

SANAE 51



THE NEWSLETTER OF THE 51st SOUTH AFRICAN NATIONAL ANTARCTIC OVERWINTERING EXPEDITION



SANAE LIFESTYLE

A day in the life of the 'average' SANAE overwinterer...

SANAE FASHION

Johan du Plessis

"The SANAE winter collection of 2012 saw a lot of blue suits and a lot of orange boots. The emphasis was consistently on bigger and bulkier. Designers are looking for strong, masculine lines in all their ranges. On top of this, trendy headgear still seems to be very fashionable; two, three, maybe even four layers if possible. Sunglasses were a must-have accessory although goggles seem to be more popular, oh! and do not get caught without those retro-feel gloves....."

In a crazier world than ours the above might have been true, but with the current level of craziness, clothing



In this issue:

SANAE fashion.....	1
The SANAE winter boredom program.....	3
First sunrise.....	5

Cooking in the cold.....	5
Medical research.....	6
CAT trains - back in the old days.....	7
Some of the science in Antarctica.....	10
SANAE trends.....	11

at SANAE is purely for function. The sleek, minimalist ethos of less-is-more is also a lie at SANAE, over here more-is-more. Have a look at the bill of material of what my personal record was for clothing items worn at the same time. This was for when things get cold...in Antarctic terms:

BILL OF MATERIAL

Item	Number	Running Total
Socks	2	2
Boot Inner	2	4
Pampoenskoen	2	6
Underwear	1	7
Thermal underwear	1	8
Jeans	1	9
Belt	1	10
Thermal vest	1	11
T-shirt	1	12
Light jersey	1	13
Fleece top	1	14
Dungarees	1	15
Jacket	1	16
Buff	2	18
Balaclava	1	19
Beanie	2	21
Goggles	1	22
Glove liners	2	24
Gloves	2	26
Mittens	2	28

2) Jon and my application of our climbing training to solve the absence of belts.



Having a 2-ton sling handy will also one day bear fruits ... I am sure.



3) Jako's never-say-die jeans that has been stitched onto a patch on numerous occasions and last but not least



4) Elrich keeping the African representation in Antarctica with his [fake] Leopard skin stitched-over beanie.



With the absence of stores once again we had to make do with what was available. In our year necessity was definitely the mother of invention. A few examples include:

1) Vincent's heavy duty Antarctic gloves - basically using a pair of leather gloves and sacrificially stitching them over thermal outdoor gloves.



"Clothes make the man. Naked people have little or no influence on society" - Mark Twain

From a practical perspective the government issued clothing served us well in most instances. The absence of brand names on the clothes did cause some unease with the brand obsessed among us but we were comfy in most conditions. Proper mittens were probably my personal best purchase for here.

When you need to work outside and your fingers start aching from the cold it was always a welcome relief to be able to stick your hands with normal working gloves into larger mittens. It replaced the frantic post-work run for warmth with a leisurely stroll, drinking in this awesome experience.

The Russians have a saying: "You do not get bad weather, only bad clothes". I think this sort of holds true, even in Antarctica.

Up to 40-knot winds you can dress warmly enough to stay outside for maybe an hour or two. Not too far above 40 knots you may be blown away and clothing becomes less of a concern. ☺

THE SANAE WINTER BOREDOM PROGRAM

Stefanie Strachan

A worry that every overwintering team member is faced with is how to pass the long, cold, dark months of winter (and still be sane at the end). When storms last for

more than two weeks, and cabin fever starts to set in, the importance of hobbies and team activities becomes evident. It tends to keep the voices in our heads

and imaginary friends at bay for a little while.

This is a look at some of the hobbies, activities, and ‘stuffs’ that helped to keep S51 (semi) sane during the winter months.

MECCANO MODELS, BILTONG, AND GYMMING

Jon Ward

I enjoyed building models such as the 1100 piece Meccano crane...

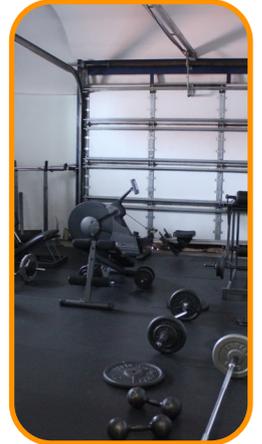


Another one of my favourite hobbies is making biltong. The air is very dry at SANAE and you do not even

need any special drying equipment. We cut and prepare the meat with vinegar, salt and other spices and then let it hang for two to three days.



