

## CEO's Report



As the dust settles on what has been another successful season on the Ice, our focus is now firmly on logistics planning for what will likely be the biggest year in the history of the New Zealand Antarctic Programme.

2007 heralds the 50th celebrations of the establishment of Scott Base and the commencement of New Zealand's scientific activities. Officially opened on January 20, 1957,

Scott Base was one of the earliest operational bases to be established on the continent and it has morphed over the past half-century to accommodate an increasing and diverse range of visitors. It is enormously symbolic that we are able to take Sir Edmund Hillary south for these celebrations and we also look forward to hosting Prime Minister Helen Clark on her first visit to Antarctica.

Following on from the Scott Base celebrations, 2007 also marks the beginning of International Polar Year (2007-2009), which will usher in a new era of polar science and focus the world's attention on Antarctica.

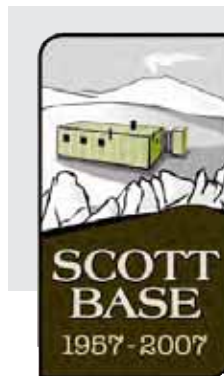
Getting back to the present, I'd like to acknowledge the efforts of the 30 Antarctica New Zealand-supported science events who went to the Ice in 2005/06. New Zealand is a world-leader in cutting edge research and science innovation and our contribution to the increased understanding of Antarctica as an indicator of global health is continually reinforced in the international arena. A particular highlight for me this season was the successful trial of the ANDRILL hot water drill on the Ross Sea Ice Shelf. Despite lengthy delays caused by the failure of the icebreaker *Krasin*, the ANDRILL team banded together during and after the ship offload and managed to condense a planned fortnight's worth of work into just four days. Their willingness to go the extra mile meant some great science was extracted during the trial process and I look forward to sharing their successes in the coming season. Whilst science is our reason for being, Antarctica New Zealand also hosted a number of very successful public outreach programmes in 2005/06, including Artists to Antarctica, Youth on Ice and an Invited

Visitor Programme, which hosted New Zealand's Ambassador to Washington, Roy Ferguson, Chief of Defence, Bruce Ferguson and CEO of the Ministry of Fisheries, John Glaister.

Antarctica New Zealand has just completed its annual End of Season debrief, a three-day process, which considers all the feedback received from the various field event reports. Much of the feedback is valuable in that it allows us the opportunity to further fine tune and streamline our processes to ensure a better, safer and more resourceful use of scientists' time on the ice.

I would like to take this opportunity to extend my grateful thanks, on behalf of the Antarctica New Zealand Board members and staff, to everyone who contributed to the success of the 2005/06 season. I look forward to re-engaging with you at the annual Antarctic Conference, being hosted by Victoria University, Wellington from 4-6 July. The theme for this year's conference is *Antarctica - the great integrator*, a theme that gives us the opportunity to reflect on the most fundamental aspect of our existence in Antarctica - our ability to work together.

**Lou Sanson**  
Chief Executive



Scott Base is turning 50 in 2007!  
For all the history, photos and anniversary events, check out [www.scottbase50years.co.nz](http://www.scottbase50years.co.nz)

## All in a Day's Work

A tribute to Paul Woodgate (aka Woody) -  
celebrating 25 years working at Antarctica New Zealand



1981 was a year of enormous political, cultural and economic significance. It was the year of the Iran Hostage Crisis, AIDS was first identified, John McEnroe beat Björn Borg at Wimbledon, someone took pot shots at Pope John II, someone else at Ronald Reagan...and IBM produced its very first personal computer...bless 'em.

1981 was also the year when Paul Woodgate (aka Woody) started his career at the then DSIR Antarctic Division.

It was, he says, an opportunity to follow the government department career path...spend 5 years climbing the clerical ropes until he reached his initial goal of being appointed a section head within a government department.

"I knew the DSIR was a good training provider and in those days, career paths in the public sector followed a formula. I had a fairly good idea of where I wanted to end up in terms of my 5-year plan, but opportunity obviously had other ideas. After a year and a bit in stores, I was transferred to staff section and I've been moving people to the ice ever since."

