



SANAE 47

**47TH SOUTH AFRICAN NATIONAL
ANTARCTIC EXPEDITION**

NEWS



MAY 2008

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Cover photo – The last sunset, taken on Vesleskarvet's northern buttress on May 17 as the long winter night begins.
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This newsletter reflects the experiences of the individuals in the overwintering expedition team. Opinions may not reflect the official policies of the SA Government, Department of Environmental Affairs and Tourism or the Directorate: Antarctica and the Islands.



The Month in Focus

The sun faded away through the month, until we were left in darkness, but the life at SANAE IV was still filled with noteworthy events...

...the first significant illness on the team, in which Anton got to spend a week in bed and Ross had to thoroughly earn his keep, thankfully resulting in a full recovery (see the picture of Anton and Nurse Neels below)...



...May 2nd dress-up poker-party, with star players from around the globe...

...more beautiful auroras...



...Santjie's Flying Ladder Trick (how to traverse a ladder swiftly without using the rungs) on the 5th...

...the first day where temperatures dropped below -30°C on the 9th...

...May 11th = Mother's Day Braai, to celebrate our mummies even in the absence thereof...

...searching the windscoop on the 12th for the skidoo cover blown off in a storm wind...



...watching the last sunset of autumn on May 17th from the slopes of the windscoop – goodbye sun!...

...Santjie manages to lock herself in her own office on the 20th, but doesn't realise it for hours as she is asleep on the couch...

...the first time we had to use the dozer at the smelter in complete darkness on May 25th...

...our first Trilogy Marathon, in which we watched all three extended edition Lord of the Ring movies in one go (more than 4 hours each!) on the 30th...

...our introduction to the noon-day moon...

...the storm that saw the month out, blowing out doors and bursting pipes in its fury – but still we carry on with a smile.

Power Generation at SANAE IV



As you may presume, all electrical power at SANAE IV has to be generated on-site. Although there are plans for wind-generation, currently our power needs are met by diesel engines. Central to all the operating systems are three ADE diesel generators, amicably named Tom, Dick and Harry. Tom and Dick are turbo-charged ADE 442T's with a rated power of 260 kW and Harry is a turbo-charged, inter-cooled ADE 442 Ti rated at 320 kW. They are connected to 250KVA, 400V, 361A, 3 phase Leroy Somer alternators which output parallel to 3-phase, 50Hz stations mini-grid. The alternators are equipped with voltage regulators, which monitor the output voltage, frequency and generator speed.

This multiple generator-set application is controlled by a WEXLER-GENCON II controller, which provides measurements (42 LCD display values), protection, management (engines & contactor operation) and paralleling



(synchronizer & load-sharing).

The generators are used on a rotational and load-sharing basis coordinated on a “master and slave” program. A master will be the generator that will be running and the slave a standby. When the power demand increases to 160kW, the slave automatically kicks in to share the load, and when it drops to 140kW, the program will revert back to single generator power supply.

This power is enough to supply the snow smelter, diesel bunkers, scientific installations and other base operating systems. From the grid, there are bus-bar trunkings for power points (16A load), heating circuits, dedicated sockets (normal and UPS power at 10A load), and lightning circuits (normal & UPS).

The average power consumption for the entire base is 2600 kWh per day in summer for 10 people, 3000 kWh in winter and about 3500 kWh during take-over.

