

**ANDRILL STRATIGRAPHIC DRILLING PROJECT IN MCMURDO-ROSS ICE SHELF: AN OVERVIEW OF SCIENTIFIC OBJECTIVES AND UPDATE ON SITE SELECTION**

T R Naish<sup>1</sup>, R D Powell<sup>2</sup>, P J Barrett<sup>3</sup>, H Horgan<sup>1</sup>, G B Dunbar<sup>3</sup>, G S Wilson<sup>4</sup>, R H Levy<sup>5</sup>, N Robinson<sup>3</sup>, L Carter<sup>3</sup>, A R Pyne<sup>3</sup>, F Neissen<sup>6</sup>, S Bannister<sup>1</sup>, N Balfour<sup>1</sup>, D Damaske<sup>7</sup>, S Henrys<sup>1</sup>, P R Kyle<sup>8</sup>, T Wilson<sup>9</sup>

<sup>1</sup>*Institute of Geological & Nuclear Sciences, Lower Hutt, New Zealand*, <sup>2</sup>*Northern Illinois University, DeKalb, Illinois, United States*, <sup>3</sup>*Victoria University of Wellington, Wellington, New Zealand*, <sup>4</sup>*Otago University, Dunedin, New Zealand*, <sup>5</sup>*University of Nebraska, Lincoln, Nebraska, United States*, <sup>6</sup>*Alfred Wegener Institut, Bremerhaven, Germany*, <sup>7</sup>*BGR, Hanover, Germany*, <sup>8</sup>*New Mexico Institute of Technology, Socorro, New Mexico, United States*, <sup>9</sup>*Ohio State University, Columbus, Ohio, United States*

Response of Antarctic ice sheets to projected greenhouse warming of several degrees by the end of the century is not known. However geological data records the behaviour of ancient ice sheets during times when Earth is known to have been warmer than today. In particular, there are data to suggest that the marine-based West Antarctic Ice Sheet (WAIS) and its fringing ice shelves collapsed during "super-interglacial" warm extremes in Quaternary times when global temperatures and sea-level were only slightly higher than today. Recent collapse of small ice shelves along the Antarctic Peninsula highlights the vulnerability of these glacial components to global warming. The Ross Ice Shelf is one of the larger and more vulnerable elements of the WAIS system, and its behaviour under warmer conditions may provide an important precursor to eventual WAIS collapse.

The ANTarctic Geological DRILLing Programme (ANDRILL) will investigate past responses of the Ross Ice Shelf to climate forcing on a range of time scales over the last million or more years by drilling 1200 m into the sea floor from the northwest corner of the Ross Ice Shelf. The drill site is on the McMurdo Ice Shelf (MIS), east of Hut Point Peninsula, Ross Island and drilling will take place in late 2006. The primary target is a Plio-Pleistocene sequence of glaci-marine, terrigenous, volcanic, and biogenic sediment that has accumulated in a flexural moat basin surrounding Ross Island. The core will be recovered from the bathymetric and depocentral axis of the moat in approximately 900m of water. The drilling technology will utilise a sea-riser system like that of the Cape Roberts Project, but will employ a combination of hydraulic piston coring (in upper soft sediments) and continuous wireline diamond-bit coring. Innovative new technology, in the form of a hot-water drill and over-reamer, will make an access hole through ~ 200m of ice and keep the riser free during drilling operations. This presentation outlines the site survey, background and scientific rationale for the MIS Project.