MEMBER COUNTRY: **New Zealand**

National Report to SCAR for year: 2014-15

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Standing Scientific Groups						
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4)	Dr Miles Lamare	Department of Marine Sciences, University of Otago, PO Box 56, Dunedin	.+64 3 479 7463		miles.lamare@otago,ac.nz	
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2)	Dr Richard Levy	GNS Science, PO Box 30-368, Lower Hutt	64-4-570 4236	64-4-570-4600	r.levy@gns.cri.nz	www.gns.cri.nz
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2)	Dr Huw Horgan	Antarctic Research Centre, Victoria University of Wellingotn, PO Box 600, Wellington	.+64 4 463 6918		huw.horgan@vuw.ac.nz	
3)	Dr Olaf Morgenstern	NIWA, Lauder, State Highway 85 Central Otago, Private Bag 50061, Omakau	.64-3-440-421		Olaf.Morgenstern@niwa.co.nz	http://www.niwa.co.nz/people/olaf-morgenstern
4)						

Activity	Contact Name	Address	Telephone	Fax	Email	Website
Scientific Research Program						
AAA						
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2)						
3)						
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2)						
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PAIS						
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SCAGI						
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ANTOS	Professor Craig Cary	Dept of Biological Sciences The University of Waikato Private Bag 3105 Hamilton	64 7 838 4466		c.cary@waikato.ac.nz	http://sci.waikato.ac.nz/about-us/people/caryc
ASPECT	Dr Vonda Cummings Assoc Prof Pat Langhorne	NIWA Ltd. Private Bag 14901, Wellington Department of Physics, University of Otago, PO Box 56, Dunedin	+64-4-386 0300 .+64 3 479 7787	+64-4-386 0574	v.cummings@niwa.co.nz pat.langhorne@otago,ac.nz	www.niwa.co.nz http://www.physics.otago.ac.nz/research/ice/

An optional report summarising scientific highlights of the past year may be included below.

Event K001-1415	**Transantarctic Mountain climate history – Friis Hills. Neogene Terrestrial Climate Reconstructions**
Nov. - Dec. 2014	Professor Tim Naish, Victoria University of Wellington, Kelburn Parade, PO Box 600, WELLINGTON 6140, Phone: (04) 472 1000, Fax: (04) 499 4601, Email: tim.naish@vuw.ac.nz
Friis Hills, Mt Boreas	Terrestrial fossils, including the remains of mosses, stunted beech trees and beetles, are exquisitely preserved within glacial deposits in the Friis Hills, upper Taylor Valley, dated between 19 and 14 million years old. Using the characteristics of the fossils, geochemical analyses of organic biomarker molecules preserved in the sediments, and the glacial deposits themselves, we aim to reconstruct the climate and glacial conditions for this period of Earth history when atmospheric carbon dioxide levels were 400ppm and the world was on average 3°C warmer (6°C warmer in Antarctica) than today. This history from the Transantarctic Mountains will be compared with environmental changes of the same age in the Ross Sea recorded in the ANDRILL, Southern McMurdo Sound drill cores, to understand how Antarctica responded to a warmer climate similar to that being projected for the coming centuries. This season our team will: (i) conduct a geophysical survey to estimate the thickness and geometry of the glacial deposits; (ii) dig pits and use a small electric drill to sample the deposits for cosmogenic isotope analyses; and (iii) develop boundary conditions for a numerical ice sheet model for the region. We will also support a collaborative media and outreach sub-event (K001-1415-C), which will be gathering film and interviews for an online science educational product.

Event K001-1415-C	**Transantarctic Mountain Climate History – Friis Hills**
Nov. - Dec. 2014	Cliff Atkins, Victoria University of Wellington, Kelburn Parade, Wellington, Phone: (04) 463 6143 / 04 472 1000, Fax: (04) 499 4601, Email: cliff.atkins@vuw.ac.nz / Rebecca.Priestley@vuw.ac.nz
Friis Hills, Mt Boreas	We will visit the field camp at Friis Hills (**Transantarctic Mountain climate history – Friis Hills, K001-1415-B)** and will spend time at locations around Scott Base, including the historic huts, for the purpose of gathering HD video footage for use in a course about Antarctica. Rebecca will also gather material for a series of written science outreach pieces (blogs, articles, and an essay) that will focus on the Friis Hills science event and the wider context of this research.

