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Antarctic Drilling : Cape Roberts Project (K001)

Event Number: K001

Sponsoring Agent: Victoria University of Wellington
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch

(see attached schedule)

Programme:
The project is to core the oldest strata in the Ross Sea sedimentary basins, estimated to be between 30 and 100 million years old. These strata lie just beneath the sea floor at a unique location off Cape Roberts, where they have been lifted up by the rising Transantarctic Mountains and exposed by erosion.

The core will be studied to address two major problems. It will contain the most direct and accessible record of Antarctic climate and ice sheets (if they existed) for testing the theory of glacially induced global sea level changes for pre-40 million year events. The core will also give the age and tectonic setting for the initiation to rifting to form what is now the West Antarctic Rift System, whose western margin is the Transantarctic Mountain Front, separating East and West Antarctica.

The drilling system and environmental assessment/safety procedures will be developed from those used in the drilling of CIROS-170 km south. Holes will be drilled from the 2m thick fast ice in up to 400m of water and to depths of up to 400m. Drilling will take place over a 40 day period from early October to mid-November, when the fast ice can provide a secure drilling platform.

The 1999-2000 season will be the third and final year of drilling. Assuming successful completion of drilling activities this year, the 2000-2001 summer season will be used to redeploy project equipment and restore the Cape Roberts environment as required under the terms of the comprehensive environmental evaluation.

Locations: Scott Base
Cape Roberts

NAME	NATION	JOB DESCRIPTION
Fulvia Aghib	Italy	Scientist
Mauro Alberti	Italy	Scientist
John Alexander	NZ	CRP Liaison Officer
Jo Anderson	NZ	Science Technician
Mike Archer	NZ	Asst. Driller
Rosie Askin	USA	Scientist
Cliff Atkins	NZ	Science Technician
Michael Avey	NZ	Asst. Driller
Peter Barrett	NZ	Chief Scientist
Stephen Bohaty	USA	Scientist
Sonya Bryce	Australia	Asst Science Support Manager
Christian Buecker	Germany	Scientist
Stuart Bush	NZ	Science Technician
Michele Claps	Italy	Scientist
Colleen Clarke	NZ	Paramedic/Camp Manager
Chris Collie	NZ	Asst. Driller
Pat Couper	NZ	Drill Manager
Jim Cowie	NZ	CRPM
Matt Curran	USA	Curator
David Eaton	NZ	Asst. Driller
Chris Fielding	Australia	Scientist
Fabio Florindo	Italy	Scientist
Simone Galeotti	Italy	Scientist
Mike Hannah	NZ	Scientist
Adam Harris	USA	Scientist
David Harwood	USA	Scientist
Chris Hayes	NZ	Mechanic/Plant Op
Stuart Henrys	NZ	Scientist
Nick Jackson	NZ	Science Technician
Tom Janacek	USA	Curator
Richard Jarrad	USA	Scientist
Shelly Judge	USA	Science Technician
Tony Kingan	NZ	Asst. Driller
Murray Knox	NZ	Plant Operator
Conrad Kopsch	Germany	Scientist
Larry Krissek	USA	Scientist
Malcolm Laird	NZ	Scientist
Mark Lavelle	UK	Scientist
Malcolm Macdonald	NZ	Driller
Wojciech Majewski	USA	Science Technician
John Moore	NZ	Asst. Driller
Tim Naish	NZ	Scientist
Marco Neumann	Germany	Scientist
Frank Niessen	Germany	Scientist
Sandra Passchier	USA	Scientist
Matt Paterson	NZ	Science Technician
Timothy Paulsen	USA	Scientist
Massimo Pompilio	Italy	Scientist

Ross Powell	USA	Scientist
Alex Pyne	NZ	Science Support Manager
Nodi Rafat	USA (Germ)	Science Technician
Ian Raine	NZ	Scientist
Brian Reid	NZ	Electrician
Jeremy Ridgen	NZ	Mechanic/Engineer
Andy Roberts	NZ	Scientist
Brett Robertson	NZ	Science Technician
Leo Sagnotti	Italy	Scientist
Sonia Sandroni	Italy	Editorial Assistant
Massimo Sarti	Italy	Scientist
Peter Schulze	Germany	Science Technician
John Simons	NZ	Science Technician
Peter Sinclair	NZ	Carpenter
John Smellie	UK	Scientist
Afredo Sorice	Italy	Scientist
Percy Strong	NZ	Scientist
Richard Struthers	NZ	Carpenter/Field Assistant
Todd Symons	NZ	Gen Asst/Asst Driller
Franco Talarico	Italy	Scientist
Frank Tansey	NZ	Driller
Marco Taviani	Italy	Scientist
Eric Trip	NZ	Telecom Technician
Jaap van der Meer	NZ/The Netherlands	Scientist
Kath Varcoe	NZ	GD
Ken Verosub	USA	Scientist
Giuiliani Villa	Italy	Scientist
Alison Ward	NZ	Chef
David Watkins	USA	Scientist
Peter Webb	USA	Science Ldr Crary Lab
Terry Wilson	USA	Scientist
Gary Wilson	NZ	Scientist
Woody Wise	USA	Scientist
Sam Woodford	NZ	Asst. Driller
Ken Woolfe	Australia	Scientist
John Wren	USA	Scientist

Antarctic Fish Biology (K012)

Event Number: K012

Sponsoring Agent: School of Biological Sciences
University of Auckland
Private Bag 92019
Auckland

Delivery Address 5 Symonds Street
Auckland

Project Leader: Dr John Macdonald
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Serena Cox	University of Auckland	19 Nov 99	20 Dec 99
Guy Carton	University of Auckland	19 Nov 99	20 Dec 99
David Todd	University of Auckland	19 Nov 99	20 Dec 99
John Macdonald	University of Auckland	19 Nov 99	20 Dec 99

Programme:
Identification and localisation of food presents considerable difficulties under conditions of near-total darkness. We propose to investigate the abilities of fish to utilise water currents in feeding, by recording neural responses of lateral line sense organs to continuous (DC) water movement in *Trematomus bernacchii*. Responses of exposed surface sense organs are predicted to differ significantly from those of sub-surface sense organs in dermal canals.

Previous work reported partial temperature compensation of neuromuscular electrical signals in one Antarctic fish species, but it is not known whether similar compensation occurs in other Antarctic species. We intend to test the generality of neuromuscular cold-compensation in Antarctic fishes by recording from two dissimilar species, for comparison with the earlier recordings.

The marine fauna of Granite Harbor has not been described in detail. We propose to collect and preserve fish and invertebrates from between Cape Roberts and the MacKay Glacier, for comparison with Ross Island species.

Locations: Scott Base
Cape Armitage
Cape Royds

Antarctic Ecotoxicology (K014)

Event Number: K014

Sponsoring Agent: School of Biological Sciences
University of Auckland
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Project Leader: Dr Clive Evans
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Glenn Lurman	University of Auckland	19 Nov 99	20 Dec 99
Clive Evans	University of Auckland	29 Nov 99	14 Dec 99
Vivian Ward	University of Auckland	29 Nov 99	14 Dec 99

Programme:
The Antarctic waters are rich in metals from both natural and anthropogenic sources. Many of these are potentially toxic to the local biota, especially to fish since these organisms are directly exposed to water contaminants across their gill epithelium. Fish, like other organisms high in the food chain, can also accumulate certain metals through their diet.

In this proposal, the burden of specific metals will be measured in tissues from a specific fish species (*Trematomus bernacchii*) selected as a representative indicator organism. These results will be correlated with pathophysiological condition to evaluate the impact of metal contamination on fish physiology and health. It is also intended to apply a molecular-based technique which utilises the sensitivity and precision of the reverse transcriptase-polyerase chain reaction (RT-PCR) amplification technique to provide an indication of the level of responsiveness of the indicator species to specific metals.

The results obtained will establish the level of metal burden in fish from natural and anthropogenic sources, indicate the impact of metal burden on fish physiology and health, and contribute to an invaluable database for monitoring the effects of future changes arising from continuing human activities in Antarctica.

