

Events 2009 – 2010



Antarctica New Zealand

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2009-2010 RESEARCH SEASON

EVENT SUMMARIES AND CONTACT INFORMATION

Event K002 Latitudinal Gradient Project (LGP)

Oct 2009
Logistics
build up
Dec 2009
Hatherton
Glacier region

**Antarctica New Zealand, Christchurch. Shulamit Gordon (Project Manager),
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: s.gordon@antarcticanz.govt.nz**

The Latitudinal Gradient Project (LGP) is aimed at increasing the understanding of the coastal marine, freshwater and terrestrial ecosystems that exist along the Victoria Land coastline in the Ross Sea region, and describing potential environmental variability that may occur in the future. Antarctica New Zealand is providing the logistical capabilities for research camps to be located at specific sites along the Victoria Land coast. K002 covers the terrestrial work that will be undertaken in the Darwin Glacier region under the LGP. The following events will be visiting the Darwin Glacier region this season: K056, K081B (see individual event entries for research summary).

Event K003 Latitudinal Gradient Project (LGP)

Nov 2009 –
Dec 2009
Granite
Harbour

**Antarctica New Zealand, Christchurch. Shulamit Gordon (Project Manager),
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: s.gordon@antarcticanz.govt.nz**

See above for LGP abstract. K003 covers the marine studies that will be undertaken at Granite Harbour area under the LGP. The following events will be undertaking research here: K018, K043A (see individual event entries for research summary).

Event K004 Cape Hallett Automatic Weather Station Maintenance

Nov 2009

**Antarctica New Zealand, Christchurch. Shulamit Gordon (Project Manager),
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: s.gordon@antarcticanz.govt.nz**

An automatic weather station was installed at Cape Hallett in November 2002 collecting data to support the Latitudinal Gradient Project. This weather station will be visited for maintenance and re-calibration.

Event K014 How do Antarctic Fishes Use Antifreeze to Survive in Ice-Laden Water?

Dec 2009
Scott Base

**School of Biological Sciences, University of Auckland, Private Bag 92019,
Auckland 1142. Dr Clive Evans, Phone: (09) 373 7599 Ext: 87245,
Email: c.evans@auckland.ac.nz**

How supercooled fishes utilise antifreeze glycoproteins (AFGPs) to survive in freezing Antarctic waters is an outstanding biological problem resolvable through the combination of biology and synthetic organic chemistry. We propose to chemically synthesize non-radioactively labeled AFGPs and to use the products to track the route by which secreted antifreeze is able to reach high levels in the circulation, to identify the cell type involved in ice crystal entrapment, and to characterize the likely receptor.

Event K018 The Meroplankton Community of Granite Harbour

Nov 2009 –
Dec 2009
Granite
Harbour

**School of Biological Sciences, University of Auckland, Private Bag 92019, Auckland.
Dr Mary A Sewell, Phone: (09) 373 7599 Ext: 83758, Fax: (09) 373 7417,
E-mail: m.sewell@auckland.ac.nz**

The pelagic community of the Ross Sea consists of a permanent component (= holoplankton) and a temporary component which is primarily made up from the larval stages of benthic marine invertebrates and fish (= the meroplankton). As part of the Latitudinal Gradient Project we are examining the distribution and abundance patterns of the meroplankton in the Ross Sea. Our research describes the meroplankton biodiversity along the Victoria Land coast and, through a molecular sequencing approach, allows linkage to the benthic adults from which they are derived.

Event K020 Predicting Biocomplexity in Dry Valley Ecosystems

Nov 2009 –
Jan 2010
Miers Valley,
Garwood Valley
and Marshall
Valleys

Department of Biological Sciences, University of Waikato, Private Bag 3105, Hamilton. Professor Craig Cary, Phone: (07) 838 5493, Fax: (07) 838 4324, E-mail: caryc@waikato.ac.nz

This research focuses on describing and interpreting biocomplexity of terrestrial ecosystems in the Ross Sea region delivering a GIS/biodiversity database model linking biodiversity, landscape and environmental factors in a form that is easily understood and taken up by end users. It will provide improved capacity for New Zealand to meet its current and future obligations in managing Antarctic terrestrial ecosystems in an international community. This is a NZ International Polar Year project.

Event K023 Life at the Extreme: Resolving the Genetic Basis of Microbial Endemism in the Super-Heated Soils of Mt Erebus, Antarctica

Nov 2009
Mt. Erebus

Department of Biological Sciences, University of Waikato, Private Bag 3105, Hamilton. Professor Craig Cary, Phone: (07) 838 5493, Fax: (07) 838 4324, E-mail: caryc@waikato.ac.nz

The study of high temperature extreme environments continues to challenge our understanding of the upper tolerances of microbial life and how life may have originated on earth and possibly other planets. The Tramway Ridge geothermal site on Mt. Erebus, an active volcano in Antarctica, is the most geographically isolated geothermal site on earth providing an excellent system for studies of microbial speciation, biogeography, and evolution of thermal adaptation. A recent preliminary genetic survey of the Tramway Ridge microflora revealed an unprecedented diversity of extremely novel microbes only distantly related to any known bacteria. Most of these loose affiliations are with organisms identified from deep-subsurface systems suggesting the Tramway Ridge community may be archaic and of a sub-surface origin. A group dominates the community that to date has no known cultured or environmental representative. Recent advances in high throughput DNA sequencing and bioinformatics allow us to acquire and decipher the genetic capabilities and structure of entire microbial communities without the necessity of cultivation. Employing a combination of these advanced genetic methods coupled with culture dependant approaches we will undertake a gene-centric analysis of the Tramway Ridge microflora and other Antarctic geothermal sites to address questions focused on endemism, biogeography, evolution, and adaptation.

