



MEDIA RELEASE WEDNESDAY 8 AUGUST 2007

Antarctic research to benefit from \$4.5 million in special projects for International Polar Year

Six exciting research projects touching on climate change and protecting the fragile Antarctic environment have been approved to mark International Polar Year.

The projects have been made possible by a special three-year, \$4.5 million contestable fund to support International Polar Year research, announced by the Prime Minister in May and administered by the Foundation for Research, Science and Technology,

“International Polar Year represents a unique opportunity for New Zealand scientists to participate in a number of important Antarctic scientific collaborations,” says foundation Chief Executive Murray Bain. “These collaborations are likely to produce major advances in Antarctic science and reinforce the position of New Zealand as a serious science partner, particularly in the Ross Sea region.”

Three of the projects will be led by the National Institute for Water and Atmospheric Research (NIWA) and one each by the University of Otago, Victoria University of Wellington and Waikato University.

The projects will look at such diverse subjects as summer biological activity in melt-water ponds, the winter thickness of the sea-ice, the effect of climate change on micro-organisms that grow in sea-ice, the ecosystems of the Dry Valleys, understanding the Antarctic’s unique marine ecosystems and the Antarctic ozone hole.

Each of the projects is being funded over three years. The successful project teams will have the full support of Antarctica New Zealand when they embark on projects in the challenging Antarctic field environment.

Antarctica New Zealand Chief Executive Lou Sanson welcomed the new Antarctic science funding. “We are thrilled to be supporting the research that is made possible by this funding. One of the objectives of International Polar Year is to spark a pulse of new polar science. The New Zealand Government has clearly answered that call and recognised the importance of Antarctic research for addressing questions of global significance”, he says.

“These projects represent significant opportunities for the scientific community to be involved in cutting edge research,” says Murray Bain.

“The International Polar Year provides a once in 50 year opportunity for a concentrated international science and research effort focussed on the polar regions, which are critical to the climate of the planet but about which comparatively little is known.”

International Polar Year actually runs for two years, from March 2007 to March 2009. It is an initiative led by the International Council for Science and the World Meteorological Organisation to begin a new era in polar research. It aims to further human understanding of the Arctic and Antarctic environments.

The last such year, 50 years ago, was marked by the founding of Scott Base and the beginning of New Zealand’s co-operation with the United States’ science programme in Antarctica.

Further information about IPY, including updates on New Zealand projects as they progress, can be found at the official IPY site: www.IPY.org.

Further Information

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The projects

Antarctic ozone recovery: Reducing uncertainty in projections of Antarctic ozone through the 21st century using IPY measurements

Contractor: NIWA

Value over three years: \$731,000

Outline: The aim of this research is to reduce uncertainty in projections of the Antarctic ozone hole by improving understanding of how Antarctic ozone depletion interacts with climate change. This will be achieved by using an enhanced suite of measurements from IPY campaigns in Antarctica to thoroughly assess and improve a state-of-the-art coupled chemistry-climate model of the troposphere and stratosphere. The researchers will then simulate Antarctic ozone changes to 2100 using the improved model. A secondary goal is to determine how projected changes in ozone over Antarctica, together with increases in greenhouse gases, will affect surface climate in Antarctica.

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Inland Water: Late season ecosystem processes in Antarctic inland waters

Contractor: National Institute of Water and Atmospheric Research

Value over three years: \$460,000

Outline: This research is likely to fundamentally change our understanding of how the biological activity in a widespread and abundant element of the Antarctic landscape – meltwater ponds – is linked to their extreme climatic setting during the transition from summer to winter. It is planned to undertake a time series of measurements of key physical, chemical and biological attributes and processes within representative ponds to determine how these change as freezing proceeds.

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Ice CUBE

Contractor: NIWA

Value over three years: \$880,000

Outline: The Antarctic marine ecosystem is under threat as a result of global climate change and other anthropogenic influences. Characterising the structure and function of benthic ecosystems and determining their relationships to key environmental factors across a range of spatial and biological scales is essential to an improved understanding of Antarctic ecology and wise management of the Antarctic coastal zone. The major goal of this research is to increase understanding of the structure and function of the Ross Sea coastal benthic ecosystem. This information will be used to develop models of biodiversity response over multiple spatial scales and levels of biological organisation, that will enable us to better-predict how this valuable ecosystem will respond to change.

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Microbial biodiversity in land-fast sea-ice in the Ross Sea

Contractor: Victoria University of Wellington

Value over three years: \$463,068

Outline: The hypothesis for this project is that changing patterns of microbial diversity along a latitudinal gradient in the Ross Sea are sensitive indicators of climate change. The research will generate a bio-inventory of the micro-organisms in sea ice using both conventional methods and molecular technology, and will quantify abundances to generate community fingerprints for sea ice biodiversity. Each fingerprint will summarise the biodiversity at one of three sites along the coast of the Ross Sea that will allow temporal and geographical comparisons.

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Understanding, valuing and protecting Antarctica's unique terrestrial ecosystems: Predicting biocomplexity in Dry Valley ecosystems

Contractor: University of Waikato

Value over three years: \$991,667

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

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Winter sea ice growth processes: The impact of winter growth on sea ice thickness.

Contractor: University of Otago

Value over three years: \$988,516

Outline: The thickness and growth of coastal sea ice during winter is a key unknown when considering polar influences on climate. Much of the coastline of Antarctica is ice shelf. Melting and/or freezing at the base of an ice shelf influences the heat content and salinity of the water in contact with it. In turn this strongly controls near-surface oceanography. The overall aim of this research is to observe the development of these processes and to measure their influence on sea ice growth.

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Note to Editors

The Foundation for Research, Science and Technology invests over \$460 million a year on behalf of the New Zealand Government, in research, science and technology. These investments are made to enhance the wealth and well being of New Zealanders.

To find out more about the Foundation visit www.frst.govt.nz