Locations: Scott Base
Winter Quarters Bay
Cape Royds

Late Glacial-Holocene Evolution of the Victoria Land Coast (K015)

Event Number: K015

Sponsoring Agent: Department of Geography
University of Auckland
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Auckland

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10 Symonds Street
Auckland

Project Leader: Dr Paul Augustinus
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Paul Augustinus	University of Auckland	11 Jan 2000	tba ship
Daniel Burton	University of Auckland	11 Jan 2000	tba ship
Nancy Bertler	Victoria University of Wellington	12 Nov 99	tba ship
Warren Dickinson	Victoria University of Wellington	12 Nov 99	15 Dec 99

Programme:
Raised beach ridges are an important repository of paleoenvironmental information. Prior geomorphological investigations of raised beach systems along the Victoria Land coast have been used to suggest that the ice of the Last Glacial Maximum ~20,000 years BP was much thinner in the Ross Sea region than indicated by ice sheet modelling. These studies have been based largely on the morphology of the ridges and this project proposes to add to this evidence by undertaking stratigraphical investigations of the raised beaches using ground penetrating radar, supplemented with shallow drilling. This information will permit detailed examination of the mode of construction of the beach ridges and will allow us to construct a reliable model of the post-glacial history of the Ross Sea Coast for the first time. Reconstruction of prior coastal conditions may allow us to predict the effects of anthropogenic climate change in the McMurdo Sound region, using early Holocene warming as an analogue.

Locations: Cape Crozier
Cape Barnes
Cape Bird
Taylor Glacier mouth

Microbial Diversity: Bacteria & Fungi from Soil & Historic Huts (K021)

Event Number: K021

Sponsoring Agent: Department of Biological Sciences
University of Waikato
Private Bag 3105
Hamilton

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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Robert Blanchette	University of Minnesota, USA	1 Dec 99	14 Dec 99
Ben Held	University of Minnesota, USA	1 Dec 99	14 Dec 99
Shona Duncan	University of Waikato	1 Dec 99	14 Dec 99
Joanne Thwaites	University of Waikato	1 Dec 99	14 Dec 99

Programme:
To isolate, identify and characterise the dominant soil microbes, bacterial and fungal, from a variety of Antarctic ecosystems including structural timber, artifactual materials such as hay and animal skins at Historic Huts in order to determine microbial diversity, particularly to address biological indicators of climate change and microbial mechanisms for survival in extreme cold, to determine potential presence of degradative enzymes expressed by these microbes which can threaten the historic materials, and to assist definition of conservation management procedures, by:

- Collection of sample material from various Antarctic terrestrial biotopes and from Historic Huts
- Quantitation of microbial diversity by microbial isolation using variety of selected media and probing with 16S RNA sequences for identification of organisms.
- Predictive modelling of populations with factors such as geographic location, climate, salinity etc factored in analysis and including comparison to Northern and Southern Hemisphere microbes.
- Characterisation of degradative enzymes such as cellulases, hemicellulases, lignin peroxidases and lipases from these organisms.

Locations: Scott Base
Cape Evans
Cape Royds

Antarctic Terrestrial Biodiversity (K024)

Event Number: K024

Sponsoring Agent: Department of Biological Sciences
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Private Bag 3105
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Project Leader: Dr Allan Green
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Allan Green	University of Waikato	7 Jan 00	7 Feb 00
Stefan Pannewitz	University of Kiel, Germany	7 Jan 00	7 Feb 00
Burkhard Schroeter	University of Kiel, Germany	7 Jan 00	7 Feb 000
Roman Tuerk	University of Salzburg, Austria	7 Jan 00	7 Feb 00
Leo Sancho	Complutense University, Spain	7 Jan 00	7 Feb 00
Rod Seppelt	ANARE, Australia	7 Jan 00	4 Feb 00
Sarah Hunger (scholarship winner)	University of Waikato	21 Jan 00	4 Feb 00
Rod Harfoot	University of Waikato	21 Jan 00	4 Feb 00
Ian Hogg	University of Waikato	11 Jan 00	29 Jan 00
Don Cowan	University College, London	11 Jan 00	29 Jan 00
TBA		11 Jan 00	20 Jan 00

Programme:
Understanding biodiversity requires information not only about the taxonomy and distribution of species but also about their genetic composition, their response to the environment and interactions within communities of plants and animals. This international programme is composed of a linked series of objectives designed to deliver this information about terrestrial biodiversity along the entire latitudinal range of the Ross Dependency. The objectives cover almost the full range of terrestrial organisms: the plants (lichens, bryophytes), the animals (insects) and the microbes. Traditional techniques of inventory to seek an integrated understanding of species and communities. The six-year period allows the possibility to interlink research, in this and other programmes, for maximal benefit and efficiency, particularly for logistics. The programme aims to considerably improve our knowledge of the terrestrial Antarctic biota, to confirm and improve New Zealand expertise in the area and to provide information for the better management and conservation thus allowing New Zealand to meet Treaty obligations.

Locations: Granite Harbour
Cape Bird
Beaufort Island
Meirs Valley
Cape Evans
Cape Royds

Weddell Seal Mating Systems (K027)

Event Number: K027

Sponsoring Agent: Department of Biological Sciences
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Dudley Bell	University of Waikato	22 Oct 99	20 Nov 99
Emma Turner	Macquarie University, Australia	22 Oct 99	16 Dec 99
Rob Harcourt	Macquarie University, Australia	22 Oct 99	16 Dec 99
Tony Dorr	Macquarie University, Australia	22 Oct 99	to K122
Joe Waas	University of Waikato	1 Nov 99	2 Dec 99
Sarah Winters	University of Waikato	17 Nov 99	16 Dec 99
Masamine Miyazaki	University of Waikato	17 Nov 99	16 Dec 99

Programme:
The mating systems of land breeding pinnipeds have been well studied and vary from serial monogamy to extreme resource and female defence polygyny. However many other pinnipeds mate in the water or on ice, and our knowledge of their mating systems is poor due to the technological and logistical difficulties associated with studies in these environments. Weddell seals offer a unique opportunity to test hypotheses about pinniped mating systems in an aquatic breeding species because they are relatively easy to approach when on the fast ice of McMurdo Sound. Prior research on the mating system of this species is limited, but has suggested that males defend underwater territories near breathing holes in the fast ice, and use calls to attract females. However, the evidence necessary to determine whether the mating system to pure resource defence polygyny or if there is some female choice is absent.

This project aims to characterise the mating system of Weddell seals in McMurdo Sound by determining a) whether males do maintain under ice territories by acoustically tracing their movements using attached "pingers" and arrays of hydrophones, b) whether calls are used to (i) advertise specific male attributes to females (inter-sexual function), (ii) reveal information on "resource holding potential" to male competitors (intra-sexual function) and /or (iii) advertise the presence of ice holes to females ("acoustic beacon" function) by conduction underwater playback experiments and monitoring responses using video and c) variance in male mating success in relation to territory size, tenure and individual characteristic using paternity analysis.

Locations: Turtle Rock
Marble Point
Cape Roberts

Molecular Ecology of Antarctic Fauna (K030)

Event Number: K030

Sponsoring Agent: Department of Ecology
Massey University
Private Bag 11 222
Palmerston North

Delivery Address Ecology Group
Massey University
Tennant Drive
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Project Leader: Professor David Lambert
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Craig Millar	Massey University	23 Dec 99	25 Jan 00
Peter Ritchie	Massey University	23 Dec 99	25 Jan 00
Peter Metcalf	University of Auckland	12 Jan 00	25 Jan 00

Programme:
On Ross Island, there are stratified deposits of subfossil bones of Adélie penguins dating back at least 8,000 years. This environment represents an ideal one for the preservation of DNA. Analysis, using modern DNA technology, will be carried out on samples from both extant and extinct penguin populations. Specifically, the proposed research will directly examine evolutionary changes in microsatellite and mitochondrial genes over a substantial time frame. These data will provide fundamental knowledge about genetic processes and will allow us to understand the evolution of these important genetic markers.

Minisatellite DNA techniques will be used to investigate unique behaviours in polar skuas by determination of parentage, levels of adoption, the sex of individuals and the processes that regulate siblicide. These problems have until now been essentially intractable using conventional ecological methods.

Locations: Terra Nova Bay
Inexpressible Island
Cape Bird

How Do Penguins Tolerate Extreme Cold (K032)

Event Number: K032

Sponsoring Agent: Massey University
Private Bag 11 222
Palmerston North

Delivery Address Department of Biochemistry
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Tennant Drive
Palmerston North

Project Leader: Dr Simon Brown
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Simon Brown	Massey University	8 Nov 99	10 Dec 99
Paul Ryland	Massey University	8 Nov 99	10 Dec 99
Yvette Cottam	Massey University	8 Nov 99	to K122

Programme:
All animals that live in or visit Antarctica are faced with the continual challenge of extreme cold, and each has developed defences against the harsh environment. The breeding activity of Adelie penguins presents unique challenges. Once Adelie penguins arrive at Antarctica to commence breeding, they cannot rely on muscular work to generate heat as they do while swimming. Adelie penguins, especially males, must also adapt to spending prolonged periods, often about 15 days, on land during the mating and incubating periods. During these times they are confronted with fluctuating conditions and, to exacerbate the problem, they do not eat. Hence, the combustion of food is a diminishing source of body heat. We propose to characterise the metabolic response of Adelie penguins during their breeding cycle. We will assess metabolic rate and the quantity of cytochrome oxidase (a key mitochondrial enzyme used in heat generation) in Adelie penguins using near-infrared spectroscopy. This technique provides a non-invasive approach to studying the unique adaptations of free-living Adelie penguins.

