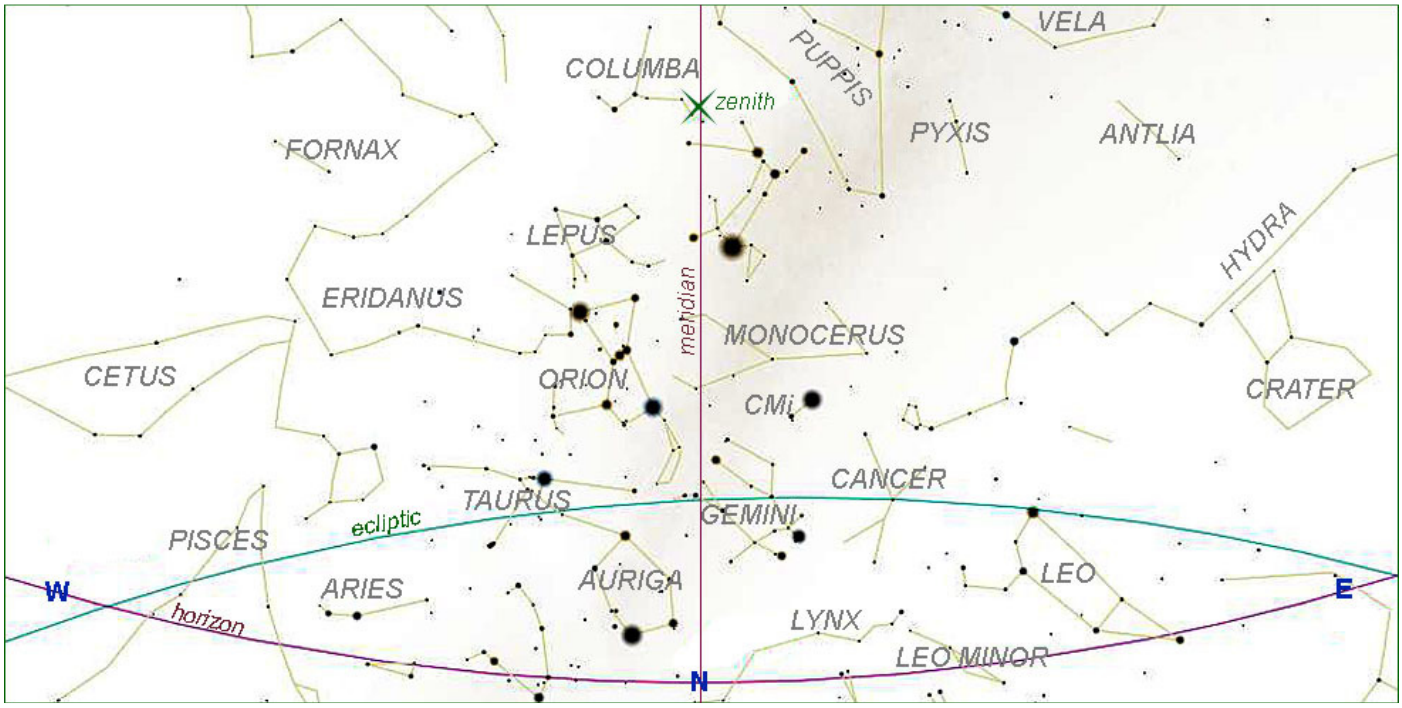
SKYNOTES from Hermanus

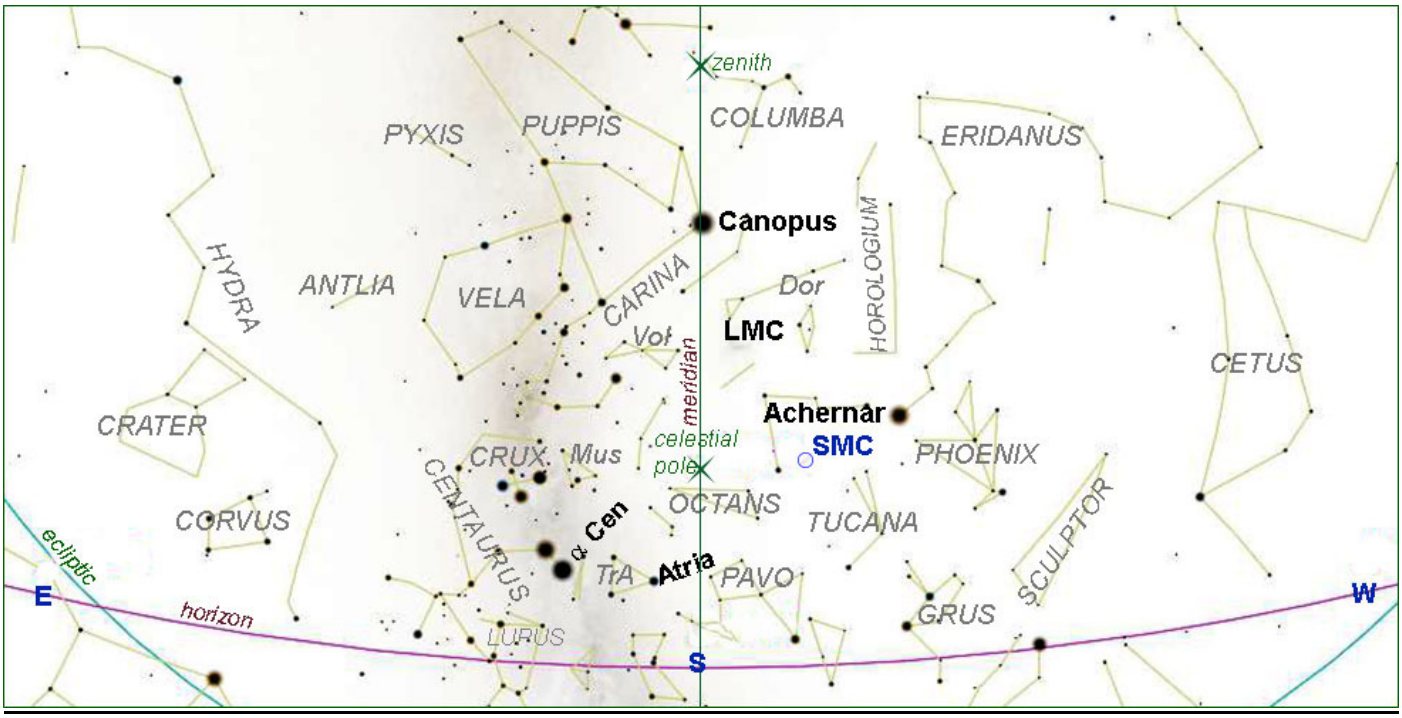
FEBRUARY 2024

SKY CHARTS

EVENING SKY FEBRUARY 7th at 22h00 (NORTH DOWN)



EVENING SKY FEBRUARY 7th at 22h00 (SOUTH DOWN)



THE SOLAR SYSTEM

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

HIGHLIGHTS for FEBRUARY FROM THE SKY GUIDE 2024

Date	*Time (SAST)*	*Item*
1		**Moon** (69%) near **Spica** (α Vir)
2		**Mercury** at aphelion
3	01h18	**Last quarter Moon**
5		**Moon** (30%) near **Antares** (α Sco)
		Mercury near **Pluto**
6	19h06	**Moon** (21%) southernmost (-28.32º)
7	12h00	**Moon** near **Venus** at noon
8		**Moon** (6%) near **Mars, Venus** and **Pluto**
10	00h59	**New Moon**
	20h49	**Moon** at perigee (358 088 km)
13	19h01	**Moon** at ascending node
	21h05	**Moon** (13%) occults **ε Pisces** (mag. +4.3 double), a dark limb event *
15		**Jupiter** sets 22h51, **Moon** (39%) sets 22h56
16	17h01	**First quarter Moon**
	22h00	**Moon** (50%) moves through **the Pleiades** (M45)
18	14h30	**Moon** (70%) very near **Elnath** (β Tauri), a mag. +1.65 double
19	10h47	**Moon** (79%) northernmost (+28.39º)
20	22h00	**Moon** (87%) near **Pollux**, **υ** and **ι Gem**
24	14h30	**Full Moon** near **Regulus** (α Leo)
25	17h00	**Moon** (99%) at apogee (406 316 km)
28	06h04	**Moon** (28%) at descending node
		Mercury at superior conjunction, **Saturn** at conjunction

