

Island life, doing things on Marion Island

The Wanderer

50

*Years of
Research*

**Cloud
Gallery**

THE METKASSIES



SANAP

South African National Antarctic Programme

Understand, develop and conserve

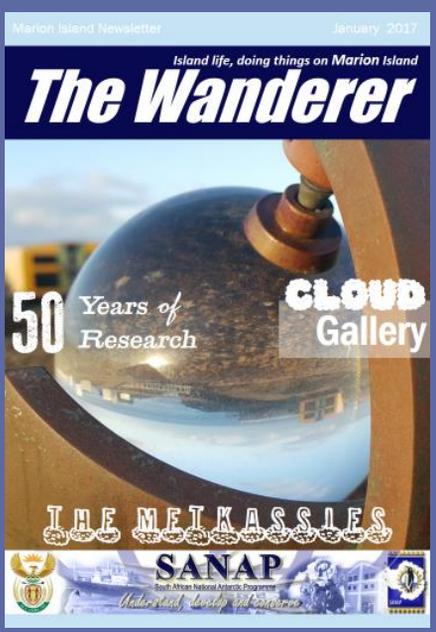


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Photo by Camilla Kotzé

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Cover: Sunshine Recorder
Photographer: Marileen Carstens



Letter from the EDITOR



Welcome to the first issue of 2017. A new year lies before us; 365 days of pure potential, hidden opportunities, miracles and the perpetual mysteries of life waiting to be uncovered. This is felt on Marion with a sense of urgency, realizing that we have only three months left on the island until take-over. Time has a wonderful way of showing us what really matters. And on Marion, it is our communion with sub-Antarctic nature- laying amongst the heady scent of yellow *Cotula* blossoms, nestling in the cucumber-mint bouquet of springy *Blechnum* slopes, watching playful pups in tidal pools, observing the courting ritual of Wandering Albatross, and allowing yourself to become nubivagant- letting your mind wander in the clouds as they move through the air above your head (see the Cloud Gallery on pg. 10).

I myself am enjoying exploring the landscape through work as a geographer. Not long ago, I visited the site of the most recently recorded volcanic eruption on Marion. It occurred on the 24th of June, 2004, in a small lake above the Watertunnel Valley.

I leave you with a quote by John Muir (1898), "Camp out among the grass and the gentians of glacier meadows, in craggy garden nooks full of Nature's darlings. Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like autumn leaves".



Kotzé

CAMILLA KOTZÉ
EDITOR



The

SENIOR MET

1. Give us a short history of yourself?

Grew up loving water, Dad was always fishing so by the time it came down to study I wanted to do something oceanic without animals, kelp and maths. Somehow I figured that has to be Oceanography. Completed a Btech, which was the 1st time I met old Marion Islanders, who advised me to apply for anything and everything. 3rd time lucky I was; did my 1st overwintering in 2011/12 as a junior met (looking back I would have died if I was sent as a sealer or birder!!). Then got introduced to Isabella Ansoorge from UCT and that led to a Hons degree in Ocean and Atmospheric studies in 2013.

Cover Photo by Marileen Carstens

While completing an internship at the CSIR a friend informed me that the SANAE post had not been filled why don't I apply, well I applied and got sent to Marion instead!

