



Analysis of the intrinsic and forced variability of the Antarctic Circumpolar Current south of Australia and New Zealand

Paola de Ruggiero (1,2), Antonio Celeste (1), Stefano Pierini (1,2), and Giovanni Sgubin (3)

(1) Università di Napoli Parthenope, Dipartimento di Scienze e Tecnologie, Napoli, Italy (paola.deruggiero@uniparthenope.it), (2) CoNISMa, Rome, Italy, (3) Environnements et Paléoenvironnements Océaniques et Continentaux (EPOC), Université de Bordeaux, France

A modelling study of the intrinsic and forced variability of the Antarctic Circumpolar Current in a wide sector of the Southern Ocean (SO) in summer conditions is presented. A sigma-coordinate ocean general circulation model with a spatial resolution of 0.18° and 12 vertical sigma levels is implemented in a domain extending from 30°S to 80°S and from 90°E to 110°W (thus including the SO sector south of Australia and New Zealand as well as the Ross Sea). Periodic conditions are imposed along the two meridional boundaries. Realistic bathymetry and coastlines and relatively idealized latitude-dependent stratification and surface momentum and heat fluxes are used. The Southern Ocean Database (SODB) for the initialization and the ERA-Interim ECMWF modelling data for the atmospheric forcing are used. Steady climatological surface fluxes are imposed to identify intrinsic low- and high-frequency fluctuations, whose analysis suggests possible mechanisms of mutual interactions. This work was carried out in the framework of the ACCUA and MOMA projects of the Italian “Programma Nazionale di Ricerche in Antartide” (PNRA).