Location: Cape Bird

Neogene Glacial History (K042)

Event Number: K042

Sponsoring Agent: Antarctic Research Centre
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Matt Paterson	Victoria University of Wellington	29 Sept 99	22 Dec 99
Cliff Atkins	Victoria University of Wellington	29 Sept 99	22 Dec 99
Peter Barrett	Victoria University of Wellington	11 Oct 99	22 Dec 99
Jaap Van der Meer	University of Amsterdam, Holland	20 Oct 99	22 Dec 99
Mark Lloyd-Davies	University of Amsterdam, Holland	12 Nov 99	25 Jan 00
Phillip Holme	Victoria University of Wellington	12 Nov 99	25 Jan 00
Jeremy Mitchell	Victoria University of Wellington	12 Nov 99	25 Jan 00
Stephen Hicock	University of Western Ontario, Canada	25 Nov 99	22 Dec 99

Programme:
This programme extends work beginning in 1997 to investigate the last major expansion of the Antarctic ice sheet over the Transantarctic Mountains at Allan Hills about 150 km northwest of Scott Base. This location is especially sensitive because it is low in the mountains and thus most recently exposed by the last over-riding of the ice sheet. The issue is controversial because similar deposits elsewhere have been dated as around 3 my old on account of microfossils found in them, but some regard these deposits as around 15 to 25 my or even older. The event is of paleoclimatic interest because it records the last time when the ice sheet had a temperate and unstable character prior to moving to is present cold and persistent state.

Mapping of Allan Hills by an earlier VUW party showed extensive patches of glacial till along with other glacial features such as boulder train and striated pavements. We propose to map and study these features to establish ice flow direction and source of debris, and to search for microfossils to help date the deposits. These studies will guide sampling for surface age dating of clasts in the till and of bedrock surfaces (including some striated) to constraint the ages of these features. We will also seek sites for shallow drilling that may reveal further sedimentary and diagenetic facies.

Location: Allan Hills

Basal Ice Processes (K053)

Event Number: K053

Sponsoring Agent: Department of Geography
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Project Leader: Dr Wendy Lawson
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Andrew Oliphant	University of Canterbury	1 Nov 99	26 Nov 99
Brian Anderson	University of Canterbury	1 Nov 99	13 Dec 99
Alun Hubbard	University of Canterbury	1 Nov 99	13 Dec 99
Richard Hindmarsh	British Antarctic Survey, England	1 Nov 99	13 Dec 99
Wendy Lawson	University of Canterbury	24 Nov 99	13 Dec 99

Programme:
Previous work at the Taylor Glacier has indicated that the relationship between the mechanical behaviour of the debris-laden basal ice found in the basal zone of the lower part of the glacier, and that of the overlying clean glacier ice, is complex and variable (Lawson 1996). It also seems likely that one of the variables that affects the nature of that relationship – temperature – varies significantly at the base of the Taylor Glacier, at least during the summer months (Robinson 1984). The research proposed here aims to extend previous and ongoing work on processes in the basal zone of Taylor Glacier by quantifying the effect of the presence of the debris-bearing ice layer on the overall dynamics of the glacier. This goal will be achieved by: (I) measuring ice velocity at a network of survey points on the surface of the glacier; (ii) establishing the contributions to that total velocity of the deformation of clean and debris-laden ice, and basal sliding (if any).

Locations: Blood Falls
Beacon Valley

Ionisation and Dynamics in the Antarctic Middle Atmosphere (K055)

Event Number: K055

Sponsoring Agent: Department of Physics and Astronomy
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Grahame Fraser	University of Canterbury	12 Jan 00	27 Jan 00
John Grant	University of Canterbury	12 Jan 00	27 Jan 00
Graham Plank	University of Canterbury	12 Jan 00	27 Jan 00
John Verschaeren	University of Canterbury	12 Jan 00	27 Jan 00

Programme:
Antarctic nototheniid fish display many physiological adaptations to the heart, circulatory system and gills that allow them to live in waters of –1.8°C. IN particular, control appears to have shifted form a dependence on circulating catecholamines to neural and other mechanisms. Recent work, however, has indicated that catecholamines may still be important under severe stress conditions.

To increase our knowledge of the cardiovascular system we intend to carry out the following work: a) measure carbon dioxide transport and excretion in whole animals and red blood cells at rest and during stress; b) measure catecholamine release in several species of Antarctic fish subjected to a range of stressors; c) investigate control of heart rate during stress using whole animals and isolated heart preparations; d) examine the effects of stress on gas exchange and catecholamine levels in fish affected by X-cell gill disease; e) measure changes to metabolic rate associated with feeding.

Locations: Scott Base
Cape Armitage

Atmospheric Corrosion of Architectural Aluminium (K056)

Event Number: K056

Sponsoring Agent: Department of Mechanical Engineering
University of Canterbury
Private Bag
Christchurch

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University of Canterbury
Engineering Road (off Creyke Road)
Christchurch

Project Leader: Dr Frank Fahy
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Facsimile (03) 364 2708

Scott Base Laboratory Programme:
Duration - continuous.

Programme:
This programme is part of a long term project to determine the corrosion resistance of an architectural aluminium alloy in the atmosphere. Different thicknesses of anodic film to resist corrosion are being evaluated by exposure to a range of atmospheres in a number of countries. The Antarctic sites are Scott Base and Arrival Heights.

Locations: Scott Base
Arrival Heights

Cardiovascular Physiology of Antarctic Fish (K057)

Event Number: K057

Sponsoring Agent: Department of Zoology
University of Canterbury
Private Bag 4800
Christchurch

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Creyke Road
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Project Leader: Dr Bill Davison
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Bill Davison	University of Canterbury	15 Nov 99	14 Dec 99
Craig Franklin	University of Queensland, Australia	15 Nov 99	14 Dec 99
Robbie Wilson	University of Queensland, Australia	15 Nov 99	14 Dec 99
Louise Kuchel	University of Queensland, Australia	15 Nov 99	14 Dec 99
Julie Hills	University of Canterbury	15 Nov 99	14 Dec 99
Bill Davison	University of Canterbury	31 Jan 00	2 Feb 00

Programme:
Antarctic nototheniid fish display many physiological adaptations to the heart, circulatory system and gills that allow them to live in waters of –1.8°C. In particular, control appears to have shifted from a dependence on circulating catecholamines to neural and other mechanisms. Recent work, however, has indicated that catecholamines may still be important under severe stress conditions. To increase our knowledge of the cardiovascular system we intend to carry out the following work: a) measure carbon dioxide transport and excretion in whole animals and red blood cells at rest and during stress; b) measure catecholamine release in several species of Antarctic fish subjected to a range of stressors; c) investigate control of heart rate during stress using whole animals and isolated heart preparations; d) examine the effects of stress on gas exchange and catecholamine levels in fish affected by X-cell gill disease; e) measure changes to metabolic rate associated with feeding.

Locations: Scott Base
Cape Armitage

Ross Orogeny : Magmatic Evolution (K061)

Event Number: K061

Sponsoring Agent: Department of Geology
University of Otago
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University of Otago
Leith Street
Dunedin

Project Leader: Dr David Craw
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Yvonne Cook	University of Otago	15 Nov 99	14 Dec 99
Sally Beckett (scholarship winner)	University of Otago	15 Nov 99	14 Dec 99
Kimberly Wallace	University of Otago	15 Nov 99	14 Dec 99

Programme:
This research is part of an on-going programme, which uses the superb rock exposure of Antarctica to examine evidence of geological processes in orogenic belts. This work has implications beyond Antarctica, but is also directly relevant to furthering our understanding of Antarctic Cambrian middle crustal processes. This will be accomplished by examining the exposed roots of the Ross Orogeny to see the results of interaction of metamorphism, deformation and magmatism in a collisional orogen. In addition, this research is directed at obtaining a fuller understanding of the nature and variations of the roots of a collisional orogen along strike.

Locations: Walcott Glacier

Magmatism in the TransantarcticMountains (K062)

Event Number: K062

Sponsoring Agent: Department of Geology
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
James White	University of Otago	22 Nov 99	10 Dec 99
Rachel Brown	University of Otago	22 Nov 99	29 Dec 99
Murray McLintock	University of Otago	22 Nov 99	29 Dec 99
Tim Barry	University of Otago	22 Nov 99	29 Dec 99

Programme:
This programme will investigate mechanisms of magma emplacement and eruption during plate tectonic processes, particularly at extensional zones at ancient plate boundaries. We will examine evidence of these processes in granites in the deep crustal roots of a 500 million year old mountain range. We will also examine eruptive processes for 180 million basalts and how they relate to rifting and early continental separation. We will determine mechanisms for explosive hydrovolcanic activity typically associated with groundwater-rich early rifting alluvial systems.