Most of the SANAE 51 team is fairly health conscious. To stay fit and healthy we often make use of the gym, which is fairly well equipped for both cardio and weight training. There are also two climbing walls.



BAKING UP A STORM

Braam Beukes

I have never baked as much in my life as I did this year at SANAE. As usual you start out

small with a banana bread or two and before you know it you have baked seven birthday cakes and quite a number of muffins. Luckily I was not alone in the

kitchen, with some of the team also baking something delicious in the kitchen this year. Here are a few of the examples of baked goods produced here at SANAE:

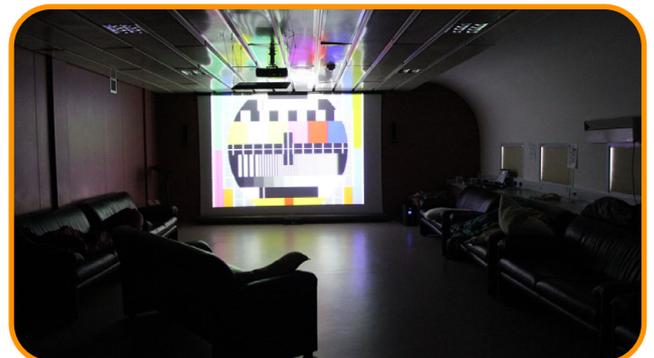


MOVIE NIGHTS, GAMES, PUZZLES, AND PARTIES

Stefanie Strachan

Since SANAE is equipped with an ‘in-house’ cinema featuring a big screen and nice comfy couches, movie and series nights were inevitable. The selection ranges from super action packed to sci-fi to TED (Technology,

Education, and Design). In other words, mostly macho-man stuff (some awesome, and some not so much).



We have also spent more than a few days playing board or card games or building puzzles. Whether it is late night poker, with sweets and chocolates for the winner, or bridge, where you have to keep your wits about you, or random board games like

Risk, Careers, or Checkers, found in the library stash, it is generally good to have a little friendly competition and sometimes even score a few free coffees in bed.

SANAE would also not be the same without the random dress-

up parties. Some end up looking a bit like the intro line to a silly joke (e.g. a cowboy, chili, and dirty mexican is sitting at the bar, talking to an Indian...), but its always very entertaining to see what everyone comes up with.



BASE PROJECTS AND STUDIES

Of course not all of our free time at SANAE can be spent messing around, often there are base projects that have to be completed. These include fixing and improving previous projects, and coming up with and building new 'installations'.



Some team members also have their own studies that they keep themselves busy with. A few also attempted learning new languages, which included French, German, and sign language.

ANTARCTIC FILM FEST AND EXTREME IRONING

Every year the Antarctic community organises a film festival that all of the Antarctic bases can partake in. There are two categories, namely Open, where you can submit any film that was made in Antarctica within the last year, and 48hour, where the teams are given 48 hours to shoot a 5 minute film that features 5 given items. This year the given items were a queen, a computer mouse, a

map of your base or region, the sound of ice cracking and the words "I will save you".

Our movie was named 'SANAELand' and was based on the infamous T3 syndrome. We didn't come anywhere close to winning, but at least we had quite a few laughs making it.



Extreme ironing (aka EI) - the latest danger sport that combines the thrills of an extreme outdoor activity with the satisfaction of a well pressed shirt.

THE FIRST SUNRISE

Braam Beukes

Talking about the first sunrise after the cold dark

winter reminds me of the Cat Stevens song 'Morning has broken'. Like most things in life you do not really appreciate something until you don't have it anymore. Back in South Africa you have cloudy days

but this year was my first year in which I went without the sun for almost two months!

Our last sunset before the winter was on the 18th of May. It was strange; you had a kind of longing feeling knowing you won't see the sun for a while. I would often go on a clear day and just stand and stare at the brightened horizon expecting the sun to rise but it obviously never did during the winter months. With the rays of the sun not reaching this far south anymore, the temperatures began to drop and you experience a cold you have never before experienced in your life. The kind of cold that makes you realise that this would kill you if you did not give it the proper respect it deserves.