Event K026 Improved Ability to Predict Cumulative Effects and Rates of Recovery from Human Impacts on the Antarctic Soil Environment

Dec 2009
Cape Evans,
Cape Roberts,
Marble Point
and Lake Vanda

University of Waikato, Department of Earth Sciences, Private Bag 3105 Hamilton 3240. Megan Balks, Phone: (07) 856 0115, Fax: (07) 856 0155, Email: m.balks@waikato.ac.nz

There is limited understanding of cumulative impacts and recovery rates in the Antarctic soil environment. With projections of tourist numbers topping 30,000 in the next few years, concerns about cumulative impacts, and the ability of the most frequently visited sites to recover after human disturbance, are increasing. This project seeks to quantify the cumulative impacts of human activities on Antarctic soils, identify areas of greater vulnerability, increase our predictive environmental impact assessment abilities, and make way for informed management decisions in the future.

Event K043 Microbial Biodiversity in Land-Fast Sea Ice in the Ross Sea

A & B
Aug 2009 –
Oct 2009 (A)
Nov 2009 –
Dec 2009 (B)
Hut Point,
Granite
Harbour, Terra
Nova Bay

School of Biological Sciences, Victoria University of Wellington, Private Bag 600, Wellington. Dr Ken Ryan, Phone: (04) 463 6083, Fax: (04) 463 5331, E-mail: ken.ryan@vuw.ac.nz

Changing patterns of microbial diversity along a latitudinal gradient in the Ross Sea are sensitive indicators of climate change. This research will generate a bio-inventory of the micro-organisms in sea ice using both conventional methods and molecular technology, and will quantify abundances to generate community fingerprints for sea ice biodiversity. Each fingerprint will summarise the biodiversity at one of three sites along the coast of the Ross Sea that will allow temporal and geographical comparisons. This event contributes to the Latitudinal Gradient Project and is a NZ International Polar Year project.

Event K049 NZ ITASE: Climate Change along the Victoria Land Coast

Dec 2009 – Antarctic Research Centre, Victoria University of Wellington, PO Box 600,
Jan 2010 Wellington. Dr Nancy Bertler, Phone: (04) 463 5233 ext 8391, Fax: (04) 463 5186,
McMurdo E-mail: nancy.bertler@vuw.ac.nz
iceshelf

Unprecedented changes are occurring in the Earth's climate. The 1990s were the warmest decade in the last 2000 years and average global temperature is projected to rise between 1.4°C and 5.8°C by 2100 [IPCC, 2001]. Although the scientific evidence of global warming is now widely regarded as incontrovertible, predicting regional impacts is proving more problematic. Especially, conclusions of the Southern Hemisphere record are limited by the sparseness of available proxy data at present. We propose to use ice cores from the Antarctic margin to address the lack of longer-term, high-resolution climate observations in the Southern Hemisphere. We will recover a series of ice cores from glaciers along a 14 degree latitudinal transect of the climatically sensitive Victoria Land coastline and thereby directly contribute a critical dataset of ITASE, AGCS, ACE, and the Latitudinal Gradient Project, as well as providing essential reference records for the NZ-led ANDRILL objective to obtain a high-resolution sedimentary archive of Ross Ice Shelf stability. Our results will help to improve our understanding of regional patterns of climate behaviour, leading to more realistic regional climate models. Such models are needed to sensibly interpret Antarctic climate records and for the development of appropriate mitigation strategies for New Zealand.

Event K053 Investigation of Snow and Ice Properties at Land and Sea to Improve Remotely Sensed Mass Balance Observations

Oct 2009 –
Nov 2009
McMurdo Ice
Shelf, Erebus
(lower slopes)
and McMurdo
Sound Sea Ice

**Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch.
Dr Wolfgang Rack, Phone: (03) 364 3166, E-mail: wolfgang.rack@canterbury.ac.nz**

The overall aim of this proposal is to carry out research in the Antarctic that will improve the accuracy of remotely sensed, satellite-derived, snow and ice data. Satellite-derived data from Antarctica currently provide significant information on snow and ice properties. This information is critical to understanding climate, climate change and the response of Antarctica to such change. But snow and ice properties are extremely complex, and the quality and reliability of the satellite-derived data depends on algorithms developed and tested with robust ground truth data, that is, with data derived on the ground in the Antarctic. The accuracy of satellite-derived snow and ice parameters such as surface height, sea ice thickness and accumulation rates - all key components to understanding cryosphere mass balance - can only be assured when coupled with good ground-truthed information. More and more information on snow and ice is coming from satellites. This information is worthless until we understand how accurate it actually is. This event will also be working in collaboration with K131.

