



Adriatic Sea dense water formation and biogeochemical cycles.

M. Zavatarelli (1), L. Polimene (1), M. butenschön (2), M. Vichi (3)

1. Alma Mater Studiorum Università di Bologna, Centro Interdipartimentale per la Ricerca sulle scienze Ambientali, Ravenna, Italia
2. Alma Mater Studiorum Università di Bologna, Dipartimento di Fisica, Bologna, Italia
3. Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Bologna, Bologna, Italia.

The influence of the (highly variable) dense water formation occurring over the shallow northern Adriatic sea and over the deep southern Adriatic is investigated by mean of a coupled physical/ecological three-dimensional numerical model.

The modeling system used is constituted by the Princeton Ocean Model (POM) for the physical/hydrodynamical part and by the Biogeochemical Flux Model (BFM) for the biogeochemical/ecological part.

The modeling system is implemented in the Adriatic Sea with an horizontal resolution of about 5 km and with 21 sigma layers. Surface forcing is climatological.

Simulations are analysed in order to highlight the role exerted by the dense water formation processes (and the associated spreading) in transporting nutrient and organic matter to the deeper Adriatic (northern Adriatic shelf dense water formation) and in controlling the surface phytoplankton dynamics (southern Adriatic dense water formation).

The work is preliminary to the activities of national and international research projects aiming to highlight the role of climatic variability in constraining the ecosystem dynamics.