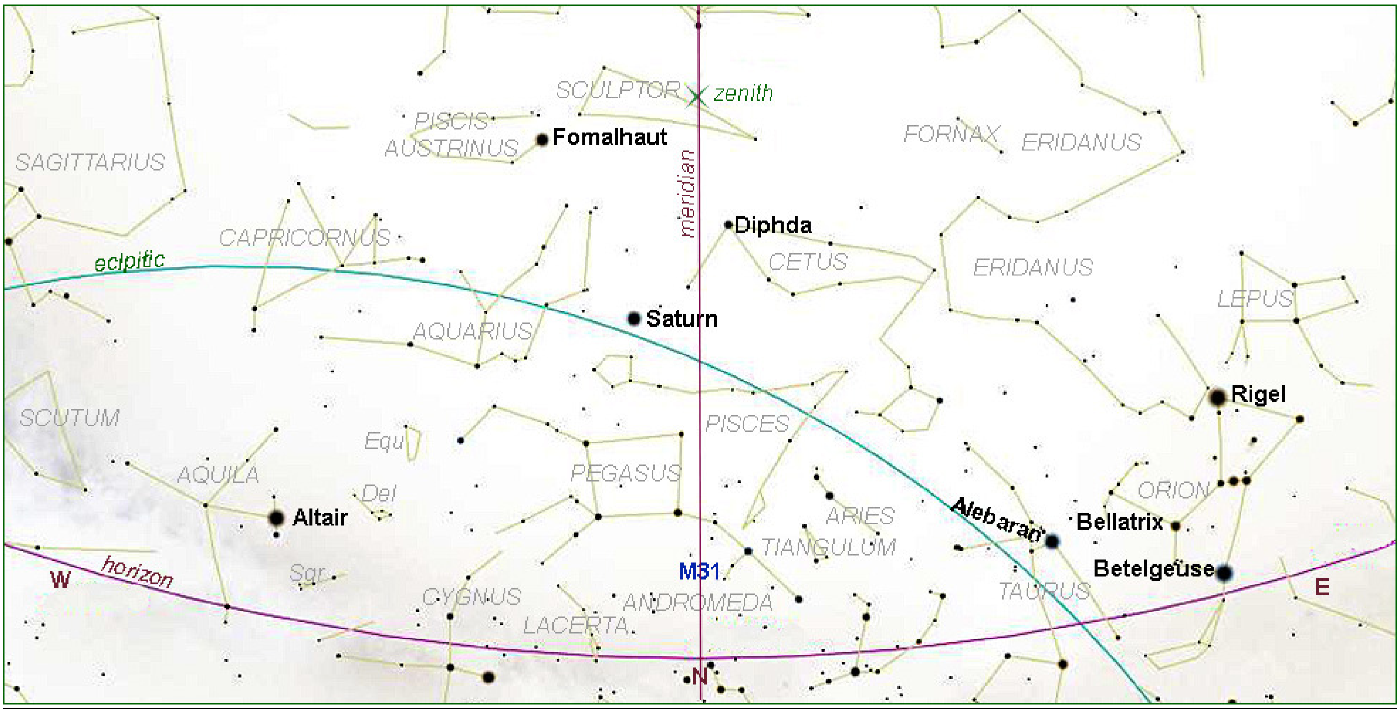
SKYNOTES from Hermanus

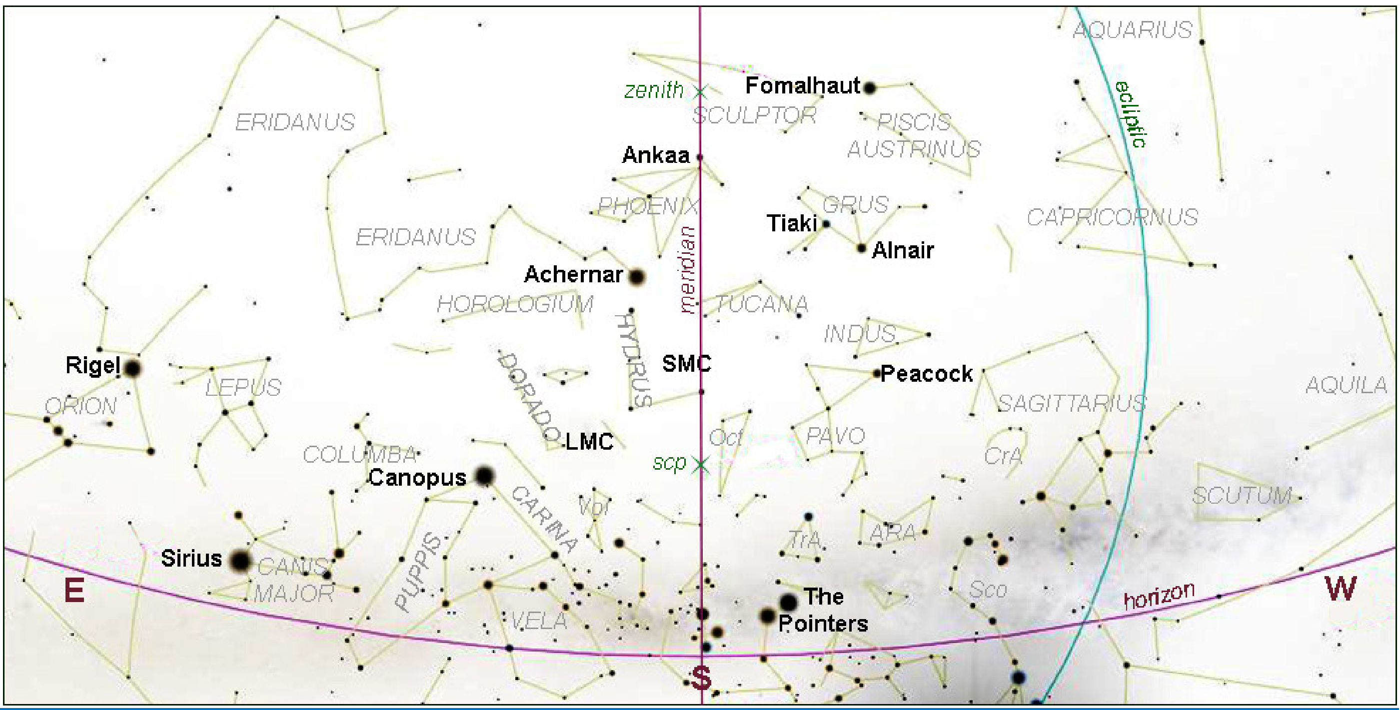
NOVEMBER 2025

SKY CHARTS

EVENING SKY – NOVEMBER 15th at 21h30 (NORTH DOWN)



EVENING SKY – NOVEMBER 15th at 21h30 (SOUTH DOWN)



SUGGESTED EVENING OBSERVATION WINDOW

(Lunar observations notwithstanding)

Date		*Moon*	*Dusk end*
November 6	*Rise*	**20h50 (98%)**	**20h51**
to November 22	*Set*	**23h06 (14%)**	**21h13**

THE SOLAR SYSTEM

NOVEMBER HIGHLIGHTS based on the 2025 SKY GUIDE

(PLEASE NOTE: all events are as observed from **HERMANUS**, Western Cape, South Africa)

Date	*Time (SAST)*	*Item*
1	19h46	**Moon** at ascending node
	21h00	**Moon** (80%) passes 8.4º west of **Saturn**
5		(12) **Victoria** at opposition (mag. +9.9, 1.3 au)
	15h19	**Full Moon,** Supermoon, *"Milk Moon"*
6	00h29	**Moon** at perigee (356 883 km)
7	20h57	**Moon** (94%) rises 18 minutes after **Pleiades** (M45)
8		**Moon** northernmost (+28.4º)
		Callisto at maximum from **Jupiter** (9')
9		**Mercury** near **Antares** and stationary
10		**Moon** near **Jupiter**
11		**Jupiter** stationary
12	07h28	**Last quarter Moon**
		Northern Taurids at maximum (see page 4 "Comets, Asteroids and Meteors")
13	02h05	**Moon** rises 8 minutes after **Regulus**
14	08h38	**Moon** at descending node
17		**Callisto** at maximum from **Jupiter** (9')
		Leonids at maximum (see page 4 "Comets, Asteroids and Meteors")
19		**Mercury** closest to **Earth** (0.677 au)
20	04h48	**Moon** at apogee (406 693 km)
	08h47	**New Moon**
21		**Uranus** at opposition and closest to **Earth** (18.509 au)
		alpha-Monocerotids at maximum (see page 4 "Comets, Asteroids and Meteors")
22		**Moon** southernmost (-28.3º)
23		**Mercury** at perihelion
25		**Callisto** at maximum from **Jupiter** (9')
28	08h59	**First Quarter Moon**
	23h33	**Moon** at ascending node
29		**Mercury** and **Saturn** stationary
30		**Mars** furthest from **Earth** (2.424 au)