Event K055 Assessment of the Current State of the Antarctic Middle Atmosphere and Climate Model Validation

Jan 2010
Arrival Heights,
Scott Base

Department of Physics and Astronomy, University of Canterbury, Private Bag 4800, Christchurch. Dr Adrian McDonald, Phone: (03) 364 2281, Fax: (03) 364 2469, E-mail: a.mcdonald@phys.canterbury.ac.nz

This research programme will underpin improvements in key components of middle atmosphere climate models. We will produce an integrated high resolution database, formed from a wide variety of remote sensing and in-situ measurements, which will elucidate the current state of the Antarctic middle atmosphere. Production of this database will make it possible to validate climate model outputs, produced using the University of Canterbury Super Computer (UCSC), and feed forward the resultant improved fundamental physical understanding of this region to improve these climate model components.

Event K056 Dynamics and Change of the Darwin-Hatherton Glacial System

Dec 2009
Road end
Nunatak,
Diamond Hill
- Darwin GI/
Hatherton
Glacier regions

Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch.
Professor Bryan Storey, Phone: (03) 364 2368, Fax: (03) 364 2197,
E-mail: bryan.storey@canterbury.ac.nz

The Darwin-Hatherton glacial system offers a unique opportunity to investigate the response of the Antarctic Ice Sheet to future climate change. As well as draining the East Antarctic Ice Sheet into the Ross Ice Shelf, there is plenty of evidence of its past glacial history preserved in marginal moraine sequences. Earlier research has produced differing estimates of the amount and rate of recent change in the system, partly because of the absence of measurements of key controlling parameters including ice thickness, mass balance and climate. This research takes an integrated earth systems approach by combining glacial, geomorphological and climatological methodologies to obtain a set of information that will enable the system to be characterised and understood. This event contributes to the Latitudinal Gradient Project.

Event K060 Space Weather Monitoring (AARDDVARK)

Nov 2009

Department of Physics, University of Otago, PO Box 56, Dunedin 9016.
Dr Craig J. Rodger, Phone: (03) 479 4120, Fax: (03) 479 0964,
E-mail: crodger@physics.otago.ac.nz

It is important to understand the response of all regions above the Earth to climate change in order to improve our modelling and prediction capabilities. This should include consideration of the contribution of solar input and its variability through the transmission of solar energy from the Earth's upstream region to the lower atmosphere. This project provides a better understanding of the volatility of near-Earth space, a plasma region populated by ionised gas embedded in the geomagnetic field. One example of the solar variability to lower atmosphere linkage comes from solar-induced energetic particle precipitation leading to ozone losses in the upper stratosphere; experimental observations show increased ozone losses occurring during the polar winter and caused by solar-generated events, particularly dramatic explosions on the Sun and aurora producing geomagnetic. This variability may contribute to the recovery times of the man-made ozone hole. Polar ozone depletion has a key-influence on the global climate system, directly impacting NZ both through changes in local ultraviolet (UV) levels and producing regional climate variability.

Event K064 Understanding the Interactions Between Glaciers and Permafrost: Implications for Landscape Development

Nov 2009 –
Dec 2009
Garwood Valley,
Lower Wright
Valley

Department of Geography, University of Otago, PO Box 56, Dunedin.
Associate Professor Sean Fitzsimons, Phone: (03) 479 8786, Fax: (03) 479 9037,
E-mail: sjf@geography.otago.ac.nz

The goal of this research is to develop an understanding of the interactions between glaciers and permafrost that will permit models of glaciers to realistically parameterise ice motion. Improvement of such models is central to their success in predicting glacier response to climate change. We aim to achieve this by undertaking a multi parameter investigation into the formation of ice-rich permafrost and the principal controls of permafrost deformation at the margins and beneath cold-based glaciers.

Event K066 Physiological and Phylogenetic Relationships Among Antarctic Organisms

Nov 2009 –
Dec 2009
Granite
Harbour and
Scott Base.

Department of Biochemistry, University of Otago, PO Box 56, Dunedin.
Dr Craig Marshall, Phone: (03) 479 7570, Fax: (03) 479 7866,
E-mail: craig.marshall@stonebow.otago.ac.nz

This research aims to understand how terrestrial organisms have adapted to changes in the Antarctic climate during the last 35 million years. To do this, we will conduct physiological and phylogeographic studies of freezing tolerant and freezing resistant invertebrates. This research contributes to the Latitudinal Gradient Project.

Event K068 Effects of Climate Change on Antarctic Marine Invertebrate Embryo and Larval Physiology

Oct 2009 –
Nov 2009
Scott Base,
Cape Armitage
and Cape Evans

Department of Marine Science, University of Otago, PO Box 56, Dunedin.
Dr Miles Lamare, Phone: (03) 479 7463, Fax: (03) 479 8336,
E-mail: miles.lamare@stonebow.otago.ac.nz

Our research aims to examine the effects of future climate change on marine organisms, and specifically their larval stage. At the same time, we question if the effects of these changes will be greater in polar species compared to non-polar equivalents, because of their cold adaptations and evolutionary history. The climate change processes that we will explore are increases in UV-R penetration, increases in sea temperature and associated viscosity changes, and reduction in ocean pH. Such changes will affect marine ecosystems at all levels, but may be more influential at certain times in a species life-history. This may include the embryonic and larval stages, whose development and survival are substantially affected by environmental conditions. Antarctic larval forms may be especially sensitive due to their polar adaptations and evolutionary history. Because of this, we hypothesise that the effects of these changes will be greater in polar species compared to non-polar equivalents. To answer this, our research approach will examine and contrast how fundamental physiology and biology processes in polar and non-polar species respond to these environmental changes.