2. Favourite island location, animal and dish?

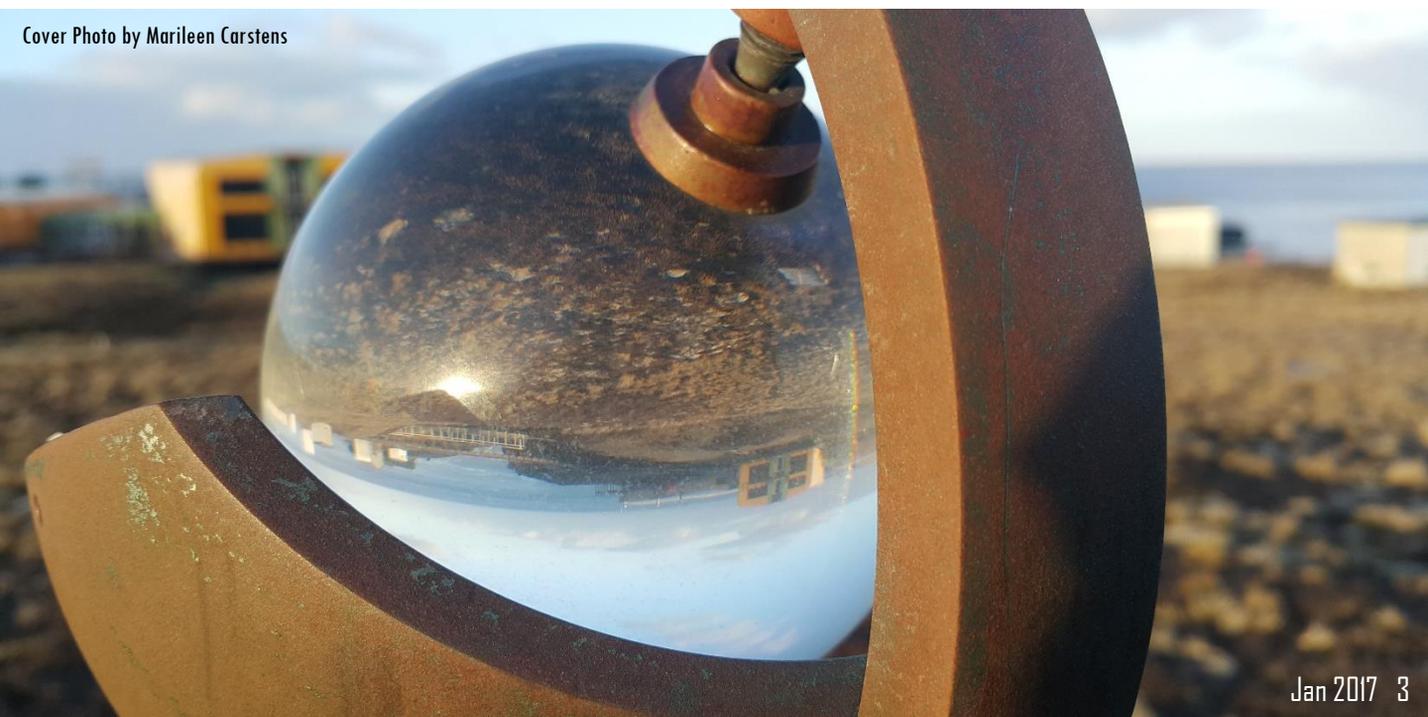
Place: Watertunnel hut (both river and ocean view at once!)

Animal: Killer whales, only thing that hasn't tried to eat, bite or chase me.

Dish: I can be bribed with anything pasta normally, but Albert's freshly baked roles and any of Alta's gourmet hut food must be my favourite this trip. I am looking forward to homemade stir fry again in 3 – 4 months.

3. Any island highlights you would like to share?

Endless seasons and sights in one day- In one day walking with Alta we encountered a pod of killer whales, dew drops on spider webs, rain, enough sunshine to strip out of our gortex and fleece and continue walking to Katedraal in t-shirts, to find ourselves snowed in before the 1st cup of coffee was done. Coming back the next day in more snow, rain, sun, wind that picked up to 100km/h just as we were climbing up the slope to base. Marion has everything!



Gerald



Together with Marileen Carstens (Senior Met.), Morgan Mugeru and Gerald Kgasago form M73's weather trio. All three having previously over-wintered on an island, they know their stuff! Gerald and Morgan touch on Upper Air and Sea Surface Temperature on the next page. When they aren't on duty, these Metkassies like to experience the island weather first hand (see island highlights below).

Morgan



1. Give us a short history of yourself?

My name is Gerald Kgasago, most of my team mates call me the new guy and top management call me the voyage saver. I was appointed at the very last minute to rescue the expedition as a new team member. I was born in the obscure, forgotten town of Polokwane, situated next to the R37 in the hills of Kgolla. Before I joined SAWS, I was doing a practical training Workshop in Pretoria West. While I was still busy with my practicals, I had the opportunity to join SAWS and spent 14 months on Gough Island in 2014 as Meteorological Technician. I am grateful to again be on a sub-Antarctic Island, doing what I love.

I was born in Limpopo province, an area just outside Makhado (Loius Trichardt) called Ha-Ramahantsha. I studied in Limpopo until matric. I moved to Johannesburg where I studied Geology and Environmental Management, and then an honours in Geology. In 2014, I went to Gough as a Meteorological Technician, then six months later I came to Marion Island.

2. Favourite island location, animal and dish?

Grey-Headed's Good Hope beach and Ships Cove, especially during seal breeding season on a sunny day! My favourite animal is a Fur Seal Bull, I just admire the way they take control over the beaches. Just give me garlic baked bread with no raisins and you got my attention.

My favourite location, animal and dish is Tweeling (around Cape Davis), a Wandering Albatross and the Hut Burger.