Event K020-1415	**Assessing and Validating Biometrics for Change: Eco forecasting for Terrestrial Antarctica**
Jan. 2015	Assoc. Prof. Craig Cary, Biological Sciences, University Of Waikato, Private Bag 3105, Hamilton 3240, Phone: (07) 838 5493, Fax: (07) 838 4300 Email: caryc@waikato.ac.nz
Spaulding Pond, Taylor Valley, Meirs Valley	During the 2013/14 season this NZARI supported programme completed the installation of two novel technologies that are currently continually measuring specific biometrics (soil CO_2 flux and photosynthetic efficiency) to assess the subtle response of biology to environmental change. This season the year round data will be collected and analyzed to assess the efficacy of the instrumentation and to determine if redeployment is warranted. The event will also have a team that will be testing several new multi-spectral imaging and high-resolution micro-climate sensor capabilities in an **unmanned aerial vehicle (UAV)**. This will provide an unprecedented ability to map the vegetation over large areas and to examine the vertical stratefication of wind patterns in the valleys. We will also be testing a new portable wind tunnel device to assess the stability and resilience of Dry Valley soil surfaces to natural and human disturbance. Ultimately these individual studies will be brought together to better understand the how terrestrial Antarctica will respond to pending environmental change and the threat of increased human activity.

Event NZARI K024-1415	**Invertebrates on the edge: Assessing Mackay Gl as an ecotone for tracking biological responses to climate changes**
Jan. 2015	Assoc. Prof. Ian Hogg, Biological Sciences, University Of Waikato, Private Bag 3105, Hamilton 3240, Phone: (07) 838 4139, Fax: (07) 838 4300, Email: hogg@waikato.ac.nz
Mt Seuss, Mt Gran, Mt George Murray	NZARI (2013) has identified an urgent need to identify "what change we will see in ecosystems and biodiversity" in Antarctica relative to global climate changes. Unfortunately, we are currently limited in our ability to fully assess biological diversity occurring within and among natural populations; especially at the

	genetic and species levels. This is particularly true for invertebrates which are a key feature of Antarctic terrestrial ecosystems. This is unfortunate as it is widely contended that the maintenance of such diversity will facilitate the evolutionary potential of natural systems to respond to changing environmental conditions, including global warming. Transitions naturally occur between one ecosystem type and another such as along shorelines of oceans, or at forest edges. These transitions are called 'ecotones' and are ideal for studying the physical, chemical and biological responses to climate changes. This project will focus on assessing the Mackay Glacier ecotone which sits between two biogeographic regions at the northern edge of the McMurdo Dry Valleys. Here we will examine the distribution and genetic variability among populations for a range of invertebrates. Using this information we can enhance our capacity to detect subtle biotic responses resulting from climate changes.

K053-1415-A	**Tidal flexure of ice shelves: the key to understanding Antarctic grounding zones**
Nov. - Dec. 2014	Dr Wolfgang Rack, Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch 8140, Phone: (03) 364 3166, Fax: (03) 364 2197, Email: wolfgang.rack@canterbury.ac.nz
McMurdo Ice Shelf	Predicting rapid retreat of the Antarctic ice sheet, and consequently sea level rise, involves fully understanding how ice flows across the transition between grounded and floating ice, an area known as the grounding zone. Although often inaccessible for direct measurements, continuous tidal bending of ice in this area can be precisely mapped by new satellites. The observed bending pattern holds a key to understanding how ice sheet thickness reacts to warming oceans. A new team of international experts will uncover important details about ice sheet bending for better prediction of ice flow at the grounding line and sea level change. To understand how much ice is currently being lost and therefore how much sea level will rise in the next century we need to know (a) the thickness of ice passing through the grounding zone, (b) how the ice behaves as it moves through this area and (c) how this will vary due to a changing climate. Above all we need a method of determining these factors remotely and with repeatability across the whole of Antarctica.