Event K069 Monitoring Magnetosphere-Ionosphere Coupling and Space Weather in the Polar Region

Jan 2010
Arrival Heights,
Scott Base

Department of Physics, University of Newcastle, NSW 2308, Australia.
Professor Brian Fraser, Phone: (+61) 2 4921 5445, Fax: (+61) 2 4921 6907,
E-mail: bbbjf@cc.newcastle.edu.au

This project will provide a better understanding of the volatility of near-Earth space, a plasma region populated by ionised gas embedded in the geomagnetic field. Energy from the Sun must pass through many important regions and boundaries to reach Earth, including the magnetosphere and the ionosphere. The dynamic behaviour of this plasma system, now referred to as “space weather” is of vital importance to life on our planet, and its effects are best studied at high latitudes, e.g. the aurora. Space weather can disrupt the operation of satellites, radio and GPS navigation and power distribution systems. The results of this project will provide important input parameters to global magnetospheric circulation models currently under development for space weather forecasting. In particular, it will study the dynamics and topology of the southern high latitude cusp and polar cap, geomagnetic field regions open to direct solar influence. Ultra-low frequency (ULF) waves will be used as tracers to study plasma dynamics and magnetosphere-ionosphere coupling. The Scott Base magnetometer and optical imager data, in conjunction with international observations from Australian bases, USA-UK-Japan-China polar cap remote sites will provide the basic dataset.

Event K072 Paleoclimate Reconstruction from the Terrestrial Record in Antarctica: the Use of Pedogenic Carbonate in the McMurdo Dry Valleys

Dec 2009 –
Jan 2010
Taylor Valley

Lincoln University, PO Box 84, Cnr Ellesmere Junction & Springs Road, Lincoln 7647.
Carol Smith, Phone: (03) 325 2811, Fax: (03) 325 2944,
E-mail: smithc2@lincoln.ac.nz

Our research will derive a new terrestrial paleotemperature proxy based on the isotopic composition of pedogenic carbonate in soils of the McMurdo Dry Valleys of Antarctica. The proxy will allow us to test hypotheses of climatically influenced changes in hydrology and glacier dynamics, provide corroboration of ice-core based isotopic paleotemperature proxies, and potentially allow reconstruction of past atmospheric CO² isotopic composition.

Event K073 Sleep and Physical Activity Patterns in a Polar Environment

Non deploying
event

**Lincoln University, PO Box 84, Cnr Ellesmere Junction & Springs Road, Lincoln
7647. Dr Gary Steel, Phone: (03) 325 3820, Fax: (03) 325 3857,
E-mail: steelg@lincoln.ac.nz**

This project's primary aim is to examine the deep theoretical relationships between circannual patterns of psychological and physical activity in Antarctica. As a result of this examination, the project will generate recommended countermeasures for any decrements in health, safety, and job performance that may arise due to low periods of human activation while on deployment to Antarctica.

Event K081 Antarctic Inland Aquatic Ecosystems

A & B

Nov 2009 –
Dec 2009 (A)

Dec 2009 (B)
Bratina Island
and Koetlitz
glacier, Darwin
and Hatherton
Glacier

**NIWA, PO Box 8602, Christchurch.
Dr Brian Sorrell, Phone: (03) 348 8987, Fax: (03) 348 5548,
E-mail: b.sorrel@niwa.co.nz**

This programme will provide information on Antarctica's inland aquatic ecosystems, focusing on ponds and lakes. It will determine how climate (temperature, wind, and irradiance) influence physical and chemical characteristics of these habitats, and how these characteristics in turn affect diversity and productivity of biological communities. This will be done by linking climate-driven models that describe the physical and chemical processes that in turn determine key biological processes (photosynthesis, respiration, nutrient transformations) within the dominant microbial communities. As part of the Latitudinal Gradient Project, we will use natural environmental gradients to provide a range of conditions within which to further develop and test these models. As part of the US Long Term Dry Valleys Ecological Research project we will also use the long-term datasets to examine inter-annual variability. The ultimate goal is to assess the resistance and resilience of aquatic ecosystems to climate variability and other disturbance. This is a NZ International Polar Year project.

Event K082 Coastal Benthic Ecosystem Structure and Function

Oct 2009 –
Nov 2009
Cape Evans,
New Harbour

**NIWA, Private Bag 14-901, Wellington.
Dr Vonda Cummings, Phone: (04) 386 0300, Fax: (04) 386 0574,
E-mail: v.cummings@niwa.co.nz**

Characterising the structure and function of benthic communities and determining their relationships to key environmental factors is essential to an improved understanding of Antarctic ecology and wise management of the Antarctic coastal zone. This programme will investigate the environmental processes that influence community dynamics and the spatial structure of populations, and hence the potential for climate variability and anthropogenic influences to impact ecosystem structure and function. Natural gradients in environmental conditions and productivity within the latitudinal range of the Ross Sea will be used to address how the structure, diversity, trophic interactions and productivity of communities relate to site-specific physical variables. This research builds on our previous research and will enable us to link disturbance and primary production regimes to patterns of resource utilisation by benthos and the biodiversity of benthic communities over different spatial scales. This research provides fundamental information on the structural and functional biodiversity of Antarctic coastal ecosystems. It also establishes a baseline for distinguishing natural environmental variability, occurring over short ecological time and space scales, from larger scale phenomena, such as changes in ice cover and disturbance regimes associated with climate variability. This work contributes to the Latitudinal Gradient Project and is a NZ International Polar Year project.

