



## New Zealand's International Polar Year programme

With the first Antarctic season of the International Polar Year (IPY) underway many events supported by Antarctica New Zealand have begun their research programmes. The IPY was launched in Paris in March 2007, and is the largest internationally co-ordinated polar research programme in 50 years. It will span two full annual cycles, from March 2007 to March 2009, in order to ensure full coverage of both the Arctic and Antarctic summer seasons. Research funding of \$4.5 million announced in May by Prime Minister Helen Clark has resulted in a diverse range of projects being supported under IPY. Antarctica New Zealand's flagship programmes are CAML and ANDRILL, however there are a number of projects taking place within the next two summer seasons in which New Zealand scientists and support staff are making a significant contribution.

### Census of Antarctic Marine Life (CAML)

New Zealand is conducting a major survey of biological diversity of the Ross Sea as part of the Census of Antarctic Marine Life (CAML) and International Polar Year (IPY). This project is a collaboration between Antarctica New Zealand, LINZ, MFish and NIWA. Up to 26 scientists and 18 crew will take part in an eight-week voyage aboard RV Tangaroa from February–March 2008. They will sample the marine ecosystem from the sea surface to the seabed, from mega-size to microscopic, across a wide range of environmental and geographic gradients in the Ross Sea region. The survey will cover habitats ranging from the ice-scoured shelf to offshore seamounts and the abyss.

### ANDRILL

ANDRILL (Antarctic Geological Drilling) is an international programme investigating Antarctica's role in global environmental change through the recovery of sediment cores from beneath the floating sea ice and ice shelves surrounding Antarctica. It involves scientists from the United States, New Zealand, Germany and Italy. Antarctica New Zealand's Jim Cowie is the Project Manager (see this issue of Ice Sheet for more information).

### Antarctic ozone recovery

Physicist Dr Greg Bodeker from NIWA leads this research programme which aims to reduce the uncertainty in projections of the Antarctic

ozone hole by improving understanding of how Antarctic ozone depletion interacts with climate change. This will be achieved by using an enhanced suite of measurements from IPY campaigns in Antarctica to thoroughly assess and improve a state-of-the-art chemistry-climate model of the troposphere and stratosphere.

### Dry Valleys ecosystems

Waikato University's Dr Allan Green is leading a group, which will be describing and interpreting biocomplexity of terrestrial ecosystems in the Ross Dependency. The final product will be a GIS/biodiversity database model linking biodiversity, landscape and environmental factors in an easy to use format.

### Inland water: late season ecosystem processes

Dr Brian Sorrell, a NIWA freshwater ecologist, will be increasing our understanding of how the biological activity in meltwater ponds is linked to their extreme climatic setting during the transition from summer to winter. The research group aim to determine how these change as freezing proceeds during an extended summer season in Antarctica.

### Ice CUBE

Benthic Ecologist, Dr Vonda Cummings from NIWA is leading a group to characterise the structure and function of coastal benthic (bottom dwelling) ecosystems and determine their relationships to key environmental factors across a range of spatial and biological scales. The Ice CUBE group have just returned to New Zealand after a successful season in Antarctica.

### Microbial biodiversity in sea ice

Biologist Dr Ken Ryan from Victoria University of Wellington is studying the changing patterns of microbial diversity along a latitudinal gradient in the Ross Sea. The research will generate a bio-inventory of the micro-organisms in sea ice using both conventional methods and molecular technology, and will attempt to quantify numbers to generate community fingerprints for sea ice biodiversity.



## Winter sea-ice growth processes

Dr Pat Langhorne from Otago University is studying the thickness and growth of coastal sea ice during winter. The focus will be on the contribution of "frazil ice" to the thickness of developing sea ice which is an unknown area of polar influence on climate. This research will be supported during the winter of 2009.