Locations: Coombs Hills

Preservation of Glaciotectonic Structures (K064)

Event Number: K064

Sponsoring Agent: Department of Geography
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Project Leader: Dr Sean Fitzsimons
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Email sjf@perth.otago.ac.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Sean Fitzsimons	University of Otago	22 Nov 99	20 Dec 99
Paul Sirota	University of Otago	22 Nov 99	20 Dec 99
Katrin Roehl	University of Otago	22 Nov 99	20 Dec 99
Vaughan Filmer	University of Otago	22 Nov 99	20 Dec 99
Sean Fitzsimons	University of Otago	7 Jan 00	7 Feb 00
Regi Lorrain	Free University of Brussels, Belgium	7 Jan 00	7 Feb 00
Marcus Van Der Goes	University of Otago	24 Jan 00	7 Feb 00
Veronique Verbecke	Free University of Brussels, Belgium	24 Jan 00	7 Feb 00

Programme:
The origin and preservation of glaciotectonic and sedimentary structures in high latitude ice marginal deposits is poorly understood. Interpretation of the origin and significance of such structures has caused controversy in the scientific literature and is an impediment to the interpretation of Pleistocene glacial deposits. The proposed research will examine the links between glaciological processes and sedimentary products to establish field criteria for the recognition of different types of deposits at the margins of alpine glaciers in the Taylor, Wright and Victoria valleys. These issues will be studied by a combination of structural, sedimentological and geomorphological analyses of deposits in the field and laboratory.

Locations: Suess Glacier
Victoria Glacier
Wright Glacier

Ecology of Terrestrial Antarctic Fauna (K067)

Event Number: K067

Sponsoring Agent: Department of Zoology
University of Otago
P O Box 56
Dunedin

Delivery Address Great King Street
Dunedin

Project Leader: Dr David Wharton
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Kristi Skebo	Department of Conservation	8 Oct 99	26 Nov 99
Brent Sinclair	University of Otago	8 Oct 99	7 Feb 00
Heidi Sjursen	University of Denmark, Denmark	22 Nov 99	7 Jan 00
Leigh Marshall	University of Otago	4 Jan 00	7 Feb 00

Programme:
The simple communities of terrestrial Antarctic organisms, which live in ice-free areas which receive meltwater during the warmest months of the year, are living at the limits of life on Earth. To inhabit these sites they must be able to survive extreme environmental stresses of cold and desiccation. They may also be particularly sensitive indicators of any amelioration of these harsh conditions and thus indicators of climate change. This project extends studies on the cold tolerance of Antarctic nematodes, initiates studies on the cold tolerance mechanisms of microathropods (mites, springtails) and aims to determine the effect of an artificial elevation in environmental temperature using cloches) on the community structure and populations of microathropods and other fauna.

Location: Cape Bird
Granite Harbour

Geomagnetic Pulsations in the Polar Cap (K069)

Event Number: K069

Sponsoring Agent:
Physics Department
University of Newcastle
NSW 2308
Australia

Department of Physics
University of Otago
PO Box 56
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Delivery Address
Science 3 Building
Cumberland Street
Dunedin

Project Leader:
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Professor Richard Dowden
University of Otago
P O Box 56
Dunedin

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Andrew Bish	University of Newcastle, Australia	14 Jan 00	20 Jan 00
Pavlo Ponomarenka	University of Newcastle, Australia	14 Jan 00	20 Jan 00

Programme:
Considerable energy enters the polar atmosphere as a result of interactions in near-Earth space between plasma of solar wind origin and the geomagnetic field. This project studies the characteristics of ultra low frequency (ULF) wave-like instabilities generated by these processes. These are manifested by pulsations of the geomagnetic field in the 1 mHz - 5 Hz frequency range, measured using sensitive magnetometers at Arrival Heights and at the Australian stations, Mawson, Davis, Casey and Macquarie Island. The regions in space where these interactions occur can be mapped using sub-visual TV-type optical equipment, and this is also located at Arrival Heights.

Locations:
Scott Base
Arrival Heights

Heritage Aspects of Antarctica (K072)

Event Number: K072

Sponsoring Agent: Dept of Human & Leisure Sciences
Lincoln University
P O Box 84
Canterbury

Delivery Address Cnr Springs Road and Ellesmere Junction Road
Lincoln
Canterbury

Project Leader: Dr Val Kirby
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Email kirbyv@lincoln.ac.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Val Kirby	Lincoln University	6 Dec 99	22 Dec 99
Emma Stewart	Lincoln University	6 Dec 99	22 Dec 99

Programme:
This study's primary aim is to investigate the nature and range of the Antarctic-linked cultural heritage resource that is of concern to New Zealand. Research aims subsidiary to this are the provision of a context and background for on-site management decisions, and the definition of parameters for other, heritage-specific research projects. Currently data on this topic is fragmented, disaggregated and in some instances simply lacking (Steel and Kirby 1997). An integrated, comprehensive review is needed, both of the physical resource in Antarctica and of the past and present roles of agencies and individuals who were/are implicated in heritage planning and management in Antarctica.

This review will provide baseline data that can provide background to further research in a number of areas. The study will involve primarily qualitative research, interpreting written and spoken (transcribed) texts. It will also take a comparative case study approach to the assessment of heritage values and meanings in a range of sites in Antarctica. Documents, files, archives and other written texts, one-to-one interviews and focus groups will be analysed using close reading techniques, for a range of possible approaches to and meanings of heritage. Where relevant, quantitative methods, both descriptive and inferential, will be used to provide appropriate contextual summaries.

Location: Scott Base
Cape Roberts
Lake Vanda

Dimensions of Special Incidents (K073)

Event Number: K073

Sponsoring Agent: Department of Parks, Recreation, & Tourism
P O Box 84
Lincoln University
Canterbury

Delivery Address Cnr Springs Road and Ellesmere Junction Road
Lincoln
Canterbury

Project Leader: Dr Gary Steel
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Susan Ladd	Lincoln University	20 Aug 99	26 Aug 99
Gary Steel	Lincoln University	20 Aug 99	26 Aug 99
Susan Ladd	Lincoln University	8 Oct 99	15 Oct 99
Gary Steel	Lincoln University	8 Oct 99	15 Oct 99
Susan Ladd	Lincoln University	16 Feb 00	21 Feb 00
Gary Steel	Lincoln University	16 Feb 00	21 Feb 00

Programme:
Living and working in Antarctica has, since the early days of exploration, been portrayed as a unique and stressful experience. Unfortunately, scant empirical work has been conducted on the nature of the specific events that give rise to this claim, and it may well be that much of the Antarctic experience is salutogenic (health-promoting or otherwise beneficial). Special incidents (including "critical" situations and specific, challenging events) may form a powerful subset of experiences in Antarctica, contributing greatly to the diverse psychological effects of a polar sojourn. Psychological data will be gathered utilising a well-validated personality scale, a mood grid, a critical incident interview methodology. Targeting "prototype" events, and employing a combination of content coding and quantitative analysis, this study will describe the structure of special incidents as experienced by past and present personnel at Scott Base, and will determine the relationships between event dimensions, personality characteristics, and mood change. These results will expand models of special incidents that currently tend to deal only with more mundane environments and their pathogenic effects. Practical applications of the study include recommendations for specialised Antarctic stress management programmes.

Location: Scott Base

Antarctic Aquatic Ecosystems (K081)

Event Number: K081

Sponsoring Agent: NIWA
P O Box 8602
Christchurch

Delivery Address 10 Kyle Street
Riccarton
Christchurch

Project Leader: Dr Ian Hawes
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Ian Hawes	NIWA	8 Nov 99	30 Nov 99
Mark Gall	NIWA	8 Nov 99	30 Nov 99
Steve Mercer	NIWA	10 Nov 99	30 Nov 99
Rob Smith	NIWA	10 Nov 99	30 Nov 99
Ian Hawes	NIWA	28 Jan 00	14 Feb 00
Clive Howard-Williams	NIWA	28 Jan 00	14 Feb 00
Rob Smith	NIWA	5 Jan 00	31 Jan 00
Antonio Quesada	University of Madrid, Spain	5 Jan 00	14 Feb 00
Eduardo Garcia	University of Madrid, Spain	5 Jan 00	14 Feb 00
Wim Vyerman	University of Gent, Belgium	14 Jan 00	31 Jan 00
Valerie Villeneuve	University of Laval, Canada	5 Jan 00	31 Jan 00
Dan Deitrich	University of Constance, Germany	5 Jan 00	25 Jan 00

Programme:
This programme seeks to provide fundamental information on the biology of Antarctica's inland aquatic ecosystems. It focuses on the microbial mat communities which dominate many of these ecosystems and their underlying sediments. The programme builds on previous work and examines the key processes which determine how community composition, trophic structure and diversity are maintained. It concentrates on carbon cycling and particularly addressed the role of extreme winter conditions in structuring the communities. The programme includes field and laboratory research on mats and their sediments from lake, pond and stream environments, designed to give insights into how these communities, and individual components of them, are adapted, both ecologically and physiologically, to their environment.

