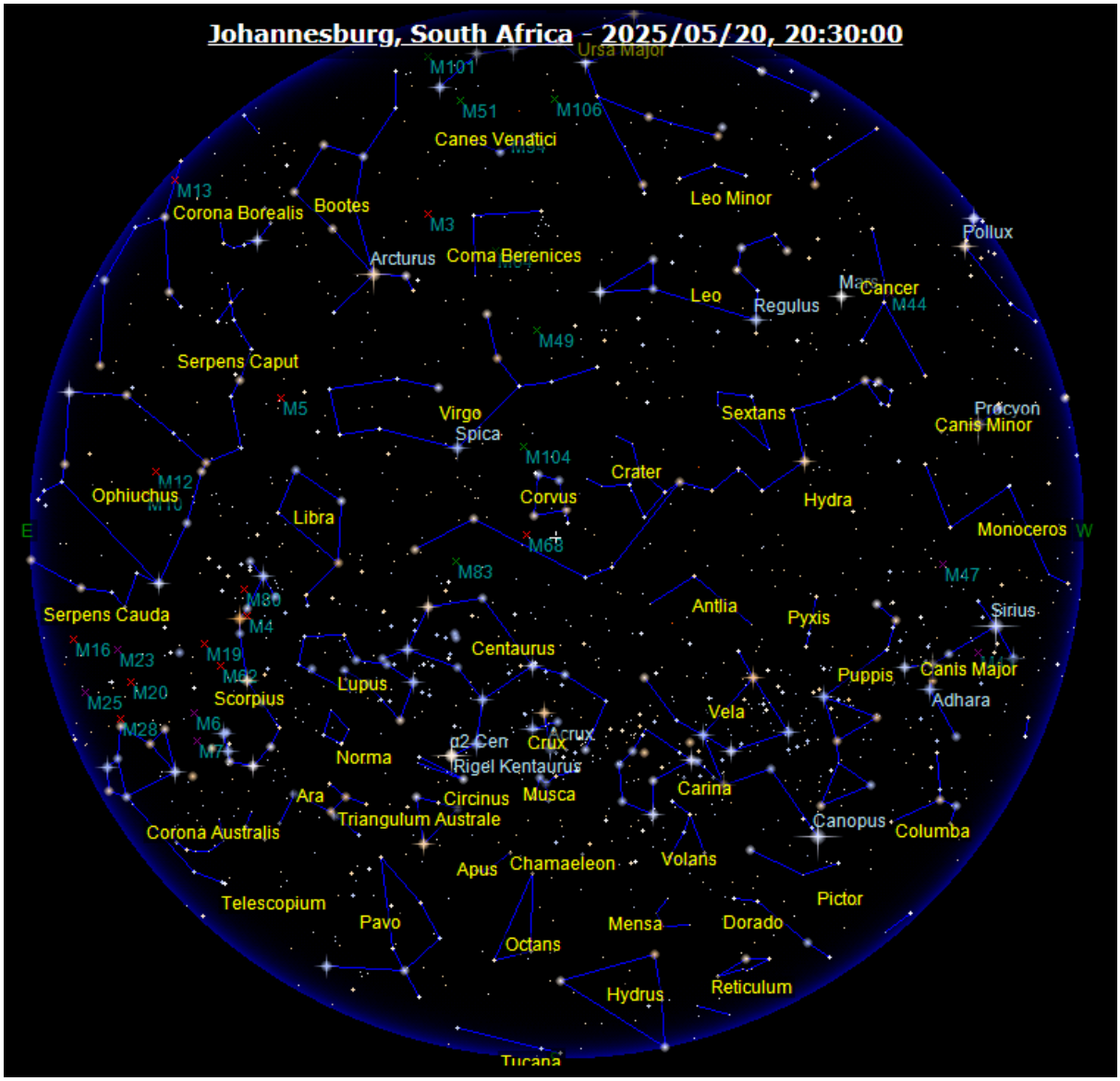




Continued on next page.

