

decision making by Trade Ministers and Leaders on the commencement of negotiations for a comprehensive free trade agreement between Australia, New Zealand and other Forum island countries (commonly known as PACER Plus).

- (5) On 26 November 2008 I (Mr Crean) tabled a document in both houses of Parliament conveying the assessments that emerged in wide-ranging public consultations on the costs and benefits of participation in the Trans-Pacific Partnership (TPP), including the expected economic, regional, social, cultural, regulatory and environmental impacts of a TPP. The document also addressed priorities and objectives for the negotiations. The Government will continue to consult fully on the terms of its participation and to convey feedback on the course of negotiations.

Climate Change

(Question No. 1507)

Senator Ian Macdonald asked the Minister for Innovation, Industry, Science and Research, upon notice, on 12 May 2009:

- (a) For the past 5 years, what Australian Research Council research grants have gone to scientists and researchers associated with work related to climate change; and
- (b) for each of these grants: (i) who was the recipient, (ii) what was the amount, and (iii) what was the short title of the research

Senator Carr—The answer to the honourable senator's question is as follows:

- (a) Details of grants awarded in the past five years under the ARC's National Competitive Grants Program (NCGP) to projects related to climate change are provided in the table at (b).
- (b) To identify projects either directly or indirectly related to climate change research, a search of projects awarded funding under the NCGP was undertaken using the following search criteria: (i) the keywords 'climate change', 'global warming' or 'greenhouse gas' in the 'Project title', 'Project abstract' or 'National Benefit Text' fields of the application; and (ii) projects that had selected the Socio-Economic Objective (SEO) code of 770101 (climate change) as being relevant to the research. The list of projects identified through this search was then checked for relevance. In addition, a separate search was undertaken of Centres funded through the ARC Centres of Excellence scheme. The details are as at the time research proposals were approved for funding and exclude any post-award variations that may subsequently have been approved.

Start Year (Note 1)	Administering Organisation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allocation (over the life of the project)
2005	The University of Western Australia	Wernberg, T	Effects of physical disturbance on kelp-dominated reef communities across a broad temperate-tropical transition zone	\$210,000
2005	The University of New South Wales	Humphrey, T	High efficiency thermoelectric nanomaterials	\$215,000
2005	Monash University	Beardall, J	Effects of global climate change on marine phytoplankton: interactions between UV radiation and elevated atmospheric carbon dioxide levels	\$190,000
2005	Monash University	McNaughton, D	Vibrational Spectroscopy and Imaging from Interstellar Dust to Life	\$555,000
2005	The University of Sydney	Armfield, S	Turbulent fountains in stratified fluids with opposing buoyancy flux	\$375,000
2005	The University of Melbourne	Lukey, G	Design of Advanced Geopolymeric Materials Based on Nanostructural Characterisation and Modelling	\$238,000
2005	Macquarie University	Gore, D	The Antarctic ice sheet through the Last Glacial Cycle - numerical modelling constrained by field evidence	\$229,000
2005	Curtin University of Technology	Lamont, B	Quantifying long-distance seed dispersal and its role in the metapopulation dynamics of plants with contrasting life histories	\$670,000
2005	The University of New South Wales	England, M	Australian climate extremes and predictability in a changing CO ₂ world: the unique role of the Southern Hemisphere extratropical ocean-atmosphere	\$225,000
2005	The University of Melbourne	Barnett, J	Climate Change and Security in the South Pacific	\$687,000
2005	The University of Queensland	Fine, M	Microendoliths, coral bleaching and environmental change	\$220,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2005	The Australian Na- tional University	Barrows, T	Cosmogenic isotopes in glacial landscapes: climate change and production rates	\$290,000
2005	The University of Mel- bourne	Stephenson, W	Erosion Morphodynamics and Evolution of Shore Platforms	\$140,000
2005	University of Tasmania	Vaillancourt, R	Genetic legacy of climate change in Australian temperate forests	\$225,000
2005	The Australian Na- tional University	Farquhar, G	Oxygen-18 in water, carbon dioxide, and or- ganic matter: a tool for linking plant biological processes, hydrology and climate change	\$400,000
2005	The Australian Na- tional University	Weber, K	High Temperature Silicon Nitride for Improved Silicon Photovoltaics	\$193,000
2005	University of Wollon- gong	Jones, N	Biomass Burning Emissions - An Innovative Technique for Assessing Global Climate Im- pacts	\$472,000
2005	The University of Mel- bourne	Walker, J	High resolution mapping of surface and root zone soil moisture	\$667,000
2005	La Trobe University	Mitchell, N	Calls and constraints: do male frogs signal di- rect benefits?	\$270,000
2005	Griffith University	Cropp, R	A modelling analysis of the implications of biogenic feedbacks on environment for the adaptation of ecosystems	\$77,000
2005	The University of Mel- bourne	Drinnan, A	Fossil evidence for the evolution of Australia's modern vegetation	\$180,000
2005	The University of New England	Geiser, F	The Role of Torpor in the Life of Arid Zone Mammals	\$300,000
2005	The University of Syd- ney	Field, J	First Australians, Last Megafauna? Modern Approaches To A Prehistoric Puzzle	\$474,000
2005	University of Wollon- gong	Murray-Wallace, C	A one million year record of relative sea-level, climatic and environmental changes - Ae- olianites of the southern Australian continental margin	\$210,000
2005	The University of Ade- laide	Bulleri, F	The interplay between natural and human per- turbations in structuring marine habitats	\$336,000
2005	Macquarie University	Wright, I	Leaf economics, and the acquisition and use of water and nitrogen for photosynthesis	\$370,000
2005	The University of Ade- laide	Williams, M	The environmental impact of an extreme event: the Toba mega-eruption, volcanic winter and the near demise of humans	\$360,000
2005	Monash University	Sanjayan, J	Development of an Alkali Activated Slag based Construction Material for High Fire Risk Infra- structures	\$280,000
2005	The University of Western Australia	Gao, J	Nonlinear and Nonstationary Time Series Econometrics: Theory and Applications	\$355,000
2005	The University of Mel- bourne	Wallace, M	Murray Basin: A unique archive of late Neo- gene global change	\$285,000
2005	Griffith University	Dale, P	Predicting Malaria and Other Vector-borne Disease Risk Using Eco-epidemiological Mod- els	\$150,000
2005	University of Technol- ogy, Sydney	Ralph, P	When corals bleach, what is the weakest photo- synthetic link?	\$134,000
2005	Curtin University of Technology	Majer, J	Effects of ants and ant-mediated dispersal on speciation rates, biogeography and diversity of angiosperms	\$230,000
2005	The University of Syd- ney	Minasny, B	How do soils grow? Modelling soil develop- ment in the landscape	\$298,000
2005	The Australian Na- tional University	McCulloch, M	Impact of increased sediment and nutrient dis- charges on the long-term sustainability of the Great Barrier Reef	\$705,000

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2005	The Australian National University	McCulloch, M	Deep sea corals as high resolution recorders of southern ocean nutrient chemistry and circulation	\$270,000
2005	The Australian National University	Mills, F	Photochemistry of the Middle Atmospheres of Venus and the Earth	\$260,000
2005	Charles Darwin University	Christian, K	Competition between regulatory processes in Amphibians: Testing the effects of physical and physiological factors on thermoregulation and hydroregulation	\$220,000
2005	The Australian National University	Eggins, S	A new approach to the U-series dating of fossil molluscs - a major advance for the earth and archaeological sciences	\$245,000
2005	The University of New South Wales	Sherwin, W	Testing indicators of genetic exchange and adaptation of populations, essential for biodiversity assessment and management	\$260,000
2005	The University of Sydney	You, Y	Simulating the evolution of the Southern Ocean and Australia's Palaeo-environment over 40 million years	\$180,000
2005	Queensland University of Technology	Thwaites, R	Reducing uncertainties in greenhouse gas emissions from sub-tropical land use systems	\$335,000
2005	The University of Sydney	Masri, A	Innovative Research in Gaseous and Spray Combustion	\$445,000
2005	Curtin University of Technology	Gavrilov, A	Acoustic observation of Antarctic ice rifting and calving events using remote hydroacoustic listening stations	\$90,904
2005	The University of Sydney	Shine, R	Ecology and evolution in dynamic systems: a new approach to conserving Australian biodiversity	\$1,551,625
2005	The University of New South Wales	England, M	Genesis of Australian Climate Extremes in the Southern Hemisphere Extratropical Ocean-Atmosphere	\$1,551,625
2005	The Australian National University	Blakers, A	A furnace stack for advanced photovoltaic, photonic and microfabrication applications	\$321,953
2005	Curtin University of Technology	Grice, K	Accelerated solvent extractor and evaporator for molecular and stable isotope analyses of sedimentary organic matter	\$110,000
2005	The Australian National University	Ireland, T	SHRIMP SI - Microscale stable-isotope analysis in the Earth Sciences	\$552,475
2005	The University of Adelaide	Reid, I	The Buckland Park Lidar Facility	\$142,138
2005	The Australian National University	Fifield, L	A new-generation gas-source radiocarbon system for integrated environmental and archaeological research	\$854,354
2005	The Australian National University	McCulloch, M	World-leading elemental and isotopic micro-analysis and chemical speciation facilities for an environmentally sustainable Australia	\$397,100
2005	University of Wollongong	Chivas, A	14CHRONOS (Chronologies from High-Resolution Organic Separations): a centre for radiocarbon dating of specific compounds for the environmental and archaeological sciences	\$267,767
2005	Deakin University	Luther, M	Determination of key parameters and control strategies for fabric energy storage (FES) systems for the various climates of Australia	\$72,444
2005	Monash University	Mac Nally, R	Models for biodiversity futures for massively altered agricultural landscapes	\$344,237
2005	The University of Melbourne	McCalman, J	Science and Citizenship: Democracy in the age of science-mediated risk	\$216,592
2005	Southern Cross University	Vanclay, J	Integrated Carbon Accounting and Information Management Systems	\$124,000