The people, the place and the very nature of the subject – Antarctica – were what appealed to Woody about the job then – and they are factors that have provided many moments of angst and inspiration, unease and excitement ever since.

Woody started at Antarctica New Zealand during the time of the Commission of Inquiry into the Erebus disaster – a time of national reflection and enormous media interest. Greenpeace was becoming a significant player in the Ross Dependency, the Scott Base rebuilding project was in full swing and everyone arriving at Scott Base was welcomed by a long line of huskies.

"I remember my first trip south landing at Willies Field and travelling on sledge to Scott Base. We stopped at the dog line to pat the huskies. You couldn't just pat one, you had to pat each and every one of them. Even though they had lost their practical use by then, the morale boost from seeing those dogs was what made Scott Base so special."

There's been one or two changes over the years....and a couple of challenges thrown in there too. 25 years has got to equate to some pretty amazing experiences.

"I've met some amazing people over the years. Heads of State, princesses, Prime Ministers, Sir Edmund Hillary. David Attenborough was a real stand out because, despite his fame, he was a truly nice guy."

So what's the best thing about working at Antarctica New Zealand?  
"When I look back on an event or a flight or some occurrence that I've had an impact on how it has turned out – and it's turned out well, that's what keeps me going. Knowing that I can make a difference. It's a real buzz when someone steps off that plane and says thank you for something I managed to do for them while they were away."

Well done Woody – you're an asset to Antarctica New Zealand – all the best for your next 25 years!

## Antarctic Scientist Receives International Honour

Well done to Professor Peter Barrett, Director of Victoria University's Antarctic Research Centre, who was recently awarded the Scientific Committee on Antarctic Research (SCAR) President's Medal for Outstanding Achievements in Antarctic Science.

In his citation, SCAR President Jörn Thiede noted Professor Barrett's contribution to bringing Antarctic science to a wider public audience and his role in establishing the international programme on Antarctic Climate Evolution.

"His early work focussed on the Beacon Supergroup of the Transantarctic Mountains but today he is universally recognised as the supremo of the geological drilling community in the Antarctic."

In 1973, Professor Barrett he was on the first cruise of the deep-sea drilling ship *Glomar Challenger* into the Ross Sea, and the cores showed that Antarctic glaciation began more than 20 million years earlier than previously thought. Since that time he has been chief scientist on several drilling projects in McMurdo Sound to study the history of the East Antarctic ice sheet. Professor Barrett says he feels privileged to have worked with great colleagues and students on a particularly challenging and sensitive part of the earth.

"The award also recognises the success of the community I have been a part of at Victoria, at GNS Science, at Antarctica New Zealand as well as many colleagues abroad. It turns out that our curiosity-driven work on Antarctic ice sheet history over the last few decades, has increasing relevance for the context it provides on new satellite monitoring results that show the beginnings of Antarctic ice melting around the edges," he says.

SCAR is an inter-disciplinary committee of the International Council for Science charged with initiating, developing and coordinating high quality international scientific research in the Antarctic region, and on the role of the Antarctic region in the Earth system. It has 28 full member countries and four associate member countries.

This inaugural award of the SCAR President's Medal will be officially presented to Professor Barrett at SCAR's Open Science Conference in Hobart in July.



## Foreign Bodies

Alien invaders were the focus of a three-day international workshop, held in Christchurch in April and jointly hosted by Antarctica New Zealand, Canterbury University's Gateway Antarctica and the University of Auckland's Centre for Biodiversity and Biosecurity. The Non-Native Species in Antarctica Workshop took an in-depth look at current risks, future management options and policy advice to ensure Antarctica's environmental future remains free of invasive plants, animals and micro-organisms.

Barry O'Neill, Director, *Biosecurity New Zealand* welcomed New Zealand's role in hosting this workshop, which was attended by 42 people representing six countries: Australia, France, Italy, New Zealand, UK and USA.

"New Zealand has the most advanced biosecurity system in the world, and our approach to biosecurity has direct relevance to protecting Antarctica from alien species. Many good measures have already been taken to limit the possibility of invasive species arriving and establishing in the Antarctic, but these need to be constantly reviewed and strengthened – over-reliance on Antarctica's extreme climatic conditions to stop invasive species establishing, would be a risky and dangerous strategy," said Dr O'Neill.