- Saziso Nginda, Electrical Engineer

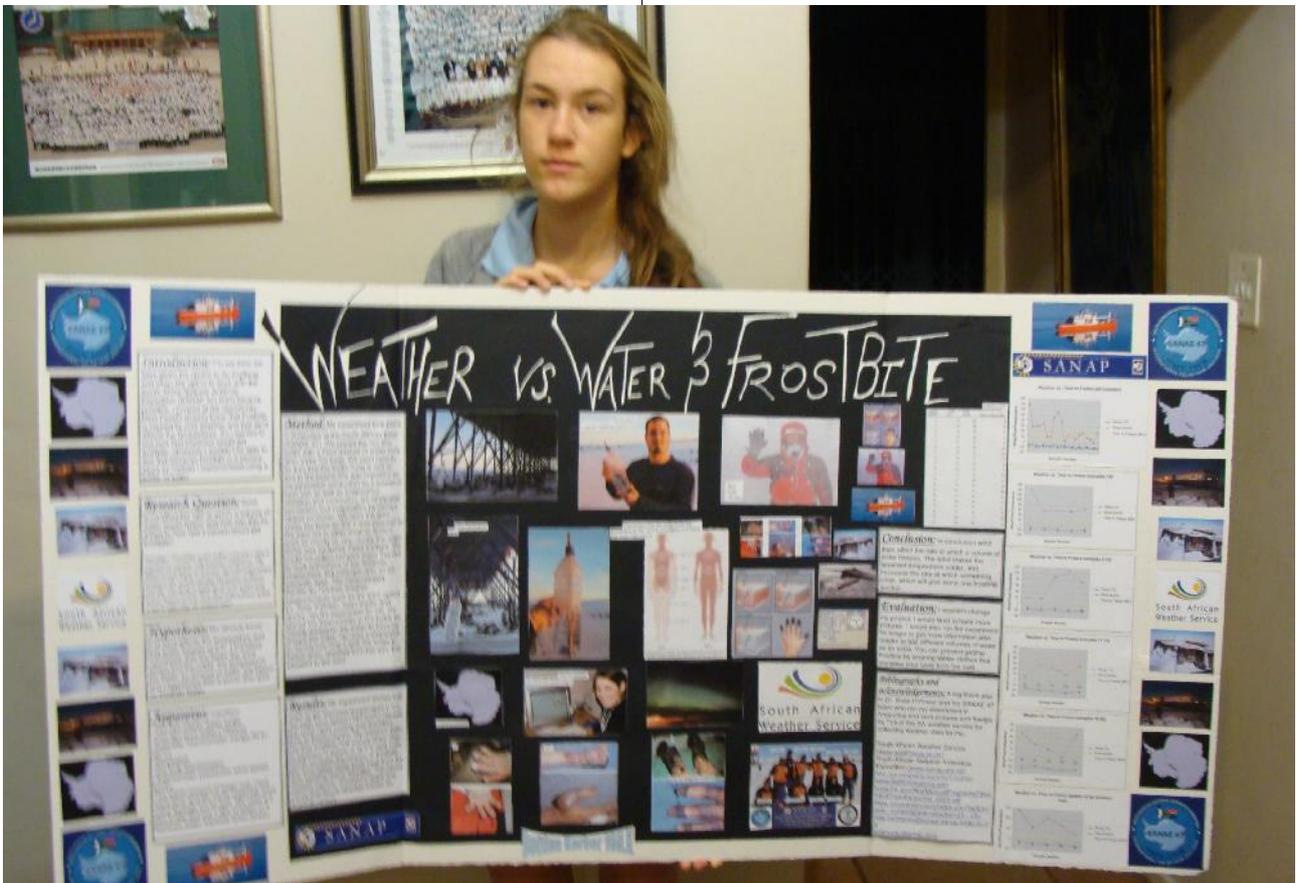
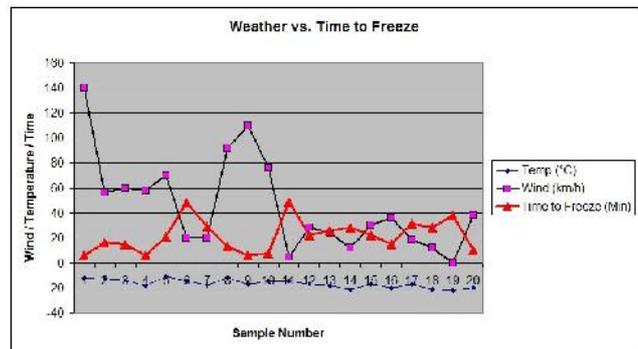


Science Expo Project in Conjunction with SANAE 47 Earns Honours

Grade 10 learner Bettina Kerber learnt about SANAP and the research happening in Antarctica when Ross gave a presentation at St Cyprians High School in Cape Town prior to the expedition's departure last year. As part of the presentation, learners were invited to think of ways that they could participate in South Africa's Antarctic research programme.