## TASTE-IDEA (Trans-Antarctic Scientific Traverses Expeditions – Ice Divide of East Antarctica)

Ice core specialist Dr Nancy Bertler from Victoria University of Wellington is contributing to this project by collecting and studying a new set of ice cores in order to extend and fill in the record of past climate variability. A Ground Penetrating Radar survey has been completed near the Darwin Glacier area this season, with drilling scheduled for the following Antarctic summer season.

## ANDRILL reaches 1138 metres

The second season of the Antarctic Geological Drilling (ANDRILL) Programme has seen a successful conclusion. On 21 November 2007, the drilling team passed the 1,000-metre mark in rock core extracted from beneath the sea floor of McMurdo Sound. The recovery rate of more than 98 percent of the core is made even more remarkable by the extreme conditions in which the ANDRILL team were working. The final completed coring achieved 1,138.54 metres below the sea floor. It's the second-deepest rock core drilled in Antarctica, surpassed only by the 1,285 metres recovered by last year's ANDRILL effort on the McMurdo Ice Shelf.

The predominantly New Zealand drilling and support team have managed to set up, complete the drilling and extract the ANDRILL rig from the sea ice ahead of schedule. The co-chief scientists, David Harwood of the University of Nebraska-Lincoln and Fabio Florindo of Italy's National Institute of Geophysics and Volcanology in Rome, said they couldn't be more pleased with the results. The efforts of the programme's nearly 80 scientists, drillers, engineers, technicians, students and educators in Antarctica, along with the operations and logistics support provided by Antarctica New Zealand, have given the world's scientists more than a kilometre of pristine rock core that records the history of climate and glacial fluctuations in Antarctica over the past 20 million years. "It's everything we hoped for," Harwood said. "Combine the core we recovered last year with this one, from a time period right below it, and it's more than 2 kilometres of geological history. It's phenomenal what we've recovered. There's a lot of diversity in the core, indeed more than we can digest right now."

The goal of this drilling project was sediment core retrieval from the middle Miocene Epoch when, for an extended period, Earth was warmer than today. Florindo and Harwood said they are especially pleased to have recovered such high-quality core from this target period. "We now have a more complete core record from the middle Miocene and a step into a colder period of time, and that was one of our key targets," Florindo said. "It will tell an important story when we put together our recovery with the record of last season. This is exciting science and it will echo loudly in the scientific community."

## POLENET

POLENET is a consortium of scientists and support staff who will be studying a diverse range of projects. These include investigations into polar geodynamics, the earth's magnetic field, crust, mantle and core structure, and systems-scale interactions of the solid earth, cryosphere, oceans and atmosphere. Research activities will be focused on collecting data from remote observation sites, permanent station observatories and satellite observations. GPS data from this project will also contribute towards extending the Ross Sea Geodetic Datum 2000.

Antarctica New Zealand CEO Lou Sanson said "We are pleased to be involved with and support such a great range of projects which will contribute to making the IPY a significant leap forward for Polar science".

For more information on all of these projects and please visit our newly-launched website: <http://ipy.antarcticanz.govt.nz/>



Emperor penguin in front of the ANDRILL rig

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After a seven-week setup period by Antarctica New Zealand during late winter, drilling began on 9 October and continued until late November, with the drillers recovering 25 to 70 meters of core each day. The ANDRILL Project Manager Jim Cowie from Antarctica New Zealand said "It's been a good season with a lot of hard work by a great team. If you add the core record of the Cape Roberts project to the last two seasons of ANDRILL we now have a complete geological record of 1 million years ago to 35 million years ago...what's more this was achieved in the extreme conditions of early season cold temperatures and the complexity of drilling from a moving platform of sea ice."

Following the planned drilling stoppage once target depth was reached, scientists lowered a variety of scientific instruments into the deep drill hole over several days to get a better understanding of the physical properties of the geological layers under pressure and to obtain an acoustic image of the inside of the borehole. The first stop for each core section after recovery is the Cray Science and Engineering Centre, operated by the U.S. National Science Foundation at McMurdo Station. After preliminary examination by on-ice scientists, the cores will be shipped to Florida State University's Antarctic Marine Geology Research Facility in Tallahassee for storage and long-term study. The record contained within the core will be used to determine the behaviour of ancient ice sheets, and to better understand the factors driving past ice sheet, ice shelf and sea-ice growth and decay. This new knowledge will enhance our understanding of Antarctica's potential responses to future global climate change.