On a global scale, biological invasions by invasive alien species (IAS) are considered one of the leading factors in biodiversity loss and species extinctions. Virtually every ecosystem type on earth has been affected. The Antarctic, due to its isolation and harsh climate, has so far escaped the major damage caused elsewhere – but the writing is on the wall.

"The workshop was extremely valuable in bringing the issue of non-native species in Antarctica to the fore," said Antarctica New Zealand Environmental Manager, Dr Neil Gilbert. "It has resulted in a collective agreement to continue to raise the profile of this issue at an international level and to advocate for the development of practical guidelines for all national Antarctic programmes to implement."

On the basis of the presentations and the discussions at the Non-Native Species Workshop, Dr Gilbert said New Zealand would be offering a number of recommendations for consideration by the Committee for Environmental Protection, which met as part of the Antarctic Treaty Consultative Meeting in Edinburgh in June.

These recommendations include giving the issue of non-native species in the Antarctic priority attention and adopting a "zero tolerance" approach; improving understanding of, *inter alia*, existing biological and genetic diversity, species distributions, and biogeographic zones through dedicated research; understanding the potential implications of a warming climate, and identifying high risk areas and ecosystems.

"The workshop recognized that prevention is more effective than response, and that the potential loss of scientific, wilderness and other values set out in Article 3 of the Protocol, is too great to leave to chance," said Dr Gilbert. "Wherever possible, non-native species concerns should be built into existing procedures and practices; notably EIA procedures and the protected areas system and a set of comprehensive and standardised guidelines should be developed, aimed at all operators in the Antarctic, based on a 'Prevention, Surveillance, Response' approach."

Proceedings of the Non-Native Species in Antarctica Workshop are available on the Gateway Antarctica website: [www.anta.canterbury.ac.nz](http://www.anta.canterbury.ac.nz)

### The cold, hard facts of Invasive Alien Species:

- Invasive alien species (IAS) are contributing significantly to a global biodiversity crisis. For several groups, IAS represent the second or third major threat to their survival.
- In the marine environment, IAS are recognised as the fifth biggest threat to global marine biodiversity.
- Invasive alien species are found in all taxonomic groups, and all ecosystem types are at risk from the impacts of IAS. Isolated and island ecosystems are particularly at risk due to the high degree of endemism found in such communities.
- Ongoing increases in global trade and travel are causing an exponential increase in the movement of species outside of their natural range.

Non-alien & non-invasive. These large jellyfish (*Diplumaris antarctica*) are abundant in McMurdo Sound. antnzc: k0680506: Miles Lamare.



## Going Solar

With 24-hour summer sunlight, why on earth do we use primus stoves to melt drinking water at Antarctic field camps?

It's a question that prompted Graduate Certificate in Antarctic Studies (GCAS) student Christina Hood to experiment with capturing the sun's energy at Windless Bight in December 2005.

Instead of using photovoltaic panels, which convert only 10-12% of incoming solar radiation, Christina focused on low-tech solar thermal design, which uses black surfaces to absorb solar radiation and turns it directly into heat. The absorption efficiencies of black surfaces can be over 90%, so for applications where heat rather than electricity is required (such as water heating or space heating) high efficiencies can be realised.

So, what were the results?

"Depending on conditions, about two loads of snow a day melted, yielding 3-4 litres of water. Over the course of the field camp, the melter produced approximately 22 litres of water in seven days of operation. One of the surprises was how well the melter worked even in overcast conditions," said Christina.

Given that the majority of fuel used when camping is for melting drinking water, switching to 100% solar melting could save approximately 75% of fuel used at a field camp. Christina calculated that for the GCAS camp, around 20 litres of kerosene and 50 person-hours of primus time could have been saved if all drinking water was provided by solar snow melters.

While the prototype worked well in the mild mid-summer conditions of Ross Island, modifications would be needed for more extreme conditions. "With a double air-gap and the right choice of materials, this should work at lower solar intensities and at temperatures down to -20°C" Christina concluded.