(Continued from previous page.)

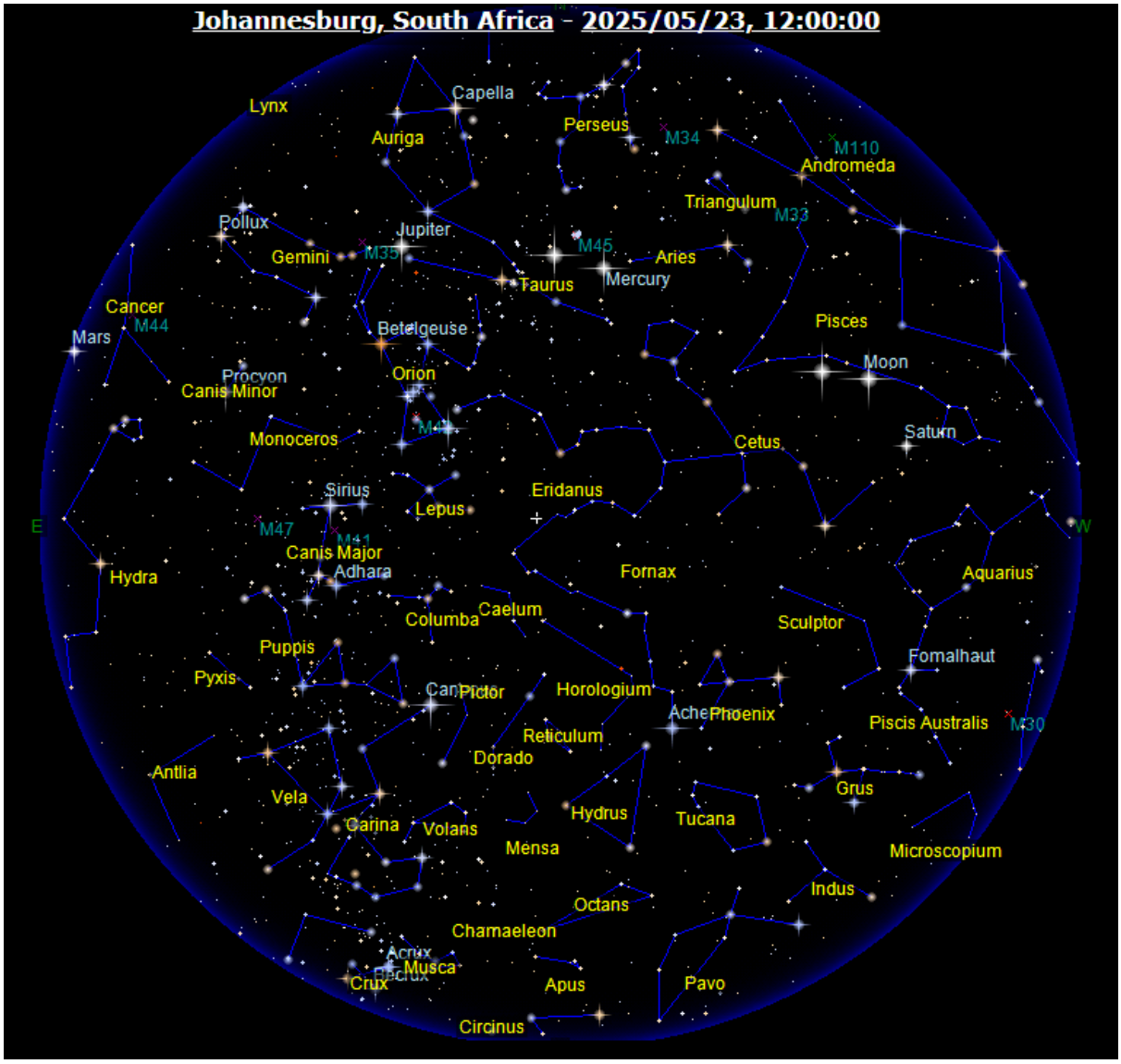
Crux and the Pointers are prominent high in the south-east, with Sirius and Orion in the West.
Archernar is low in the south, while Canopus is prominent in the south-west.
Archturus can be seen low in the north-west, while Spica can be seen to the East.
On the 10th the Moon is near Spica.
Later in the month, Antares can be seen low in the east.
On the 13th and 14th the Moon is near Antares.