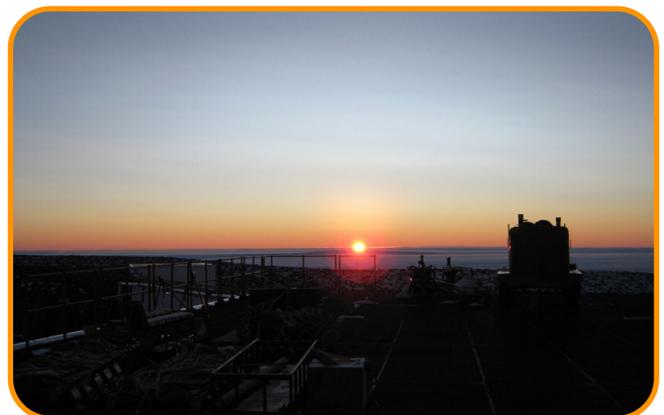
During the winter I learnt a new acronym SAD, which stands for Seasonal Affective Disorder. As with all new

experiences you never know how something will affect you until you stare it right in the face. The winter was a tough time but it has its own beauty. The twilight you experience is sometimes surreal as though you were transported into a fairy tale world of ice and hues of blue and pink. At other times the

wind would carry snow lightly across the landscape making it appear as though the lights outside were glowing orbs or pillars of light.

The yearning for the return of the sun was finally answered on the 24th of July. It was amazing to see the sun again. It was as if you know that

things will now in some way be getting better and each day from that point on will be getting significantly brighter. Also, that finding your place in the sun will be much more likely. ☺



COOKING IN THE COLD

Jon Ward

Winter at SANAE IV brings extreme temperatures and nearly 24 hours of darkness. This made it rather difficult for the team to engage in

many outdoor activities and some cabin fever was starting to set in.

After mid-winter, the team was desperately missing the South African tradition of 'braai-vleis' and we decided that we were going to

attempt an extreme outdoor cook-out to satisfy our cravings for flame-



grilled steaks and boerewors.

After keeping an eye on the weather, we got our break one Saturday afternoon. The wind had died down to only 10 knots and the first few rays of light had begun to brighten the sky from below the horizon. We knew that we had to act quickly, as we would only have a few hours of daylight to get the job done.

We gathered our supplies of charcoal, firelighters, beers and meat as well as our trusty braai apparatus, which was made from a modified fuel drum and

temperature was -33°C (dry-bulb).

The first problem one has to overcome, when participating in extreme Antarctic braai-vleis activities, is working with very thick gloves. It is very difficult to hold and pour beverages, maneuver braai tongs, open and close cooler boxes as well as take photographs of all these fun activities while dressed in your full cold-weather gear.



The third problem is that cooking in the cold produces A LOT of smoke. For the braai-master, this poses a bit of a challenge as he has to do most of his work “by feel”.

The fourth and final problem is how to keep your meat warm after it has been cooked. This leads to many of the portions being warm on one side and cold on the other. In our case we had to quickly run with the cooked pieces and put them in the base kitchen and then run back to get more.

In the end, the resulting food was a somewhat mixed success, but overall the entire afternoon was an immense success, with those involved having a smokin’ time. 🍷



aerodynamically engineered to deflect the wind away from the braaing surface. We then made our way down to the ice and set up; the

The second problem is deciding on the ratio of cooking surface to drink resting surface. In -33°C , your alcoholic beverage will freeze in a matter of minutes, so one has to reserve a special space over the coals to place your beer to keep it in a liquid state.

MEDICAL RESEARCH

Jako Bester

After surviving the winter down here in Antarctica, it becomes reasonably obvious from a medical point of view that the Isolated, Confined and Extreme environment (so-called ICE environment) we live in has its effects on the human body and mind. From some of our previous newsletters it may have become quite apparent that there are still a lot that we do not know about how this place affects the human physiology and psychology. This continues to intrigue scientists from all over the world and also forms the ideal testing ground for similar, but even more remote environments such as space.

This year a new program at SANAE has commenced within a partnership with the German Center for Space Medicine Berlin, Charite University, the Alfred Wegener Institute for Polar and Marine Research, and the University of Stellenbosch.



This research program involves a few interesting medical tests that are performed on a monthly basis on the volunteers from our overwintering team. Before we departed from Cape Town all the team members were also tested at the Stellenbosch sports physiology lab with regards to fitness, VO2 max and body composition, which will be repeated upon our return. During these tests a few of us were able to measure the metal we were made of... though I suppose none of us matched Vince that just kept on running non-stop with the physiologists performing the tests speechless, just staring in awe... meanwhile he was breathlessly wondering and wishing for the time when they would tell him he could stop...



During our overwintering stay the tests mainly constitute a device worn for 36 hours to monitor

changes in activity, energy expenditure and sleep activity, this in turn is then integrated with results from body composition measurements and a list of blood tests. A fourth and final test is then conducted to monitor the individual volunteers' cognitive function by playing a computer game.