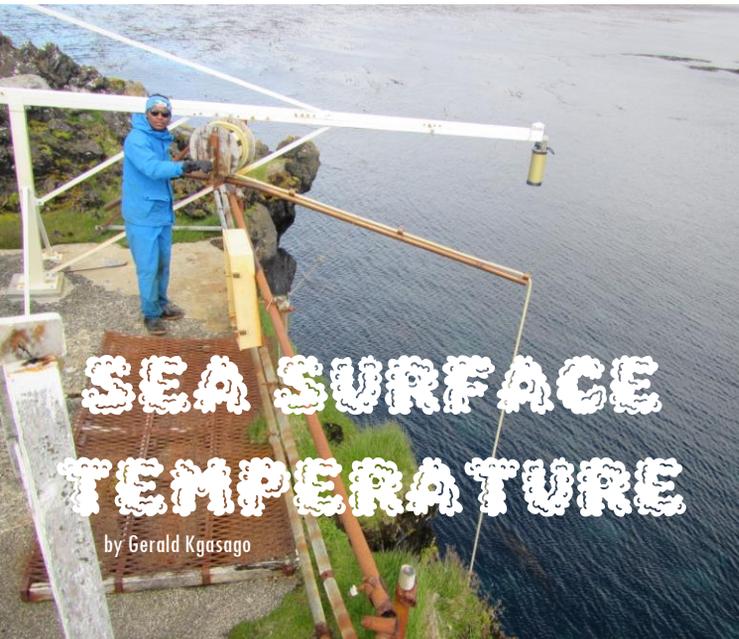
3. Any island highlights you would like to share?

My first round island in August with Sydney doing south census from the base to Kildalkey. The weather was lovely in the morning, snow covered and sunny. Spent a night at Kildalkey where we met up with Jessie and Makhudu. Jessie was so welcoming in her 2nd home that she made us supper. Jessie and I stayed up until midnight chatting and so we bonded from that day onwards. The following day we headed to Watertunnel. On our way, the wind picked up and just before we reached the hut ice pellets came down, hitting our faces like mini daggers.

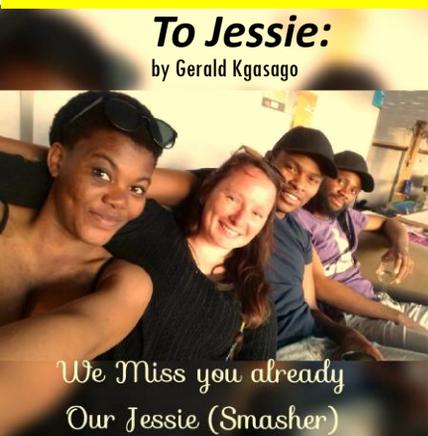
In October, I went on a Round Island with Zuko. We left base and were aiming to reach Rook's hut. But the weather was so bad that we had to stop at an earlier hut. The next morning the weather had cleared, and it was the most beautiful view at Rooks. There were rainbows and Albatrosses everywhere, it was a really memorable experience for me.

On Marion Island, the weather office conducts two upper air ascents daily, one at 10:30GMT followed by the other at 23:00GMT. To conduct upper air we need a Radiosonde, a receiver, 350g latex balloon, hydrogen gas, a string to tie the balloon and a string to attach the balloon with the radiosonde. We also use a computer to read the data emitted when the balloon is going up. For those who are unfamiliar with radiosondes, it is a small dispensable package of instrument that is lifted by a hydrogen filled balloon.

A radiosonde has sensors and a GPS, so while it is going up, a Meteorological Technician can monitor and identify its location. As it ascends, radiosonde measures temperature and relative humidity. With known location of the radiosonde, pressure, wind speed and direction can be calculated. This data is then received on the ground for encoding and sent to the South African Weather Service. The balloon usually goes up to 25km before it bursts. The data that is collected through upper air is used for forecasting and research purposes.



It is the water temperature close to the ocean's surface. The exact meaning of surface varies according to the measurement method used but it is between 1 millimetre and 20 metres below the sea surface. Sea surface temperature (SST) has a large influence on climate and weather, for example every 3 to 7 years, a wide swath of the Pacific Ocean along the equator warms up by 2 to 3 degrees Celsius. In simple terms, the SST is used for data scaling, studies, forecasting and data storage to check if it has changed in the past 30 or 40 years. If you don't have observation of temperature, you won't be able to verify global warming of an area. We store the data to check if the trend is going up or down.



Without you

In your absence my life is stammer hunted down by non-Existent tomorrow I feel guilty of sins I have not commit born of the winds mesecen fears, without you my earth suffers the demise of colors as when the guest leaves a house at night the light goes out.