* Should be visible in a small telescope

SUGGESTED EVENING OBSERVATION WINDOW

(Lunar observations notwithstanding)

Date		*Moon*	*Dusk end*
1st February	*Rises*	**23h12 (69%)**	**21h25**
12th February	*Sets*	**21h28 (6%)**	**21h11**

SOLAR SYSTEM VISIBILITY

2023 FEBRUARY 7				*When and Where visible?*
Sun Length of day	Capricornus 13 hours 36 minutes	Rise: Transit: Set:	06h09 12h57 19h45	**Never look at the sun without *SUITABLE EYE PROTECTION!***
Mercury Magnitude Phase Diameter	Capricornus -0.4 92% 5”	Rise: Transit: Set:	04h54 11h59 19h04	**Low in the east before sunrise**
Venus Magnitude Phase Diameter	Sagittarius -4.0 87% 12”	Rise: Transit: Set:	03h48 10h55 18h02	**“The Morning Star”**
Mars Magnitude Phase Diameter	Sagittarius +1.3 98% 4”	Rise: Transit: Set:	04h19 11h26 18h32	**Low in the east before sunrise**
Jupiter Magnitude Diameter	Aries -2.3 39”	Rise: Transit: Set:	12h33 17h58 23h23	**Evening**
Saturn Magnitude Diameter	Aquarius +1.0 16”	Rise: Transit: Set:	07h42 14h13 20h43	**Low in the west after sunset**
Uranus Magnitude Diameter	Aries +5.7 4”	Rises: Transit: Set:	13h28 18h41 23h54	**Evening**
Neptune Magnitude Diameter	Pisces +7.9 2”	Rise: Transit: Set:	09h12 15h22 21h31	**Evening**
Pluto Magnitude	Capricornus +14.5	Rise: Transit: Set:	04h40 11h49 18h57	**Low in the east before sunrise**

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.

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 number. A ‘good’ human eye on a clear night can see down to a magnitude of about +6.

THE MOON

TYCHO

Location: south-west quadrant

Type: very young crater with steep walls and a tall three-peaked central mountain. This crater is well known for its extensive ray system, one ray actually reaching almost to the Moon's north-eastern limb.

Size: diameter 86 Km.

Best seen: at last quarter (3rd February) and one day after first quarter (18th February).

Naming: Named by Jesuit astronomer Giovanni Riccioli. after the Danish astronomer Tycho Brahe (1546–1601).

Notes: aged about 108 million years. 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 (53 mi) and a depth of 4,800 m.

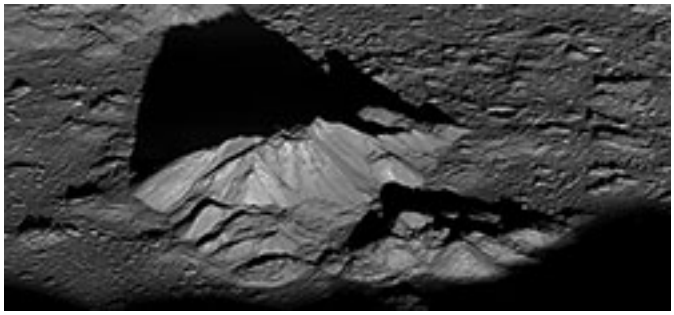


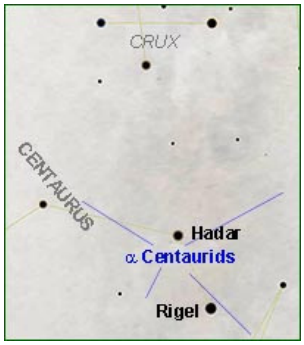
Image above taken at sunrise by the Lunar Reconnaissance Orbiter in 2011