Locations: Bratina Island
Lake Vanda

Antarctic Atmospheric Research (K085)

Event Number: K085

Sponsoring Agent: NIWA
Private Bag 50061
Omakau
Central Otago

Delivery Address State Highway 85
Lauder
Central Otago

Project Leader: Dr Stephen Wood
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Steve Wood	NIWA	20 Aug 99	29 Aug 99
Jelena Ajtic	University of Canterbury	8 Nov 99	23 Nov 99
Brian Conner	NIWA	8 Nov 99	23 Nov 99
Steve Wood	NIWA	24 Jan 00	14 Feb 00
John Robinson	NIWA	24 Jan 00	14 Feb 00
Allan Thomas	NIWA	24 Jan 00	14 Feb 00

Programme:
The relative stability of the southern polar vortex creates conditions for enhanced chemical changes in the stratosphere that are quite remarkable. The depletion of ozone that these conditions cause in the spring has direct effects on the Antarctic environment but its potential feedback to the radiative forcing that drives atmospheric circulation are important in understanding atmospheric change for the whole Southern Hemisphere. This programme aims to improve the combination of ground based trace gas measurements available from Arrival Heights and Scott Base, with collaboration from other research groups. Combined measurements of closely related chemically active gases, and of less reactive gases that act as tracers, can identify transport and chemical processes in the atmosphere. A comparison of data with modelling calculations enables physical insight into these processes. In particular the work is directed towards understanding the reasons for, and the significance of, the changes with time in stratospheric nitrogen, chlorine and bromine compounds that are active in ozone chemistry.

Locations: Scott Base
Arrival Heights

Atmospheric Air Sampling (K087)

Event Number: K087

Sponsoring Agent:
NIWA
P O Box 14 901
Kilbirnie
Wellington

Delivery Address
301 Evans Bay Parade
Brodie Building
Greta Point
Wellington

Project Leader:
Dr Gordon Brailsford
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Gordon Brailsford	NIWA	24 Aug 99	24 Aug 99
Ross Martin	NIWA	6 Oct 99	6 Oct 99
		17 Nov 99	18 Nov 99
Anthony Gomez	NIWA	28 Jan 00	29 Jan 00

Programme:
This programme extends measurements made of several important atmospheric species in the New Zealand region to the Antarctic region. This is important for several reasons. Samples collected in the Antarctic reliably represent large maritime air masses which can be compared with clean air samples from lower latitudes. Fluctuations seen both in the Antarctic and around New Zealand reveal large scale changes in atmospheric composition that are more important than anomalies seen at a single site. The relative timing of fluctuations seen at different latitudes provides information on the corresponding source. Determining latitudinal profiles of trace gases between New Zealand and the Antarctic is particularly important for assessing the interactions between the Southern Ocean and the atmosphere.

Locations:
Scott Base
Arrival Heights
New Zealand <-> Antarctica

Climate Monitoring (K089)

Event Number: K089

Sponsoring Agent:
NIWA
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Kilbirnie
Wellington

Delivery Address
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295-301 Evans Bay Parade
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Wellington

Project Leader:
Andrew Harper
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Steve de Lima	NIWA	12 Jan 00	20 Jan 00

Programme:
Climate observations are made daily at Scott Base. Recording of wind, temperature, pressure and direct, diffuse and global radiation are also made. This climate record began in 1957 and is one the of longest continuous records in Antarctica.

Locations:
Scott Base
Arrival Heights

Seismological Observatory (K102)

Event Number: K102

Sponsoring Agent: IGNS
P O Box 30 36
Lower Hutt

Delivery Address 41 Bell Road South
Gracefield
Lower Hutt

Project Leader: Dr Fred Davey
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Steve Bannister	IGNS	22 Oct 99	16 Dec 99
Steve Sirotjuk	Australian National University, Australia	22 Oct 99	16 Dec 99
Tony Percival	Australian National University, Australia	1 Dec 99	16 Dec 99
Steve Bannister	IGNS	26 Jan 00	10 Feb 00
Steve Sirotiuk	Australian National University, Australia	26 Jan 00	10 Feb 00

Programme:
The Transantarctic Mountains crustal structure has been defined only locally by the SERIS (NZ/US) (ten Brink et al 1993) and ACRUP (Germany/Italy/US) (Della Vedova et al 1997) experiments. These experiments just 'touched' Moho (base of crust) beneath the Victoria Land Basin, and mid-lower crust beneath the Transantarctic Mountains. That is, there is some very limited 2-d information on the physical properties of the crust beneath the eastern side of the Transantarctic Mountains and Victoria Land Basin.

The proposed survey plans to investigate the crust and upper mantle of a 100 km x 100 km area of the Transantarctic Mountains in the Cape Roberts region, which covers the critical transition region from thin VLB crust (east-side of the Transantarctic Mountains) through to the plateau-side of the Transantarctic Mountains. It will do this by deploying an array of 15 portable broadband seismographs across this region (station spacing about 20 km). The instruments will be deployed on rock and will be recording for a period of about three months (November 1999 - January 2000. The seismographs will be deployed, serviced (once) and recovered by helicopter operating (probably) out of Marble Point or Cape Roberts. The seismographs will record teleseismic data (distant earthquake) and local seismicity.

Locations: Cape Archer
Dry Valleys
Mount Feather
Mount Fleming

Cosmogenic Nuclides in Earth Science (K112)

Event Number: K112

Sponsoring Agent: IGNS
P O Box 31 312
Lower Hutt

Delivery Address Top Site
30 Gracefield Road
Lower Hutt

Project Leader: Dr Ian Graham
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Ian Graham	IGNS	24 Jan 00	4 Feb 00
Neil Whitehead	IGNS	24 Jan 00	4 Feb 00

Programme:
Direct measurement of in-situ production rates will be undertaken for the cosmogenic isotopes ^{7}Be, ^{10}Be and ^{36}C1 along a broad transect in the Southern Hemisphere. Sealed containers of water, KF will be exposed to cosmic rays at six sites over time periods of six months to three years1. In addition, neutron flux will be measured at all target sites, and at least ten others covering a wide range of altitudes and geomagnetic latitudes. After isotopic analysis by gamma counting (^{7}Be) and accelerator mass spectrometry (^{10}Be and ^{36}C1), target data obtained will be modelled together with neutron flux data and integrated into on-going theoretical and experimental production rate studies, then reported to the scientific community. The results will provide much needed validation of the key corrections necessary for surface exposure age calculations.

The programme takes advantage of Australia and New Zealand's unique geographic location straddling more than 45 degrees of latitude along similar lines of longitude in the Southern Hemisphere, and New Zealand's proximity to additional locations in the South Pacific and Antarctica. Other studies of the type proposed are rare and have been undertaken exclusively in the Northern Hemisphere. The research is planned to coincide with, and take advantage of, solar minimum when cosmic ray flux is at a maximum (at the poles), and nuclide production is up to 50% greater than the average over a complete solar cycle.

Locations: Arrival Heights
Hoopers Shoulder

Aerial Photographic Survey & Assessment of Population Dynamics of Penguin Rookeries on Ross Island (K122)

Event Number: K122

Sponsoring Agent: Landcare Research
Private Bag 6
Nelson

Delivery Address Cnr Melton & Halifax Streets
Nelson

Project Leader: Dr Peter Wilson
Telephone (03) 548 1082 A/hrs (03) 545 0096
Facsimile (03) 546 8590
Email wilsonpr@landcare.cri.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Kerry Barton	Landcare NZ	1 Dec 99	27 Jan 00
Brian Karl	Landcare NZ	21 Dec 99	11 Jan 00
Yvette Cottam	Massey University	(x K032)	22 Dec 99
Tony Dorr	Macquarie University, Australia	(x K027)	11 Jan 00

Programme:
This project investigates the factors regulating population size and colony distribution of Adelie penguins (*Pygoscelis adeliae*) through studying the importance of key resources (nesting space, food) and the way they are allocated by behavioural traits (philopatry, immigration, emigration). At three Ross Island colonies, automatic data-loggers and aerial photography will quantify reproductive effort and success, habitat use and philopatry, relative to colony size and environmental conditions. For the Ross Sea region estimates will be made of nesting space availability, degree of philopatry among colonies (DNA analysis), food quality for each colony (stable C and N analysis) and food accessibility (satellite imagery). Factors responsible for colonisation and growth in penguin colonies will be modelled to help understand population regulation, the present effects of climate and to predict future trends.