Event K055-1415-A	**Dynamics and Ionisation in the Antarctic Middle Atmosphere**
Nov. 2014 - Jan. 2015	Dr Adrian McDonald, Department of Physics and Astronomy, University of Canterbury, Private Bag 4800, Christchurch, New Zealand, Phone: (03) 364 2281, Fax: (03) 364 2490 Email: adrian.mcdonald@canterbury.ac.nz
McMurdo and Ross Ice Shelves	Our studies investigate the Antarctic middle atmosphere's response to natural and man-made factors which change climate, and the feedbacks in the atmosphere which couple this change to climate change at the surface. The measurements made by the Scott Base MF radar provide valuable climate information about how the flow in the middle atmosphere (70-100 km) has changed. The Scott Base radar record, wind measurements have been made since 1982, is one of the longest duration climate records of this type of data in the world. This record, along with observations from satellite instruments, allows the coupling between the middle atmosphere and the surface over Antarctica to be examined; this coupling is often associated with wave-like motions in the atmosphere that the MF radar is particularly good at observing. This type of study is important because improvements in the predictive ability of the current generation of climate models may be particularly sensitive to the coupling processes that we examine. - See more at: http://antarcticanz.govt.nz/science/science-supported-by-antarctica-new-zealand/k055-dynamics-and-ionisation-in-the-antarctic-middle-atmosphere#sthash.Iyh1EEIj.dpuf

Event K055-1415-B	**Assessment of the Current State of the Antarctic Middle Atmosphere and Climate Model Validation (AH)**
Dec. 2014	Dr Adrian McDonald, Department of Physics and Astronomy, University of Canterbury, Private Bag 4800, Christchurch, New Zealand, Phone: (03) 364 2281, Fax: (03) 364 2490 Email: adrian.mcdonald@canterbury.ac.nz
Arrival Heights (ASPA 122)	Increases in Antarctic sea ice area are a puzzling trend in a warming world, especially when compared to decreases in the Arctic. Unfortunately, climate models have difficulty in reproducing this Antarctic trend which casts doubt on predictions. Changes in weather patterns over the Ross Sea, which act to promote ice production and push the sea ice away from the Antarctic coast, may be poorly simulated in global models and therefore offer a potential solution to this problem. We aim to test this possibility and determine whether

	therefore offer a potential solution to this problem. We aim to test this possibility and determine whether small scale circulation changes are the missing piece in the sea ice puzzle.

Event K060-1415-A	**Space Weather Monitoring (AARDDVARK)**
Nov. 2014	Craig Rodger, University of Otago, PO Box 56, DUNEDIN, 9054, Phone: (03) 479 1100, Fax: (03) 479 8692, Email: crodger@physics.otago.ac.nz
Arrival Heights (ASPA 122)	It is important to understand the natural drivers of climate variability such that we can better understand and predict climate change driven by man. This effort into natural drivers includes investigation into the solar input and its variability through the transmission of solar energy from the Earth's upstream region to the lower atmosphere. Our research 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 caused by solar-generated events, particularly those caused by dramatic explosions on the Sun and aurora producing geomagnetic storms. Empirical climate data shows these events affect surface temperature variability in the polar regions, influencing regional climate patterns that directly affect New Zealand. We are working towards quantifying this impact in collaboration with international climate modellers.

Event NZARI K065-1415	**Determining Antarctica's Terrestrial Climate History Permafrost (MDV)**
Jan. 2015	Prof Gary Wilson, New Zealand Antarctic Research Institute, Private Bag 4745, Christchurch 8140, Phone: 021 731489, Fax: (03) 358 0211, Email: gary.wilson@nzari.aq
Table Mountain, Pearce Valley, Mt Flemming, Lower Wright Valley,	Climate models predict that past warming resulted in melting of Antarctic ice. In order to predict future impacts of warming, we are compelled to ask: How much warming and how much melting? Ice cores cannot answer these questions, as they do not sample far enough back in time. But, frozen ground has persisted for much longer and it represents an archive of past microbial life. We propose to use the genetic code from the microbes along with a growing genetic database to determine the temperature of past warm intervals and thus determine if past atmospheric warming drove melting of ice. We propose to investigate the viability and longevity of microbial populations in Antarctic permafrost (frozen soil and sediment). Permafrost is the longest-lived component of the Antarctic cryosphere and we will investigate microbial community diversity and their products (chlorophyll, enzymes and hydrocarbon gases) in permafrost. We will investigate microbial community relationships to terrestrial temperature and project this back through time using stratigraphic cores aseptically recovered from each site using a portable drilling rig. We hypothesize that community assemblage and metabolic by-products will record episodes of atmospheric warmth in Antarctica that predate the cryogenic state of the last 1 million years. The research should provide a significant advance over current climate model reconstructions, which rely on marine temperature history.

