

Dark Ocean Dynamics in the Ross Sea: Estimating Carbon Export from the shelf to the abyss, implication for climate stability

A.Bergamasco¹, P. Castagno², P. Del Negro³, M. Celussi³, S. Aliani⁴, G.Budillon²

¹CNR ISMAR Venezia . andrea.bergamasco@ismar.cnr.it

²University Parthenope, Naples

³OGS BIO Trieste

⁴CNR ISMAR La Spezia

Abstract

In the Antarctic Pacific sector, interaction between Ross sea shelf water and deeper open ocean is a key factor in ventilating the global deep ocean. Dense shelf water flows from the interior of the Ross shelf northward and trigger downslope processes to the abyss.

During last decades PNRA expeditions, mainly CLIMA & Polar DOVE Projects, different moorings are deployed in the Ross sea area, on the shelf, near the shelf break in the Hillary canyon head and in the deeper part, off the Cape Adare area. The mooring analysis as well as the oceanographic cruises carried out from the 1995 up to now given us the opportunity to have some long time series of the evolution of the bottom layer variability.

The work want to estimate the deep and bottom ocean dynamics in the Ross area, focusing on energy and mass export from the shelf to the abyss and giving some speculations about the climate stability.

Keywords: Ross sea shelf water, Hillary canyon, Cape Adare