Bettina wrote to us at SANAE IV with a proposal for an experiment on frostbite; particularly, the effects of wind-speed on cooling. In conjunction with the team and after much email back and forth she developed a protocol which allowed us to collect the data needed and send it back to South Africa, where she interpreted it and created a presentation about the results.

Data were collected from the weather monitoring systems (courtesy of the South African Weather Service, and our meteorologist, Santjie) and from a container of water which was allowed to freeze outside under varying conditions. After more than a month's samples were transmitted back to SA, Bettina was able to show (quite correctly!) that even a little wind rapidly increases the speed of cooling and risk of frostbite. Her project earned honours at the school science expo, and is destined for the MTN Sciencentre if all goes well.



Developing a Telemedicine Solution in Antarctica using Common Technology

The remote doctor must be a 'special generalist' – able to deal with the full spectrum of health promotion, prevention of disease, and cure of illness and injury when it occurs, without the luxury of specialists or highly advanced technology. Expedition doctors fall at the most remote end of this spectrum; we are separated by vast distances and lengthy evacuation times from medical care, and must fulfil all roles. An important skill is the ability to access specialist opinion and assistance when required. For remote doctors, telemedicine is an important tool in this regard.

Telemedicine refers to any use of medical resources which are distant from the patient. In its most simple form, it can be the act of calling a specialist for advice; at its most complex it involves robotic tele-surgery using highly sophisticated machinery. There is a notable history of telemedicine in Antarctica – all bases have arrangements with hospitals in their home country to provide telephonic advice, and in the past fax systems have been used to transmit ECG tests and suchlike. With the advances in communications technology, it has become commonplace to send scanned x-rays and photographs of pathological findings.

One field which is being explored overseas is the use of real-time video feeds to assist remote doctors. This has taken off in fields like dermatology, where specialists are few and far between, but has also been used successfully in emergency cases in rural areas. Unfortunately, the equipment is specialised and expensive. However, with the greatly improved bandwidth on the new SANAP system, I have been working with other interested doctors around the world at creating an effective system using the readily available technology – the Internet, some free software, and web- and video cameras.



Dr Prasanna Simha, an enthusiastic friend and surgeon in Bangalore, India, and I have been testing free video conferencing software and a video camera feed. Simulating several operations, we've shown that at most times the data speed and picture is good enough to be truly useful. What is even more exciting is that we've seen that with a network of specialists in South Africa and across the globe we can offer valuable assistance to remote or expedition doctors anywhere provided they have access to the Internet. This opens many other possibilities for medics of all levels, including continuing medical education, and dealing with diseases that are unusual in one area but common in another (imagine an outbreak of malaria in the USA, for example, where doctors are generally unfamiliar with the disease and its treatment).

Using free collaborative online software, Dr Simha and I are writing an article together on what we've achieved and learnt through the process, which we will submit for publication in a medical journal soon. In the light of the partnership of India and SA in the sciences, this is a very fitting and exciting project at SANAE.