Constellations visible during the evening sky are Crux, Musca (the Fly), Corvus (the Swan), Coma Berenices and Crater,
Mars is prominent, and Jupiter can be seen lower in the west.
Mars moves through Cancer during May.

(Continued on next page.)

(Continued from previous page.)



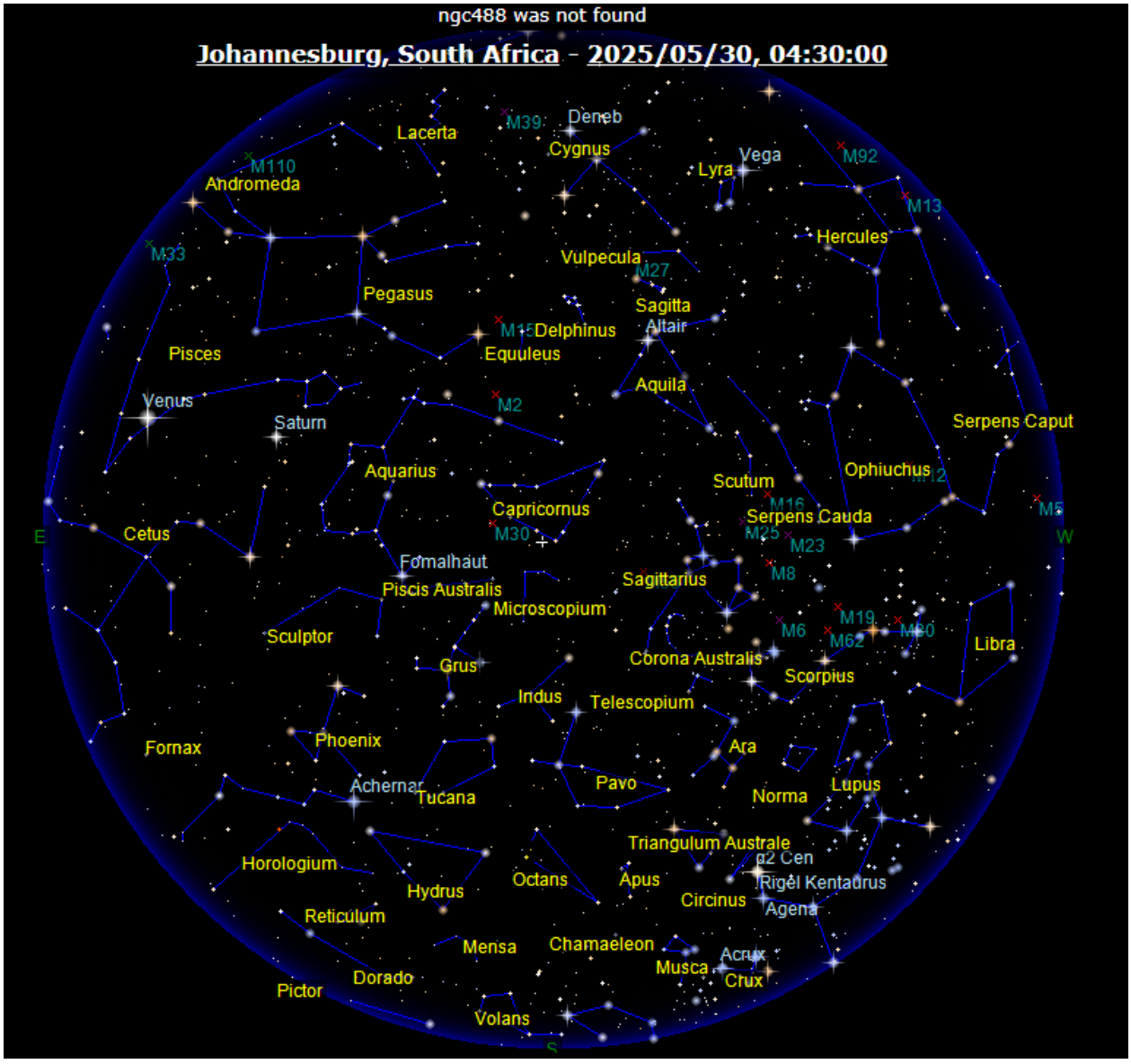
On the 22nd and 23rd we find the Moon near Saturn and then near Saturn and Venus respectively. This happens near noon.

