



## **Seismic stratigraphy and tomography in the outer shelf and slope of the Central Basin, Ross Sea, Antarctica**

Sookwan Kim (1,2), Laura De Santis (3), Gualtiero Böhm (3), Jong Kuk Hong (1,2), Young Keun Jin (1), Riccardo Geletti (3), Nigel Wardell (3), Lorenzo Petronio (3), and Ester Colizza (4)

(1) Korea Polar Research Institute (KOPRI), Incheon, Republic of Korea (skwan@kopri.re.kr), (2) University of Science and Technology (UST), Daejeon, Republic of Korea, (3) Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), Trieste, Italy, (4) University of Trieste, Trieste, Italy

The Ross Sea, located between Victoria Land and Marie Byrd Land in Antarctica, is one of the main drainage of the Antarctic Ice Sheet (AIS). Reflection seismic data acquired by many countries during several decades have provided insights into the history of the Ross Sea and the AIS evolution. However the majority of the existing seismic data are concentrated in the shelf area, where hiatus formed by grounding ice sheet erosion multiple events prevent to reconstruct the entire sedimentary sequences depositional evolution. On the outer shelf and upper slope, the sedimentary sequences are relatively well preserved. The main purpose of this study is the investigation of the Cenozoic Antarctic Ice Sheet evolution through the seismic sequence analysis of the outer shelf and slope of the Central Basin, in the Ross Sea. The data used are the new multi-channel seismic data, KSL12, were acquired on the outer shelf and upper slope of the Central Basin in February 2013 by Korea Polar Research Institute. The reflection seismic data, previously collected by the Italian Antarctic Program (PNRA) and other data available from the Seismic Data Library System (SDLS) are also used for velocity tomography and seismic sequence mapping. The seismic data were processed by a conventional processing flow to produce the seismic profiles. Preliminary results show well-developed prograding wedges at the mouth of glacial troughs, eroded by a major glacial unconformity, the Ross Sea Unconformity 4 (RSU-4), correlated to a main event between early- and mid-Miocene. The velocity anomalies shown along KSL12-1 can be interpreted as showing the occurrence of gas and fluids, diagenetic horizons and sediment compactions. The isopach maps of each sequence show the variation of thickness of the sediments depocenter shift. The seismic sequence stratigraphy and acoustic facies analysis provide information about different phases of ice sheet's advance and retreat related to the AIS Cenozoic dynamics.