SOLAR SYSTEM VISIBILITY

2025 NOVEMBER 15				*When visible?*
Sun	Libra	Rise:	05h30	**Never look at the sun without *SUITABLE EYE PROTECTION!***
Length of day	13 hours 55 minutes	Transit:	12h28	
		Set:	19h26	
Mercury	Scorpius	Rise:	06h06	Low in the west after sunset
Magnitude	+2.4	Transit:	13h12	
Phase	8%	Set:	20h17	
Diameter	10”			
Venus	Libra	Rise:	04h57	Low in the east before sunrise
Magnitude	-3.9	Transit:	11h38	
Phase	98%	Set:	18h21	
Diameter	10”			
Mars	Scorpius	Rise:	06h21	Low in the west after sunset
Magnitude	+1.4	Transit:	13h28	
Phase	99%	Set:	20h36	
Diameter	4”			
Jupiter	Gemini	Rise:	23h49	Morning
Magnitude	-2.4	Transit:	04h54	
Diameter	42”	Set:	09h54	
Saturn	Aquarius	Rise:	14h36	Evening
Magnitude	+0.9	Transit:	20h49	
Diameter	18”	Set:	03h06	
Uranus	Taurus	Rises:	19h47	All night
Magnitude	+5.6	Transit:	00h56	
Diameter	4”	Set:	06h01	
Neptune	Pisces	Rise:	14h57	Evening
Magnitude	+7.8	Transit:	21h03	
Diameter	2”	Set:	03h13	
Pluto	Capricornus	Rise:	10h11	Evening
Magnitude	+14.5	Transit:	17h22	
		Set:	00h37	

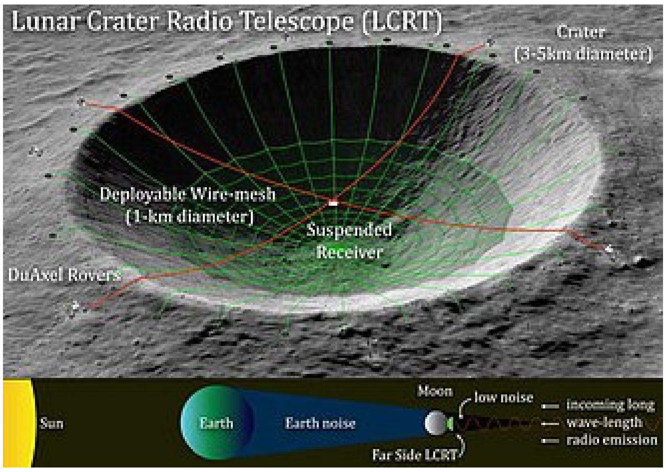
Phase: In a telescope, the inner planets (Mercury, Venus and Mars) appear to us in phases depending on the angle of the Sun’s illumination, as does the Moon. The observed **angular diameter** is given in arc seconds.

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 the brightness of 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 a star down to a magnitude of about +6.

THE MOON

THE LUNAR CRATER RADIO TELESCOPE



The LCRT is a proposal by the NASA Institute for Advanced Concepts (NIAC) to create an ultra-long-wavelength (wavelengths greater than 10 m, corresponding to frequencies below 30 MHz) radio telescope inside a lunar crater on the far side of the Moon.

When completed, the telescope would have a structural diameter of 1.3 km, and the reflector would be 350m in diameter. Robotic lift wires and an anchoring system would enable origami deployment of the parabolic reflector.

History

A previous proposal put the reflector size at 1 km diameter. In 2021, the LCRT project went into phase II of development in the NIAC program and was awarded $500,000 to continue work. As of 2023, work on the lunar crater radio telescope was ongoing at Caltech/NASA Jet Propulsion Laboratory.