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2005	The University of Queensland	Possingham, H	A Bayesian framework for metapopulation dynamics of species in endangered communi- ties: integrating demographic, environmental and genetic data	\$328,860
2005	The University of Western Australia	Murphy, D	Integrating microbiology and climatic drivers to determine triggers for nitrous oxide emis- sions from arable soils in semi-arid Western Australia	\$387,941
2005	University of Wollon- gong	Griffith, D	Novel, Cost-Effective Methods for Measuring Methane Emissions from Grazing Livestock	\$144,844
2005	The University of Western Australia	Hertzler, G	Designing Weather Derivatives and Yield Index Contracts for Rural Australia	\$72,444
2005	Australian Catholic University	Saintilan, N	Trophic associations involving fish and crusta- ceans in coastal saltmarsh	\$79,844
2005	The University of New South Wales	Sorrell, C	Surface Processing of Photo-Sensitive Semi- conducting Oxides for Solar-Hydrogen	\$1,250,000
2005	The University of Mel- bourne	Yuen, S	Phytocapping for sustainable waste contain- ment systems and reduction of greenhouse gas emissions and odour from waste disposal sites	\$735,000
2005	University of Wollon- gong	Monaghan, B	Insoluble Oxide Product Formation and its Effect on Coke Dissolution in Liquid Iron	\$82,444
2005	The University of Queensland	Hoegh-Guldberg, O	New tools for managing ecosystem responses to climate change on the southern Great Barrier Reef	\$1,100,000
2005	University of the Sun- shine Coast	Shapcott, A	National Macadamia Conservation Program	\$72,444
2005	University of Wollon- gong	Griffith, D	Innovative measurement and modelling of greenhouse fluxes at regional scales across Australia	\$125,000
2005	The University of Queensland	Lu, G	Nanostructured Magnesium-base Composites for High-density Hydrogen Storage	\$342,200
2005	University of the Sun- shine Coast	Wallace, H	Genetic variation of the vulnerable Eucalyptus argophloia, and its development for sustainable hardwood forestry in low rainfall areas	\$135,000
2005	The University of Mel- bourne	Kentish, S	The separation of carbon dioxide from indus- trial sources using nanoporous carbon	\$24,100
2005	University of Tasmania	Roberts, J	Earth Systems Science OPeNDAP computer server framework	\$81,900
2006	The University of Mel- bourne	Warren, C	How do plants cope with temporal variability in water and nutrients?	\$820,000
2006	The University of Western Australia	Judd, K	Forecasting and management using imperfect models, with a focus on weather and climate	\$231,000
2006	The University of New South Wales	Cavicchioli, R	The molecular basis of cold adaptation: an in- tegrated genomic and proteomic study of Ant- arctic archaea	\$259,000
2006	Macquarie University	Henderson-Sellers, A	Stable water isotopic simulation and analysis to improve Earth System models and deliver bet- ter predictions of Australian water resource vulnerability	\$905,000
2006	Macquarie University	Pitman, A	Do terrestrial processes intensify Australian droughts ?	\$240,000
2006	The University of Ade- laide	Marschner, P	Understanding plant residue decomposition by linking organic matter chemistry and soil mi- crobiology	\$260,000
2006	The University of Queensland	Memmott, P	Isolation, Insularity and Change in Island Popu- lations - an Interdisciplinary Study of Aborigi- nal Cultural Patterns in the Gulf of Carpentaria	\$365,000

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2006	The Australian Na- tional University	Gao, Q	Band gap engineering of novel (In,Ga)SbN epitaxial semiconductors for high-performance long-wavelength optoelectronic devices	\$330,000
2006	The Australian Na- tional University	Gagan, M	The Indian Ocean Dipole, Australasian drought, and the great-earthquake cycle: Long-term per- spectives for improved prediction	\$1,016,000
2006	The Australian Na- tional University	Gagan, M	Monsoon extremes, environmental shifts, and catastrophic volcanic eruptions: quantifying impacts on the early human history of southern Australasia	\$445,000
2006	The University of Mel- bourne	Chong, M	The structure of turbulent boundary layers	\$520,000
2006	The University of Mel- bourne	Waller, R	Molecular-genetic organization and evolution of dinoflagellate mitochondria	\$264,000
2006	The University of Western Australia	Waite, A	Biological Oceanographic Mechanisms Driving Australia's Coastal Fisheries	\$310,000
2006	The Australian Na- tional University	Sumner, J	Testing Theories of Historical Divergence using South Eastern Australian Reptiles	\$318,000
2006	The University of Mel- bourne	Simmonds, I	Global objective identification and tracking of atmospheric fronts and the role of fronts in climate change	\$180,000
2006	The Australian Na- tional University	Griffiths, R	From The Ocean Depths To Abrupt Climate Change - Missing Processes In The Global Overturning Circulation	\$401,000
2006	Griffith University	Xu, Z	Fingerprints of global climate change and for- est management on rhizosphere carbon and nutrient cycling	\$280,000
2006	Deakin University	Arnould, J	The cost of a meal: life-history consequences of foraging mode in fur seals and sea lions	\$219,000
2006	University of Wollon- gong	Woodroffe, C	Variability in El Niño frequency and intensity over the past 4000 years	\$115,000
2006	The Australian Na- tional University	Weber, K	Investigation of P Type Emitters for Future Generation Photovoltaics	\$265,000
2006	Murdoch University	Lyons, T	Impact of land use on cloud formation	\$145,000
2006	The University of Ade- laide	Cooper, A	Using ancient DNA to investigate the environ- mental impacts of climate change and humans through time	\$470,000
2006	The University of Mel- bourne	Woodhead, J	Of caves, bones, and climate change: new in- sights from old speleothems	\$240,000
2006	Museum of Western Australia	McNamara, K	Extinction and survival: biotic responses to environmental change in Late Devonian oceans during a greenhouse-icehouse transition	\$235,000
2006	The University of Western Australia	Ghadouani, A	Predicting plankton patchiness in lakes using a high resolution sampling system	\$140,000
2006	James Cook University	Willis, B	The role of algal endosymbionts in acclimation and adaptation of reef corals to climate change	\$356,000
2006	The Flinders Univer- sity of South Australia	Schwarz, M	Origins of invertebrate fauna in Australia since the Cretaceous: a molecular approach using bees as a model taxon	\$297,000
2006	University of Wollon- gong	Turney, C	Testing the hypothesis of synchronous inter- hemispheric climatic change during the Last Termination (20,000-10,000 years ago)	\$379,000
2006	The University of Queensland	Skilleter, G	Ecological consequences of global warming: predicting effects on biodiversity on intertidal assemblages on the east coast of Australia	\$362,000
2006	Curtin University of Technology	Cooper, C	Evaporative water loss and relative water econ- omy in marsupials	\$175,000
2006	The University of Syd- ney	Chen, M	Novel Chlorophylls and New Directions in Photosynthesis	\$420,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2006	The University of New South Wales	Sorrell, C	P-Type Titanium Dioxide for Hydrogen Gen- eration from Water using Solar Energy	\$350,000
2006	Griffith University	Heazle, M	Global Warming, Iraq, and the Washington Consensus: Three Case Studies on the Role of Specialist Advice in Policy Making	\$240,000
2006	The University of Syd- ney	Underwood, A	Connecting ecological processes controlling variation across spatial scales	\$1,185,237
2006	The University of Queensland	Lowe, A	Developing biogeographic know-how: Improv- ing species divergence and dispersal estima- tions to examine geological and climatic evolu- tionary drivers	\$282,000
2006	Monash University	Holmes, D	Optimal Control of Modular Multilevel Power Electronic Converter Systems for Electrical Distribution Networks	\$325,000
2006	Monash University	Stegman, D	Planetary Pulsations: Exploring Links between Superplumes, Supercontinents, and Super- chrons with 3-D Spherical Mantle Convection Models	\$305,000
2006	The University of Syd- ney	Harris, A	Selective generation of hydrogen from biomass and waste fuels	\$260,000
2006	University of Wollon- gong	Innis, P	Self-Assembled Porphyrin-Fullerene Photo- voltaic Electrodes: Towards Nanostructured Organic Solar Cells	\$429,000
2006	University of Tasmania	Coleman, R	Active Ice-Shelf Rift Systems on the Amery Ice Shelf, East Antarctica	\$290,000
2006	University of Wollon- gong	Ayre, D	Setting the limits: Ecological and genetic tests of the status of marine populations at species borders	\$275,000
2006	The University of New South Wales	England, M	Abrupt Southern Hemisphere Climate Change: The Role Of The Southern Ocean Thermoha- line Circulation	\$270,000
2006	University of Wollon- gong	Nanson, G	Palaeoclimatic and environmental significance of major Late Quaternary drainage contribu- tions and disruptions in the Lake Eyre basin	\$270,000
2006	The Australian Na- tional University	Grove, R	British Empire and the Natural World: the En- vironmental History of the British Empire and Commonwealth 1600-2000	\$673,200
2006	The University of Mel- bourne	Karoly, D	Improving understanding of climate change and its impacts in Australia through detection and attribution of climate change	\$1,901,110
2006	The University of Mel- bourne	McFadden, G	Drug targets in malaria parasites	\$1,581,110
2006	The University of New South Wales	Suthers, I	Sydney Harbour Institute of Marine Science (SHIMS) aquarium facility	\$160,000
2006	The University of Mel- bourne	Woodhead, J	A new X-ray spectrometer facility for VIEPS: major and trace element characterisation of geological materials	\$186,000
2006	The University of Western Australia	Li, Z	Western Australia Palaeomagnetic and Rock- magnetic Facility	\$246,000
2006	The University of Newcastle	Drysdale, R	A high-throughput stable isotope ratio mass spectrometer for water resource management and climate change studies	\$100,000
2006	University of Wollon- gong	Griffith, D	High resolution Fourier transform infrared spectrometer for atmospheric remote sensing and laboratory spectroscopy	\$250,000
2006	Griffith University	Quinn, R	Upgrade of existing university low field and high field nuclear magnetic resonance facilities	\$350,000