(Continued on next page.)

(Continued from previous page.)

On the morning of 28th May, Venus lies 1deg from galaxy NGC 488 in Pisces. This pairing presents an interesting challenge to astrophotographers. Virtual observers using an 8-inch telescope will be able to pick up the galaxy, which lies just due west of a mag +7.5 star. On the morning of 30th May, Venus occults the mag +8.0 star HD8849. The pair will be low in the east when the star disappears at 04:46 and reappears some 10 minutes later.

Happy star hunting. Ω



International Astronomy Day

[International Astronomy Day (May 3rd, 2025) | Days Of The Year]

NOTICE BOARD

➔ **Look for merging galaxies in brand new data from the JWST.**
Cosmic Collisions — Zooniverse

➔ **Old newsletters.** All old newsletters from January 2004 onward are on our website. They contain a record of our Centre's activities as well as astronomical information.

Astronomy related images, video clips and documentaries on the Internet

➢ Several astronomy related video clips can be found at these two websites:
Top 5 Exoplanets Hiding Alien Life Discovered By NASA | Watch

See the universe like never before captured by a 609 megapixel camera | Watch

➢ Fastest spinning neutron star.
Fastest Spinning Neutron Star Just Found, But Its Spin Makes No Sense | Watch

➢ Jupiter's Great Red Spot. Jupiter's Great Red Spot Is Shaking | Watch
(Editor's comment: This reminds me of a line from one of Elvis Presley's songs: **"Shake, rattle and roll!"**)

➢ First data from Euclid. Euclid space telescope's 1st results reveal 'a goldmine of data' in search for dark matter and dark energy (images, video) | Space

➢ HST spies star-forming cocoons.
Hubble Telescope spies star-forming cocoons in neighboring galaxy (photo) | Space

➢ Life on exoplanet? Dimethyl sulfide (chemical formula $(CH_3)_2S$) is in its atmosphere.
Strongest evidence yet that there is life outside our solar system revealed | Watch

Report of the observing evening in March

There was no observing evening in March because of inclement weather.

Report of the meeting on Wednesday 26 March

The first presentation was "What's up in April 2025?" and was given by Johan Jordaan. After that the main talk, namely "Conjunctions" was given by Michael Poll. A summary of his presentation is to be found on page 10 of the newsletter for March.

Astronomy basics: History of the third planet from the Sun

See a 10 minute video clip that depicts the 4.5 billion year history of this planet.

Earth's Evolution in 10 Minutes

Note about joining our monthly meeting over the Internet

If you wish to attend, please be online before 19h00 SAST (= 17h00 GMT) and mute your microphone until you wish to speak.
Disabling your camera will save bandwidth on your side too.

Observing. IC 2602: take note Carina – by Magda Streicher

Our own Southern Pleiades, also known as IC 2602 is situated within the borders of Carina and most amateurs are aware of this beautiful bright cluster. Nearly five degrees south of the famous Carina Nebula this bright and outstanding cluster can be easily seen through binoculars. It is also easy enough to locate, because the brightest star, magnitude 2.7 theta Carinae itself, is obviously the heart of the grouping. In 1751 its discoverer, Nicholas de Lacaille, made the connection to the Pleiades when he describes it as follows: “the grouping resembles the Pleiades with theta Navis surrounded by a number of stars”.