Astronomers want to build the first-of-its-kind dish, known as the Lunar Crater Radio Telescope (LCRT), to help unravel some of the universe's biggest mysteries — but also because they are concerned about growing levels of invisible radiation leaking from private satellite "megaconstellations" which could soon disrupt Earth-based radio astronomy.

The proposed telescope will be built entirely by robots and consist of a giant wire mesh suspended via cables within a crater on the moon's far side, similar to the collapsed alien-hunting Arecibo telescope in Puerto Rico or China's giant Five-hundred-meter Aperture Spherical Telescope (FAST), which were both built within natural depressions on Earth. This will shelter the dish from satellite signals, as well as prevent interference from solar radiation and Earth's atmosphere.

No eclipses, lunar or solar, will be visible from southern Africa in November 2025

COMETS, ASTEROIDS AND METEORS

The link to the latest Comet, Asteroid and Meteor Section from Tim Cooper:

https://assa.saao.ac.za/wp-content/uploads/sites/23/2025/09/ASSA-CAMnotes-2025-Number-4.pdf

THIS MONTH'S DEEP SKY OBJECT

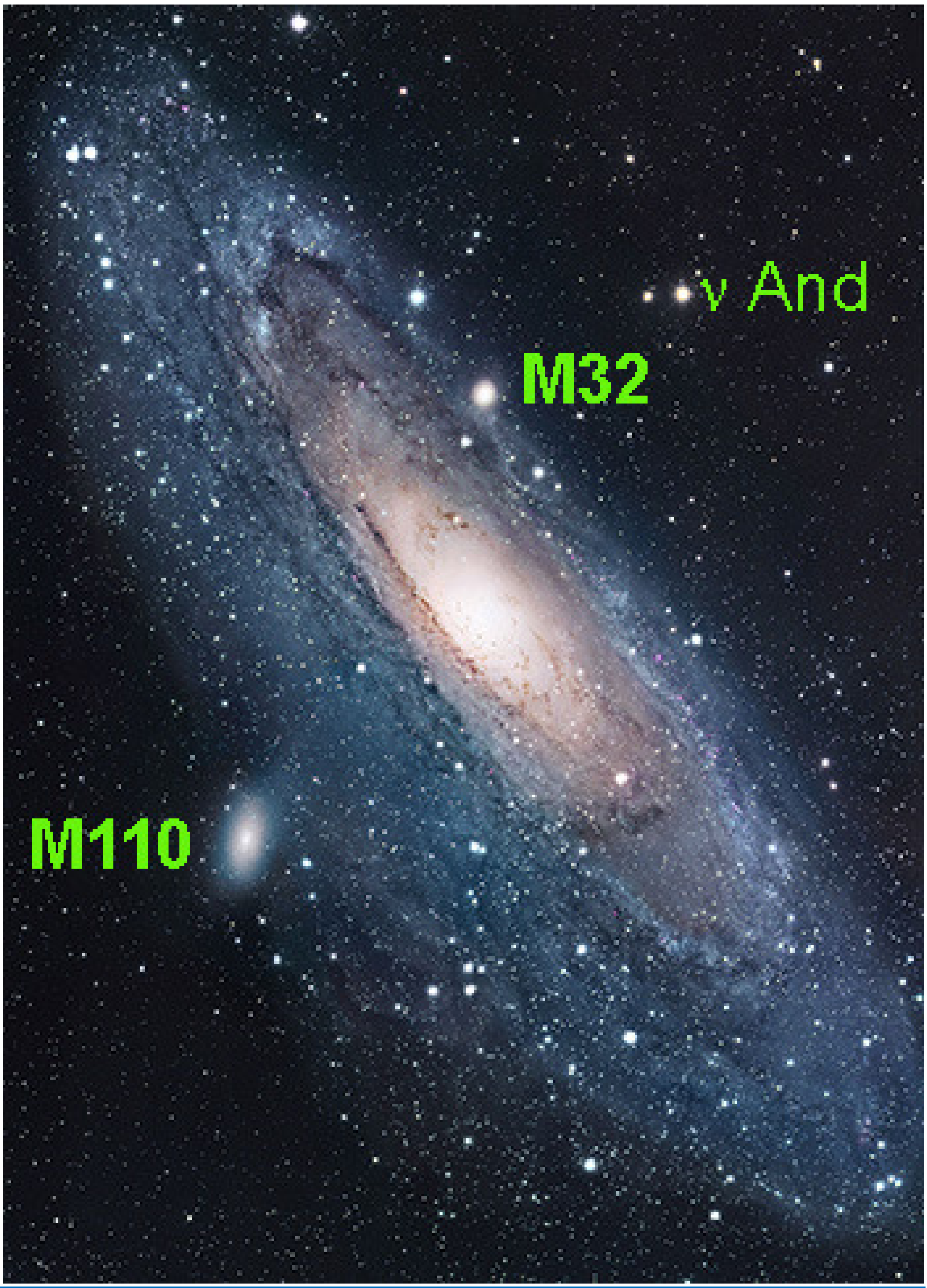


Image of M31 taken with a 12.5" Ritchey-Chrétien telescope by amateur astronomer Robert Gendler.

Credit: Photo by R. Gendler

ANDROMEDA GALAXY
M31, NGC 224

Description	Barred spiral galaxy - SA(s)b	***Visibility on 2025 November 15th***		
Constellation	Andromeda	*Rises*	*Transits*	*Sets*
Distance	2,5 Mly, 780 kpc	18h11	21h47	01h26
Magnitude	+3.44			
Apparent size	178 x 70 arcmin	*Naked Eye*	A faint smudge on clear nights	
Actual size	131.3 Kly, 40.2 Kpc	*Binoculars*	Yes	
J2000 Dec/RA	+41°16’07” / 0h42m44s	*Telescopes*	Yes, with detail	
Alt/Az (Hermanus	+14º05’10” / 3h03m14s			

Description