As a next step, Gateway Antarctica and Antarctica New Zealand may support development of an advanced prototype for testing at next summer's GCAS camp. Anyone interested in further details can stop by Christina's poster at the Antarctic conference in July, or email her at [chood@ihug.co.nz](mailto:chood@ihug.co.nz)

## 50 years on ice

*“Great God, this is an awful place.”*

*Capt Robert Falcon Scott*

From the longest night to the worst journey in the world, Antarctica has attracted its fair share of unkind utterances. But in 2007, there will be nothing but praise for the icy continent as New Zealand celebrates the 50<sup>th</sup> anniversary of Scott Base and the world celebrates International Polar Year.

Scott Base was officially opened on January 20, 1957, making it one of the earliest operational bases to be established on the continent. Though it was originally designed for only a short life – to accommodate New Zealand’s participation in the International Geophysical Year (1957-58) and Commonwealth Transantarctic Expedition (1957) – it wasn’t long before the value of Antarctic research beyond these events was recognised and Scott Base has supported New Zealand’s scientific endeavours in the Antarctic ever since.

In the summer of 2007, Sir Edmund Hillary hopes to accompany Prime Minister Helen Clark to Antarctica, where they will celebrate this New Zealand milestone.

“Not only will 2007 be an opportunity for New Zealanders to celebrate our cultural and geographical connection to the Ice, but it will also set the scene for recognising the global importance of New Zealand’s involvement in International Polar Year events,” said Antarctica New Zealand Chief Executive, Lou Sanson.

Proposed events to mark the 50<sup>th</sup> Anniversary of Scott Base include an on-ice dinner in the original TAE hut at Scott Base, an exhibition – opening at Te Papa and travelling around the regions, a gala 3-day reunion event in Christchurch and an exhibition of Antarctic art. New Zealand Post is also producing a commemorative stamp issue.

If you’d like to find out all about the history of Scott Base and New Zealand’s scientific presence in Antarctica, as well as keeping up-to-date with all the upcoming Anniversary events, then check out our Scott Base Anniversary website:  
[www.scottbase50years.co.nz](http://www.scottbase50years.co.nz)



Left: Sir Edmund Hillary on a Ferguson tractor, leaving Depot 48 on his way to the South Pole (Dec 1957) anzp: Historic Collection: TAE 1001

## International Polar Year Plans for New Zealand

International Polar Year (IPY) is of a coordinated programme of interdisciplinary scientific research and observations in the Earth’s polar regions. Its aim is to explore new scientific frontiers, deepen our understanding of polar processes and their global linkages, increase our ability to detect changes, attract and develop the next generation of polar scientists, engineers and logistics experts and capture the interest of students, the general public and key decision-makers.

The IPY (occurring from 1 March 2007 to 1 March 2009) will include a broad range of activities organised around five main themes:

- To determine the present environmental status of the Polar Regions by quantifying their respective spatial and temporal variability.
- To quantify and understand past and present environmental and human change in the Polar Regions in order to improve future predictions.
- To advance our understanding of polar – global teleconnections on all scales, and of the processes controlling these interactions.
- To investigate the unknowns at the frontiers of science in the Polar Regions.
- To use the unique vantage point of the Polar Regions to develop and enhance observatories studying the Earth’s inner core, the Earth’s magnetic field, geospace, the Sun and beyond.

The international science community has indicated its support for 401 IPY proposals. New Zealand is listed as a participating country on 43 of these projects. Our research includes:

- Air-Ice chemical interactions
- Antarctic and sub-Antarctic permafrost, periglacial and soil environments
- A Census of Antarctic Marine Life
- Antarctic climate evolution
- Microbiological and ecological responses to global environmental changes in Polar Regions
- Plate tectonics and Polar gateways in Earth history
- Ozone layer and UV radiation in a changing climate
- The state and fate of the Cryosphere
- Astronomy from the Polar Plateaus
- Evolution and biodiversity in the Antarctic: the response of life to change
- Taking the Antarctic / Arctic Polar Pulse – Human biology and medicine research
- Antarctic Anthology. A collaborative book incorporating literary, visual and scientific representations of the continent
- Internationally coordinated studies on Antarctic environmental status, biodiversity and ecosystems

For detailed information on New Zealand’s contribution to IPY events or an international overview, check out: [www.ipy.org](http://www.ipy.org)

## Integrating Art and Science

Joyce Campbell - a leading New Zealand installation artist and Clare Plug - a prominent Hawkes Bay textile artist are the 2006/07 Antarctic Arts Fellows.