Locations: Cape Bird
Cape Crozier

Impacts of Fuel Spills on Antarctic Soils (K123)

Event Number: K123

Sponsoring Agent: Landcare Research New Zealand Ltd
P O Box 3127
Hamilton

Delivery Address C/- University of Waikato
Level 2, Block R
Gate 9
Hillcrest Road
Hamilton

Project Leader: Dr Jackie Aislabie
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Iain Campbell	Land & Soil Consultancy	22 Nov 99	20 Dec 99
Jackie Aislabie	Landcare Research	29 Nov 99	9 Dec 99
Megan Balks	University of Waikato	29 Nov 99	9 Dec 99
Ron Paetzold	USDA NRCS, USA	29 Nov 99	9 Dec 99
Errol Balks	University of Waikato	29 Nov 99	9 Dec 99
Robert Gibb	Landcare Research	29 Nov 99	10 Dec 99

Programme:
Antarctic soils are unique as they occur in an extremely cold, arid, environment. There is increasing concern about the impacts of human activities in the Antarctic. In occupied regions there is evidence of terrestrial oil contamination. To more effectively assess effects of fuel spills, and determine whether amelioration measures are necessary, it has become apparent that information is needed on the properties of Antarctic soils, and how they respond to hydrocarbon contamination. The goal of this programme is to determine the impact of fuel spills on Antarctic soils. The research is divided into four objectives. Three are focused on the effects of hydrocarbons on the biological, physical and chemical properties of soils, and the fourth on developing a decision support system for prevention of and remedial action after (oil) spills on soils in ice free areas of the Ross Dependency.

Locations: Marble Point
Bull Pass

The Break-up of Sea Ice (K131)

Event Number: K131

Sponsoring Agent: Industrial Research Ltd
P O Box 31 310
Lower Hutt

Delivery Address 69 Gracefield Road
Lower Hutt

Project Leader: Dr T G Haskell
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Tim Haskell	Industrial Research	4 Oct 99	22 Dec 99
Inga Smith	University of Otago	4 Oct 99	1 Nov 99
Simon Gibson	Industrial Research	4 Oct 99	13 Nov 99
Eberhard Duess	Industrial Research	4 Oct 99	13 Nov 99
David Cochrane	Industrial Research	4 Oct 99	13 Nov 99
Pat Langhorne	University of Otago	8 Oct 99	1 Nov 99
Vicky Lyttle	CRC, Australia	8 Oct 99	1 Nov 99
Jean Louis Tison	University of Brussels, Belgium	8 Oct 99	27 Oct 99
Joe Trodahl	Victoria University of Wellington	8 Oct 99	20 Oct 99
Mark McGuinness	Victoria University of Wellington	8 Oct 99	20 Oct 99
Urlich Buschman	University of Munster, Germany	8 Oct 99	1 Nov 99
Paul Callaghan	Massey University	20 Oct 99	10 Nov 99
Rob Dykstra	Massey University	20 Oct 99	10 Nov 99
Suzanne Furkert	Massey University	20 Oct 99	10 Nov 99

Programme:
A synthesis of various in situ, process-oriented measurements concerned with the nature of sea-ice at several scales is proposed to enable features relating to sea-ice breakup to be understood. The manner in which sea-ice breaks up determines its floe size distribution. This, together with any redistribution due to ocean currents and winds, alters the fluxes between the atmosphere and the underlying ocean. Consequently the study is germane to the climate of the southern hemisphere. Data relating to the physical properties of sea-ice, its mechanical properties, the way it fatigues, and its breakup by sea waves will be integrated with available satellite imagery to enable climate-related issues to be addressed.

Locations: Cape Evans

UV-B Effects on Bottom-Ice Algae (K136)

Event Number: K136

Sponsoring Agent: Industrial Research Ltd
P O Box 31 310
Lower Hutt

Delivery Address 69 Gracefield Road
Lower Hutt

Project Leader: Dr Ken Ryan
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Kevin Mitchell	Industrial Research Ltd	20 Oct 99	5 Nov 99
Scott Thompson	Industrial Research Ltd	20 Oct 99	5 Nov 99
Andrew McMinn	University of Tasmania, Australia	25 Oct 99	17 Nov 99
Louise Trennery	University of Tasmania, Australia	25 Oct 99	17 Nov 99
Dave Clement	University of Tasmania, Australia	25 Oct 99	17 Nov 99
Ken Ryan	Industrial Research Ltd	29 Oct 99	10 Nov 99

Programme:
The primary global source of usable energy and carbon is photosynthesis. To understand the energy budget of the Southern Ocean it is essential to understand the factors that cause temporal and spatial variability, including increased springtime levels of UV-B. Bottom-ice algal communities in both fast- and pack-ice contribute a major proportion of the total primary production of the perennial ice covered areas of the Southern Ocean. These algae may be damaged during spring, when ice can be quite transparent to UV-B radiation. Previous studies by us and others have involved in vitro techniques which have lead to inaccurate estimates of the impact of UV-B on productivity. We have used oxygen microelectrodes on previous campaigns to measure the photosynthetic rates of Antarctic bottom ice algal mats, and have been developing a means of deploying them under the ice remotely. The new method will not disturb the ice environment or algal mat at all, and will be applied to pack ice algae in 1998 and to fast ice algae in 1999. This study will be the first attempt to measure the impact of UV radiation on bottom-ice algae growing in situ.

Locations: Cape Evans

Environmental Assessment & Review Panel (EARP) (K200)

Event Number: K200

Sponsoring Agent: Antarctica New Zealand
Private bag 4745
Christchurch

Project Leader: Emma Waterhouse
Telephone (03) 358 0200
Fax (03) 358 0211
Email e.waterhouse@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Emma Waterhouse	Antarctica New Zealand	ex K407	10 Nov 99
Tim Haskell	Industrial Research Ltd	ex K131	10 Nov 99
Harry Keys	Dept of Conservation	5 Nov 99	10 Nov 99
Maj de Poorter	University of Auckland	5 Nov 99	10 Nov 99

Programme:
Familiarisation with, and review of, Antarctica New Zealand operations, environmental procedures and management.

Location: Scott Base
Cape Roberts
Dry Valleys
Ross Island

Telecom Maintenance and Installation (K211)

Event Number: K211

Sponsoring Agent: Telecom Limited
PO Box 1473
Christchurch

Delivery Address Connnectel Ltd
175 Durham Street
Christchurch

Project Leader: Chris Robertson
Telephone (03) 363 8733
Fax (03) 365 3693

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
TBA x 2	Connectel Ltd	29 Dec 99	20 Jan 00

Programme:
Annual inspection, maintenance and installation of Telecom equipment at Scott Base.

Location: Scott Base

Historic Sites Management (K282)

Event Number: K282

Sponsoring Agent: Antarctic Heritage Trust
Private Bag 4745
Christchurch

Project Leader: Paul Chaplin
Telephone (03) 358 0200 A/hrs (03) 332 8104
Facsimile (03) 358 0211
Email p.chaplin.aht@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/ChCh
Sarah Clayton	Conservancy Consultant	15 Nov 99	10 Dec 99
Peter Maxwell	Conservancy Consultant	19 Nov 99	10 Dec 99
John Charles	Antarctic Heritage Trust	19 Nov 99	2 Dec 99
Sheridan Easdale	Antarctic Heritage Trust	29 Nov 99	10 Dec 99
Caroline Nixon	Antarctic Heritage Trust	15 Nov 99	10 Dec 99

Programme:
Implementation of the Antarctic Heritage Trust's annual conservation and maintenance programme at Cape Royds, Cape Evans, and Hut Point. This includes maintenance on the structure of the huts; condition assessment and conservation treatments of artefacts; reviewing the historical accuracy of placement of relics; identifying items for a reserve collection and monitoring the interior environment of the huts.

Locations: Cape Royds
Cape Evans
Hut Point

Natural History NZ Ltd Filming (K294)

Event Number: K294

Sponsoring Agent: Natural History NZ Ltd
P O Box 474
Dunedin

Delivery Address 8 Dowling Street
Dunedin

Project Leader: Max Quinn
Telephone (03) 479 9799
Facsimile (03) 479 9917

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Max Quinn	Natural History NZ Ltd	22 Oct 99	3 Nov 99
Jeanie Ackley	Natural History NZ Ltd	22 Oct 99	3 Nov 99

Programme:
Natural History New Zealand Ltd will have a two-person film crew operating out of Scott Base. The crew will be conducting interviews and filming science projects for a television series for National Geographic Television, looking at polar wildlife, climate, and scientific activity.