Event K067-1415-A	**Does Sea Ice Microbial Production Support Benthic Consumers in the Ross Sea, Antarctica?**
Oct. - Nov. 2014	Assoc. Prof Stephen Wing, Department of Marine Science, 310 Castle St, Dunedin 9010, University of Otago, PO Box 56, DUNEDIN, 905, Phone: (03) 479 1100, Email: steve.wing@otago.ac.nz
McMurdo Sound	The goal of this project is to test whether sea ice microbial communities are an important source of organic material supporting marine communities in the Ross Sea, including important prey for seals and penguins. We will use bulk and compound specific isotopic composition of organic matter sources to trace their contribution to consumers across spatial gradients corresponding to different sea ice extent and persistence. This will be extended to a systems level modelling approach to understand organic matter flux in the Ross Sea marine community. The project addresses an important unknown for Antarctic communities: the connectivity between primary production within sea ice and availability of organic material for benthic consumers. It will provide new understanding of the role of sea ice for ecosystem functioning in Antarctica.

Event K070-1415-A	**Defining functional roles and trophic dependencies of key top predators in the Ross Sea**
Oct. 2014 - Feb. - 2015	Dr Regina Eisert, University of Canterbury, Private Bag 4800, CHRISTCHURCH, 8041

	Phone: (03) 366 7001, Fax: (03) 364 2490, Email: regina.eisert@canterbury.ac.nz
McMurdo Sound	Climate change and commercial fishing are two potential drivers of change in the Ross Sea, but our ability to predict or manage impacts is limited by lack of information. Antarctic top predators integrate complex changes in the physical and biological conditions affecting their food resources, which makes them ideal sentinels for the state of the Ross Sea ecosystem. We will study the food requirements of killer whales, Weddell seals and Adélie penguins to provide reference points for detecting future change and to identify what food resources are critical to these predators to allow responsible environmental stewardship of the Ross Sea.

Event K070-1415-B	**Cameras at Crater Hill and Turtle Rock**
Oct. 2014 - Feb. - 2015	Professor Bryan Storey, Gateway Antarctica, 20 Kirkwood Avenue, Ilam, Private Bag 4800, CHRISTCHURCH 8140, Phone: (03) 364 2368, Fax: (03) 364 2197, Email: bryan.storey@canterbury.ac.nz
Hut Point Peninsula	The lack of accurate abundance estimates for key top predators in the Ross Sea represent a critical knowledge gap. We are installing survey cameras in several locations during the period from Nov-Feb to remotely monitor the abundance and daily activity patterns of Weddell seals, which demonstrate a clear diurnal or quasi-diurnal cycle of diving and resting on the sea ice. Since this activity pattern means that 10-90% of seals may be invisible on the surface at a given time, establishing what drives the diurnal behaviour (time, tides, lunar declination, other factors) is an essential prerequisite for accurate, remote (aerial or satellite) monitoring at a scale relevant to the Ross Sea population.

Event NZARI K081-1415-A	**Mesoscale Variability in Sea Ice Thickness, Optical Properties and Algal Biomass using UAV.**
Oct. - Nov. 2014	Ian Hawes, Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch Phone: (03) 364 2330, Email: ian.hawes@canterbury.ac.nz
McMurdo Sound	Sea ice is of global significance, playing important roles in ocean circulation and the functioning of polar ecosystems. However, inaccessibility makes it hard to quantify its properties at meaningful spatial scales. Autonomous Underwater Vehicles (AUVs) are potentially able to measure horizontal variability in sea-ice properties at near centimetre resolution along kilometres of trackline, offering a fundamentally new approach to sea ice research. Our project will develop and apply new AUV instrumentation specifically for estimating a particularly important and spatially variable properties of sea ice, that of the irradiance below, and biomass of algae within, the ice. This proposal addresses how to obtain better information on sea ice properties to improve quantification of ecosystem properties and processes, to test models of ice dynamics and monitor changes in ecosystem dynamics. With increasing focus on the role of Antarctic sea ice in global processes, use of new technologies to make robust, cost-effective measurements at appropriate spatial scales is increasingly necessary. This project uses an AUV to obtain and use data that will transform our spatial understanding of sea ice and its biological communities.