Event K085 Drivers of Global Change in the Antarctic Atmosphere:

Aug 2009 –

Feb 2010

Arrival Heights,
Scott Base

Atmospheric Remote-Sensing

NIWA, Private Bag 50061, Omakau.

Dr Stephen W Wood, Phone: (03) 440 0426, Fax: (03) 447 3348,

E-mail: s.wood@niwa.co.nz

The Antarctic atmosphere with its unique physical and chemical attributes is an important part of the global system. This research aims to improve understanding of how the Antarctic atmosphere drives and responds to global change and its interaction with New Zealand. It focuses on Antarctic ozone depletion, the effect of that depletion beyond Antarctica, and the Antarctic's influence on global greenhouse gas (GHG) concentrations. Antarctic stratospheric air, depleted in ozone as a result of anthropogenic interference, is transported to southern mid-latitudes in summer, decreasing ozone and increasing UV radiation over the New Zealand region. Although ozone-destroying chlorine is declining, it may take several years to detect a consistent decrease in Antarctic ozone depletion. Natural variability complicates this detection and increasing GHG concentrations may delay the recovery. Changes in GHG concentrations, including ozone, affect the radiative balance of the atmosphere in ways that are not fully understood. The Antarctic provides a unique opportunity to measure global trends in atmospheric trace gases at sites isolated from anthropogenic sources, assess human impacts on a pristine environment, and quantify the Southern Ocean uptake of CO².

Event K087 Atmospheric Air Sampling

Nov 2009

Arrival Heights,
Scott Base

NIWA, PO Box 14 901, Wellington.

Mr Gordon Brailsford, Phone: (04) 386 0308, Fax: (04) 386 2153,

E-mail: g.brailsford@niwa.co.nz

The Antarctic region provides a vast area that is not influenced by man, and therefore the atmosphere is unaffected by local anthropogenic activity. The main goals of our programme are to study trace gas species in the Antarctic troposphere and lower stratosphere to better understand the way in which the global changes impact on the Antarctic region. Our studies include collections of whole air at Arrival Heights and in the free troposphere between Christchurch and Ross Island; these samples are later analysed for mixing ratio of trace gases such as methane, carbon dioxide, nitrous oxide and carbon monoxide, as well as the isotopic composition of H²O, CH⁴, CO², and CO. The information obtained from these analyses can assist in determining the transport of these species from other locations and the way in which they are produced or removed from the atmosphere. Our programme also includes the collection of air samples in the lower stratosphere; these samples are then later analysed to better understand the interaction of trace gas species within the Antarctic vortex, and the way in which these interactions change with the development of the ozone hole in spring. Part of this work involves the study of water vapour and its role in the formation of polar stratospheric clouds; these clouds provide sites for the destruction of ozone.

Event K089 Climate Data Acquisition – Scott Base and Arrival Heights, Antarctica

Jan 2010

Arrival Heights,
Scott Base

NIWA, PO Box 8602, Christchurch.

Mr Andrew Harper, Phone: (03) 343 7890, Fax: (03) 343 7891,

E-mail: a.harper@niwa.co.nz

The goal of this programme is to obtain a high-quality continuous climate record for Scott Base and Arrival Heights in Antarctica, and archive it in NIWA's publicly accessible climate database. Scott Base is one of 47 reference climate stations for the New Zealand region managed by NIWA, and climate observations (wind speed and direction, air temperature, relative humidity, barometric pressure, global solar radiation, diffuse solar radiation and direct solar radiation) are recorded there daily. This climate record began in 1957 and is one of the longest continuous records in Antarctica. Wind speed and direction, air temperature, relative humidity and global solar radiation are also recorded at Arrival Heights. The measurements are needed for characterising the local climate and state of the environment, identifying climate variations and changes, and in research on climate-sensitive processes and ecosystems. This programme also includes measurements from the sea level recorder installed at Scott Base.

Event K122 Adélie Penguin Population Responses Mediated by Climate Change

Nov 2009 –
Feb 2010
Cape Bird,
Cape Crozier,
Cape Royds

Landcare Research, PO Box 69, 40 Gerald Street, Lincoln 8152.
Dr Phil Lyver, Phone: (03) 325 6700, Fax: (03) 325 2418,
E-mail: lyverp@landcareresearch.co.nz

Our programme will maintain an internationally significant long-term database by continuing the annual aerial census of three Adélie penguin populations on Ross Island (e.g. Capes Crozier, Bird and Royds) and along the Victoria Land coast approximately every 3 years. In collaboration with the US Adélie penguin team, demographic rates (e.g., survival, productivity, breeding rates) and provisioning strategies (e.g., foraging behaviour, dietary composition, chick condition) will be recorded annually at the Ross Island colonies. Variation in demographic rates and provisioning strategies will be used to predict population trajectories and plausible sea-ice and krill abundance scenarios that may be mediated by climate change. Differences between demographic and provisioning strategies across a latitudinal gradient will be compared and linked to sea-ice scenarios and/or atmospheric-oceanic patterns. Ecosystem and food-web models will be developed in collaboration with NIWA to inform Antarctic managers (e.g. Antarctica New Zealand, CCAMLR) of potential population changes related to human-related pressures such as tourism and commercial fishing in the Ross Sea.