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2006	Monash University	Dixon, P	Combining hydrological information with a multi-regional, computable general equilibrium model	\$169,100
2006	The University of New South Wales	Wang, J	Process models and control strategies for abrasive waterjet precision cutting of amorphous magnetic metal parts for energy efficient electrical machines	\$295,000
2006	Curtin University of Technology	Nayar, C	Variable speed diesel power conversion system using a doubly fed induction generator	\$280,000
2006	The University of Adelaide	Bi, P	Risk assessment for environmental health in Adelaide based on weather, air pollution and population health outcomes	\$73,950
2006	The University of Queensland	Rudolph, V	Dynamic Gas Permeability Investigations of Highly Stressed Coals	\$400,000
2006	The University of New South Wales	Sharma, A	A Stochastic Downscaling Framework for Catchment Scale Climate Change Impact Assessment	\$278,918
2006	The University of Sydney	Munn, A	Avoiding Environmental Bankruptcy: the grazing impacts of red kangaroos and sheep	\$259,340
2006	Queensland University of Technology	Buys, L	Managing the social, environmental & economic impacts of high density-living within inner-urban sub-tropical environments	\$350,000
2006	The University of Sydney	Jeng, D	Port Stephens Flood Tide Delta: Shoreline Management Issues	\$370,920
2006	The Flinders University of South Australia	Matisons, J	The Nanotechnology Desalination Research Project - Low Energy Desalination Membranes	\$735,000
2006	The University of Western Australia	Balme, J	Aboriginal landscape transformations in south-west Australia	\$379,278
2006	The University of Queensland	Batstone, D	Advanced Stability Sensor for Anaerobic Digestion Processes	\$164,000
2006	The University of Queensland	Hyde, R	Exploring synergies with innovative Green Technologies for Advanced Renovation: Redefining a Bioclimatic approach for multi residential and office buildings in warmer climates	\$221,004
2006	The University of Western Australia	Chua, H	Near zero-emission hydrogen and carbon production from natural gas and bio-methane	\$295,000
2006	The Australian National University	Blakers, A	Efficient photovoltaic concentrator receivers utilising commercial non-concentrator solar cells	\$127,901
2006	Monash University	Leblanc, M	Satellite based monitoring system of lakes and wetlands water quality	\$223,020
2006	The University of Queensland	Hankamer, B	Developing a competitive H2 production system based on engineered cells of green algae	\$140,000
2006	The University of New South Wales	England, M	Eddy mixing and water mass formation in the Southern Ocean in a global 1/4 degree model	\$14,000
2006	The Australian National University	Hogg, A	Nonhydrostatic waves and instabilities in rotating fluids	\$16,400
2007	The University of New England	Andrew, N	Ecology of insect herbivore assemblages: influence of climate, evolutionary history and plant traits	\$256,000
2007	The University of Queensland	Feng, B	Regenerable CO2 adsorbing materials for zero emission power generation systems	\$230,000
2007	The University of Adelaide	Nathan, G	Investigating the coupled dependencies of soot in turbulent flames by advanced laser diagnostics and modelling	\$541,063
2007	University of Wollongong	Dou, S	Current limiting mechanisms in magnesium diboride superconductors	\$1,430,000
2007	The University of Western Australia	Li, Z	Neoproterozoic global geodynamic and climatic events: were they linked?	\$230,000

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2007	The University of New South Wales	Froyland, G	A Dynamical Systems Approach to Mapping Southern Ocean Circulation Pathways	\$285,000
2007	The University of Melbourne	Lane, T	Tropical convection and its contribution to climate variability	\$238,000
2007	Monash University	Stamatov, V	Physics of combustion of multicomponent alternative transport fuels	\$250,000
2007	Monash University	Suzuki, K	Novel nanostructured alloy membranes for hydrogen permeation: Advanced materials technology for renewable energy	\$280,000
2007	The University of New South Wales	Hand, S	Unravelling the last great Gondwanan mystery: the first land vertebrate fauna from the Tertiary of New Zealand	\$513,902
2007	James Cook University	Pratchett, M	Climate change and coral reef communities: predicting and managing future impacts	\$483,070
2007	University of Canberra	Maher, W	Southern Ocean nutrients and their links to climate change: insights from the isotope and elemental signature of diatoms and sponges	\$390,000
2007	University of Tasmania	Hindell, M	Winter Foraging Locations Of Southern Ocean Predators In Relation To Stochastic Variation In Sea-Ice Extent	\$263,000
2007	The University of Western Australia	Chen, Z	Reconstruction of marine ecosystems following the greatest mass extinction during the Phanerozoic history of Earth life: Lessons for the present	\$563,070
2007	The University of Adelaide	Murphy, N	Evolution of the unique fauna of the Great Artesian Basin mound springs: the impact of aridification and climate change	\$300,004
2007	The Australian National University	Brocks, J	Molecular fossils, environmental genomics and the natural history of an Australian salt lake	\$263,000
2007	The University of New South Wales	Middleton, J	Hydrodynamics and Mixing around Coral Reefs	\$280,000
2007	The University of Queensland	Buckley, Y	How do characteristics of seeds and landscape heterogeneity determine plant spread in new environments?	\$790,000
2007	The Australian National University	Evans, J	What limits CO ₂ diffusion inside leaves? Dissecting the diffusion path with Arabidopsis mutants	\$263,000
2007	The Australian National University	Eggins, S	The Southern Ocean's role in determining atmospheric CO ₂ levels: new insights from novel biogenic silica records of seawater pH	\$262,000
2007	The Australian National University	O'Neill, H	An experimental exploration of silicate melt thermodynamics	\$122,000
2007	The University of Melbourne	Eckersley, R	Regime interplay: from conflict to integration in overlapping international regimes	\$111,000
2007	Murdoch University	Bunce, M	Ancient DNA as a tool to study Australia's paleome: exploring climatic change, past biodiversity, extinctions and long-term survival of DNA	\$192,000
2007	Deakin University	Shi, G	The bipolarity of Late Palaeozoic marine faunal distributions: origin, processes and implications for modern global marine biogeography	\$170,000
2007	University of Tasmania	Hovenden, M	Ecosystem level impacts of climate change on a temperate grassland	\$178,000
2007	The University of Sydney	Masri, A	Finite Rate Chemistry Effects in Turbulent Combustion	\$500,000
2007	The University of Sydney	Phillips, B	Disperse or die: the evolution of dispersal ability in a changing climate	\$332,000
2007	The University of Sydney	Seebacher, F	Genetic mechanisms of metabolic control and thermal sensing during thermoregulation	\$228,000