The Great Andromeda Galaxy, Messier 31, is the nearest spiral galaxy to our own. Visible as a faint smudge on moonless nights, it is one of the furthest objects visible to the naked eye. As a mirror image of the Milky Way, this huge aggregation of stars, gas and dust allows us to study all the features of our own galaxy that we cannot observe because we are inside it.

The Andromeda Galaxy was formed roughly 10 billion years ago from the collision and subsequent merger of smaller protogalaxies.

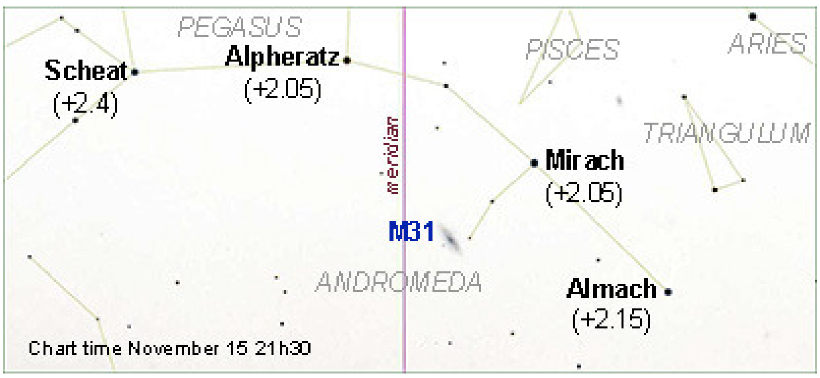
With an apparent magnitude of +3.4, the Andromeda Galaxy is one the brightest Messier objects. It is visible to the naked eye from areas of moderate light pollution and can even be seen from urban areas with binoculars.

Although the apparent size of the galaxy is about 3 x 1 degrees – six times the size of the full moon – only the bright central region is visible to the naked eye. M31 harbours a dense and compact nucleus at its centre, giving the visual impression of a star embedded in the more diffuse surrounding bulge.

Astrophotographers can gather fine, faint detail in the spiral arms. M31, classified as an “SA(s)b” spiral galaxy, has arms moderately wound up in a clockwise direction. Andromeda’s galactic plane is tilted approximately 13° to our line of sight and is therefore seen nearly edge-on. Like the Milky Way, the Andromeda galaxy has satellite galaxies. Charles Messier found the two brightest, M32 and M110, both visible in binoculars and conspicuous in small telescopes.

Observation

Being so low on the horizon, our observation windows are annually restricted to between October and early December of each year with further restriction imposed by the moon’s phases (and of course the weather!).



From the southern Cape, the biggest limitation with the observation of this splendid object is its low altitude, particularly from Hermanus with its range of mountains to the north. A site out in the Fisherhaven area may be preferable.