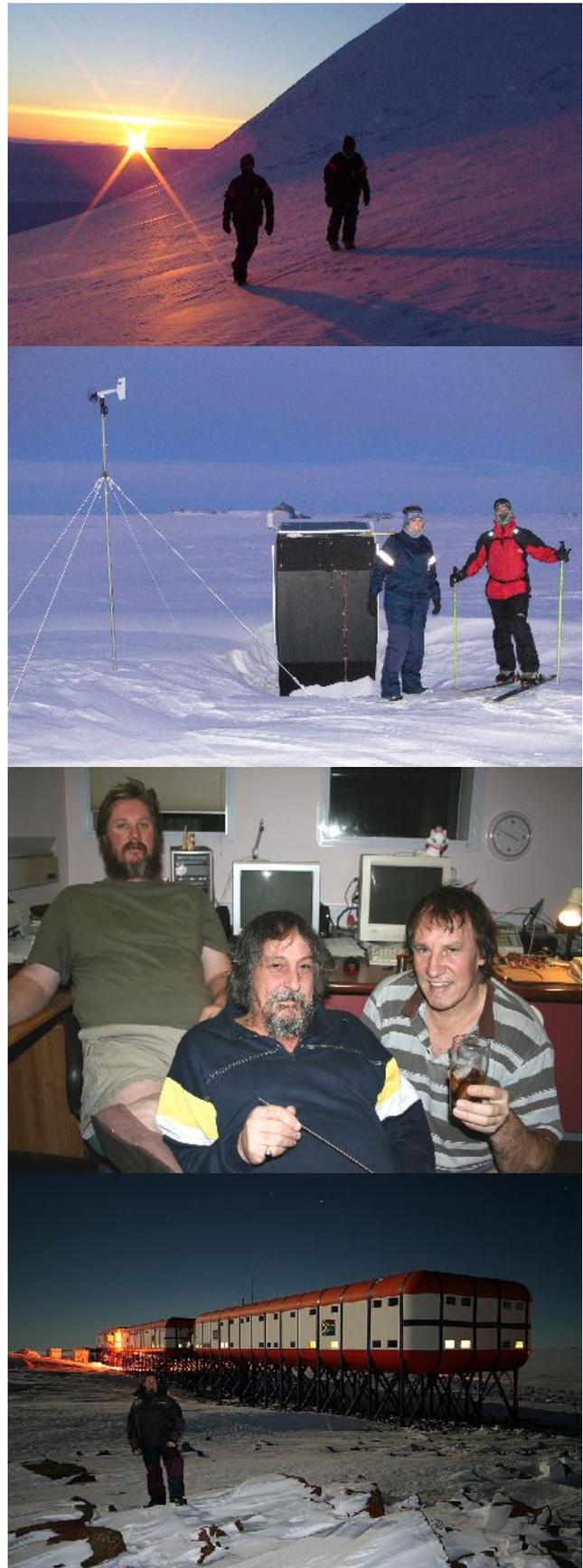
How Can I Find Out More About the Expedition?

The Antarctic Expedition is full of interesting aspects, encompassing the scientific work we do, the logistics of working in such a distant and isolated location, and the human factors of being alone for so long. We love to hear from you and grow public awareness of the projects, and for you to be involved. Here are some ideas to learn more:

- Visit the official SANAE website at www.sanap.org.za and learn more about the base, the logistics, the science and the people.
- Email the team at sanae@sanap.ac.za with your questions or news.
- Email team-members directly, using the format below:
firstname.lastname@sanae.sanap.ac.za
- Visit the websites of our sister projects at Marion and Gough Islands:
marion.sanap.org.za, and gough.sanap.org.za
- Many of the organisations involved have their own pages, and some team-members have personal blogs.
 - The links page on the official SANAP website has plenty-
<http://www.sanap.org.za/links.html>
 - The Scientific Committee on Antarctic Research (SCAR) –
www.scar.org
 - The Hermanus Magnetic Observatory - www.hmo.ac.za
 - Ross' blog about living in Antarctica - www.doctorross.co.za

Finally, you can CALL US at normal South African telephone rates by dialling:

021 405 9428/9



THE AMAZING ADVENTURES OF

SASTRUGIANA, CABOOSE, ARNOLD AND MAYA



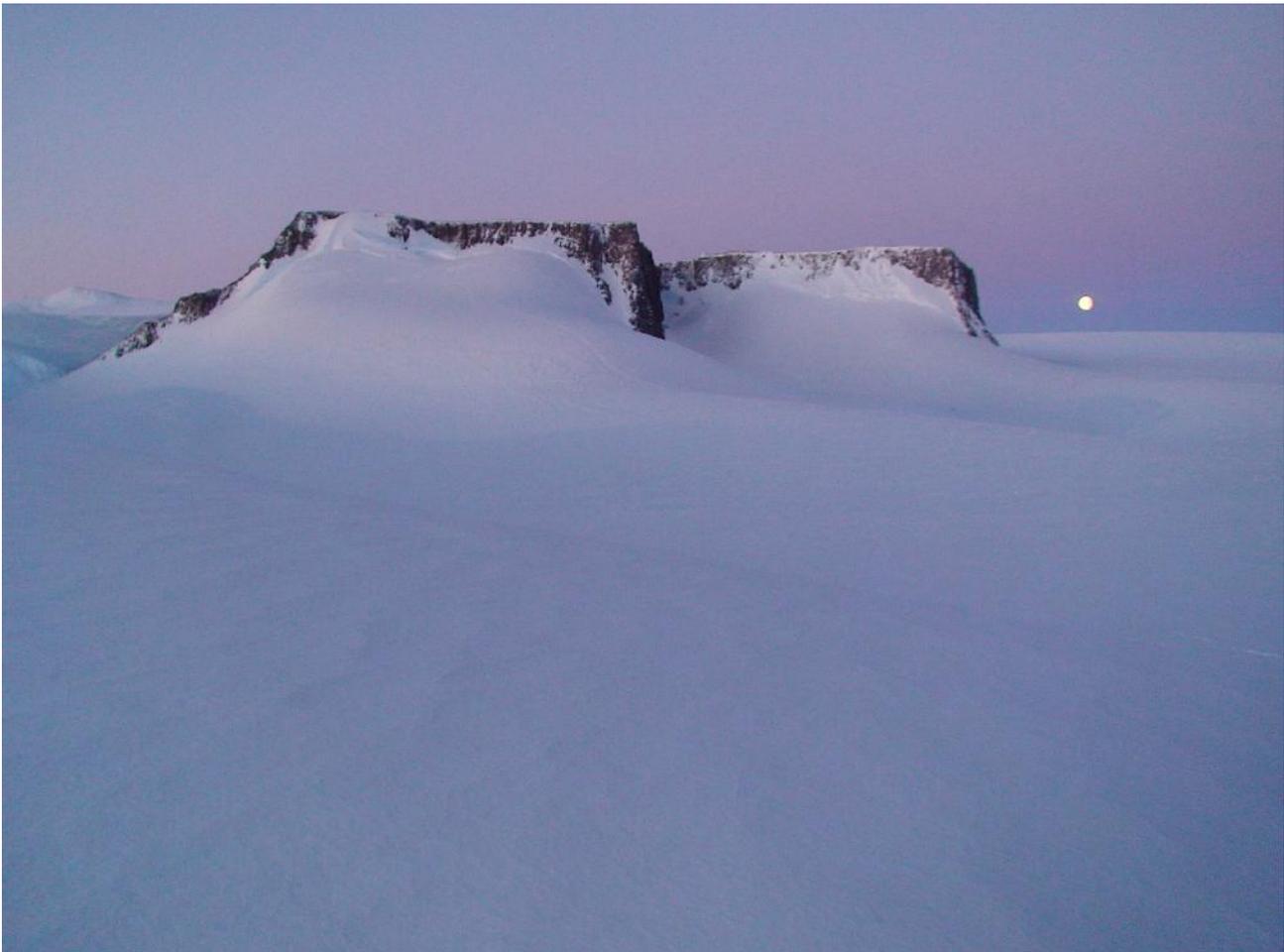
THEY WILL ALL REMEMBER THE
GREAT KITCHEN SKIVVIE OF '08

SANKI

SANAE IV WEATHER STATS: MAY 2008

	Maximum		Minimum		Average
Pressure	904.9 hPa	5-May	852.7 hPa	31-May	886.6 hPa
Temperature	-12.9°C	1-May	-31.3°C	9-May	-20.9°C
Humidity	100%	31-May	3%	26-May	49%
Wind Gust	46.5m.s ⁻¹	31-May			
	167.4km.h ⁻¹				

Parting Shot – Rising of the Noon-day Moon



photograph © Ross Hofmeyr 2008