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2007	University of Wollon- gong	Westaway, K	Landscape evolution and palaeoclimates in Indonesia: environmental, faunal and archaeo- logical implications	\$306,090
2007	The University of Queensland	McCallum, H	Network structure, connectivity and wildlife disease	\$210,000
2007	Macquarie University	Evans, J	Vulnerability of the Murray-Darling basin hydrometeorology to human modification	\$658,000
2007	The University of Queensland	Chenoweth, S	The Genetic Basis of Differences Between the Sexes	\$838,000
2007	James Cook University	Nott, J	Are humans responsible for recent changes in the behaviour of tropical cyclones? Decoupling natural variability from human influence using isotopes	\$315,118
2007	The Australian Na- tional University	Hermann, J	Experimental and natural constraints on trace element and volatile recycling in subduction zones	\$300,000
2007	Monash University	Sunnucks, P	Understanding responses to climate change: a mechanistic approach integrating functional genetics, physiology and biophysical models for the Common brown butterfly	\$240,000
2007	The University of New South Wales	Sijp, W	What controls the shift from a hot house cli- mate to a cold house climate: the Eocene/ Oli- gocene climate transition and greenhouse warming	\$243,090
2007	The Flinders Univer- sity of South Australia	Prideaux, G	Responses of southern Australian mammal faunas to climate change before and after hu- man arrival	\$629,274
2007	Monash University	Beringer, J	Patterns and processes of carbon and water budgets across northern Australian landscapes: From point to region	\$668,000
2007	The University of Mel- bourne	McMahon, T	Understanding and modelling of interannual hydroclimatic variability in the context of his- toric streamflow	\$195,000
2007	The Australian Na- tional University	Lambeck, K	Sea-level change in the Australasian region during the past 6000 years: Understanding the past to predict the future	\$361,000
2007	The University of Queensland	Zhao, J	Characterising the tropical "heat engine" of global climate: combined coral, stalagmite and tree-ring records from the Indo-Pacific region	\$681,070
2007	The University of Mel- bourne	Simmonds, I	Tropical and mid- and high latitude cyclones in a time of climate change: New insights and integration	\$330,000
2007	The University of New South Wales	Steinberg, P	Bacterial disease and bleaching of chemically defended marine algae	\$313,000
2007	The Australian Na- tional University	Hoskin, C	Understanding "reinforcement", an evolution- ary process that can lead to the origin of new species and generate species diversity	\$265,000
2007	University of Technol- ogy, Sydney	Ralph, P	Bio-optical model of Antarctic sea-ice algae photosynthesis	\$263,000
2007	The University of Newcastle	Drysdale, R	Improving climate models through new insights on long-term inter-hemispheric climate syn- chronicity from speleothems	\$329,000
2007	University of Technol- ogy, Sydney	Zhu, J	Application Oriented System Level Optimum Design Method for Advanced Electrical Drive Systems	\$135,000
2007	Southern Cross Uni- versity	Parr, J	Enhancing long-term soil organic carbon se- questration	\$255,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2007	The University of Syd- ney	Liu, Z	Development of Carbon Nanotube Nanother- mometers and Their Application for Tempera- ture Measurement in the Catalytic Layers of Fuel Cells	\$695,000
2007	The University of Newcastle	Saco, P	Role of vegetation patchiness and self organisa- tion in the ecohydrologic response of water limited ecosystems to climate variability and change	\$180,000
2007	The Australian Na- tional University	Ball, M	Interactive effects of salinity and nutrients: linking physiological processes with patterns in mangrove forest productivity	\$263,000
2007	The University of Syd- ney	Stopher, P	Developing Tour Based Models for an Inte- grated Land Use, Transport and Environment Model System for Australia	\$207,000
2007	The University of New South Wales	Postma, E	The genetic basis of differentiation: Towards a predictive understanding of evolution in the wild	\$234,000
2007	The Flinders Univer- sity of South Australia	Lawrance, W	Energetics, spectroscopy and dissociation dy- namics of bimolecular complexes of atmos- pheric importance	\$305,141
2007	The University of Newcastle	Moghtaderi, B	A Fundamental Study on Redox Behaviour of Oxygen Carriers in Chemical Looping Com- bustion	\$365,000
2007	The University of Queensland	Quiggin, J	Climate change: adaptation and resilience in the face of uncertainty	\$1,606,210
2007	The Australian Na- tional University	Honda, M	A New Generation Noble Gas Mass Spec- trometer Facility for Advanced Research in the Earth, Planetary and Environmental Sciences	\$700,000
2007	Monash University	Webley, P	Characterisation Equipment for Advanced Gas Separation Applications	\$345,000
2007	Monash University	Pathegama, R	Advanced Testing Facility for Geological Se- questration of Greenhouse Gases	\$350,000
2007	University of Wollon- gong	Buttemer, W	Flora and Fauna Research Facility	\$200,000
2007	The University of New South Wales	Adams, M	Environmental Research Isotope Ratio Mass Spectrometer (ERIRMS)	\$135,000
2007	Charles Darwin Uni- versity	Hutley, L	Integrative assessment of disturbance and land- use change on total greenhouse gas balance and nutrient cycling in savanna ecosystems	\$190,000
2007	The University of New South Wales	Kingsford, R	Managing Ecosystem Change in the Greater Blue Mountains World Heritage Area	\$450,000
2007	The University of Queensland	Possingham, H	Marine conservation planning for persistent coral reef communities: Incorporating connec- tivity and resilience	\$200,000
2007	Queensland University of Technology	Zare, F	High Efficient and Reliable Power Converters with Low Electromagnetic Interference Based on an Intelligent Distributed Control System in Train Systems	\$195,000
2007	Macquarie University	Pitman, A	Reengineering a dynamic vegetation model to explore the stability of Australian terrestrial carbon	\$191,921
2007	The University of New South Wales	Munroe, P	Chicken Litter Char for Soil Health and Carbon Sequestration	\$105,000
2007	The Australian Na- tional University	Grun, R	Environmental Evolution of the Willandra Lakes World Heritage Area	\$570,884
2007	RMIT University	Horne, R	Carbon neutral communities: making the transi- tion	\$169,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2007	Queensland University of Technology	Brown, R	Optimisation of Dual Fuel Compression Ignition (Diesel) Engines With Respect to Engine Performance and Pollutant Emissions	\$300,000
2007	Queensland University of Technology	Morawska, L	Quantification of current and future traffic emissions of greenhouse gases and particulate matter for application in transport and urban planning	\$219,995
2007	The University of Queensland	McAlpine, C	Restoration of Fragmented Brigalow Landscapes for Conservation: Evaluating Alternative Futures in a Changing Climate	\$355,000
2007	The University of Queensland	Dove, S	Assessing the risk of ocean acidification for the Great Barrier Reef	\$476,950
2007	Griffith University	Stewart, R	Impact of urban water conservation strategies on end-use water consumption in residential households	\$240,000
2007	The University of New South Wales	Adams, M	Quantifying tree and soil respiration and their responses to global change	\$150,708
2007	The University of New South Wales	Sahajwalla, V	Recycling waste plastics in electric arc furnace steelmaking: Fundamental understanding of plastics/slag interactions and slag foaming	\$560,354
2007	The University of New South Wales	Lucien, F	Carbonate binding: an ecologically sustainable alternative to cement	\$209,250
2007	The University of Ade- laide	Nathan, G	Assessment and Optimisation of Mixing and Aerodynamic Characteristics of Multi-Fuel Burners for Rotary Kilns	\$280,000
2007	The University of Queensland	Schmidt, S	Accelerated breeding for a changing environment: genomic and physiological profiling of newly generated polyploid trees	\$510,000
2007	The Flinders Univer- sity of South Australia	Driscoll, D	Spatial-dynamic models to identify optimal fire mosaics, based on demography, dispersal and fire responses of plants, birds and reptiles	\$431,052
2007	University of Wollon- gong	Zhu, S	Wave to Wire: Optimising Hydrodynamic Performance and Capture Efficiency of Next Generation Ocean Wave Energy Systems	\$313,869
2007	The University of Syd- ney	Shine, R	Understanding and reversing the habitat shifts that have endangered the broad-headed snake	\$773,060
2007	Macquarie University	Leishman, M	Invasive plant species and climate change in Australia: predicting the threat and projecting the future	\$311,296
2007	RMIT University	Horne, R	Lifetime Affordable Housing in Australia: Integrating environmental performance and affordability	\$339,000
2007	RMIT University	Roddick, F	Enhancing the productivity of wastewater desalination	\$86,372
2007	Queensland University of Technology	Tong, S	Development of a framework for assessing the vulnerability of eco-environmental health to climate change	\$177,585
2007	James Cook University	Schwarzkopf, L	Are frogs in fragmented lowland rainforest especially susceptible to both disease and climate change?	\$98,299
2007	The University of Western Australia	May, E	Increased liquified natural gas (LNG) production efficiency through nitrogen and carbon dioxide capture using high-pressure cryogenic adsorption onto tailored nanopore substrates	\$263,000
2007	University of South Australia	Saman, W	Advancing the Thermal Insulation Performance of Australian Roofing Systems	\$70,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2007	Deakin University	Hancock, L	Community Engagement for Localised Green- house Reduction: a local government demand- management model for business and household water, energy and waste reduction	\$84,461
2007	The University of Syd- ney	Trethowan, R	Improved Indian Mustard for sustainable bio- diesel production	\$120,000
2007	The University of Queensland	Wardell-Johnson, G	Biodiversity in high rainfall mediterranean- climate ecosystems: Integrating fields of eco- logical enquiry to achieve improved conserva- tion outcomes	\$22,000
2007	The University of Ade- laide	Kear, B	Global implications of Australian Cretaceous faunas: biogeography, evolution and effects of climate change	\$40,306
2007	The University of Queensland	Possingham, H	Determining global and regional conservation priorities for biodiversity hotspots	\$123,343
2007	University of Wollon- gong	Turney, C	Australasian climate reconstruction for the past two millennia	\$64,297
2007	University of Tasmania	Haward, M	The Future of Oceans Governance in Polar Areas	\$17,000
2008	The University of Queensland	Hunter, C	The impact of climate change on the resilience of Australian marine systems: linking climate and ecosystem models	\$160,000
2008	Macquarie University	Westoby, M	Plant ecological strategies across species and an evolutionary-ecology vegetation model	\$690,000
2008	University of Tasmania	Bindoff, N	The Southern Ocean Meridional Overturning Circulation: New observations of vertical mix- ing	\$318,000
2008	The University of Queensland	Hankamer, B	Targeted bioengineering and systems biology for solar powered hydrogen production in green algal cells	\$286,000
2008	Curtin University of Technology	Grice, K	Characteristics of organic matter formed in toxic, sulfide-rich modern and ancient envi- ronments	\$660,000
2008	James Cook University	Ainsworth, T	Coral Reefs Sensing Our Changing Climate	\$235,944
2008	Griffith University	Cartwright, N	Contribution of surf zone wind stress to storm surge inundation	\$268,000
2008	The University of Mel- bourne	Wong, W	Novel organic materials for efficient low-cost solar cells	\$138,000
2008	The Australian Na- tional University	Tregoning, P	Environmental geodesy: variations of sea level and water storage in the Australian region	\$1,160,000
2008	Monash University	Nicholls, N	Scientific basis for improved climate predic- tions on seasonal and climate-change time- scales	\$1,010,936
2008	The University of New South Wales	Curnoe, D	The Late Pleistocene Peopling of East Asia and Associated Climate-Environment History	\$665,000
2008	The University of Ade- laide	Bradbrook, A	Creating a Comprehensive International Law of Sustainable Energy: The Contribution of Law to Sustainable Development and Climate Change	\$361,000
2008	James Cook University	Munday, P	Global climate change and the future for coral reef fishes	\$461,482
2008	The Australian Na- tional University	Hogg, A	Causes of Enhanced Warming of the Southern Ocean	\$287,000
2008	University of Tasmania	Wapstra, E	Maternal effects and sex allocation: an inte- grated approach	\$181,752
2008	Macquarie University	Beaumont, L	Where will species go? Revolutionising projec- tions of species distributions with climate change	\$519,697