Discovery and History

The earliest known record of the Andromeda Galaxy was made in 964 CE by Persian astronomer **abd al-Rahman al-Sufi** who described it as a “nebulous smear” or “small cloud” in his Book of Fixed Stars. It must have been known to Persian Astronomers at Isfahan as early as 905 AD. It also appeared on a Dutch star map in 1500.

The first telescopic description of M31 was given by the German astronomer **Simon Marius** in 1612 *without* claiming its discovery. Apparently` unaware of al-Sufi’s and Marius’ observations, **Giovanni Batista Hodierna** independently rediscovered this object in 1654. **Edmond Halley**, in his 1716 treatise, credits the discovery of this ‘nebula’ to French astronomer **Ismail Bouillard**, who observed it in 1661. In 1745, **Pierre Louis Maupertuis** proposed that the blurry spot was an “island universe”. As early as 1755, the German philosopher **Emmanuel Kant**, in his book *“Universal Natural History and Theory of the Heavens”,* proposed the hypothesis that the Milky Way is only one of many galaxies.

In 1764, **Charles Messier** catalogued the object as number 31. Unaware of al-Sufi’s earlier work, Messier incorrectly credited Marius with its discovery.

The *“Great Andromeda Nebula”* was long believed to be one of the nearest gaseous nebulae. In 1785, **William Herschel** wrote (incorrectly) that, based on its colour and magnitude, its distance “would not exceed 2000 times that of Sirius” – about 17 000 ly. In 1850, **William Parsons**, 3rd Earl of Rosse, made the first drawing of the spiral structure. **William Huggins**, the pioneer of spectroscopy, observed the spectrum of M31 in 1864. The “nebula” displayed a star-like continuous spectrum, unlike the line spectra of gaseous nebulae. From this, Huggins deduced that M 31 had a stellar nature.

The first photographs of M 31 were taken in 1887 by **Isaac Roberts** from his private observatory in Sussex, England. His long-duration exposures allowed the spiral structure of the "nebula" to be seen for the first time. But Roberts mistakenly believed that it was actually a solar system in formation, with its satellite galaxies as nascent planets.

In 1912, **Vesto Slipher** of Lowell Observatory measured the radial velocity of the Andromeda "nebula", using spectroscopy. He found it had the highest velocity yet measured, about 300 km/sec, moving toward the Sun and estimated to collide with the Milky Way in 4-5 billion years. This also pointed to the extra-galactic nature of the object.

The Great Debate

In 1917, **Heber Curtis** observed a nova within M 31, and discovered 11 more by searching the photographic record. These novae were, on average, 10 magnitudes fainter than those within the Milky Way. As a result Curtis became a proponent of the so-called "island universes" hypothesis that spiral nebulae were actually independent galaxies. The Great Debate between **Harlow Shapley** and Heber Curtis took place in 1920, concerning the nature of the Milky Way, spiral nebulae and the dimensions of the universe.

Edwin Hubble settled the debate in 1925 when he found the first Cepheid variable in the Andromeda galaxy. This proved conclusively that M 31 lies far beyond the Milky Way, and established its true nature as a separate galaxy. Hubble published his epochal study of the Andromeda "nebula" as an extragalactic stellar system in 1929. But because Hubble was not aware of the two classes of Cepheid variables, he underestimated M 31's distance by more than a factor of two. This error was not discovered until the observations of the 200-inch telescope on **Mount Palomar** started in 1953.

In 1943, **Walter Baade** was the first person to resolve stars in M31 and was able to discern two distinct stellar populations. He named the young, high velocity stars in the disc Type I and the older, red stars in the bulge Type II. This nomenclature was subsequently adopted for stars within the Milky Way and other galaxies. Dr. Baade also discovered the two types of Cepheid variables, which doubled the distance estimate of M 31.

Radio emission from the Andromeda Galaxy was first detected by **Grote Reber** in 1940, and the first radio maps of the galaxy were made in the 1950s at the **Radio Astronomy Group** at Cambridge University. The core of the Andromeda Galaxy is called 2C 56 in the 2nd Cambridge radio astronomy catalog.

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/

Acknowledgements to the following:

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Edited by Peter Harvey - petermh@hermanus.co.za