Event K123 Environmental Protection of Soils of the Ross Sea Region

Jan 2010
Bull Pass,
Marble Point,
Minna Bluff,
Mt Fleming,
Granite
Harbour,
Victoria

Landcare Research Ltd, Private Bag 3127, Hamilton 3240.
Dr Jackie Aislabie, Phone: (07) 858 3700, Fax: (07) 585 4964,
E-mail: Aislabiej@Landcareresearch.co.nz

The goal of this research is to support environmental protection and management of ice-free areas of the Ross Sea region, Antarctica by: increasing fundamental knowledge and understanding of Antarctic soils including soil distribution and climate, bacterial diversity, and vulnerability to human impacts. Soil maps will be developed and with underlying soils data will be added to the Antarctic soils database in our On-line Ross Sea region GIS (<http://gis.massey.landcare.cri.nz/rsr/soils/>). Soil climate stations at 7 locations in the Ross Sea region will continue to be maintained.

Event K131 Sea Ice and Southern Ocean Processes

A & B
Aug 2009 –
Nov 2009
Winter Sea Ice
growth Process.
K131C
Jan 2010 –
Feb 2010
Ocean Profiler
deployment.

Industrial Research Ltd, PO Box 31-310, Lower Hutt, 5040.
Dr Timothy G Haskell, Phone: (04) 569 0000, Fax: (04) 569 0754,
E-mail: t.haskell@irl.cri.nz

This programme consists of a consortium of the Universities of Auckland, Wellington and Otago and the Crown Research Institutes the National Institute of Water and Atmosphere and Industrial Research Ltd. The programme aims to characterise the relationship between the sea ice, ocean and atmosphere of Antarctica in order to better understand and predict high-latitude coupled climate variability, and to underpin the management of Antarctica and the Southern Ocean in the context of the global climate system. It concentrates on the climate-related processes occurring within McMurdo Sound to the marginal ice zone. It covers a range of scales, from microns in structure of sea ice, to the order of thousands of kilometres in the process of sea ice dispersal in the Southern Ocean, and the relationships linking Antarctica to global climate variability and change. Part of this programme is a NZ International Polar Year project.

Event K141 Malaysian Antarctic Programme

A & B
141A
Oct 2009
141B
Dec 2009
Willies Field,
McMurdo
Sound,
Cape Evans

Antarctica New Zealand, Private Bag 4745, Christchurch.
Lou Sanson, Phone: (03) 358 0200, Fax: (03) 358 0211,
E-mail: lsanson@antarcticanz.govt.nz

Supporting the Malaysian Antarctic Programme.

Event K150 Land Information New Zealand

Oct 2009 –
Dec 2009
Capes Royds
and Evans,
Darwin Glacier,
Cape Roberts,
Asgard Range

Land Information New Zealand (LINZ), PO Box 5501, Wellington, 6145.
Graeme Blick, Geospatial Data Analyst, Phone: (04) 460 0191, Fax: (04) 498 3837,
E-mail: gblick@linz.govt.nz

LINZ and its predecessor agencies have operated surveying, charting and mapping programmes in the Ross Sea region, as well as place naming administration, for some 30 years. The Department has an agreement with the United States geological Survey, which provides for co-operation in these activities and in particular joint topographic mapping, geodetic surveying and place naming programmes.

Event K160 Postgraduate Scholarships

Oct 2009 –
Feb 2010

Postgraduate Scholarships Antarctica New Zealand, Christchurch.
Shulamit Gordon, Phone: (03) 358 0200, Fax: (03) 358 0211,
E-mail: s.gordon@antarcticanz.govt.nz

The four current scholarships are:

a) Sir Robin Irvine Doctoral Scholarship: awarded to Lana Cohen from Victoria University of Wellington to better understand the relationship between short-term climate cycles (El Nino Southern Oscillation and the Southern Annular Mode) and the longer term warming trend. Associated with K049.

b) Helicopters New Zealand Doctoral Scholarship: awarded to Fiona Shanhan from Lincoln University to study the use of soil carbonate to reconstruct terrestrial paleotemperatures. Associated with K072.

c) New Zealand Post Scholarship: awarded to Stephen Archer from the University of Waikato for his work on the planktonic communities in Bratina Island melt-water ponds. This project aims to formulate and develop a model of how the microbial communities of the ponds are structured in response to their environment, how they function within that environment and what drives the community composition and structure. Specifically, the goals of this project are to: 1) gain a better understanding of diversity and spatial variability of microbial populations in relation to the extreme physicochemical characteristics of their environment in mid-summer, and 2) investigate microbial community-level gene expression involved in specific metabolisms and adaptations to these highly stratified environments.

d) Kelly Tarlton's Scholarship: awarded to Ruma Ghosh at the University of Otago. Ruma's research is looking at contaminants in McMurdo Sound by analysing temporal and spatial trends and toxicological impacts of these contaminants on Notothenioid fish. Associated with K068.

Event K170 Antarctic Heritage Trust (AHT).