You are missed my friend, got no one to call my name the way you did, wish you'd trained someone before you left. Get better, you are LOVED.



Ultamate

Accessories

Photo by Camilla Kotzé

Meet the

BRAAI BAND

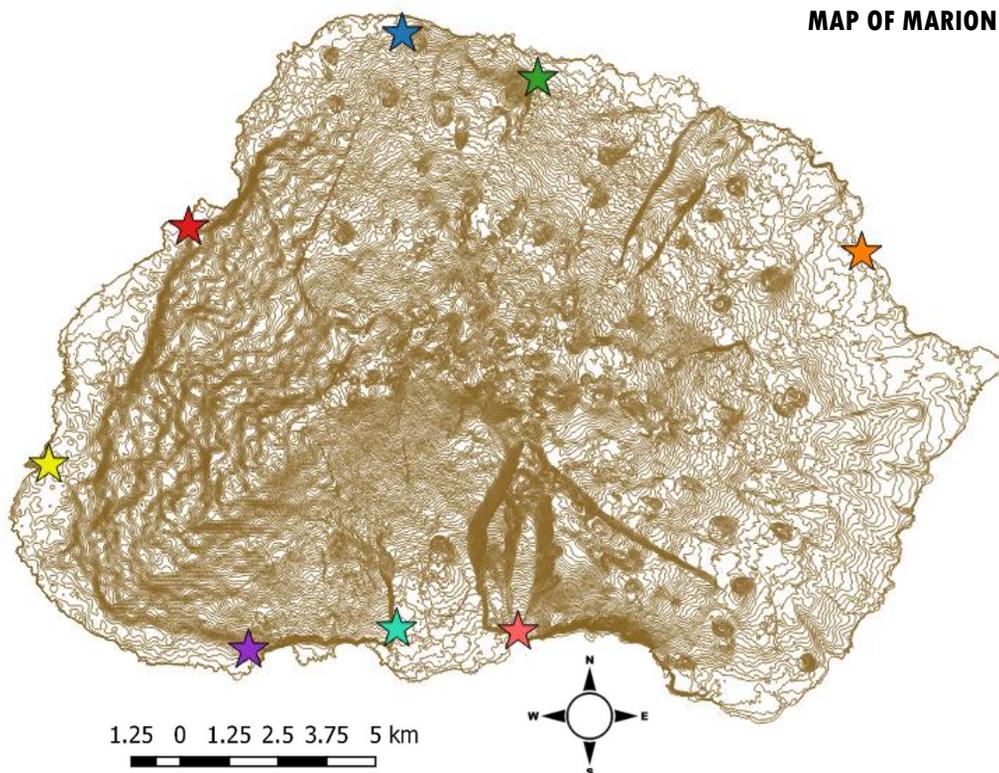
TEXT BY CAMILLA KOTZÉ

The *Braai Band* is fast becoming a key Marion item. Kyle and Travis can attest to this as the *Braai Band* tamed their unruly curly locks, keeping their vision clear for braaing the perfect steak. Incidentally, it also made them look cool in an in an 80's tennis player sort of way! The *Braai Band* is also perfect for use at the gym; soaking the sweat off one's brow as originally intended.



Readers' Round Island

MAP OF MARION ISLAND: Position of Watertunnel



LEGEND

- ★ Cape Davis
- ★ Grey Headed
- ★ Mixed Pickle
- ★ Repetto's
- ★ Rooks
- ★ Swartkop's
- ★ The Butternut Hotel
- ★ Watertunnel
- Contours

Readers' Round Island:

Watertunnel

Text by Camilla Kotzé

Photo by Camilla Kotzé



Situated at the base of the Watertunnel Valley, lies Watertunnel hut. Located parallel to a stream which cascades into the ocean a few hundred metres away, it is a serene place to spend the night. Its name comes from a water feature less than a kilometre upstream; rock is carved by the river to form tunnels which temporarily trap the stream in incandescent pools as it spills over moulded bedrock to its final reunion with the sea.

WATERTUNNEL FEATURE
by Jessie Berndt



THE ORIGINS OF THE WATERTUNNEL STREAM:

Emanating from a watershed in the interior, the Watertunnel stream can be heard bubbling beneath the Grey lavas until it surfaces from an outlet as a mere trickle (1). Along the way, tributaries join up to form the trunk which polishes and moulds the bedrock as it goes (2).