Event NZARI K081-1415-B	**Identification and Management of Change in Inland Antarctic Aquatic Ecosystems**
Dec. 2014	Ian Hawes, Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch Telephone: (03) 364 2330, Fax: (03) 364 2490, Email: ian.hawes@canterbury.ac.nz
Lake Vanda	Inland Aquatic Ecosystems are seen as the first to be affected by changing climate regimes in the McMurdo Dry Valleys that result in shifts in the ice/snow/meltwater balance. Already we have seen the levels of lakes fed by glacial melt rise as the frequency of warm summers has increased. Our programme in 2014-15 specifically examines the impact of rising levels in Lake Vanda insofar as they interact with the legacy of contamination that is associated with New Zealand's historic base on the shore of this iconic lake. Lake Vanda station was operational from 1967 to 1994, a period when environmental standards were less rigorous than they are today. Known areas of contamination remain from the old base, including heavy metals, hydrocarbons and personal care products, but until recently these have been of limited concern as they have been above the lake level. Accelerated lake level rise in the last few years has now flooded or threatens to flood contaminant sites and there is an increased degree of urgency in understanding their impacts on the lake and determining whether further remediation attempts should be made. This year we will sample sediments, soils and water in and around the old base site to determine and map the levels of

	contaminants and the extent to which they have already entered the lake ecosystem.
K082-1415-A	**Impacts of changing environments - Ross Sea coastal underwater benthic ecosystems**
Nov. 2014	Dr Vonda Cummings, NIWA - Wellington, Private Bag 14 901, WELLINGTON, 6241, Phone: (04) 386 0300, Email: v.cummings@niwa.co.nz
Granite Harbour	Anthropogenic impacts in Antarctica are increasing and a good understanding of marine ecosystem function is needed to inform decisions on environmental management and protection. With a focus on coastal benthic (seafloor) communities and the environmental conditions that structure them, the major goal of this research is to advance knowledge of coastal benthic ecosystem structure and function, spatial variance and response to environmental stress, and thus improve management of the Ross Sea region.
Event K085-1415	**Understanding How Antarctic Atmospheric Chemistry Drives and Responds to Global Change: Atmospheric Remote-sensing and Air Sampling**
Oct. 2014 - Feb. 2015	Dan Smale, NIWA - Lauder,Private Bag 50061. State Highway 85, Omakau, Central Otago 9352 Phone: (03) 440 0424, Fax: (03) 447 3348, Email: d.smale@niwa.co.nz
Arrival Heights (ASPA 122)	The Antarctic atmosphere is an important and unique part of the global climate system. Within the K085 activity, we measure atmospheric trace gases and radiation at two remote sites, Arrival Heights and Scott Base, which are exposed to minimal local anthropogenic pollution but do experience large-scale global change. The goal of NIWA's research is to improve understanding of how Antarctic atmospheric chemistry drives and responds to global climate change. To this end, it is associated with the Deep South National Science Challenge. Research topics include: ozone depletion and recovery, greenhouse gas measurements, sea-ice/atmosphere trace gas interactions, and hemispheric transport and mixing of atmospheric constituents. We measure atmospheric composition throughout the year using ground-based remote sensing instruments and surface in-situ air samples. In addition to these in-house research activities the measurements are used by the international scientific community to validate global climate-chemistry models, and in satellite validation campaigns.
Event K089-1415	**Climate Data Acquisition: Scott Base and Arrival Heights**
Oct. 2014 - Feb. 2015	Andrew Harper,NIWA - Christchurch, P O Box 8602, Christchurch 8440, Telephone: (03) 343 7824 Email: a.harper@niwa.co.nz
Scott Base	Antarctica is an important and unique part of the global climate system and provides a unique opportunity for us to observe global trends. 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 daily Scott Base 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 K108-1415	**Magnetotelluric (MT) Data Acquisition at Mt Erebus and Ross Island Region**
Nov. 2014 - Jan. 2015	Dr Graham Hill, GNS Science, 1 Fairway Drive, Avalon, PO Box 30 368, Lower Hutt 5040, Phone: (04) 570 1444, Fax: (04) 570 4600, Email: g.hill@gns.cri.nz
Mt Erebus	Erebus volcano, Antarctica in New Zealand's Ross Dependency, offers a unique opportunity to understand the internal workings of a volcano, the origin of alkalic magmas, and crustal rifting within West Antarctica. Erebus has the world's only active phonolite lava lake in its summit crater, which provides a unique window into the heart of an active degassing volcanoes magma chamber. Phonolite magmas like that at Mt Erebus have been responsible for past devastating eruptions (e.g. Pompeii 79 AD; Tambora 1815). We will use