Oct 2009 –
Feb 2010
Cape Evans,
Cape Royds,
Scott Base

AHT. Al Fastier, Programme Manager. Phone: (03) 358 0212, Fax: (03) 358 0244.
E-mail: aht@nzaht.org

AHT cares for the expedition bases associated with the early Antarctic explorers Captain Robert Falcon Scott, Sir Ernest Shackleton and Carsten Borchgrevink. AHT's Ross Sea Heritage Restoration Project (RSHRP) aims to conserve the sites and their contents for future generations. With the work programme for Sir Ernest Shackleton's base at Cape Royds almost complete, AHT's team of employees and contractors will be spending the majority of the season working onsite at Captain Scott's base at Cape Evans.

Event K172 Antarctic Heritage Trust (AHT).

Feb 2010 –
Aug 2010
Cape Evans,
Cape Royds,
Scott Base

AHT. Al Fastier, Programme Manager. Phone: (03) 358 0212, Fax: (03) 358 0244.
E-mail: aht@nzaht.org

The AHT Artefact Conservation Programme (part of the AHT's Ross Sea Heritage Restoration Project) aims to conserve the thousands of artefacts associated with the expedition bases of Captain Scott, Sir Ernest Shackleton and Carsten Borchgrevink. AHT's conservators are based year round in Antarctica conserving the artefact collections. This summer the conservators will be working from both Scott Base and onsite at Cape Royds and Cape Evans.

Event K175 Antarctic Heritage Trust (AHT).

Nov 2009 – AHT. Nigel Watson, Executive Director.
Dec 2009 **Phone: (03) 358 0212, Fax: (03) 358 0244,**
Cape Evans, **E-mail: aht@nzah.org**
Cape Royds, Familiarisation visit for key AHT stakeholders.
Hut Point,
Scott Base

Event K200 Communications Staff Visits

Jan 2010 **Antarctica New Zealand, Private Bag 4745, Christchurch.**
Scott Base **Matt Vance, Phone: (03) 358 0200, Fax: (03) 358 0211,**
E-mail: m.vance@antarcticanz.govt.nz

The Communications Advisor will be escorting K235, K245 events and researching science and general interest stories.

Event K215 LEARNZ

Nov 2009 **Pete Sommerville, Managing Director**
Scott Base **Phone: +64 3 353 7360, Fax: +64 3 366 5488, Mobile: +64 27 229 4690**
E-mail: pete@heurisko.co.nz, www.heurisko.co.nz

LEARNZ is an online education programme specialising in virtual field trips designed to meet New Zealand Curriculum objectives. This season will see LEARNZ focus on the concept of energy budgets and the commissioning of the Ross Island wind farm which will directly link Scott Base with students in New Zealand classrooms.

Event K220 University of Canterbury Post Graduate Certificate in Antarctic Studies

Dec 2009 **Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch.**
Windless Bight, **Professor Bryan Storey, Professor of Antarctic Studies & Director Gateway**
Scott Base **Antarctica. Phone: (03) 364 2368, Fax: (03) 364 2197,**
E-mail: bryan.storey@canterbury.ac.nz

The goal of the Graduate Certificate in Antarctic Studies is to engage participants in a critical examination of the contemporary scientific, environmental, social and policy issues and debates facing the Antarctic region. The Antarctic field component incorporates field studies at Scott Base and its environs. Students will complete Antarctic Field Training, participate in base activities and undertake supervised studies related to geology, ecology, art, glaciology and meteorology.

Event K235 Invited Artist Programme

Jan 2010 **Antarctica New Zealand, Christchurch.**
Scott Base **Matt Vance, Phone: (03) 358 0200, Fax: (03) 358 0211,**
E-mail: m.vance@antarcticanz.govt.nz

Antarctica New Zealand Arts Fellowship recipients Owen Marshall (writer) and Peter James Smith (painter) will experience Antarctica for the first time. Their focus will be on contemporary science and the cultural interventions of Ross Island.

Event K240 NZDF Media

Jan 2010 **Antarctica New Zealand, Private Bag 4745, Christchurch.**
Matt Vance, Phone: (03) 358 0200, Fax: (03) 358 0211,
E-mail: m.vance@antarcticanz.govt.nz

NZDF Journalist will be researching stories on C130 crew, Scott Base and Ship off load events.

Event K245 Media Programme

Jan 2010
Scott Base

Antarctica New Zealand, Private Bag 4745, Christchurch. Matt Vance,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: m.vance@antarcticanz.govt.nz
Kelly Tarlton's Antarctic Encounter and Underwater World will be researching various science events for inclusion in proposed Antarctic upgrade.

Event K300 Chief Executive Visits

Nov 2009 and
Jan 2010
Scott Base

Antarctica New Zealand, Private Bag 4745, Christchurch. Lou Sanson,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: l.sanson@antarcticanz.govt.nz
Visits associated with organisational oversight 2009/2010, Invited Visitor and Antarctica NZ Board.

Antarctica New Zealand - Permanent Staff

Antarctica New Zealand, Private Bag 4745, Christchurch. Lou Sanson,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: l.sanson@antarcticanz.govt.nz
Christchurch staff familiarisation visit.

Event K310 Antarctica New Zealand Board Sub-Committee Visit

Nov 2009

Antarctica New Zealand, Private Bag 4745, Christchurch. Lou Sanson,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: l.sanson@antarcticanz.govt.nz
Productivity and Sustainability Improvements

Event K320 Invited Visitor Visit

Nov 2009

Antarctica New Zealand, Private Bag 4745, Christchurch. Lou Sanson,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: l.sanson@antarcticanz.govt.nz
Invited Visitor programme for key stakeholders structured around New Zealand's strategic interests in the New Zealand Antarctic Programme.