Locations:

Army Engineers (K300)

Event Number: K300

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
TBA x 5	Army	5 Jan 00	18 Feb 00

Programme:
Various maintenance, minor alterations and construction tasks.

Locations: Scott Base

Operation White Safari (K302)

Event Number: K302

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
K J Aiken	Navy	11 Jan 00	27 Jan 00
A P Brooker	Navy	11 Jan 00	27 Jan 00
? Neville	Navy	11 Jan 00	27 Jan 00
A W McLachlan	Navy	11 Jan 00	27 Jan 00
B F Geraghty	RNZAF	31 Jan 00	16 Feb 00
A S Lyster	RNZAF	31 Jan 00	16 Feb 00
L M Taylor	RNZAF	31 Jan 00	16 Feb 00
L J Wood	RNZAF	31 Jan 00	16 Feb 00

Programme:
Air Force and Navy assistance in maintenance and environmental tasks.

Location: Scott Base

RNZAF Helicopter Detachment (K303)

Event Number: K303

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
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Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Chris Gear	RNZAF	27 Sept 99	1 Nov 99
Mike Robinson	RNZAF	27 Sept 99	1 Nov 99
Ty Cochran	RNZAF	27 Sept 99	1 Nov 99
Craig Hughan	RNZAF	27 Sept 99	16 Nov 99
Peter Meredith	RNZAF	27 Sept 99	16 Nov 99
Paul Coombes	RNZAF	27 Sept 99	16 Nov 99
Bruce Grey	RNZAF	27 Sept 99	16 Nov 99
Mike Sarney	RNZAF	27 Sept 99	16 Nov 99
Colin Heffer	RNZAF	28 Oct 99	10 Nov 99
Steve Currie	RNZAF	28 Oct 99	7 Dec 99
Jeff Jones	RNZAF	28 Oct 99	7 Dec 99
Jason Milne	RNZAF	4 Nov 99	7 Dec 99
Warren Burt	RNZAF	14 Nov 99	29 Dec 99
Dale Cox	RNZAF	14 Nov 99	29 Dec 99
Greg Hopkins	RNZAF	14 Nov 99	29 Dec 99
Del Waiariki	RNZAF	14 Nov 99	29 Dec 99
Lee Foote	RNZAF	14 Nov 99	29 Dec 99
? Heke	RNZAF	2 Dec 99	10 Jan 00
Garry Spencer	RNZAF	28 Dec 99	9 Feb 00
Mike O'Sullivan	RNZAF	28 Dec 99	9 Feb 00
Bruce Kropp	RNZAF	28 Dec 99	9 Feb 00
Aaron van Stipprian	RNZAF	28 Dec 99	9 Feb 00
Tim Evans	RNZAF	6 Jan 00	9 Feb 00
Kane Chapman	RNZAF	6 Jan 00	9 Feb 00
James Cagney	RNZAF	6 Jan 00	9 Feb 00

Programme:
RNZAF helicopter detachment support for New Zealand and United States science and logistical activities.

Location: Scott Base

RNZAF Antarctic Field Training (K303)

Event Number: K304

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Facsimile (03) 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
TBA x 4	40 Squadron RNZAF	1 Nov 99	5 Nov 99

Programme:
Antarctic field training for RNZAF C130 crews.

Locations: Scott Base

RNZN - Attachment to USCG Icebreaker (K305)

Event Number: K305

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Facsimile (03 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
TBA x 2	RNZN	20 Dec 99	4 Jan 00

Programme:
Providing RNZN officers with experience of US Coast Guard icebreaker operations in the Antarctic.

Locations: Scott Base
Ross Sea

NZDF - Medical (K307)

Event Number: K307

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Facsimile (03 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Dave Foote	Army	8 Nov 99	16 Nov 99

Programme:
Familiarisation of Scott Base medical procedures and facilities.

Locations: Scott Base
Ross Sea

Malaysian Science Visit (K352)

Event Number: K352

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Dean Peterson
Telephone (03) 358 0200
Facsimile (03 358 0211
Email d.peterson@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Azizan bin Abu Samah	University of Malaysia	11 Oct 99	27 Oct 99
Noorsaadah Abdul Rahman	University of Malaysia	11 Oct 99	27 Oct 99
Nik Meriam Nik Sulaiman	University of Malaysia	11 Oct 99	27 Oct 99
Radzi Abas	University of Malaysia	11 Oct 99	27 Oct 99

Programme:
Samples of air will be collected under two different conditions, ie in the presence of sunlight (in summer) and without sunlight (in winter). Organic matter will be extracted from these samples and characterised in order to identify the secondary pollutants originating from chemical and photochemical reactions of the primary organic pollutions in the atmosphere.

Locations: Scott Base
Ross Sea

General Visits (K360)

Event Number: K360

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Facsimile (03 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Paul Burns	New Zealand Fire Service	8 Oct 99	11 Oct 99
Paul Leslie	Vision Products	4 Oct 99	8 Oct 99
David Sharp	Vigilant Fire & Evacuation Systems	15 Oct 99	18 Oct 99
Geoff Chapman	CT & Associates	15 Oct 99	18 Oct 99
Tim Donaldson	Ace Water Treatment	15 Oct 99	18 Oct 99
Robert Klomp	Comaint	18 Oct 99	22 Oct 99
Alan Wright	Power Hire Ltd	22 Nov 99	26 Nov 99
Kim Pitt	ANARE	21 Jan 00	25 Jan 00
TBA	ANARE	21 Jan 00	25 Jan 00
tba (fire safety inspection)	tba	? Feb 00	? Feb 00

Programme:
Short term visits for maintenance, construction or consultancy projects.

Location: Scott Base

Consultants (K370)

Event Number: K370

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Facsimile (03 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Jonathan Pascoe	Antarctica New Zealand Medical Consultant	8 Nov 99	16 Nov 99

Programme:
Familiarisation and review of Antarctica New Zealand medical facilities and procedures both at Scott Base and in the field.

Location: Scott Base

Education (K391)

Event Number: K391

Sponsoring Agent: Te Papa Museum of New Zealand
P O Box 467
Wellington

Delivery Address 55 Cable Street
Wellington

Project Leader: Vivienne Allan
Telephone (03) 358 0200
Facsimile (09) 358 0211
Email v.allan@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Nigel Cox	Museum of New Zealand	8 Nov 99	12 Nov 99

Programme:
A short familiarisation visit for Te Papa's Exhibition Concept Developer who is responsible for designing and implementing Te Papa's forthcoming Wonders of Technology Exhibition, scheduled to open in 2001. The exhibition is intended to be displayed for five years and attract 1.5 million visitors per year. The intention of the exhibition is to physically connect remote parts of New Zealand via interactive screens, including live activity from sites. This visit is to assess possibilities of including various sites of interest in Antarctic into the exhibition with the use of technology.

Location: Scott Base

Distinguished Visitors (K392)

Event Number: K392

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Vivienne Allan
Telephone (03) 358 0200
Facsimile (03) 358 0211
Email v.allan@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Group 1			
tba		21 Jan 00	25 Jan 00
Group 3			
IGY/TAE visit (numbers tba)		26 Jan 00	29 Jan 00

Programme:
Familiarisation visit for key stakeholders from the science, political, business and legal sectors.

Members of the 1958 winter party from the International Geophysical Year and Transantarctic Expedition will visit Scott Base Base.

Locations: Scott Base and other locations in the Ross Dependency

Media Programme (K393)

Event Number: K393

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Vivienne Allan
Telephone (03) 358-0200
Fax (03) 358 0211
Email v.allan@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/ChCh
TBA x 4	TVNZ	29 Dec 99	4 Jan 00

Programme:
A television crew will provide coverage of Scott Base and New Zealand's Antarctic activities for inclusion in Millennium broadcasts.

Locations: Scott Base and other locations in the Ross Dependency

Artists to Antarctica Programme (K394)

Event Number: K394

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Vivienne Allan
Telephone (03) 358-0200
Fax (03) 358 0211
Email v.allan@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/ChCh
Virginia King		3 Nov 99	16 Nov 99
Chris Cree Brown		3 Nov 99	16 Nov 99

Programme:
The third year of the Artists and Writers to Antarctica Programme will include sculptor Virginia King and composer/musician Chris Cree Brown. They will spend time at Turtle Rock, Lake Vanda, Bull Pass and Cape Royds to gather sound recordings and visual material for works to be completed on return to New Zealand Chris Cree Brown is currently senior lecturer in music at the University of Canterbury and has won seven awards for his compositions. Virginia King plans to focus her work on the natural environment, including the micro-organisms of Antarctica with the aim of exhibiting a body of work incorporating sculpture, aural records and video images. Virginia won the Jane Campion Memory award in 1998. The artists receive financial support from Creative New Zealand.