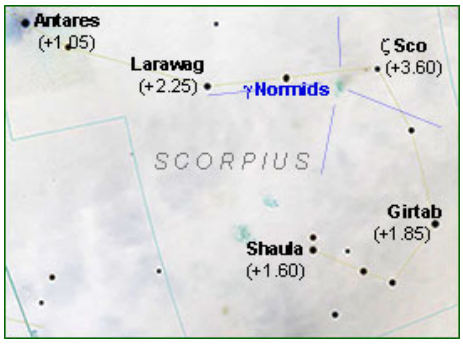
No eclipses, lunar or solar, will be visible from southern Africa in February 2024

METEOR ACTIVITY

From SGAS 2023	*Maximum Date/Time*	*Moon on max Date/Time*	*Duration*	*Radiant*	*ZHR**	*Velocity Km/sec*
α Centaurids	Feb 9 22h00 to 03h30	2%	Jan 31 to Feb 20	1.1° north-east of **Hadar** (β Cen)	5	60
γ Normids	Mar 14 00h00 to 04h30	sets 21h34	Feb 25 to Mar 28	1° north-east of **ζ Sco**	5	56

[in the editor's humble opinion, neither of these showers will reap much reward for staying up late at night. They are mentioned here because they will be there for the dedicated. ***Please let me know if you have any success!****]*