Photo by Camilla Kotzé



Photo by Camilla Kotzé

WATERTUNNEL VALLEY
by Camilla Kotzé



View from the loo



The route from Grey headed to Watertunnel

Photos by Camilla Kotzé

As soon as you leave Grey-headed, the path takes you into Santa Rosa Valley; a cross-section through an bygone black lava outflow. Watch out for your hands on the jagged basalt and be sure to keep to the path, losing your way can cost precious time as the lava can be an overwhelming maze replete with loose rock and ghost holes (hidden holes which tend to swallow your limbs when careful attention is not paid). The path takes you past the old cat hunter signpost (1) and a rock that, if you use your imagination, resembles a vultures head.

It's not long before you reach the Golden Highway which opens out onto Gazella Plain (2), aptly named for its large population of Antarctic fur seals (*Arctocephalus gazella*). The hardest part is ascending the Devils Staircase (3), a thigh-burning climb that delivers you to the Ridge upon which the hut sits.

GORGEOUS GOLDEN HIGHWAY. The Golden Highway with the Devils Staircase in the background. The hut sits on top of the first ridge with the FeldmarkPlateau behind it.



HOT RECIPE OF

by Camilla Kotzé

THE MONTH

**Serves 2*

Chocolate & Almond Cake

Ingredients

Self-raising flour: 250 g Hot Chocolate: 2 tbsp.
 Oil: 2 tbsp Chocolate: 1 slab
 Powdered Milk: 2 tbsp Luke warm water as
 Condensed Milk: 2 tbsp needed
 Milo: 2 tbsp Handful of almonds

Methods

1. Mix all ingredients together besides warm water.
2. Add water slowly while mixing until dough forms a sticky ball.
3. Break slab of chocolate and mix it in with the dough.
4. Oil a small pot and add dough inside.
5. Take a big pot (small pot must fit inside) and fill a 1/3 with water.
6. Put small pot with dough inside big pot with water. Cover both pots with one big lid.
7. Top with almonds as desired.
8. Cook on stove for 30 mins on low heat (make sure water does not boil dry).



Photo by Kyle Lloyd

MAXIMUM WIND GUST	130 km/h
TOTAL RAINFALL	312.2 mm
HIGHEST IN 24 HOURS	48 mm
TOTAL DAYS WITH RAIN	29 days
TOTAL DAYS > 1 MM	23 days
TOTAL SUNSHINE	183.8 hours

SAWS STATS

December

	AVE	MAX	MIN
TEMPERATURE (°C)	7.4	15.4	-0.2
PRESSURE (hPa)	995.1	1015.7	970.9
HUMIDITY (%)	78	96	24

Gallery

A selection of excellent photographs taken and compiled by Marileen Carstens, unless otherwise stated

Cloudy with a chance of...

EVERYTHING!

"The air up there in the clouds is very pure and fine, bracing and delicious. And why shouldn't it be? – It is the same the angels breathe."

Mark Twain

If clouds were an indicator of angel presence, then Marion must be some sort of angels retreat. From the 29 main types of clouds (divided into low, middle and high altitude), Marion frequently sees her share of about 6 types.

This is mainly due to the position and topography of the island. The westerly wind belt drives cold fronts over the island and the interior mountain range forces the cold moist air to rise, forming a special orthographic cloud.



Low Cloud:



STRATUS NEBULOSUS

- Drizzle
- Snow grains

When visibility is more than 1km it is classified as mist (top), less than 1km it's fog (right)



Find the fieldworker and Watertunnel hut...



Photo credit: Camilla Kotzé

STRATOCUMULUS

This low stratiform cloud brings rain and snow to the island, note the trademark roll shape in the top photo compared to when its breaking up (bottom).



Jan 2017 12

Fair weather **CUMULUS HUMILIS** is rare on the island (below), but



CUMULUS CONGESTUS brings showers of rain, snow and ice pellets that stings! (bottom and on right).



MID LEVEL CLOUDS:



ALTOSTRATUS: a thin veil that reveals the position of the sun and moon (above).



NIMBOSTRATUS differs from **STRATUS** in that it brings continuous heavy rain or snow. Even though it 's a middle cloud, it can reach the surface and extend vertically to high level clouds (weather balloon data shows us this height is between 11-15 km).

ALTOCUMULUS makes up the remaining mid level clouds. They are divided into classes depending on (1) transparent or opaque appearance, (2) invading or not invading the sky and (3) the presence of more than one layer with **ALTOSTRATUS** and **NIMBOSTRATUS** clouds.



Photo credit: Camilla Kotzé

Left and middle show semi transparent, single layer invading **ALTOCUMULUS**. Bottom shows multiple layers that are dominantly opaque.



Photo credit: Camilla Kotzé





Prince Edward island covered in a blanket of low cloud, with a semi transparent layer of **ALTOCUMULUS** on top, note how the clouds changed in 5min between the top and bottom photo.