This generally leads to a fun discussion and debate as to each team member's performance on the challenges of the game during their breakfast afterwards.

So far this year the team has stuck to their challenge of committing themselves to being observed, prodded, and poked each month, all for the good of science and also doing their part for future human endeavours to polar regions and also the far reaches of space.



So lets hope they find some insightful results! 🤖

CAT TRAINS - BACK IN THE OLD DAYS

Stefanie Strachan

In a few of our previous newsletters we wrote about our travels across Antarctica. This raised the question of how we know where to drive in an environment where everything looks pretty much the same? The answer is quite simple, with the help of a GPS (Global Positioning System). The GPS gives our coordinates, the bearing we need to be heading in, as well as how far off track we are. This ensures that we don't accidentally drive into a crevasse or each other in bad weather

conditions. So then how did people back in the good old days get from one point to another safely without the help of one these nifty electronic devices?



The most common idea of GPS-less navigation probably involves finding your way home by means of the stars. Effective, yes, if you don't have 24hour sunshine which makes star gazing a bit difficult. Some of the methods used include magnetic compasses, Grid North, sun compasses, sextants, and dead reckoning, each of these having its own drawbacks. Apart from the drawbacks, the most important thing was to know how to use the navigation method of choice, since figuring it out in the field was definitely not an option.

The previous SANAE bases were built much closer to the ice shelf than our current base, making the task of hauling cargo from the ship to the base a fairly

easy task. Poles were planted in the snow as waypoints for the drivers to follow. Of course the trip between the ice shelf and the base was not the only traveling that had to be

done. Other geological bases were also established further inland, some as far as 350km from the coast. The geologists needed to

navigate to and from the base, and on occasion restock their supplies from the main base.

In an extract from a SANAE 24 diary of a trip to the Gruna Hogna field base, it is seen that these trips weren't anything close to easy: "SANAE 24 – 1st trip to new Grune Hogna Field Station.

The field trip was necessary mainly for three reasons:

1. The new Grune Hogna field station is approximately 231km from SANAE, i.e. around four days of travel with a fully loaded train. This necessitates the laying of fuel deposits at 40km intervals in order that the supply trains can reach Grune Hogna with the maximum payload.

2. The upkeep and marking of the route, which would otherwise be lost owing to storms and snow accumulation.

3. Supplying the new field base with diesel and chopper fuel for the geologists and carrying out maintenance checks.

... We loaded 7 sledges with polar diesel, 3 with avtur, 1 with

food, 1 with a skidoo and personal belongings, 1 with an ice drill and marker poles, and 1 with workshop tools and equipment. A Muskeg for route finding and 3 CATs (red CAT,

Big Ears, and Peanuts) for the trains completed the list. After a 2 week delay caused by storms, we finally left SANAE on that fateful day, March 14th, 1983.

All things considered the journey on the way there went well. We were stranded in a whiteout on day 2, abandoned the Muskeg and had our first taste of the red CAT on day 6, and finally arrived at the field base on day 7. "

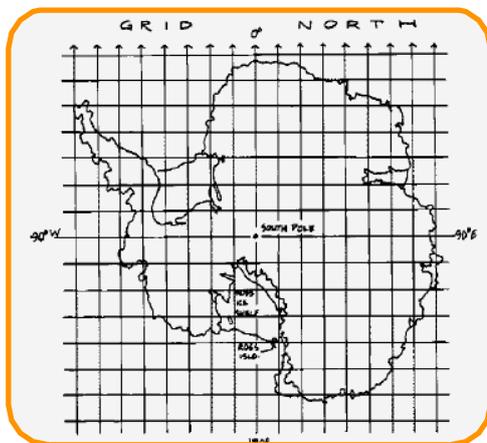
After a few weeks of maintenance done to the vehicles and field base, the journey back that started on 6 April was a little more troublesome.

"After days of wind that destroyed two tents already, the sun finally prevailed, and we left in perfect weather conditions on 6 April.

Within two hours one of the CATs weren't moving. We tried and worked and swore, but no. The weather was getting worse quickly, and with darkness approaching, we decided to follow our tracks back to the field base. We left all the sleds and the one CAT and rushed to safety. The gearbox of the one vehicle started to complain, and then we were traveling at 1km/h. Suddenly, we are 8 hours travel away from the field base, and the weather is getting worse still.

