

Final project report

Project ID: 2002/3.06
Title: *Analysis of physical properties relevant to seismic stratigraphy, ODP Leg 188 – 119, Prydz Bay*

Principal investigator: Valentina Volpi
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Duration: 2 years
Assigned funding: € 23.000,00

Activities and results

The study performed within this project allowed to obtain new insights in the evolution of Antarctic ice sheet during the Neogene. It has been applied a specific geophysical technique (seismic attribute analysis) to evidence the stratigraphic relationships among three important ODP wells (1166, 739 and 742) located on the continental shelf of the Prydz Bay area. This methodology is usually applied by petroleum companies hence it is innovative in Antarctic research. The obtained results yielded a substantial contribution in the Neogene stratigraphy of the Prydz Bay area in particular regarding the onset of the polar condition in the East Antarctica. The understanding of the evolution of the Antarctic Ice Sheet is crucial for the comprehension of the history of past global climate. An evident change in the geometry of the depositional systems of the Prydz Bay continental margin demarked the initiation of the Prydz Channel Fan and has been inferred to correspond to this transition. The improvement in the age placement of this change contributes to unravel the last stages of the Antarctic glacial history. We predicted the spatial distribution of P-wave velocity data along both dip- and strike-oriented seismic profiles that intersect three Ocean Drilling Program (ODP) sites on the Prydz Bay continental shelf. We used this information to assist the correlation of the existing litho- and bio-stratigraphic information among the drilling sites and to produce an accurate geometric reconstruction of the Neogene shelf units through depth-migration of the seismic data. The revised stratigraphy that we obtained suggests an early late to late early Pliocene age for the seismic reflector at the base of the Prydz Channel Fan. This age, younger than previously proposed, is consistent with the age inferred for similar geometric changes identified in different Antarctic margins.

Products

A – papers in scientific magazines

1. Volpi, V., Rebesco, M., Diviacco, P., New insights in the evolution of Antarctic glaciation from depth conversion of well-log calibrated seismic section of Prydz Bay , Internationa Journal of Earth Sciences (Geol Rundsch) DOI 10.1007/s00531-008-0356-6.

B – book chapters

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C - proceedings of international conferences

1. Volpi, V.; Rebesco, M.; Diviacco, P. New Insights in the evolution of Antarctic Glaciation from Depth Conversion of Well-Log calibrated Seismic Section. European Geosciences Union General Assembly 2007, Vienna, Austria, 15–20 April 2007, Geophysical Research Abstracts, Vol. 9, 07364

Programma Nazionale di Ricerche in Antartide (PNRA)

2. Volpi, V.; Rebesco, M.; Diviacco, P. New Insights in the evolution of Antarctic Glaciation from Depth Conversion of Well-Log calibrated Seismic Section , X° International Symposium on Antarctic Earth Sciences, Santa Barbara, August 26-31 2007. Poster presentation

D – proceedings of national meetings and conferences

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E – thematic maps

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F – patents, prototypes and data bases

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G – exhibits, organization of conferences, editing and similar

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H - formation (PhD thesis, research fellowships, etc.)

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Research units

Valentina VOLPI.-Principal investigator (OGS)
Michele REBESCO – Researcher (OGS)
Giuliana ROSSI – Researcher (OGS)

Date: 30/10/2008

Notes

The project concluded on 31/12/2005.