



Dense shelf water cascading in Southern Ocean: the role of bottom steepness versus plume geometry

Andrea Bergamasco (1) and Arnold L. Gordon (2)

(1) CNR-ISMAR, Dept. Oceanography, Venice, Italy (andrea.bergamasco@ismar.cnr.it), (2) Lamont-Doherty Earth Observatory, USA

Plumes of dense shelf water down the Antarctic continental slopes provide a mechanism for shelf-ocean exchange and abyssal water ventilation.

Antarctic Bottom Water occupies a large portion of the deep ocean, so the scientific community has been investigating how it is originated and spreads, focusing in terms of downslope overflow mechanisms involved and their dynamics for many years.

A state-of-the-art hydrodynamical model (ROMS) was implemented in a first setup as process study, exploring the role of the steepness and the dynamics of the different bottom Ekman layer thickness and plume width.

The work presented deals with the some results of the numerical experiments, exploring how the downslope flow develops into a gravity current cascading event, and the associated characteristic time scales of such events.