Event K400 Antarctic Programme

Aug 2009 –
Feb 2010

Antarctica New Zealand, Private Bag 4745, Christchurch. Erik Barnes,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: e.barnes@antarcticanz.govt.nz
The purpose of this event is to provide experience and familiarity with Scott Base and Antarctic field operations for Antarctica New Zealand staff, provide for hand-over and liaison with relevant Scott Base staff, and allow necessary on-site management, audit and inspection.

Event K401 Antarctic Programme Summer Staff

Aug 2009 –
Feb 2010
Scott Base

Antarctica New Zealand, Private Bag 4745, Christchurch. Erik Barnes,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: e.barnes@antarcticanz.govt.nz

Event K402 Antarctic Programme Winter Staff

Sept 2009 –
Oct 2010
Scott Base

Antarctica New Zealand, Private Bag 4745, Christchurch. Erik Barnes,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: e.barnes@antarcticanz.govt.nz

Event K411 Helicopters NZ

Nov 2009 –
Feb 2010
Scott Base

Dennis Laird
Helicopter support for Antarctica New Zealand sponsored operations provided by Helicopters (NZ) Ltd.

Event K412 NZDF Survival School

Jan 2010

Antarctica New Zealand, Private Bag 4745, Christchurch. Erik Barnes,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: e.barnes@antarcticanz.govt.nz

Event K414 Facilities Visitors

Oct 2009 – Feb 2010
Antarctica New Zealand, Private Bag 4745, Christchurch.
Kevin Rigarlsford, Phone: (03) 358 0200, Fax: (03) 358 0211,
E-mail: k.rigarlsford@antarcticanz.govt.nz

Worker visitors who perform on site training/instruction at Scott Base for staff on a yearly basis, training subjects include vehicle operation and fire crew training. K414 also includes engineering worker visitors who shall provide a mixture of on site engineering staff training and inspections of Scott Base facilities.

Event K415 IMS/JASART

TBC
Antarctica New Zealand, Private Bag 4745, Christchurch. Simon Trotter,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: s.trotter@antarcticanz.govt.nz

Event K420 Energy Centre Upgrade

Feb 2010 – Oct 2010
Antarctica New Zealand, Private Bag 4745, Christchurch. Iain Miller,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: i.miller@antarcticanz.govt.nz
Arrival Heights, Upgrade of the Scott Base energy centre, and electrical network reticulation.
Scott Base

Event K423 Telecom Riggers Maintenance

Jan 2010
Scallop Hill, **Antarctica New Zealand, Private Bag 4745, Christchurch. Peter Brookman,**
Hoopers **Phone: (03) 358 0200, Fax: (03) 358 0211,**
Shelter, **E-mail: p.brookman@antarcticanz.govt.nz**
Newall Mt, Annual maintenance of transmission lines and equipment, structures & antennae.
JJ Thomson Mt,
Cerberus Mt,
Scott Base

Event K427 Ross Island Wind Energy Project

Oct 2009 – Dec 2009
Antarctica New Zealand, Private Bag 4745, Christchurch. Iain Miller
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: i.miller@antarcticanz.govt.nz
Construction of 1 megawatt wind farm on Crater Hill.

Event K428 Ross Island Wind Energy Commissioning

Jan 2010
Antarctica New Zealand, Private Bag 4745, Christchurch. Iain Miller
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: i.miller@antarcticanz.govt.nz

Event K430 Armed Forces Canteen Council

Oct 2009 & Feb 2010
Scott Base
Antarctica New Zealand, Private Bag 4745, Christchurch. Erik Barnes,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: e.barnes@antarcticanz.govt.nz
Staff visit to oversee shop and bar operations.

Event K440 Stage 6 / 7 Bypass Project

Nov 2009 – Jan 2010
Scott Base
Antarctica New Zealand, Private Bag 4745, Christchurch. Iain Miller
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: i.miller@antarcticanz.govt.nz
Construction of new locker areas and linkway between Stage 6 and the HFC.

Event K500 Environmental Staff Visits

Dec 2009 - Feb 2010
Scott Base
Antarctica New Zealand, Private Bag 4745, Christchurch. Neil Gilbert,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: n.gilbert@antarcticanz.govt.nz

Event K501 Environmental Visits

Nov 2009
Antarctica New Zealand, Private Bag 4745, Christchurch. Neil Gilbert,
Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: n.gilbert@antarcticanz.govt.nz
Antarctic Youth Ambassador and Landcare Environmark visitors with K500 staff.

Event K600 Corporate Services Staff Visits

Oct 2009 – Antarctica New Zealand, Christchurch. Peter Smith,

Feb 2010 Phone: (03) 358 0200,

Fax: (03) 358 0211, E-mail: p.smith@antarcticanz.govt.nz

IT maintenance and support; business systems upgrades; Scott Base staff focus groups

Event K601 Corporate Services Invited Visitor

TBC

Event K700 Science and Information Visits

Oct 2009 - Antarctica New Zealand, Christchurch. Dr. Ed Butler,

Nov 2009 Phone: (03) 358 0200, Fax: (03) 358 0211, E-mail: e.butler@antarcticanz.govt.nz

Scott Base Visits to Scott Base by members of the Science and Information Team associated with LGP and other science activities.