"Both artists were standouts, given their knowledge of science and their desire to explore scientific principles in their work," said Antarctica New Zealand Chief Executive, Lou Sanson. Both artists also provide a working example of how science and the environment can inspire the creation of innovative New Zealand art."

Joyce Campbell is internationally renowned for her sculpture, photography and time-based media works. She has exhibited extensively in New Zealand, Australia, the US and Europe and received critical acclaim for her ability to portray difficult and obscure environments through her work. Her work is driven by the way physical forces generate complex forms, particularly in extreme environments and she sees Antarctica as an important indicator of the health of the rest of the planet. Her intention is to use her artistic ability and scientific knowledge to communicate and depict our relationship with an increasingly precarious environment.

"I'm interested in rendering visible, localised - perhaps even minute - events that might point to the fragility of more massive systems. Most notably I am interested in the impact of ozone depletion on the biological systems of the Ross Sea and the impact global climate change has had on the erosion of major ice structures."

Textile artist, Clare Plug is the second Antarctic Arts Fellow for 2006/07. Clare's work reflects an affinity with her natural environment and critics often refer to her intriguing, almost poetic ability to capture the essence of a particular environment and to lure her viewers to it. Clare has exhibited her quilts - abstract and often enigmatic - both in New Zealand and extensively in the US. Clare has a B.Sc (Hons) in Zoology from Massey University. Clare has themed her expected works from her Antarctic Arts fellowship as '*Necessary Protection*', focussing on the fall of light upon the landscape, the protective layers garnered by the frozen environment and the ongoing need for people to put in place measures to protect Antarctica's delicate ecology.

"I fervently believe that as New Zealanders, we all need to be regularly reminded how Antarctica, and the Southern Ocean that surrounds it, is a unique place - for the treasure it holds, the information it yields about the past and in helping us understand the future of our world."

The Artists to Antarctica Programme is a joint initiative between Antarctica New Zealand and Creative New Zealand and is open to all established New Zealand artists and writers. Previous Antarctic Arts fellows include author Margaret Mahy, fashion and wearable arts designer Fieke Neuman, furniture maker/sculptor David Trubridge and poet Bernadette Hall.

For information about Antarctica New Zealand's Artists to Antarctica Programme or to download an application for the 2007/08 programme check out [www.antarcticanz.govt.nz](http://www.antarcticanz.govt.nz).

## Kid's Fest '06

It's not often you get the chance to dress up in a penguin suit to go to church...but you'll have the perfect excuse to do just that at the ChristChurch Cathedral, when they celebrate Kid's Fest 2006 on Sunday July 2. Dean of ChristChurch, the very Reverend Peter Beck, has developed a 'Penguin' theme for the event - and it's going to be nothing short of penguin pandemonium! There will be huskies, haggglunds, a live cross-over to Scott Base, penguin film-clips, penguin people, polar tents...and of course, the great penguin-themed kid's favourite - bluebird chips!

To find out more, check out [www.christchurchcathedral.co.nz](http://www.christchurchcathedral.co.nz)

## Cold Snaps – Photographic Competition

Have you got a photo of a bone-chilling, cold-in-the-extreme experience? Then you need to enter the COLD SNAPS photography competition! Whether it's icy cold, wind-blown, atop a mountain, rainy, misty or fog-bound, we want to see your photographic interpretation of the cold...

You could win one of the following fabulous prizes:

Best Cold Snap:	\$1000
Best Antarctic/Sub Antarctic photo:	\$500
People's Choice Pic:	\$500

All photos need to be in digital format and submitted on disk to Julie Battersby at CCC. Finalists will be displayed at the ChristChurch Cathedral and voting for the People's Choice Pic is open until 26 September. For more details check out [www.antarcticanz.govt.nz/what'snew](http://www.antarcticanz.govt.nz/what'snew).