But here is the challenge: just off IC 2602’s southern edge is a grouping named Melotte 101, also Melotte 102, which is a very rich faint cluster far in the background, but slightly controversial. Over 50 stars of more or less magnitude 10 are situated on the southern tip of IC 2602. A few brighter stars can be seen just west of Melotte 101/2, conveniently showing the way. Some sources refer to IC 2602 as Melotte 102, but the deduction can now be made that Melotte 101 and Melotte 102 is the same object.

Philibert Jacques Melotte (1880–1961) was a British astronomer who had emigrated from Belgium. In 1908 he discovered a moon of Jupiter today known as Pasiphae. It was simply designated Jupiter VIII and was not given its present name until 1975.

Don’t just pass over the bright objects; linger for a while and just maybe you might spot these objects in the shadow of the brighter neighbour.

Object	Type	RA	DEC	Mag	Size
IC 2602	Open Cluster	10h43m.2	-64°24’.7	2	50’

Web links for the astronomy enthusiast

- **The website for all information about the ASSA and the ASSA Centres:**
  https://assa.saao.ac.za/
- **ASSA Specialist Sections:**
  ASSA has various areas of interest. Join and participate!
  https://assa.saao.ac.za/sections/
- **ASSA Publications to download and enjoy:**
  MNASSA: https://www.mnassa.org.za/
  Nightfall: http://assa.saao.ac.za/sections/deep-sky/nightfall/
  To receive as part of ASSA membership benefits - *Sky Guide Southern Africa,* the astronomical handbook for Southern Africa:
  http://assa.saao.ac.za/about/publications/sky-guide/
- **Mail Groups to join:**
  For general ASSA related information: https://groups.io/g/ASSA-announce
  For posting general items and discussion: https://groups.io/g/ASSA-discussion
- **Social Media to join and share:**
  Facebook: https://www.facebook.com/Astrosocsa/?_rdc=1&_rdr
  Youtube: https://www.youtube.com/channel/UCJ4b1fhmPvYTOsy15YP-_JA
  Twitter: https://twitter.com/AstroSocSA
- **Planetaria:**
  WITS Planetarium (Johannesburg): Welcome to Wits Planetarium
  Naval Hill Planetarium (Bloemfontein): Planetarium Home (ufs.ac.za)
  Iziko Planetarium (Cape Town): Planetarium and Digital Dome - Iziko Museums
  Sutherland Planetarium (Sutherland): Sutherland Planetarium
- **More web links can be found on page 118 of "2025 SKY GUIDE Southern Africa". Ω**

Pretoria Centre committee

Chairman:	Johan Smit	072 806 2939	johanchsmit@gmail.com
Vice Chairman:	Neville Young	083 303 2840	nevyoung@gmail.com
Secretary:	Michael Poll	074 473 4785	pollmnj@icon.co.za
Treasurer and Membership Secretary:	Michelle Ferreira	073 173 0168	michellem.ferreira@standardbank.co.za
Newsletter Editor:	Pierre Lourens	072 207 1403	pierre.lourens@vodamail.co.za
Webmaster	Danie Barnardo	084 588 6668	daniebar403@gmail.com
and Social Media: &	Johan Smit	072 806 2939	johanchsmit@gmail.com
Curators of Instruments:	Johan Jordaan	082 373 3395	jjordaan121@gmail.com
&	Johan Smit	072 806 2939	johanchsmit@gmail.com
Centre Representative:	Johan Smit	072 806 2939	johanchsmit@gmail.com
Telescope making:	Johan Smit	072 806 2939	johanchsmit@gmail.com
Observing Coordinator:	Neville Young	083 303 2840	nevyoung@gmail.com