Three Successful Antarctic Surveys Return Home

Geoscience Australia's Antarctic Geoscience programme has completed three highly successful Antarctic surveys during the 2016-17 field season. Marine geoscience and geophysical data acquisition surveys are important for learning about these environments so they can be better managed and protected.

Three Geoscience Australia marine specialists, Dr Jodie Smith, Kim Picard and Ian Atkinson, were part of a two month survey of the near-shore region near Australia's Davis research station. This survey was completed in collaboration with the Royal Australian Navy and the Australian Antarctic Division (AAD), as part of a three year program to map the high-use areas close to Australia's three Antarctic stations, supporting objectives within the whole-of-government Australian Antarctic Strategy and 20 Year Action Plan.

Seafloor and Seabed Information

The survey collected a range of datasets, including hydrography data, which provide the researchers with a detailed picture of the shape of the seafloor, and seabed characterisation information about what material is on the seafloor and also what organisms live there.

A sub-bottom profiler was used to look below the seafloor for the very first time in this area. The next step is to bring all this information together to understand the "why". Scientists will now further examine the data to determine the relationships between the shape and composition of the seafloor and what lives there. This information can then be used to better manage this environment.

Marine geoscientist Dr Alix Post participated in a voyage to the Sabrina Coast region of East Antarctica on board the RV Investigator. The voyage, led by Macquarie University, completed the most extensive hydrographic survey in East Antarctica to date and collected long sediment cores that contain a rich archive of climate information. In addition, the survey completed detailed assessments of benthic ecosystems, studying the organisms that live on or near the seafloor, and mapped the seafloor, in support of Australia's efforts to establish a Marine Protected Area in the region.

Gravity Survey

In February, geophysicist Aki Nakamura spent one week at Casey Station conducting an absolute gravity survey. Casey Station is one of Australia's three Antarctic research stations and is the operations hub for a multi-year multi-national airborne geophysics programme, ICECAPII, being run by the AAD, which Geoscience Australia supports by providing geophysical expertise.

The ICECAPII programme is collecting a range of airborne geophysical datasets, including ice-penetrating radar, Lidar, gravity and magnetics, across large areas of East Antarctica. This information contributes to understanding the volume and dynamic behaviour of the vast East Antarctic Ice Sheet, as well as the underlying bedrock topography and geological characteristics.

The absolute gravity survey will provide a valuable benchmark for the airborne gravity dataset - essential to improving the utility and value of airborne gravity for further use by Geoscience Australia and other science organisations that use this data.