ALTOCUMULUS LENTICULARIS (meaning lens shape) is the special mid level cloud that forms when wind is forced to rise over mountainous terrain, causing the water vapour to condensate forming a smooth edge cloud. They can occur as single, stacked or parallel to each other clouds.





Some more
LENTICULARIS
clouds in
single and
stacked form.



Photo credit: Jessie Berndt



A single **LENTICULARIS** cloud above low level **STRATOCUMULUS**.



HIGH LEVEL CLOUDS:

Like the mid level clouds, high **CIRRUS** clouds are categorised according to whether they invade the sky or not, whether they have thin hook like filaments or tangled sheets, as well as their angle in the sky.

Above we have **CIRRUS SPISSATUS** forming entangled sheaves. Below we have **CIRRUS UNCINUS** with a filamentous hook. *Cirrus* clouds are not associated with precipitation.





Thick and thin **UNCINUS** (top and middle)



CIRRUS FIBRATUS forming an incomplete Halo in the top right corner

ATMOSPHERIC VORTICES

By Camilla Kotzé



ROLL VORTICE: VIEW FROM THE GROUND

Date taken: 18th of October 2016

Where: Repettos

Atmospheric Vortices are found downwind of island wakes, where the islands are situated in the low latitudes and penetrate inversions above cloud tops. This in conjunction with Marion Island acting as a barrier to the prevailing westerly wind, deflects the surface layer of air around the island. Air flow accelerates, inducing strong horizontal wind shears and counter-rotating vortices also known as cloud streets.

Cloud streets come in many forms, the ones shown here in particular are Roll vortices. Roll vortices are interpreted by the assumption that the counter-rotating vortex rolls have their axes in the direction of the mean wind, where clouds are formed above the updraft parts of the roll circulations and cloud free areas result from sinking motions.

Eiling, D. (1990). Mesoscale Vortex Shedding from Large Islands: A Comparison with Laboratory Experiments of Rotating Stratified Flows. *Meteorology and Atmospheric Physics*, 43: 145-151.