## 50th Anniversary celebrations



Sir Edmund Hillary, John Claydon and Norm McPherson unveiling a new plaque at the Scott statue  
Photo courtesy of Glynis Hicks

The New Zealand Antarctic Society celebrated its jubilee marking '50 Years in Antarctica'. The celebration spanned the weekend of 28-30 September 2007 and was held in conjunction with the city of Christchurch's annual Antarctic Festival. The weekend's events brought together a wide range of people with connections and interest in New Zealand's five decades on the ice.

Celebrations began on the Thursday evening with the book launch of *Call of the Ice*. This is Antarctic historian David Harrowfield's history of the New Zealand Antarctic programme. The launch was followed by a presentation at Warner's Hotel by Peter Otway on the husky dogs that were employed at Scott Base following the 1956-58 Trans-Antarctic Expedition and International Geophysical Year.

Friday evening saw the official opening of the Antarctic season hosted by Christchurch City Council at Chateau on the Park. An informal reception held at the International Antarctic Attraction where Antarcticans of all ages and professions were able to meet was also held later in the evening.

Saturday delivered perfect Canterbury weather for the laying of the wreaths and the unveiling of a bronze plaque at the foot of the Captain Robert Falcon Scott statue honouring the service of those who contributed to New Zealand's effort in the Antarctic over the last 50 years. A team of eager huskies 'pulled' the Christchurch tram carrying Sir Edmund and Lady June Hillary, as well as US Ambassador William McCormick, Mayor Garry Moore and Antarctica New Zealand CEO Lou Sanson and their partners from Cathedral Square to the Statue. The plaque was unveiled by Sir Edmund Hillary with assistance from his Trans-Antarctic Expedition Chief Pilot, Wing Commander John Claydon.

A gala dinner was held on Saturday evening at the Air Force Museum at Wigram, where over 520 people enjoyed an evening celebrating and reminiscing on their Antarctic experiences. Highlights of the evening were event Chairman David Harrowfield's pictorial review of New Zealand's 50 year Antarctic journey and a re-enactment of a possible conversation between Admiral Richard Dufek and Sir Edmund Hillary. The evening also included the presentation of a Commemorative Gold Medallion to New Zealand members of the 1957 Trans-Antarctic Expedition/ International Geophysical Year teams. The event's guest speaker was the United States explorer and educator Will Steger who gave a talk on his incredible traverse of Antarctica and the need for all to play an active role in protecting the future of the planet. Music was provided by the New Zealand Army Band bringing the evening to a close.

The Annual season opening memorial service was held on the Sunday morning at the Christchurch Cathedral. This marked the start of another season of work in Antarctica and the beginning of the next 50 years of New Zealand's involvement on the ice.

Antarctica New Zealand offers thanks to all those who made the celebrations possible.

### Sir Edmund Hillary

As Ice Sheet has gone to press Antarctica New Zealand has been saddened by the passing of Sir Edmund Hillary. CEO of Antarctica New Zealand Lou Sanson said "Sir Ed was a towering legend in New Zealand's identity with Antarctica and holds a special place within the New Zealand Antarctic programme.

It has been 50 years since Ed reached the South Pole as part of the 1957/58 Trans Antarctic Expedition and he was the first person to do this overland since Amundsen and Scott. As a result of this expedition Sir Ed became largely responsible for the creation of Scott Base and ultimately New Zealand's presence in Antarctica."