	magnetotelluric methods, developed by our team for use in Antarctica, to image the volcano and its underlying magmatic system. In addition we will map out the underlying rifted crustal structure and examine the mantle source of the magma. Petrologic models suggest Mt Erebus is undergoing fractional crystallisation of deep mantle derived parental basanite magma in crustal magma chambers. Mt Erebus is a model volcano that, in recent years, has provided important insight into magma evolution and crystallisation, volcanic degassing and eruptive mechanisms. Our magnetotelluric study will provide new insight into how the volcano works and our findings will have global implications to understanding volcanoes in general and their internal plumbing systems.

Event K123-1415	**Environmental Domains Classification for the Ross Sea Region**
Jan. 2014	Dr Fraser Morgan, Landcare Research Ltd, 231 Morrin Road, St Johns, Auckland 1072 Phone: (09) 574 4149, Fax: (09) 574 4101, Email: morganf@landcareresearch.co.nz
Minna Bluff, Mt Fleming, Bull Pass, Don Juan Pond, Victoria Valley, Marble Point, Granite Harbour	The research develops an environmental classification for terrestrial ecosystems of Ross Sea region. The classification includes associated data and models and is underpinned by new knowledge on soil distribution, climate and microbial diversity and/or abundance. Its delivery, via a one-stop web portal will produce a classification that is dynamic, widely accessible, and functional. We provide new data on these ecosystems by developing a terrestrial environmental classification for the Ross Sea region using environmental domains analysis that encompasses climate, landform, soil, and biology layers; mapping soil attributes using soil-landscape models, validated with field data to establish the spatial distribution of soils in the McMurdo Dry Valleys; extending our existing soil climate network to include upland slopes for monitoring the impact of climate change on soil active layer and permafrost depth; and characterising soil microbial communities.

Event K131-1415-A	**Sea Ice Physical Impacts on Biology**
Oct. - Nov. 2014	Dr Tim Haskell, Industrial Research Ltd, PO Box 31-310, Lower Hutt, 5040, Phone: (04) 569 0000, Fax: (04) 569 0754, E-mail: t.haskell@irl.cri.nz
McMurdo Sound	This 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.

Event K131-1415-B	**Coulman High Mooring and Waves**
Jan. 2015	Dr Tim Haskell, Industrial Research Ltd, PO Box 31-310, Lower Hutt, 5040. Phone: (04) 569 0000, Fax: (04) 569 0754, E-mail: t.haskell@irl.cri.nz
Ross Ice Shelf	TBA

Event K150-1415	**LINZ - tide gauges at C Roberts and Scott Base**
Oct. - Nov. 2014	Paula Gentle, Land Information New Zealand, 155 Lambton Quay, PO Box 5501, WELLINGTON, 6145, Phone: (04) 460 0110, Fax: (04) 460 0112, Email: pgentle@linz.govt.nz
Scott Base, Cape Roberts	TBA

Event K220-1415	**Postgraduate Certificate in Antarctic Studies**
Dec. 2014 - Jan. 2015	Dr Daniela Liggett, Gateway Antarctica, University of Canterbury, Private Bag 4800, Christchurch 8140 Phone: (03) 364 2367, Fax: (03) 364 2490, Email: daniela.liggett@canterbury.ac.nz
Scott Base, Ross Ice Shelf	The Postgraduate Certificate in Antarctic Studies is a joint initiative of the University of Canterbury and Antarctica New Zealand, which aims to: (a) Provide students with sufficient background to understand interdisciplinary issues in relation to Antarctica and the Southern Ocean; (b) Translate classroom learning into practical field studies in Antarctica and introduce participants to the constraints of working in extreme conditions; and (c) Engage students in critical examinations of a selection of the contemporary scientific,

	environmental, social and political debates with respect to Antarctica and the Southern Ocean.
Event K400-1415	**NZARI Cape Adare site assessment team**
Nov. - Dec. 2014	Prof Gary Wilson, New Zealand Antarctic Research Institute, Private Bag 4745, Christchurch 8140, Phone: 021 731489, Fax: (03) 358 0211, Email: gary.wilson@nzari.aq
Cape Adare	A small team to conduct site assessment activities to determine whether Cape Adare is suitable for a longer-term study.