

Analysis of glacimarine sediments by travel time reflection tomography in the eastern Ross Sea (Antarctica)

Andrea Geniram¹, Walter Boehm², Laura De Santis², Angelo Camerlenghi²

¹University of Trieste, Italy. a.geniram@gmail.com

²OGS, Borgo Grotta Gigante, Sgonico (TS), Italy

Abstract

This work presents the results of a study whose aim is to investigate the nature of acoustic facies and of their seismic interfaces, from geophysical analysis to reconstruct P waves velocity of glacial sediments across the drill site DSDP270, in the Eastern Ross Sea (Antarctica).

The applied technique allows to better identify the petro physical properties (e.g. compaction, fluid content) related to the depositional process, that originated the different acoustic facies, by correlating seismic reflectors (depth in meters). The correlation of lithological information in the area around drill sites across a seismic data grid helps to reconstruct the regional versus local evolution of the ice sheet dynamics.

We applied travel time reflection tomography on a multichannel seismic reflection 2D section to obtain a detailed model, defined by the geometry of 6 surfaces and by the velocity field.

From the tomographic results we observed an evident increase of seismic velocity below an intermediate surface between RSU5 and RSU6 which can indicate glacial sediments over-compacted by grounding ice sheet.

Keywords: P waves velocity, petro physical properties