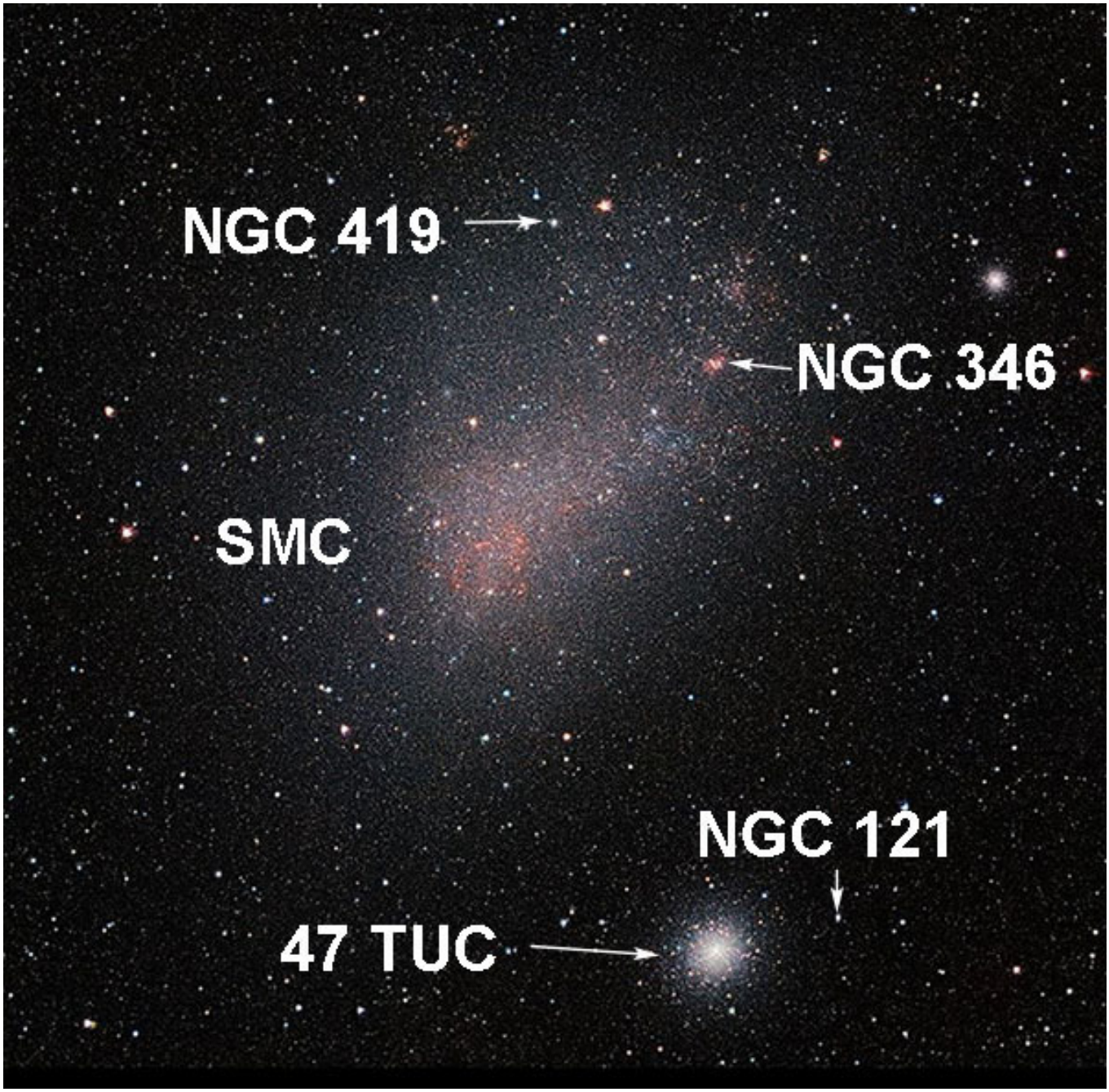


* A word of caution regarding predicted Zenithal Hourly Rates:

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 ot 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



This month we have no member's image. Instead, we do have this chart of our object of the month. The image includes the well known cluster 47 TUC which will be featured in the March issue of Skynotes.

Imaged by **VISTA** (**Visible and Infrared Survey Telescope for Astronomy**), a wide-field reflecting telescope with a 4.1 metre mirror, located at the Paranal Observatory in Chile. It is operated by the European Southern Observatory and started science operations in December 2009.

The Small Magellanic Cloud
NGC 292, Nubecula Minor, SMC

Description	Dwarf irregular galaxy	***Visibility on February 7th 2024***		
Constellation	Tucana			
Distance	191 - 209 kly, 61 kpc	*Rises*	*Transits*	*Sets*
Magnitude	+2.74	Does not rise	16.28	Does not set
Apparent size	300 x 180 arcmin			
Actual size	17.4 kly, 5.3 kpc	*Naked Eye*	Yes, in good conditions	
J2000 Dec/RA	-72º48'01" / 0h42m38s	*Binoculars*	Yes	
Alt/Az	+34º37' / 201º04'	*Telescopes*	Yes	

DISCOVERY AND HISTORY

The Magellanic Clouds have long been included in the lore of native southerners, including pacific islanders and indigenous Australians. Like its larger apparent neighbour, the Large Magellanic Cloud, the SMC was probably mentioned by **Amerigo Vespucci** in a letter written about his third (1503-4) voyage.

European sailors may first have noticed the clouds during the middle ages but their existence only became widely known to the west after **Ferdinand Magellan's** circumnavigation of the earth in 1519-22. **Johan Bayer's** 1603 Celestial Atlas *Uranometria* named the smaller cloud *Nubecula Minor*, Latin for "Little Cloud". Between 1834 and 1838, John Herschel observed the southern skies from the Cape of Good Hope. He described Nubecula Minor as a cloudy mass of light with an oval shape and a bright centre, cataloguing 37 clusters and nebulae within it. Many of these clusters and nebulae were given their own NGC numbers in Dreyer's catalog and the main body of the SMC was assigned NGC 292.