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2008	The University of Ade- laide	Williams, M	Environmental impacts of climate change in the Nile basin over the past 30,000 years	\$250,000
2008	The University of Newcastle	Connor, L	Climate change, place and community: An ethnographic study of the Hunter Valley, New South Wales	\$422,000
2008	The University of Ade- laide	Reid, I	The aeronomy of the atmosphere between 50 and 110 km	\$515,000
2008	University of Tasmania	Bowman, D	Understanding the impact of global environmental change on Australian forests and woodlands using rainforest boundaries and Callitris growth as bio-indicators	\$570,000
2008	Macquarie University	Lusk, C	The physiological ecology of forest succession: explaining shade tolerance variation in evergreen and deciduous trees	\$127,000
2008	The University of Queensland	Riginos, C	Coral reef connectivity: an empirical and theoretical synthesis	\$473,640
2008	The University of Ade- laide	Soong, W	Innovative Grid-Connected, Small-Scale Wind Turbine Generators Offering Low Cost and Wide Operating Speed Range	\$265,000
2008	The Australian Na- tional University	O'Connor, S	Cultural and Environmental Shifts in Late Holocene East Timor: Evidence for Climate Change?	\$380,000
2008	The University of New South Wales	Anderson, E	Understanding the interactions between emissions trading and wholesale electricity markets	\$428,000
2008	Charles Darwin Uni- versity	Bradshaw, C	Density regulation as a major determinant of population persistence: advancing empirical and theoretical approaches to conserve biodiversity	\$315,000
2008	University of Wollon- gong	Yu, X	Improvement and synthesis of advanced hydrogen storage materials for fuel cell applications	\$288,444
2008	The University of Syd- ney	Minasny, B	Devising a methodology for the digital soil map of the world	\$880,000
2008	The University of Newcastle	Kennedy, E	Process for treatment of fluorine-containing synthetic greenhouse gases	\$1,225,000
2008	Curtin University of Technology	Gale, J	A virtual exploration of iron-sulphur-world in search of the precursors to life on earth	\$267,911
2008	University of Wollon- gong	Dou, S	Giant Magnetocaloric Materials and Room Temperature Refrigeration	\$760,000
2008	The University of Western Australia	Gao, J	Nonlinear Panel Data Econometrics: Theory and Practice	\$370,077
2008	The Australian Na- tional University	Niemeyer, S	Social Adaptation to Climate Change in the Australian Public Sphere: A comparison of individual and group deliberative responses to scenarios of future climate change	\$378,500
2008	The University of Queensland	Rabaey, K	Extracellular electron transfer in bio-electrochemical systems	\$485,000
2008	The University of Mel- bourne	Duffy, M	Transcriptional control of antigenic variation in the malaria parasite Plasmodium falciparum	\$294,606
2008	Deakin University	Hodgson, P	Development of new steel products by thin strip casting and direct thermomechanical processing	\$825,000
2008	The University of Queensland	Richardson, A	Integrating climate and ecosystem models to predict climate change impacts on Australian marine systems	\$285,300
2008	University of Wollon- gong	Griffith, D	The carbon cycle and climate: new approaches to atmospheric measurements and modelling	\$393,000
2008	Monash University	Pringle, J	Advanced Ionic Materials for Organic Photovoltaics	\$718,000

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2008	Monash University	Ranjith, P	Hydro-mechanical interactions in coal geo-sequestration of carbon dioxide	\$298,000
2008	University of Western Sydney	Tissue, D	Eucalypt growth in past and future environments - a novel approach to understanding the impacts of atmospheric CO2 and climate	\$300,000
2008	The University of Queensland	White, C	The evolution of periodic ventilation in insects	\$400,000
2008	University of Wollongong	Peleckis, G	Development of novel high efficiency thermoelectric oxides for high temperature power generation	\$105,000
2008	The University of Sydney	Williams, S	Autonomous Exploration and Characterization of Benthic Habitats Linked to Oceanographic Processes	\$134,000
2008	Macquarie University	Paulsen, I	A functional genomic approach for understanding metal ion adaptation in marine cyanobacteria	\$352,800
2008	The Australian National University	Roderick, M	Water availability, evaporative demand and climate change	\$370,000
2008	Charles Darwin University	Christian, K	Do frogs hydroregulate? Regulation versus tolerance of thermal and hydric states	\$270,000
2008	The Australian National University	Cardillo, M	Anatomy of a biodiversity hotspot: investigating the evolutionary and ecological basis of high plant diversity in southwestern Australia	\$710,571
2008	The Australian National University	Eggins, S	Atmospheric CO2, global temperature, and surface ocean acidity response to fossil carbon burning - insights from an ancient analogue	\$313,000
2008	The Australian National University	Catchpole, K	Photonic structures for high efficiency, low cost solar cells	\$595,286
2008	Monash University	Evans, A	Megafauna and mega-extinction: assessing palaeocommunity change using dental complexity and shape analyses	\$600,000
2008	University of Tasmania	McMinn, A	Dark survival in the polar winter	\$255,000
2008	The University of Melbourne	Van Deventer, J	Gel interactions in geopolymers for sustainable construction	\$300,000
2008	Curtin University of Technology	Tadé, M	Multiscale Integrated Modelling and Control of an Ethanol-Fuelled Tubular Solid Oxide Fuel Cell	\$300,000
2008	University of Wollongong	Roberts, R	Monsoons and migrations: Quaternary climates, landscapes and human prehistory of the Arabian peninsula and the Indian subcontinent	\$620,000
2008	The University of New South Wales	McNeil, B	An Investigation into Oceanic CO2 Variability and its Influence on Atmospheric CO2 Concentrations	\$617,418
2008	The Australian National University	Gibson, S	Sulfuric acid formation from atmospheric sulfur trioxide and disulfur oxide: is one water molecule enough?	\$390,000
2008	The University of Adelaide	Bi, P	Extreme weather and population health in Australia: risk assessment, prediction of health impacts and disease burden, and adaptive strategy exploration	\$189,485
2008	Macquarie University	De Dear, R	Occupant comfort in naturally ventilated and mixed-mode spaces within air-conditioned offices	\$129,000
2008	The University of Newcastle	Jameson, G	New process for mineral flotation	\$800,000
2008	University of Canberra	Sarre, S	Sex in Dragons: Evolution of sex determination in reptiles	\$383,000
2008	University of Western Sydney	Ellsworth, D	How will Eucalypt tree architecture and growth adapt to future atmospheric CO2 and drought?	\$360,000