Photo credit: NASA EOSDIS

ROLL VORTICE: VIEW FROM SPACE

Date taken: 18th of October 2016

ROLL VORTICE: VIEW FROM THE GROUND

Date taken: 29th of December 2016

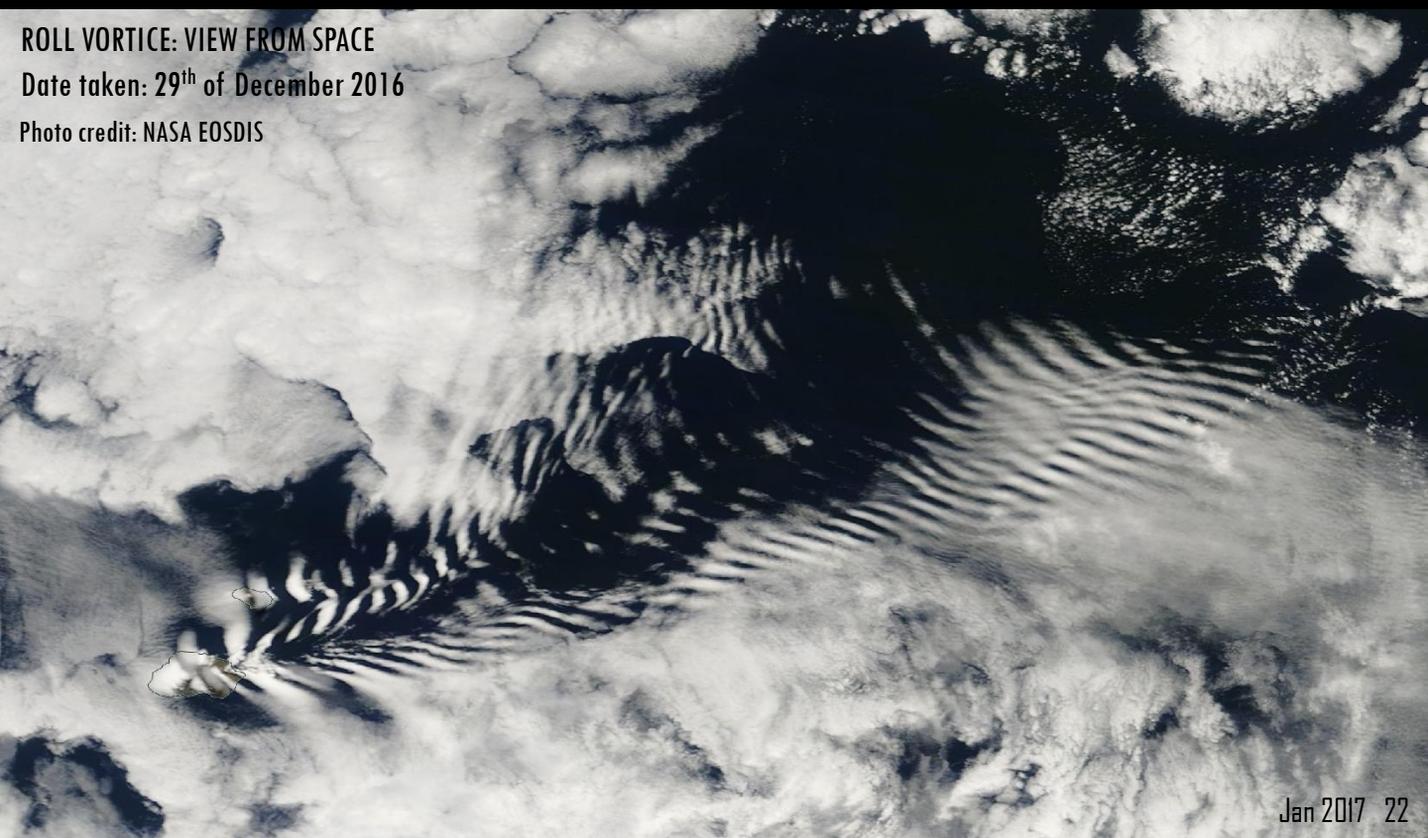
Where: Base



ROLL VORTICE: VIEW FROM SPACE

Date taken: 29th of December 2016

Photo credit: NASA EOSDIS



Now that the basics are known, please enjoy some more photos of our angel's retreat...









Half a century on: commemorating the 50th Anniversary of the First Biological AND Geological Expedition to Marion Island



Article by John Cooper, Antarctic Legacy of South Africa, Department of Botany & Zoology, Stellenbosch University

Equipped for the field: Brian Huntley about to climb Junior's Kop with an island-made automatic weather station on his back

In January 1965 the First Biological & Geological Expedition sailed for Marion Island on the *R.S.A.*, South Africa's first Antarctic supply ship, then only three years old. The expedition was the brainchild of Eduard Meine van Zinderen Bakker, Senior, Professor of Botany at the then University of the Orange Free State.

The six-man expedition joined Marion's 21st Overwintering Team led by meteorologist Theo van Ludwig which was already on the island. Settling in for the summer – and converting an old accommodation building into the island's first laboratory as their first task – field research took the intrepid scientists far and wide with heavy packs, camping out in tents and using caves and overhangs as shelters in the days before the first field huts were erected.

Geologist Wilhelm Verwoerd from Stellenbosch University and surveyor Otto Langenegger (who had previously spent a year at SANAE on the Antarctic Continent) undertook a topographical survey, which resulted in the first detailed map for the island. During the survey they climbed most of the island's peaks, erecting cairns and leaving markers on many of them. When producing their maps (a geological one was also made) names of team members were assigned to hills and peaks, including the island's pet dog.

So nowadays island visitors can climb "Oubaas" as well as Brian, Eduard, Lou, Neville, Otto, Stevie, Sydney, Theo, Wilhelm, Wolfie and Wynand – as I have done over the years.



Looking up at the black and red lava of Wolfie above Marion Island's west coast, photograph by Barend van der Merwe

Most of the expedition left the island at the end of the 1965/66 summer on the annual relief voyage but two members, botanist Brian Huntley and ornithologist Eduard van Zinderen Bakker, Junior, the leader's son) stayed on for a second summer, eventually returning to South Africa in March 1966. Brian's research resulted in him being awarded a Master's degree, the first higher degree earned from Marion Island. During their extended stay Brian, along with M22 team member Fred Clements on 21 October 1965, made what is pretty certainly the first ascent of the island's highest peak, now known as Mascarin. Previously, another peak nearby was regarded as the highest.



Members of the First Biological Expedition, 1965/66. Back row from left: Otto Lengenegger, Eduard van Zinderen Bakker Sr, Wilhelm Verwoerd, Eduard van Zinderen Bakker Jr; Front Row: Brian Huntley, Neville Fuller.

Since the First Biological & Geological Expedition, Marion Island has been continuously occupied by researchers. Over the years many higher degrees have been awarded and hundreds of scientific papers and book chapters have been written. All these researchers owe a debt of gratitude to the 1960s pioneers. Fitting then that a portrait of Eduard van Zinderen Bakker, Senior now

The expedition made two short visits of a few days each to Prince Edward Island, the first visit by scientists to that island. The maps produced then remain half a century later as the only ones available for the little-visited island. Fittingly the highest point on the island was named after the expedition's leader as Eduard van Zinderen Bakker Peak.