Luckily the gearbox died completely, so we left the vehicle there. Extremely relieved faces were evident when we made it back. Hans and a piece of catwalk were blown onto the ice and Hans came second. How he escaped serious injury no one knows. Tony's Anorak hood was ripped right off its studs and blown away by the wind.

At supper that night the word 'survival' cropped up in the conversation for the first time. We had lost all confidence in our equipment by this time, and decided to take one of the Geologists' skidoos in order to have at least a last ditch chance of getting through to SANAE."



The radio equipment used was also inadequate, allowing them only 3 times of contact with SANAE in the 6 weeks that they were gone from the base.

“Even though Jose struggled 2 to 3 times a day, through the wind and storm, to get to the Caboose where the antenna was set up, and Hans and Thys climbed up the mountain where they almost died of cold, we could not get any communication.”

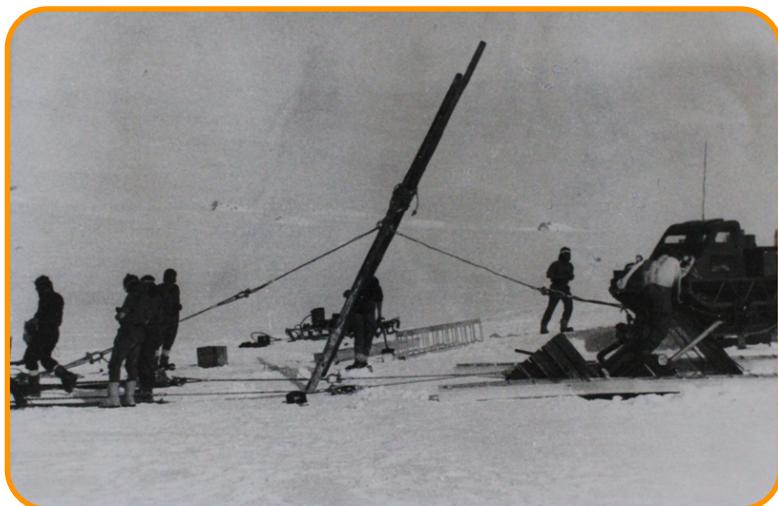
After a few days of struggling with the vehicles, they could finally get going, but the good weather was short lived.

Day 9 and we are forced to abandon all attempts to get the red CAT back to SANAE. It has already cost us 5 traveling days and much skin. Not ten minutes after abandoning the red CAT, Peanuts breaks its generator. Visibility is so bad that you cannot see your feet on the snow. We manage to find a use for



Day 22, at 4am we start digging. By this time the sun is rising after 9am and sets before 4pm and we lose 10minutes more daylight every 24hours. It was quite late by the time we coaxed the vehicles into life and got moving. By 4:30pm it was getting pretty dark, but in the distance we could see a light. At 11:51pm we walked into the lounge.”

After 23 days on the road, they were finally back at SANAE, having less than 100ml of gas for their stoves (to provide heat and melt snow for water) left. We are very thankful for the improvements in technology over the years. Traveling across Antarctica has undergone quite a few changes since we first started to explore here, but despite the changes and technological help, a trip across this great white desert is still no joke. ☺

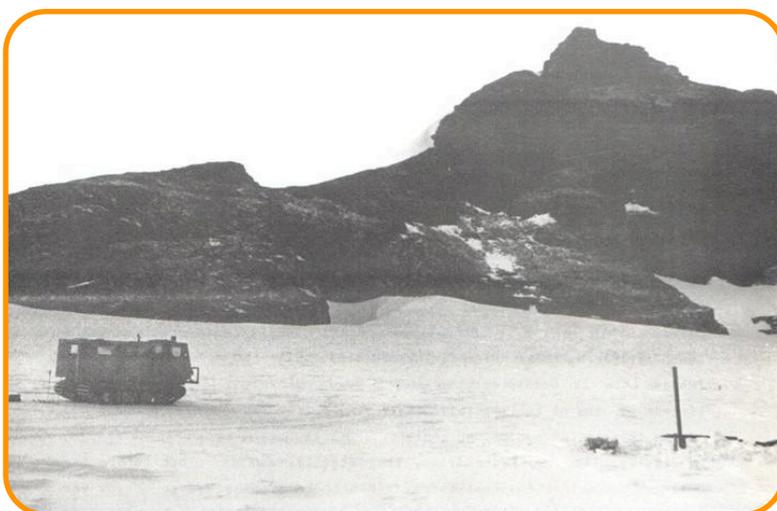


“By now first degree frostbite was becoming a problem. The wind was so bad that visibility was almost zero. Luckily we could see mountain peaks at times and using them as beacons we could travel without falling into any crevasses. Then came a few days of good weather during which we covered a lot of ground. On day 7 of the return journey the red CAT overheating had reached breakpoint. We had to ditch 8 sledges. Peanuts was now pulling close to 24tons. To make matters worse, the icy wind and driving snow kept clogging the breather and Peanuts puked oil with monotonous regularity. This was corrected with a big hammer and a hacksaw.

the dipole antenna of the radio – it was the only thing we could find for a lifeline between the vehicles.