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2008	The University of Queensland	Price, G	Constructing a temporally-constrained palaeoecological model of Quaternary faunal evolution and extinction in eastern Australia	\$300,000
2008	The University of Sydney	Byrne, M	Development and calcification in benthic marine invertebrates (Mollusca and Echinodermata) in an acidified and warm ocean	\$269,504
2008	The University of New South Wales	Hand, S	Precious time-capsule: discovery of fossil-rich amber from Australia	\$245,000
2008	The University of Newcastle	Geigenberger, P	Investigations of signals involved in redox-regulation of carbon storage	\$376,000
2008	The University of Adelaide	Brook, B	Reconstructing past population dynamics to understand human and climatic impacts in pre-history	\$624,000
2008	The University of New South Wales	McMurtrie, R	Explaining forest responses to rising carbon-dioxide concentrations at stand scale using a new, simple model of plant carbon economy	\$318,000
2008	Monash University	Chaffee, A	Carbon dioxide conversion over nanostructured mixed metal catalysts	\$308,000
2008	The University of New South Wales	Tran, N	Towards efficient development of geothermal resources in Australia: an improved simulation package for fluid flow in fractured geothermal reservoirs	\$303,000
2008	The University of New South Wales	England, M	Coupled ocean-carbon-atmosphere feedbacks in the global climate system	\$415,000
2008	James Cook University	Bird, M	Environmental change, carbon cycling and human impact in tropical Australia	\$2,137,508
2008	The Australian National University	Dryzek, J	Deliberative Global Governance	\$1,638,730
2008	Curtin University of Technology	Grice, K	A novel isotope facility to characterise high-molecular-weight fractions of natural organic matter in soils, sediments, water, petroleum and coal	\$160,000
2008	The Australian National University	Arculus, R	Australian Membership of the Integrated Ocean Drilling Program	\$6,000,000
2008	The University of Sydney	Warren, C	Tuneable diode laser for field and laboratory measurement of stable isotopes of CO ₂	\$110,000
2008	The University of Melbourne	Arndt, S	MEGA - Mobile Ecosystem Gas-exchange Analyser for Australian landscapes	\$135,000
2008	Monash University	Bach, U	Organic Solar Cells Fabrication and Characterisation Facility	\$150,000
2008	Queensland University of Technology	Ghosh, A	Distributed Generation Evaluation Facility and Power Control	\$600,000
2008	University of Wollongong	Chivas, A	A stable-isotope mass spectrometer for novel determinations of past temperatures	\$250,000
2008	University of Southern Queensland	Gururajan, R	Remote patient assessment using digital stethoscope for telehealth systems in Australia	\$478,862
2008	University of Western Sydney	Cameron, F	Global Citizenship and the Agency of the Museum Sector in Climate Change Interventions	\$570,000
2008	The University of Queensland	McAlpine, C	The conservation of widely distributed species: implications of differences between western and eastern koala populations	\$459,804
2008	The University of Adelaide	Connell, S	Forecasting change in subtidal habitats: connecting local pollution with global climate in temperate Australia	\$296,112
2008	Monash University	Webley, P	Renewable energy from carbon dioxide: Process engineering to obtain bio-oil from algae	\$682,717
2008	Southern Cross University	Bush, R	Impacts of climate change on coastal floodplain wetland biogeochemistry and surface water quality	\$246,000

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2008	University of Wollon- gong	Zhang, C	Novel methods for enhancing room tempera- ture figure of merit of thermoelec- tric/thermionic materials for refrigeration ap- plications	\$247,000
2008	The University of Queensland	Lanyon, J	Animal movement between populations de- duced from family trees - a test case on du- gongs in southern Queensland	\$225,000
2008	Swinburne University of Technology	Young, I	A Global Satellite Altimeter Database for Ocean Engineering Applications	\$240,000
2008	Macquarie University	De Dear, R	Residential Air Conditioning, Comfort and Demand Response in Australia	\$234,950
2008	The University of Ade- laide	McLaughlin, M	Explaining the interactions between drought and fertiliser use efficiency using tracing and imaging techniques	\$248,752
2008	The University of Western Australia	May, E	Fundamental Data and Thermodynamic Model- ling for Cryogenic LNG Fluids to Improve Process Design, Simulation and Operation	\$390,000
2008	The University of Queensland	Rudolph, V	Flue Gas and CO2 Geosequestration in Surat and Bowen Basin Coals	\$785,221
2008	The University of New South Wales	Sahajwalla, V	Recycling waste plastics in aluminium process- ing: Fundamental investigations of carbon/gas reactions	\$265,000
2008	The University of New South Wales	Ge, L	Measurement of paddock scale pasture biomass using synthetic aperture radar remote sensing	\$250,944
2008	Queensland University of Technology	Goonetilleke, A	Adaptation of Water Sensitive Urban Design (WSUD) to Climate Change, Changing Trans- port Patterns and Urban Form	\$270,000
2008	Murdoch University	Jones, M	Assessing plant virus threats to indigenous Western Australian flora: implications for bio- diversity, conservation, ecosystem reclamation and the wildflower industry	\$255,000
2008	The University of Ade- laide	Nathan, G	Aerodynamic enhancement of the capture of fine particle emissions and gaseous pollutants by sorbents	\$550,000
2008	Queensland University of Technology	Doherty, W	Effect of cane sugar juice composition on scal- ing rate and scale composition in sugar mills	\$90,000
2008	The University of Mel- bourne	Hoffmann, A	An Integrated Assessment of the Impacts of Climate Change on Victorian Alpine Ecosys- tems: Detecting and Managing Ecological Change	\$596,250
2008	RMIT University	Zhang, K	Satellite-Based Radio Occultation for Atmos- pheric Sounding, Weather Forecasting and Climate Monitoring in the Australian Region	\$536,322
2008	The University of New South Wales	Sharma, A	Integrated assessment of climate change, cli- mate input errors and land-use change on soil- moisture and carbon-balance in a catchment simulation framework	\$262,000
2008	The University of Queensland	Hankamer, B	Second generation biofuels: developing envi- ronmentally friendly high-efficiency microal- gae for biofuel production	\$674,345
2008	The University of New South Wales	Simnett, R	Improving the Credibility of Greenhouse Gas Emissions Disclosures	\$167,958
2008	The Flinders Univer- sity of South Australia	Bull, C	Translocation as a Conservation Strategy for the Pygmy Bluetongue Lizard	\$215,000
2008	The University of Queensland	Scott, P	Genetic transformation of the biodiesel produc- ing tree legume <i>Pongamia pinnata</i>	\$370,000
2008	The Australian Na- tional University	Weber, K	Minimising charge carrier recombination at silicon surfaces with improved dielectric coat- ings	\$420,000

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2008	The University of Queensland	Possingham, H	Spatial prioritization in the context of climate change and unforeseen opportunities: maximizing conservation outcomes in Gondwana Link	\$431,968
2008	The University of Queensland	Foster, J	Assessing the impacts of proposed carbon trading and tax schemes on the Australian electricity industry and the overall economy	\$318,674
2008	The University of Queensland	Richardson, A	Resilience of Moreton Bay to climate change: Links between nutrient inputs and plankton dynamics	\$480,000
2008	James Cook University	Simpfendorfer, C	Spatial ecology of inshore predators in tropical marine systems and implications of marine protection zones	\$195,000
2008	The University of Western Australia	Cawood, P	Chronostratigraphic Framework for the Devonian Canning Basin - A Multidisciplinary Record of Environmental Change	\$580,000
2008	University of Wollongong	Monaghan, B	The Fundamentals of Liquid Flow Through A Reactive Packed Bed	\$76,881
2008	The University of Queensland	Gilbert, R	Graft copolymers from starch and synthetic monomers	\$420,000
2008	Monash University	Jakob, C	Assessing clouds and rainfall in Australia's community climate model - Towards an improved simulation of Australia's water resources	\$260,000
2008	Queensland University of Technology	Tong, S	An evaluation of the environmental health risk of heatwaves associated with global warming	\$316,029
2008	University of South Australia	Boland, J	Unlocking the Grid: the future of the electricity distribution network	\$160,000
2008	The University of New South Wales	Loosemore, M	Assessing the adaptive capacity of hospital facilities to cope with climate-related extreme weather events: A risk management approach	\$435,000
2008	University of Wollongong	Dou, S	Development of nano-structured thermoelectric materials for power generation from heat	\$58,600
2008	University of Western Sydney	Cairney, J	Future climate change: consequences for decomposition and pathways of carbon flow through rhizosphere fungal communities	\$69,700
2008	Curtin University of Technology	Grice, K	Chemostat experiments to mimic toxic environments associated with mass extinction events	\$18,450
2009	Monash University	Mac Nally, R	Change ecology - gaining broad-scale, timely biodiversity knowledge in a time of uncertainty	\$440,000
2009	The University of New South Wales	Moles, A	How are weeds adapting to life in Australia? Quantifying the rate and direction of evolution in introduced species	\$730,000
2009	The University of Melbourne	Walker, J	Active-passive microwave soil moisture remote sensing: Towards sustainable land and water management from space	\$540,000
2009	The University of Western Australia	Judd, K	Synthesis of dynamics, stochastics and information in forecasting and management of complex systems	\$279,000
2009	Murdoch University	Bain, P	Collective futures: The effects of beliefs about future states of society on the support for and enactment of social change	\$268,000
2009	Curtin University of Technology	Lu, Z	Nonlinear spatial and spatiotemporal econometrics: theory with applications	\$105,000
2009	University of Tasmania	Hovenden, M	How does warming prevent soil nitrogen availability from declining in response to elevated CO2?	\$450,000
2009	The Australian National University	Gunningham, N	States, Coalitions and Climate Change Governance	\$390,000