Sir Ed will be sadly missed by all those with connections to Antarctica. (See the next issue of Ice Sheet for full details)

### New EBA Secretary announced

Shulamit Gordon, Science Advisor for Antarctica New Zealand, was recently named the Secretary of the Evolution and Biodiversity in the Antarctic programme (EBA). This is one of five research programmes that sit within the Scientific Committee on Antarctic Research (SCAR) and the position will be integral to communication within the EBA and the wider Antarctic community. Shulamit is also the Project Manager for the Latitudinal Gradient Project and these two roles will complement each other and present opportunities for information sharing between the groups. Whilst in this role, Shulamit has already created a new EBA website ([www.eba.aq](http://www.eba.aq)), convened workshop for 16 highly recognised Antarctic Biologists (May 2008) and is currently working towards compiling an EBA newsletter to be circulated among the Antarctic science community. Antarctica New Zealand congratulates Shulamit on this appointment.



## Scouts to the Ice

It has been one hundred years since the international Scouting movement began. As part of the wider centenary celebrations New Zealand Scouts Matt O'Sullivan, Tim Johns, Tom Williams and Andy Bartle, accompanied by Scout leader John Dale departed for Antarctica on 27 November 2007 hosted by Antarctica New Zealand. Throughout their eight-day stay at Scott Base they undertook Antarctic Field Training and assisted in the construction of a trail to the top of Crater Hill, which expanded the joint United States/ New Zealand Ross Island Trail network.

Tim Johns, a member of the Scouting party, described his time at Scott base as "awesome...I'd love to get back there and work at Scott Base in the future.

**Above:** Scouts on Ice pulling a Nansen sledge during field training (from left to right: Tom Williams, John Dale, Matt O'Sullivan, Andy Bartle, Tim Johns)

© J Watson, Antarctica NZ Pictorial Collection: K250 07/08

I think that this is a remarkable opportunity and a great way to celebrate 100 years of Scouting around the world." The only disappointment for the party was that they did not get to experience a blizzard!

Lou Sanson, CEO of Antarctica New Zealand, welcomed the opportunity of contributing to the Scouts' 100th anniversary celebrations. "Giving young people a chance to experience not only the place but the world-leading science that is going on down there is vital if we are to ensure a future for Antarctica. It is fitting that we are able to be part of the 100th anniversary and continue the proud tradition of Scouts on the Ice."

## Inaugural Antarctic Youth Ambassador to the Ice

Jay Piggott has led the way as the inaugural Antarctic Youth Ambassador. The award, developed by Antarctica New Zealand in partnership with the Sir Peter Blake Trust, was launched by the Prime Minister, Sir Edmund Hillary and James Blake, as part the 50th anniversary celebrations at Scott Base in January 2007. The award aims to provide an opportunity for a young New Zealander to contribute to environmental work in Antarctica. Jay Piggott was selected from a large number of high quality applicants and has applied himself with enthusiasm and intelligence to the role.

Throughout Jay's time on the Antarctic Youth Ambassador programme he has been under the supervision of Dr Neil Gilbert, Environment Manager for Antarctica New Zealand. Neil says he is delighted with both Jay's selection and the Youth Ambassador programme. "Jay is an outstanding first recipient of this award. 2007 is the International Polar Year and so it is an appropriate time to launch this programme, which invests in the future of the Antarctic environment by building capability and understanding in young New Zealanders."

While Jay was resident at Scott Base he contributed to a team working on a review of the Dry Valleys ASMA (Antarctic Specially Managed Area) Management Plan. Jay was able to contribute to a survey of special features and coastal locations with the goal of improving the management of important sites within the area. As an addition to Jay's field work, he was able to send back images and experiences to the Christchurch Press blog site ([www.antarcticyouthambassador.blogspot.com](http://www.antarcticyouthambassador.blogspot.com)) and has also designed a new website for the Dry Valleys.