It was in the SMC where Henrietta Swan Leavitt discovered the period-luminosity relation of Cepheid Variables in 1908. Since then, this has been the most reliable method available for determining large cosmic distances.

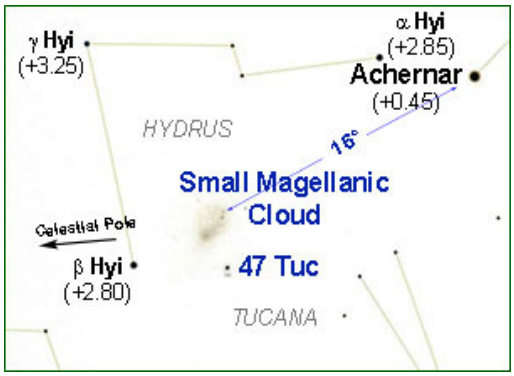
AMATEUR OBSERVATION

To the naked eye, the SMC appears as a detached piece of the Milky Way, a hazy patch covering about 280 by 160 arcminutes with a total visual magnitude of +2.3, making it the second brightest external galaxy (after the LMC). With a very low surface brightness, this galaxy is best viewed from a dark site away from city lights.

The SMC contains several nebulae and star clusters which can be seen through telescopes. Our small neighbour contains the same kinds of objects as the Milky Way: open clusters, diffuse nebulae, supernova remnants, planetary nebulae and globular clusters.

PHYSICAL PROPERTIES

Like the LMC, the SMC is a member of the Local Group and highly probably is a former satellite of the Large Magellanic Cloud and a current satellite of the Milky Way, though the HST observations make this arguable (see below).



At a distance of about 200 Kly, the SMC is the Milky Way's fourth nearest neighbour after the Sagittarius Dwarf Elliptical discovered in 1994, the Canis Major Dwarf Galaxy and the LMC. The SMC has a diameter of about 7 000 ly and contains several hundred million stars with a solar mass of approximately 7 billion.

Some speculate that the SMC was once a barred spiral disrupted by the Milky Way, becoming somewhat irregular. It still contains a central bar structure.

HST observations released in 2007 showed that both the LMC and SMC are moving too fast to be gravitationally bound to the Milky Way but are simply passing through our galactic neighbourhood.

Associated with SMC		*Not associated with SMC*	
OBJECT	DESCRIPTION	OBJECT	DESCRIPTION
NGC 121	Globular cluster	**47 Tucanae** (NGC 104)	Globular cluster
NGC 419	Open cluster	**NGC 346**	Cluster associated with nebulosity
		C104 (NGC 362)	Globular cluster

UPDATE

Youtube link, "The two Faces of the SMC" - https://www.youtube.com/watch?v=8eT0f9U3vdk

The Small Magellanic Cloud is a nearby galaxy that is very familiar to astronomers — or so they thought. New research suggests that the satellite galaxy of the Milky Way, located around 199 000 light-years from Earth, seems to have been hiding a secret: It's actually two galaxies, one behind the other. To make the discovery, a team led by Claire Murray, an astronomer at the Space Telescope Science Institute in Maryland, tracked the movement of gas clouds and young stars being born within them around the Small Magellanic Cloud. They found that the small galaxy, which is around 18 900 light-years wide (or less than a fifth of the width of the **Milky Way**), contains two distinct stellar nurseries thousands of light-years apart.

While the Large Magellanic Cloud has a disk-like shape similar to that of the Milky Way, the Small Magellanic Cloud is more irregular. The Small Magellanic Cloud has only one-third the mass of the larger dwarf galaxy, which has a mass equivalent to around 7 billion times that of the sun. Although the Small Magellanic Cloud was previously thought to consist of multiple components, it is somewhat obscured by interstellar clouds of gas and dust, meaning these features have been hard to distinguish.

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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, **so contact us and let's talk!**

With Grateful thanks to the following:

Sky Guide Southern Africa 2024
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