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2009	The University of Mel- bourne	Hoffmann, A	Testing the DNA decay hypothesis of ecologi- cal specialization	\$780,000
2009	James Cook University	McCormick, M	Catch me if you can: predator recognition and anti-predator behaviour in marine fishes	\$185,000
2009	The Australian Na- tional University	Keogh, J	Climate change and cryptic biodiversity in the Australian arid-zone: Molecular phylogeny- based assessment of conservation priorities	\$230,000
2009	The Australian Na- tional University	Tregoning, P	Tracking the response of terrestrial and ocean waters to climate variations using space gravity observations	\$480,000
2009	The University of Mel- bourne	Woodhead, J	Ancient weather stations of Australia: charting a continent's descent into aridity and its eco- logical consequences	\$220,000
2009	The University of Western Australia	Ivey, G	Transient coastal upwelling along Western Aus- tralia: The dynamics of the Ningaloo Current system	\$360,000
2009	University of Tasmania	Lannuzel, D	Iron in the Antarctic sea ice zone and its role in the past and future climate	\$300,000
2009	The University of Syd- ney	Fillios, M	The Taphonomy of Waterhole Faunal Death Assemblages: A model for Archaeological Con- texts in the Australian Semi-Arid Zone	\$335,978
2009	Curtin University of Technology	Newman, P	Drivers and barriers to sustainability in residen- tial and commercial buildings	\$100,000
2009	The Australian Na- tional University	Crisp, M	Distinguishing among patterns of extinction and speciation through geological and climatic change: a molecular modelling approach	\$280,000
2009	The Australian Na- tional University	Prebble, M	Tracking 3000 years of agricultural adaptation to the resource poor, climate sensitive and re- mote Solomon Islands using biomarkers and palaeoecology	\$308,591
2009	The University of New England	Geiser, F	Cool mammals: responding to thermal and energetic challenges in the Australian tropics	\$250,000
2009	Monash University	Jakob, C	Rainfall over the Maritime Continent and Northern Australia	\$370,000
2009	The University of New South Wales	McAdam, J	Weathering Uncertainty: Climate Change 'Refugees' and International Law	\$159,500
2009	The University of Western Australia	Murphy, D	The connectivity of pore theory - does it influ- ence microbial community composition and function?	\$360,000
2009	The University of Syd- ney	Lu, D	Hot-swappable and High-efficient Grid- connected Power Electronics System For Photovoltaic Modules with Direct Power Trans- fer Technique	\$175,000
2009	The University of New South Wales	Warton, D	Predicting the effect of climate change on community structure and function: an assess- ment using temperate grassland invertebrates	\$300,000
2009	The University of Mel- bourne	Simmonds, I	Storm activity in the Arctic and implications for rapid climate change in polar regions	\$360,000
2009	University of Wollon- gong	Waitt, G	Making less space for carbon: cultural research for climate change mitigation and adaptation	\$403,984
2009	The University of Newcastle	Kisi, E	A New Paradigm for the Solid State Synthesis of Layered Materials	\$363,000
2009	The Australian Na- tional University	Wallis, I	Re-evaluating the role of tannins in Australian forest ecosystems	\$262,000
2009	The University of Queensland	Ortiz-Barrientos, D	Does divergent natural selection drive the early stages of speciation?	\$210,000
2009	The University of Queensland	Lovelock, C	Development of a theoretical framework for predicting responses of coral reef ecosystems to nutrient enrichment and herbivory	\$240,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2009	Victoria University	Duke, M	Designing the surface and structural properties of MFI zeolite membranes for low energy ion-selective desalination	\$285,000
2009	Griffith University	Hindmarsh, R	Meeting 2020 Targets: Effective Transitions for Renewable Energy & Beyond	\$100,000
2009	Monash University	Forsyth, M	Interphase Engineering of Reactive Metal Surfaces Using Ionic Liquids	\$750,000
2009	The University of Melbourne	Phillips, D	The Cosmogenic ²¹ Ne Exposure Dating Method: Calibration for Application to Volcanic Chronology, Landscape Evolution and Palaeo-Climate Change	\$195,000
2009	The Australian National University	Hogg, A	Mixing and dissipation in the ocean: Processes for the next generation of climate models	\$370,000
2009	The University of New England	Siriwardana, M	Improving our understanding of the effects of low carbon policies on the Australian economy and regions	\$115,000
2009	The University of Queensland	Schmidt, S	Towards sustainable bioproduction systems: harnessing organic nitrogen for plant growth	\$220,000
2009	The Australian National University	McCulloch, M	Ocean Acidification in a Rapidly Increasing CO2 World	\$670,000
2009	The Australian National University	Haberle, S	Light islands in a sea of dark rainforest: Human influence on fire, climate and biodiversity in the Australian tropics	\$443,685
2009	University of Wollongong	Blanksby, S	New insights into free radical reactivity via gas phase studies of radical anions	\$320,000
2009	The University of Queensland	Rudolph, V	Anisotropic behaviour of coal for coalbed methane recovery and CO2 geosequestration	\$490,000
2009	Queensland University of Technology	Zare, F	Improving the efficiency of silent discharge plasma systems through an effective high voltage power converter design match	\$230,000
2009	James Cook University	Franks, P	450 Million year history of plant gas exchange capacity and the role of atmospheric carbon dioxide	\$500,000
2009	The University of New South Wales	Sheppard, L	An Innovative Solid-State Approach to Enhanced Solar-Hydrogen Production	\$561,000
2009	University of Tasmania	Kirkpatrick, J	Australia's changing urban tree estate: a socio-ecological study of patterns, causes and consequences	\$130,000
2009	University of South Australia	Boland, J	Strategic integration of renewable energy systems into the electricity grid	\$240,000
2009	The University of Queensland	Yuan, Z	Understanding Fugitive Greenhouse Gas Emissions from Wastewater Systems for Reliable Accounting and Effective Mitigation	\$225,000
2009	Macquarie University	Allen, A	Predicting Biodiversity from Population Dynamics	\$225,000
2009	The University of New South Wales	Tanaka, M	Mathematical models and bioinformatic analyses of bacterial genome evolution	\$614,870
2009	Southern Cross University	Rose, A	A new paradigm for the geochemistry of mineral precipitation and dissolution in aquatic systems: Polymer-based numerical modelling	\$380,000
2009	University of Technology, Sydney	Smith, G	Radiative Cooling Tuned to the Spectral and Directional Infra-red Properties of the Atmosphere	\$270,000
2009	The University of New South Wales	McCabe, M	Characterizing the hydrological cycle using water isotopes, land-surface models and satellite observations	\$320,000
2009	The University of Queensland	White, C	The evolution of energy metabolism in ectotherms	\$730,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2009	The University of Syd- ney	Muller, D	The Subduction Reference Framework: unrav- elling the causes of long-term sea-level change	\$310,000
2009	The University of New South Wales	Warton, D	Advances in statistical methods for analysing high dimensional count data	\$282,000
2009	The University of Queensland	Balasubramanian, S	Mechanistic characterisation of genotype x environment interactions in sorghum and arabi- dopsis	\$220,000
2009	The University of Mel- bourne	Godden, L	Responding to Climate Change: Australia's Environmental Law and Regulatory Frame- work	\$226,000
2009	Macquarie University	Madin, J	Ecological consequences of hydrodynamic disturbances	\$170,000
2009	The University of New South Wales	Brown, M	Towards a predictive model for coastal marine microbial assemblages	\$695,000
2009	The University of Queensland	Hoegh-Guldberg, O	The impact of ocean acidification on the fertili- zation, larval development and recruitment of key Australian marine organisms	\$420,000
2009	The University of New South Wales	Rahman, M	Optimum rotor and concentrated stator-winding structures for improving the torque, field- weakening and power-density characteristics of interior permanent-magnet machines	\$320,000
2009	The Australian Na- tional University	McKibbin, W	Climate Change Projections and Policy Design Under Uncertainty	\$415,000
2009	The University of Syd- ney	Armfield, S	Investigation and optimisation of displacement ventilation and cooling systems	\$300,000
2009	The University of Syd- ney	Dickman, C	The renaissance predator: complex predator- prey interactions and vertebrate diversity in arid Australia	\$1,080,000
2009	The University of New South Wales	Li, S	Development of High Performance Ceramic Based Thermoelectric Materials for Power Re- generation Applications	\$650,000
2009	The University of Syd- ney	Merchant, A	Metabolite pools and their implications for plant responses to global change	\$277,182
2009	The University of New South Wales	Suthers, I	Coastal cold core eddies of the East Australian Current and their fisheries potential	\$240,000
2009	Griffith University	Zhao, H	Fabrication of High Performance Nanocompo- site Photoanodes with Built-in Electron Trans- port Superhighway for Photoelectrocatalysis Applications	\$345,000
2009	The University of Queensland	Zhao, J	The future of palaeoclimate and archaeological research in Australia: next generation instru- mentation for chronology and environmental reconstruction	\$950,000
2009	La Trobe University	Dyson, P	A New Digital Radar for Studies in Solar- Terrestrial and Atmospheric Physics	\$450,000
2009	The University of Western Australia	Lambers, J	Phytosphere: new facilities for controlled ma- nipulation of effects of climate change & air- borne pollutants on disease epidemiology & plant performance	\$600,000
2009	The Australian Na- tional University	Foley, W	High throughput nitrogen analysis for ecologi- cal studies	\$100,000
2009	Curtin University of Technology	Buckley, C	Facility for studying the sorption properties of gases by nanostructured materials	\$150,000
2009	Griffith University	Gray, E	The National Hydrogen Materials Reference Facility	\$350,000
2009	The University of Queensland	Hoegh-Guldberg, O	The Heron Island Climate Change Observatory: An In-Situ Ocean Acidification and Carbonate Chemistry Monitoring Platform	\$190,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2009	The Australian Na- tional University	Gagan, M	A high performance stable-isotope microana- lytical facility for environmental Earth science and climate change research	\$200,000
2009	James Cook University	Munday, P	Environmentally Controlled Infrastructure to Investigate the Effects of Climate Change on the Great Barrier Reef	\$150,000
2009	The Australian Na- tional University	Eggins, S	Instrumentation for Innovative Marine Biogeo- chemistry	\$700,000
2009	University of Technol- ogy, Sydney	Whitchurch, C	Microbial and Cellular Imaging and Analysis Facility	\$750,000
2009	Southern Cross Uni- versity	Eyre, B	A Continuous Flow-Wet Chemical Oxidation- Isotope Ratio Mass Spectrometer for Environ- mental Research	\$220,000
2009	University of Wollon- gong	Wang, G	Novel lithium iron based olivine phosphates as cathode materials for the development of new generation power batteries	\$385,000
2009	The University of Mel- bourne	Gallagher, S	The climate evolution of high latitude 140 to 90 million year old hydrocarbon prospective strata of Southeast Australia	\$220,000
2009	The Australian Na- tional University	Hill, D	Power systems with diverse generation - impli- cations, control and capability	\$255,000
2009	The University of Queensland	Lindsay, P	A New Approach to Air Traffic Management to Deliver Significantly Reduced Environmental Impact and System-wide Efficiencies	\$390,000
2009	The Australian Na- tional University	Lindenmayer, D	Best practice biodiversity management in re- serves and other natural areas	\$910,000
2009	The University of New South Wales	Wang, J	A new abrasive waterjet milling technology and process models for fabricating energy-efficient electrical machines from amorphous magnetic metal laminations	\$351,000
2009	The Australian Na- tional University	Peakall, R	A multidisciplinary research program to assess limiting factors and predict impacts of climate change for endangered Australian orchids	\$760,000
2009	The University of Western Australia	Zhang, D	Homogeneous Combustion Catalysts for Effi- ciency Improvements and Emission Reduction in Diesel Engines	\$510,000
2009	The University of Ade- laide	Brook, B	Planning for a transformed future: Modelling synergistic climate change and land use impacts on biodiversity	\$521,000
2009	The University of Mel- bourne	Swearer, S	What drives recruitment variability in Snapper? Application of a novel theoretical and empirical approach to predict fluctuations in fisheries	\$370,000
2009	The University of Mel- bourne	Walker, J	A new paradigm for improved water resource management using innovative water modelling techniques	\$420,000
2009	Monash University	Stilwell, J	A highly resolved chronostratigraphic and pa- laeoenvironmental framework for Pre-Salt Bra- zilian core basins	\$470,000
2009	The University of Mel- bourne	Chen, D	Enhanced efficiency fertilisers for agricultural sustainability and environmental quality	\$235,260
2009	The University of Mel- bourne	Wintle, B	Robust prediction and decision strategies for managing extinction risks under climate change	\$621,000
2009	The University of New South Wales	Munroe, P	Conversion of Lignite to Biochars to Enhance Soil Fertility	\$115,000
2009	The University of Queensland	Yao, X	An integrated system for high-efficiency hy- drogen assisted electricity generation from so- lar energy	\$475,000