Jay Piggott and Emily Kelly (from the US program) surveying key sites in the McMurdo Dry Valleys as part of the ASMA Management Plan

Photo courtesy of Neil Gilbert

Prior to becoming the inaugural Antarctic Youth Ambassador Jay has packed a lot into his 26 years. He is currently the team manager of the Stream Ecology Research Group in the Department of Zoology at University of Otago. He has extensive experience in the outdoors as a mountaineer, climber, scuba diver and sailor. His writing and photographs have been widely published and he has also been an internationally recognised youth leader for the environment. Jay returned from his 10 day experience and said "Antarctica is truly wonderful to behold. The harshness and fragility of the place is both frightening and amazing. Going there was a physical and emotional rollercoaster ride from start till finish... Once away from Scott Base and in the Dry Valleys, the remoteness and solitude is so intense that the obsessions of the material world become meaningless and one is confronted by the reality of one's own existence and survival." For further information on the Antarctic Youth Ambassador programme visit: <http://www.sirpeterblaketrust.org/index.php/environment/aya/aya/index/aya/index.php>

## Polar Contests winners announced



IPY Polar Contests awards ceremony 24 October 2007  
 Back row: Lou Sanson, Daniela Haase, Melianie Raymond (IPY Youth Steering Committee members), Professor Bryan Storey, Gateway Antarctica;  
 Front row: Carina Donald and Charlotte Taylor

Photo courtesy of Eve Welch

Congratulations to secondary school students Charlotte Taylor (first prize) and Carina Donald (second prize), winners of the 2007 Polar Contests. Antarctica New Zealand in collaboration with University of Canterbury, Otago University and The Foundation for Research, Science and Technology have supported this initiative run by the International Polar Year (IPY) Youth Steering Committee. The contest challenged the students to design digital interactive educational materials that can be used to communicate the international importance of the Polar Regions to other people of their age group.

The winners were officially announced in October 2007 at a ceremony held at Gateway Antarctica at Canterbury University. The first prize for the contest was a place on an expedition to the Antarctic Peninsula with Students on Ice, an organisation offering unique learning expeditions to the Antarctic and Arctic. This was awarded to Charlotte Taylor from St Cuthberts School, Auckland, for her entry "Ice Base". This interactive presentation leads the viewer through the decision making process involved in establishing a base in Antarctica. Her entry displayed exceptional knowledge and understanding of the political and environmental concerns, as well as the practicalities of running an Antarctic research base. Charlotte is delighted to be able to join the expedition this December, where she will meet the winners of similar contests that were held for the IPY in Portugal and Canada.

## Energise your future challenge 2007

Creative solutions to Antarctica's energy needs have won nine secondary school students scholarships to study Engineering at the University of Canterbury.

Sixty students from around New Zealand took part in the 2007 Energise Your Future Challenge, organised by University of Canterbury's Electric Power Engineering Centre and co-sponsored by Antarctica New Zealand. Working in teams of three, the students were asked to design a stand-alone renewable energy system for

a new, state-of-the-art, scientific research station at the South Pole. Students had to determine the total energy requirements for the station and the best form of renewable energy, taking into consideration policy, environmental and social issues associated with Antarctica.

"Team Penguin" from Christ's College in Christchurch won first prize for its engineering solution that focused on wind and solar energy. Tristan Read, James Moore and Sam Hamilton each won scholarships worth \$4000 over two years while the college was awarded a prize of \$2000.

Electric Power Engineering Centre Manager Joseph Lawrence said the challenge was designed to make students think about the growing need for energy systems that are not heavily reliant on fossil fuels.

Speaking at the prize ceremony on 6 December 2007, Antarctica New Zealand Chief Executive Lou Sanson told the students that their work was of "real relevance to the international community which is striving to address the unique challenges of renewable energy in Antarctica".



## The Big Ice exhibition hits the road.

The successful exhibition The Big Ice which celebrates 50 years of New Zealand scientific exploration and environment work in Antarctica is on the road. Be sure to catch it at one of the following venues:

Palmerston North	Te Manawa, 326 Main St	10 Nov 07 - 16 March 08
Wellington	BNZ, Willis St	24 March 08 - 3 May 08
Hamilton	Waikato Museum, 1 Grantham St	10 May 08 - 3 Aug 08
Auckland	MOTAT, Gt North Rd, Western Springs	14 Aug 08 - Nov 08

## Antarctica New Zealand welcomes new board member Rob Fenwick



Rob Fenwick has been appointed to the Board of Antarctica New Zealand replacing retiring Board member Francis Small. Rob is an experienced businessman and company director with interests closely aligned to promoting sustainable development. He has had a long association with Antarctica, which includes nine years as director and later chairman of Landcare Research and is a former Chairman of the Antarctic Heritage Trust.