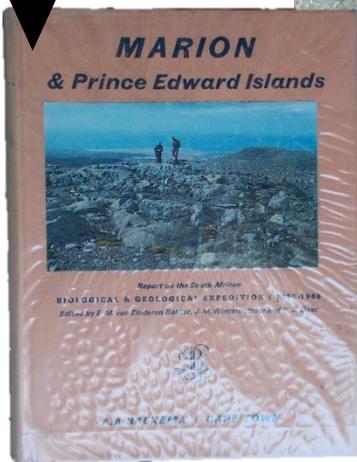
Following the expedition, biological samples were sent to experts around the world for identification and within a few years the islands' "big blue book" entitled "Marion and Prince Edward Islands" was published, with the expedition's leader as its senior editor and with lengthy papers on Marion by team members, notably Brian Huntley, Wilhelm Verwoerd and both the van Zinderen Bakkers. A valuable addition to the book, now long out of print and valuable Africana, were the four folded maps produced by Wilhelm and Otto.

adorns the science wing in the island's new base to remind current scientists of the legacy they follow.

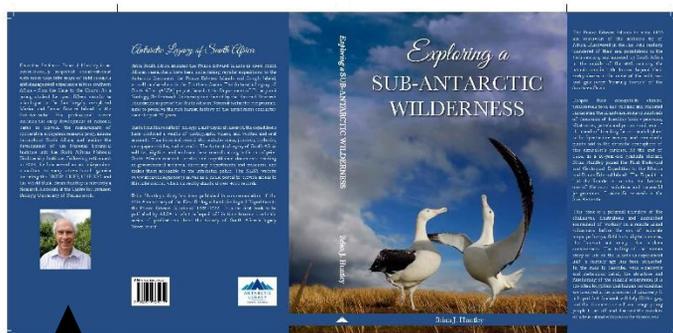


Eduard van Zinderen Bakker, Senior greets a Wandering Albatross on Marion Island

With grateful thanks to Brian Huntley, Eduard van Zinderen Bakker, Junior and Wilhelm Verwoerd for their continued and willing contributions towards preserving South Africa's Antarctic legacy.



To commemorate the 50th Anniversary of the expedition in 2016, the Antarctic Legacy of South Africa has published Brian Huntley's diary "Exploring a Sub-Antarctic Wilderness" which he meticulously wrote up each evening of his island sojourn. Brian's diary captures the excitement – and some of the difficulties – of being a young researcher straight out of university (the youngest of the expedition) and far from supervisors and libraries, exploring and studying what was to him a completely new and unknown environment.



Exploring a Sub-Antarctic Wilderness: Brian Huntley's 1965/66 diary

REDUCE, REUSE AND RECYCLE- MARION STYLE

by Louise Gadney

Craft work on Marion is fun and I firmly believe in REDUCE, REUSE AND RECYCLE...Man has created a world where quality is often overlooked by quantity and the more convenient an item, the better. We now live for instant gratification and new items constantly, and yes this leads to a very wasteful society. Plastic is the best but worst invention so far. Most pollutants contain plastics, it is even in some of our foods. Did you know our deadliest Ocean trash comes from discarded Fishing gear, plastic bags and utensils followed by all kinds of balloons, cigarette butts and bottle caps!!! Concerned scientists have predicted that by 2050 there will be more plastic in the Oceans than Fish.

Sadly here on our little island of paradise, even Marion cannot escape debris reaching our shores and our own generated waste is full of plastic too. Happily, I love to be creative and have spent some time re-creating fun things. Here are a few to inspire you too...

..Soda Stream Concentrate bottles become cute Father Christmas and Clown men, filled with sweeties, they are sure to please. These bottles also act as a handy water bottle for those strolls close to Base and can be used in a game of Skittles or as Salt and Pepper sets.

A can can be reused (excuse the pun!!) as a handy pen and pencil holder perhaps and our trusty Gumboots are not forgotten, making for a pair of stunning new sandals. When I go home, I also plan to plant some shrubs into my trusty old Gumboots.



Anyone for a juice cocktail in a chutney glass?? Or how about some stunning red candle holders? Odd bits of wood become unique frames and a bottle top curtain will certainly brighten any room.



Finally, I am sure some kiddies will enjoy digging in the sand pit with this assortment of spoons and scoops. Let us make 2017 the year we save our Planet and reduce our garbage.