Location: Scott Base and other locations in the Ross Dependency

Certificate in Antarctic Studies (K396)

Event Number: K396

Sponsoring Agent: Centre for Continuing Education
University of Canterbury
Private Bag 4800
Christchurch

Delivery Address Okeover House
Continuing Education
University Drive
University of Canterbury
Christchurch

Project Leader: Geoff Pearman
Telephone (03) 364 2470
Facsimile (03) 364 2057
Email g.pearman@cant.canterbury.ac.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Students (21)	Centre for Continuing Education	14 Dec 99	27 Dec 99

Programme:
The Continuing Education Certificate in Antarctic Studies is designed to provide a multi-disciplinary educational programme for graduate students with an interest in Antarctica, and for people working in relevant professions and organisations who are able to make a significant contribution to their communities as a result of the programme. A 10-14 day field trip to Scott Base is included as part of the intensive twelve week course run by the University of Canterbury and contributes field work relating to all aspects of the lecture/discussion component of the course. Development and teaching of the course has involved input from all New Zealand universities.

Location: Scott Base

Scholarship (K397)

Event Number: K397

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Dr Dean Peterson
Telephone (03) 364 2470
Facsimile (03) 364 2057
Email d.peterson@cant.canterbury.ac.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Jonathan Banks	Lincoln University	3 Nov 99	18 Nov 99

Programme:
The dominant group of terrestrial insects present in Antarctica are the chewing lice of penguins. Penguin lice have solved the problem of survival in Antarctica which includes temperatures ranging from -4°C to +40°D, deep diving of penguins and dispersal between hosts. Little is known about these lice other than that they exist. The co-evolution between penguin hosts and their hosts will be studied.

Location: Scott Base

Antarctica New Zealand Christchurch Staff Visits (K400)

Event Number: K400

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Fax (03) 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Vivienne Allan	Antarctica New Zealand	13 Oct 99	22 Oct 99
		3 Nov 99	12 Nov 99
Helen Boerlage	Antarctica New Zealand	20 Oct 99	12 Nov 99
		31 Jan 99	16 Feb 00
Peter Brookman	Antarctica New Zealand	20 Aug 99	26 Aug 99
		28 Sept 99	14 Dec 99
		31 Jan 00	16 Feb 00
Natalie Cadenhead	Antarctica New Zealand	21 Dec 99	4 Jan 00
Kevin Foyle	Antarctica New Zealand	15 Oct 99	18 Oct 99
Mike Mahon	Antarctica New Zealand	29 Sept 99	25 Oct 99
		24 Jan 00	14 Feb 00
Dean Peterson	Antarctica New Zealand	11 Oct 99	20 Oct 99
		1 Nov 99	5 Nov 99
		31 Jan 00	7 Feb 00
Ron Rogers	Antarctica New Zealand	29 Sept 99	22 Oct 99
		9 Dec 99	21 Feb 00
Heather Smith	Antarctica New Zealand	19 Nov 99	30 Nov 99
Rob Stewart	Antarctica New Zealand	24 Jan 00	Ship
Julian Tangaere	Antarctica New Zealand	20 Aug 99	26 Aug 99
		11 Oct 99	22 Oct 99
		21 Jan 00	25 Jan 00
		7 Feb 00	11 Feb 00
Gillian Wratt	Antarctica New Zealand	22 Aug 99	26 Aug 99
		15 Oct 99	22 Oct 99

Programme:
Operational visits by Antarctica New Zealand's Christchurch staff .

Locations: Various

Scott Base Summer Support (K401)

Event Number: K401

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Fax (03) 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Position	ChCh/SB	SB/Chch
Dean Arthur	AFT Instructor	28 Sept 99	14 Feb 00
Rod Bowler	Communications Operator	29 Sept 99	4 Dec 99
Steve Brown	Carpenter	26 Aug 99	16 Dec 99
Kevin Chappell	Base Engineer - Serco	29 Sept 99	16 Feb 00
Peter Cleary	Operations Manager	28 Sept 99	16 Feb 00
Andrew Dickson	Chef	4 Oct 99	16 Feb 00
Chris Duurentijdt	Cargo Handler	29 Sept 99	14 Feb 00
Catherine Flanagan	Domestic	4 Oct 99	16 Feb 00
Ross Hickey	AFT Instructor	22 Nov 99	14 Feb 00
Sharyn Hoult	Base Services Manager	29 Sept 99	16 Feb 00
Steve Kino	Snr Communications Operator	29 Sept 99	4 Dec 99
Kevin Nicholas	AFT Instructor	28 Sept 99	30 Nov 99
Jodi Pearson	Communications Operator	29 Sept 99	4 Dec 99
Stefan Preddy	Communications Operator	29 Nov 99	14 Feb 00
Daniel Smale	Science Technician - NIWA	4 Oct 99	14 Feb 00
Shaun Smith	Canteen Manager - AFCC	4 Oct 99	14 Feb 00
Robert Spice	Snr Communications Operator	29 Nov 99	16 Feb 00
Clare Sprosen	Domestic	29 Sept 99	14 Feb 00
Matthew Stock	Communications Operator	29 Nov 99	14 Feb 00
Peter TeNahu	Plant Operator	4 Oct 99	21 Dec 99
Hamish Wilson	Plant Operator	29 Sept 99	18 Feb 00

Programme:
Deployment of Scott Base summer support staff.

Locations: Scott Base

Scott Base Winter Support (K402)

Event Number: K402

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Fax (03) 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Chris Bray	Chef	28 Sept 99	Oct 2000
Sean Flanagan	Science Technician	29 Sept 99	Oct 2000
Scott Iremonger	Mechanic	29 Sept 99	Oct 2000
Jonathan Leitch	Base Engineer/Engineering Mgr	29 Sept 99	Oct 2000
Dave Palmer	Carpenter	19 Nov 99	Oct 2000
Ewan Paterson	Field Support Officer	28 Sept 99	Oct 2000
Keith Roberts	Telecom Technician	29 Sept 99	Oct 2000
Steve Spicer	Electrician	29 Sept 99	Oct 2000
Jan Stratford	Domestic	28 Sept 99	Oct 2000

Programme:
Scott Base winter support staff

Locations: Scott Base

Environmental Management and Monitoring Projects (K407)

Event Number: K407

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Emma Waterhouse
Telephone (03) 358 0200
Fax (03) 358 0211
Email e.waterhouse@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Grant Redvers	University of Auckland	25 Oct 99	10 Nov 99
Emma Waterhouse	Antarctica New Zealand	27 Oct 99	10 Nov 99
		18 Jan 00	25 Jan 00

Programme:
Environmental review of Antarctica New Zealand operations and supported activities including monitoring for compliance with the Antarctica (Environmental Protection) Act and environmental audit of the Cape Roberts Project. Activities will also include implementation of Antarctica New Zealand's environmental monitoring programme focussed on Scott Base and major field sites.

Locations: Scott Base
Cape Roberts
Dry Valleys
Cape Bird

Antarctica New Zealand Board of Directors' Visit (K408)

Event Number: K408

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Kevin Foyle
Telephone (03) 358 0200
Fax (03) 358 0211
Email k.foyle@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
Ron Heath	Antarctica New Zealand Board	15 Oct 99	18 Oct 99
Clive Howard-Williams	Antarctica New Zealand Board	15 Oct 99	18 Oct 99
Chris Mace	Antarctica New Zealand Board	15 Oct 99	18 Oct 99
Sue Suckling	Antarctica New Zealand Board	15 Oct 99	18 Oct 99
Bill Mansfield	Antarctica New Zealand Board	15 Oct 99	18 Oct 99

Programme:
Visit to Scott Base by the Board of Directors.

Location: Scott Base and other locations in the Ross Dependency.

Serco Visit (K500)

Event Number: K500

Sponsoring Agent: Antarctica New Zealand
Private Bag 4745
Christchurch

Project Leader: Julian Tangaere
Telephone (03) 358 0200
Fax (03) 358 0211
Email j.tangaere@antarcticanz.govt.nz

Field Team:

Name	Organisation	ChCh/SB	SB/Chch
TBA x 2	Serco	7 Feb 00	11 Feb 00

Programme:
Representatives from Serco, the facilities management company, will visit Scott Base to gain a better understanding of the facilities and functions of Scott Base. Antarctica New Zealand is considering contracting out the provision of support services at Scott Base. Serco (NZ) Ltd have been identified as preferred supplier of these services.

Location: Scott Base

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