Day 13 dawns and sees us digging ourselves out and hitting the road.

Day 14 sees us stuck again. Day 18 – we saw a Snow Petrel this morning, the first living thing since we left SANAE.



SOME OF THE SCIENCE IN ANTARCTICA

Braam Beukes

webflash.ess.washington.edu),
UltraMSK (see ultramsk.com) and
DVRAS (Digital VLF Recording and
Analysis System).

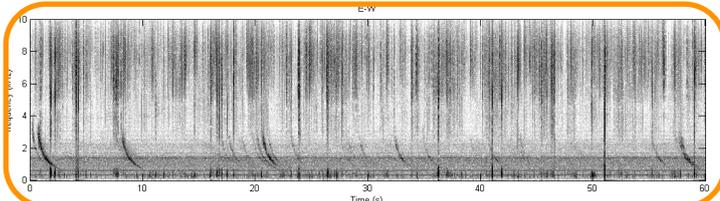
In this edition of our newsletter I get to provide an overview of the science instruments I look after here at SANAE IV. The instruments are as follows: VLF recording equipment, Magnetometers, Aurora recording, and assistance with image- and wide-angle riometers. The VLF or Very Low Frequency recording equipment is used to record low frequency radio waves that are in the audible frequency range. So, once the data is recorded you can actually listen to it. These radio waves originate from lightning strikes or special transmitters which then travel between the ground and ionosphere until they reach us here at SANAE IV. In special cases VLF radio waves also propagate along magnetic field lines and interact with plasma in the atmosphere. This gives rise to radio waves called whistlers that actually sound a bit like someone whistling.



The two VLF antennas at SANAE

The magnetometers here at SANAE IV record the strength of the magnetic field. This helps to determine what the effect of the activity of the sun has on the

magnetosphere of our planet. We have three types of magnetometers here at SANAE IV which are the Pulsation magnetometer, Fluxgate magnetometers and the Overhauser magnetometer. Large changes in the magnetic field of the earth also alert us as to when aurora are most likely taking place.



A spectrogram of whistlers recorded at SANAE

As the magnetometers give warning of when aurorae could be taking place, we record when aurora are visible and some of the characteristics they portray.

The riometers or relative ionospheric opacity meters are used to monitor radio wave absorptions in the ionosphere.

The other effects we look for in the VLF data are hiss, quasi-periodic emissions and chorus. I personally prefer the chorus as it sounds to me like frogs croaking. The systems which utilise the VLF data are AWESOME (Atmospheric Weather Electromagnetic System for Observation Modeling and Education), WWLLN (World Wide Lightning Location Network, see

All of the above equipment record data that is relevant to

the study of Space Weather. As we are expecting a solar maximum in 2013, this is the equipment that will help us to record and 'see' what is happening and how this event is affecting our planet. ☺



The imaging riometer at SANAE

SANAE TRENDS

Temperature

Maximum	-13.3 °C
Average Max	-18.9 °C
Average	-22.6 °C
Average Min	-26.3 °C
Minimum	-36.7 °C

Pressure

Maximum	889.8 hPa
Average Max	880.9 hPa
Average	876.7 hPa
Average Min	872.0 hPa
Minimum	860.9 hPa

Humidity

Maximum	100%
Average	71%
Minimum	16%

Wind speed

Mean	25.2 Knots (50.4 km/h)
Maximum Gust	87.8 Knots (175.6 km/h)

Daytime lengths

Average day length 8.15 hrs

Quote of the month

Mike: (on diagnosing a blown head gasket) "The oil tastes too sweet"

Braam: (randomly after dinner) "Whats this wind?"

Movie of the month

Johnny English

Song of the month

Mountain sound - Of monsters and men

Dish of the month

Braaivleis and braaibroodjies

THANKS TO OUR SUPPORTERS:



MEERLUST





Support also by the following individuals:

Homemade Buffs – Mrs du Plessis

Homemade Ginger Biscuits – Mr and Mrs Knoesen, Mrs Bester