Start Year (Note 1)	Administering Organi- sation (Note 2)	First-named Chief Investigator (Note 3)	Project title	Funding allo- cation (over the life of the project)
2009	University of Southern Queensland	Gururajan, R	Implementing teleauscultation for remote user health services in Australia: A case study with economic evaluation	\$235,773
2009	The University of New South Wales	Wood, S	Using Advances in Bayesian Statistics to Esti- mate Australian Rainfall Variations in a Climate Change World	\$240,000
2009	The University of Queensland	Anthony, K	Multi-Scale Analysis of the Vulnerability of Coral Reefs to Ocean Acidification	\$276,000
2009	The University of Mel- bourne	Gray, D	Towards Distributed Phased Array Radar for High Resolution Weather Monitoring	\$720,000
2009	The Australian Na- tional University	Tacconi, L	Governance and economic incentives for reduc- ing the contribution of tropical deforestation to climate change	\$222,000
2009	The University of New South Wales	Hand, S	Environmental change in northern Cenozoic Australia: a multidisciplinary approach	\$900,000
2009	Monash University	Thompson, R	More bang for your carbon buck: carbon, bio- diversity and water balance consequences of whole-catchment carbon farming	\$708,000
2009	University of Technol- ogy, Sydney	Phillips, M	Development of Low Cost, High Quality Ni- trides for Solid-State Lighting and Other Power Saving Applications	\$290,000
2009	The University of Queensland	Xing, H	Supercomputer Simulation of Multiscale Dy- namic Behaviour in Multiphase Deformable Porous Media	\$107,230
2009	The University of Queensland	Zhao, J	Continental temperature and rainfall change during past global warming - a multiproxy ap- proach involving clumped isotopes in speleo- them	\$82,000
2005	James Cook University	Hughes, T	ARC Centre of Excellence for Coral Reef Stud- ies	\$12,000,000
2005	The University of Western Australia	Muddle, B	ARC Centre of Excellence in Plant Energy Biology	\$12,500,000

Notes

Note (1): Start year – The list includes projects which received funding commencing in the years 2005 to 2009. Data for projects commencing in 2009 is incomplete as funding for the following scheme rounds are yet to be finalised – Linkage Projects Round 2, Future Fellowships, Australian Laureate Fellowships.

Note (2): Administering organisation – Under the NCGP, administering institutions are responsible for administration of funding if a proposal is approved for funding.

Note (3): First-named Chief Investigator – The first-named researcher nominated on a Proposal is considered to be the Project Leader.

**Education, Employment and Workplace Relations, Social Inclusion, Employment Participation, and Early
Childhood, Education, Childcare and Youth: Statutory Reviews
(Question Nos 1510, 1511, 1512, 1538 and 1543)**

Senator Minchin asked the Minister representing the Minister for Education, the Minister for Employment and Workplace Relations, the Minister for Social Inclusion, the Minister Employment Participation and the Minister for Early Childhood Education, Childcare and Youth, upon notice, on 18 May 2009:

With reference to all legislation administered within your portfolio:

- (1) (a) How many and which statutory reviews are due to commence and/or conclude in 2009; and (b) what are the specified timelines for the commencement and conclusion of each these reviews.
- (2) (a) How many and which statutory reviews are due to commence and/or conclude in 2010; and (b) what are the specified timelines for the commencement and conclusion of each these reviews.

Senator Carr—The Minister for Education, Minister for Employment and Workplace Relations, Minister for Social inclusion, the Minister for Employment Participation and the Minister for Early Childhood Education, Childcare and Youth, have provided the following answer to the honourable senator's question: