

Queensland

James Cook University

DP0771982 Prof TH Bell; Prof BE Hobbs

Approved Project Title **Numerical modelling of deformation partitioning and its role in metamorphism, tectonism and mineralization**

2007 : \$68,000

2008 : \$73,000

2009 : \$38,000

Primary RFCD 2601 GEOLOGY

Administering Organisation James Cook University

Project Summary

Targeting blind mineralization is the biggest problem facing the Australian mining industry. The modelling developed in this project will integrate deformation, fluid and chemical processes and provide a means for understanding the deformation partitioning that localizes epigenetic ore regionally as well as along portions of large-scale structures. Applying this to known ore deposits may delineate adjacent plus regionally distributed zones where the deformation event responsible for mineralization is locally present at sufficient intensity to form ore. This would allow targeted deep drilling in ground with no ore close to the surface saving millions in drilling costs and dramatically increasing the financial viability of this industry.

DP0770428 Dr KH Ferguson

Approved Project Title **A study of the public understanding of the Great Barrier Reef and its sustainable use**

2007 : \$77,030

2008 : \$77,030

2009 : \$77,030

Primary RFCD 4301 HISTORICAL STUDIES

APD Dr KH Ferguson

Administering Organisation James Cook University

Project Summary

As a national icon, the survival of the Great Barrier Reef is of consequence to all Australians. As pressures on the Reef increase, it is imperative that the cultural heritage and social value of the Reef be recognised, understood, and mobilised to facilitate efforts to preserve the Reef for future generations. Reaching and informing broad and varied audiences in a range of communities, this project encourages a much wider appreciation of the value and importance of the Reef to Australian culture, and thus provides an important capacity-building step in realising the long-term social goal of sustainable use of the Reef's unique biodiversity

DP0773029 Dr AI Kemp

Approved Project Title **Proterozoic crustal evolution of the Northern Australian Craton revealed from hafnium-oxygen isotope systematics of granite-hosted and detrital zircons**

2007 : \$115,000

2008 : \$120,000

2009 : \$125,000

2010 : \$115,000

2011 : \$105,000

Primary RFCD 2603 GEOCHEMISTRY

ARF Dr AI Kemp

Administering Organisation James Cook University

Project Summary

This project will provide an detailed view of continental crust formation during a key period of Earth's history. Through an innovative approach and the use of sophisticated micro-analytical techniques, it will enhance the profile and global competitiveness of Australian research. The project is an integral part of a national collaboration on Proterozoic terranes involving universities, Geoscience Australia and state geological surveys, and datasets generated by this study can potentially lead to refined mineral exploration strategies. The project is linked to the development of a major new analytical facility at James Cook University that will support local and international research and research training.

Summary of Discovery Projects Proposals for Funding to Commence in 2007

DP0772691 Prof JF Nott; Prof MI Bird; Dr SG Smithers

Approved Project Title **Are humans responsible for recent changes in the behaviour of tropical cyclones? Decoupling natural variability from human influence using isotopes**

2007 : \$80,000
2008 : \$50,000
2009 : \$90,000
2010 : \$70,000
2011 : \$25,118

Primary RFCD 2603 GEOCHEMISTRY

Administering Organisation James Cook University

Project Summary

An increase in the frequency of intense landfalling tropical cyclones will have a major impact upon Australia's economy and the safety of its citizens and visitors. There is little doubt that global climate change will cause this increase. Understanding when this might occur and the extent of this change over and above that which could also occur naturally will help reduce economic loss and save peoples' lives. Using isotope records of tropical cyclones and global climate models we will differentiate natural from human induced changes and ascertain the likely future impact of this hazard on Australia and its near neighbours.

DP0773486 Prof NH Oliver; Prof BE Hobbs; Dr SF Simmons; Prof RH Sibson; Dr T Baker; Dr J Rowland

Approved Project Title **Numerical modelling of coupled deformation, fluid flow and heat flow in modern and ancient rifts**

2007 : \$100,000
2008 : \$90,000
2009 : \$90,000

Primary RFCD 2601 GEOLOGY

Administering Organisation James Cook University

Project Summary

Computer modeling of geological processes is increasingly important to mineral and hydrocarbon exploration, to hazard prediction (e.g. earthquakes) and to plate tectonics. Because it is difficult to understand geological processes from ancient rocks, we will use new computer models to study fluid circulation in an active volcanic fault zone in New Zealand, where many of the parameters obscured in ancient rocks can be measured directly. We will determine processes of fluid migration that contributed to the formation of mineral deposits in ancient rocks, such as those mined in eastern Australia for gold. The project also has implications for discovery and development of energy resources including fossil fuels and geothermal waters.

DP0770759 Dr MS Pratchett

Approved Project Title **Climate change and coral reef communities: predicting and managing future impacts.**

2007 : \$96,614
2008 : \$96,614
2009 : \$96,614
2010 : \$96,614
2011 : \$96,614

Primary RFCD 3008 ENVIRONMENTAL SCIENCES

ARF Dr MS Pratchett

Administering Organisation James Cook University

Project Summary

Coral reefs are critically important for the goods and services they provide, but are facing considerable threat from sustained, ongoing climate change. Results from this project, and supplementary data from other researchers within the ARC Centre of Excellence for Coral Reef Studies, will help develop innovative strategies to manage the effects of climate change on coral reef ecosystems. There is no comparable team in the world that has the capacity or resources to rigorously integrate world-class research into knowledge-based management of coral reef ecosystems.