In 2005 the New Zealand Geographic Society named the Fenwick Ice Piedmont in the Ross Sea for his work in Antarctica.

He is currently Deputy Chairman of TVNZ and Chancellor and Chairman of the National Board of St John. He is a Knight of the Order of St John and a member of the Institute of Directors. He is a co-founder and Director of Living Earth Ltd, New Zealand's principal organic waste management business and is active in policy development around waste minimisation and climate change, and has been a member of several Government working groups in these areas. He is a trustee of Pacific Development Conservation and patron of the New Zealand Plant Conservation Network. The Board and Staff of Antarctica New Zealand look forward to working with Rob and the extensive experience he brings to the position.

## New Communications Advisor



Matt Vance has been appointed to the role of Communications Advisor from a diverse background of communications management. With degrees in Parks and Recreation, Landscape Planning and a Post Grad Diploma of Natural History Filmmaking, Matt's most recent position has been as Director of his own company, Poiesis Communications. His major contracts were with Lincoln University and Heritage Expeditions. Matt has been a freelance writer/photographer and brings an artist's perspective of science and the environment to his work, which has been published in the Listener and Sunday Star Times.

Matt's passion for Antarctica and the Southern Ocean has come from his four seasons of experience working as lecturer and guide for Rodney Russ of Heritage Expeditions around East Antarctica and the Ross Sea. "I'm looking forward to the challenge of getting science on the ice more profile, especially given the increasing prominence of Antarctica and the Southern Ocean in climate change research."

With a short time in the job Matt has observed, "I'm impressed with the people and their passion for the ice, I'm also impressed with the no less than 9 pages of acronyms and I hope we can push that to 10 by the end of the year!"

Outside of work Matt has represented New Zealand in Yachting and Windsurfing, is an internationally exhibited Artist, and Award-winning filmmaker. Most weekends are devoted to family, friends and sailing a 28ft classic yacht named "Siward".

## Board Member Francis Small retires

Antarctica New Zealand gratefully acknowledges the contribution of Francis Small, who has served as a board member for six years and recently retired from his position. Francis has made an important contribution to the Scott Base asset management programme, engineering services at the base and Antarctica New Zealand's move towards alternative energy. Francis has brought a longstanding perspective to the Board as an Engineer and his dedication to the organisation will be missed.

## GCAS Scholarships

Two students are embarking on the Graduate Certificate in Antarctic Studies programme this summer season with support from Antarctica New Zealand.

Jimena Sardina is attending the fourteen week course, with assistance from the Ministry of Foreign Affairs and Trade, Latin America Strategy Fund. Jimena works for Instituto Antártico Chileno (INACH) in Chile and it is intended that her visit will strengthen links between the two Antarctic Treaty Partners. Turi McFarlane has also been the first to receive a GCAS scholarship with support from both Ngai Tahu and Antarctica New Zealand.



Antarctica New Zealand



### Antarctica New Zealand

Private Bag 4745  
Administration Building  
International Antarctic Centre  
38 Orchard Road  
Christchurch  
New Zealand

Tel (64) 3 358 0200  
Fax (64) 3 358 0211  
Email [info@antarcticanz.govt.nz](mailto:info@antarcticanz.govt.nz)

### 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. In the meantime, if you would like to alert us to a change of address, please contact Rebecca Elliott [r.elliott@antarcticanz.govt.nz](mailto:r.elliott@antarcticanz.govt.nz) or go to the 'contact us' part of the website.

### Cover Image

Setting experiments at the McMurdo Sound sea ice edge.  
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