## Celebrating in the City

Christchurch will celebrate its 'Gateway to Antarctica' status in September with a series of Antarctic Festival events. Christchurch City Council, Gateway Antarctica, Antarctica New Zealand, Canterbury Museum and the International Antarctic Attraction are working together on a programme designed to inspire and stimulate interest in all things icy. The event is also timed to farewell people travelling to the Ice as part of the New Zealand, Italian and US Antarctic Programmes.

Highlights of the Festival will include the Haggglund Challenge, an outdoor Antarctic-themed film festival, a celebrity debate, cold snaps photographic competition and the much-anticipated arrival of real, live penguins at the International Antarctic Attraction's purpose-built penguin enclosure.



## The Longest Night

Being New Zealand's first-ever woman winter manager at Scott Base doesn't phase Vicki Addison – she's more interested in just getting on with the job...and enjoying the amazing scenery.

Vicki has spent long nights working on ski fields so she wasn't bothered about living life in relative darkness for a month or two. What attracted her to the job was the challenge of living in isolation with a group of people and witnessing the beauty of Antarctica during the longest night.



Above: Summer Base Manager Emma Reid (left) handing over to Winter Base Manager Vicki Addison.

“Having done a reasonable amount of night shift work I knew the darkness would be manageable. What I thought might take some adjustment - and indeed has - are the restrictions placed on you as a result of both the environment we live in and the demands of communal living.”

The winter manager is inevitably going to become a jack-of-all-trades and Vicki has relied on a range of skills to ensure her

success in the role. “All you need is to be great at managing people, have patience, use diplomacy and tact, retain your sense of humour and develop a brain for fixing things.”

The best thing about wintering? “The light changes; even now it's not totally dark all day and when the moon is full or the Auroras come out to play, it's just magic.”

And of course, the inevitable question – do the boys wind you up? “Of course the boys try to wind me up but that is a pretty universal thing and no one on base is immune”.

So as the light begins to fade and attention turns to her return to New Zealand, what's on Vicki's post-winter horizon?

“Initially, I'm just looking forward to sitting in my garden in the sun with a nice glass of chilled wine, and perhaps swimming in the sea. Longer term, being surrounded by such motivated people doing interesting science has made me want to expand on my geology degree and move into the field of resource management. So, I'll be going back to university on my return to NZ!”

## Arrival Heights Lab Replacement

For the past 45 years, the laboratory at Arrival Heights has provided scientists with a wealth of data on upper atmospheric physics and boundary layer air sampling studies. The Scott Base team have been working over the winter months to complete a total revamp of the lab, which will be ready to house science programmes commencing in October 2006.

“The existing laboratory is located in a low area, prone to snow build up around the structure and is difficult to maintain” said Antarctica New Zealand Project Manager Peter Brookman.

“The new facility is located in an area, which remains snow free year round and is a low maintenance design similar to the existing buildings at Scott Base.”

Arrival Heights began life in 1959-60 with the construction of an auroral radar building. Both the New Zealand Antarctic Programme and USAP have laboratories situated there, conducting long-term investigations into the Antarctic atmosphere's role in global change.

“The area, both environmentally and logistically, lends itself well to the study of upper atmospheric physics” said Mr Brookman. “Arrival Heights was designated as a protected area in 1975, on the grounds that it represents an electromagnetic and natural ‘quiet site’, offering ideal conditions for the installation of sensitive instruments for recording minute signals associated with upper atmospheric programmes.”

Over the years, there has been increasing interest in, and demand for, the type of data gathered at Arrival Heights and the lab has been enlarged as needed to accommodate emerging science support requirements.

The new building has a greater footprint than the old Arrival Heights lab, being 160 sq metres compared to the previous area of 110 sq metres and is designed such that it can be easily enlarged should that be required in future.

Below: Arrival Heights: Photographer Stephen Robbins.



Antarctica New Zealand



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### Icesheet goes electronic

Because of Antarctica New Zealand's continued commitment to environmental best practice, Icesheet is going electronic! If you would prefer to receive your next issue of Icesheet via email, please contact Antarctica New Zealand and we will add you to our electronic database.

We'll be making contact with everyone on our current database over the coming months to ascertain your preferred way of receiving our publications.

### Cover Image

Night sky at Scott Base. Kim Westerskov 1990. Antnzpc: W33

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