

ICE SHELF WATER EPISODIC OUTFLOW IN THE ROSS SEA

G Budillon¹, A Bergamasco², S Aliani², G Spezie¹

¹*Universita' di Napoli 'Parthenope', Napoli, Italy*, ²*CNR - ISMAR, Venezia, Italy*

We present some preliminary results from the observations performed the Ross Sea during the austral summer 2005/06 within the framework of the Italian CLIMA project.

In particular this work focus on the Ice Shelf Water (ISW) behaviour when it arrive at the shelf break near the data line a 75°south. ISW is a water mass characterized by a potential temperature below the surface freezing point. It is one of the major water masses that flows out of the Glomar-Challenger Basin in the central Ross Sea making a significant contribution to the production of Ross Sea Bottom Water. We use all available current meter records from a mooring deployed in the Glomar-Challenger Basin to calculate the flux of cold water ($\theta < 1.9$ °C) which flow to the shelf break.

Cross slope CTD/LADCP sections showed the presence of a cold and oxygenated layer of dense shelf water flowing north-westward. The head of the water plume flow at a speed of 0.5 m s⁻¹ along slope and 0.2 m s⁻¹ across the slope. The Glomar-Challenger outflow presents a unique feature: a thin layer of super cold ISW is located just above the high salinity shelf water. This signature can be most clearly seen in the T-S diagram with medium levels of dissolved oxygen. Moreover we analyze a one year data set collected from a mooring deployed during the 2004/05 cruise at 1200 m depth along a possible path followed by the plume of ISW.

A cross wavelet transform is used to explore the relationship in time-frequency space between two current time series collected at 5, 6 and

7m from the bottom. The wavelet technique is a powerful tool for such studies because it expands time series into time-frequency space and allows the finding of localized events with intermittent periodicities. The preliminary results show the presence of energetic recurrent episodes which happen at about 4 days several times during the year.