Geophysical Research Abstracts, Vol. 7, 08536, 2005 SRef-ID: 1607-7962/gra/EGU05-A-08536 © European Geosciences Union 2005



## Assimilation of real DYFAMED data in a 1D coupled physical-biogeochemical model of the Ligurian Sea, by means of an Ensemble Kalman filter.

F. Lenartz (1), C. Raick (1), K. Soetaert (2) and M. Grégoire (1)

(1) University of Liège, Belgium, (2) Netherlands Institute of Ecology, Centre for Estuarine and Coastal Ecology, Yerseke, the Netherlands(fabian.lenartz@student.ulg.ac.be / Fax: +0032 4 366 33 25 / Phone : +0032 4 366 33 54)

A 1D coupled physical-biogeochemical model has been developed for the Ligurian Sea (NW Mediterranean Sea). The model represents the partially decoupled nitrogen and carbon cycles of the pelagic food web, through nineteen state variables (Raick et al. 2005). To improve model results, an Ensemble Kalman filter (Evensen, 2003) is developed. In a first step, the technique has been applied in a very simple ecosystem model in order to test the procedure. A log-normal transformation is applied to solve the problem of negative concentrations. It is foreseen to implement this ensemble filter in the 1D model of the Ligurian Sea and to compare its results with the data assimilation experiments using a Singular Fixed Extended Kalman (SEEK) filter (Raick et al. submitted), algorithm developed by Pham et al. (1998).

References:

Evensen G. (2003). The Ensemble Kalman filter: theoretical formulation and practical implementation. Ocean Dynamics, 53: 343-367.

Pham D. T., Verron J. and Roubaud M.-C. (1998). A Singular Evolutive Kalman filter for data assimilation in oceanography, *Journal of Marine Systems*, 16 (3-4): 323-340.

Raick C., Delhez E. J. M., Soetaert K. and Grégoire M. (2005) Study of the seasonal cycle of the biogeochemical processes in the Ligurian Sea using a 1D interdisciplinary model. *Journal of Marine Systems*, in press.

Raick C., Alvera-Azcarate A., Barth A., Brankart J.-M., Soetaert K. and Grégoire M.

(2004). Application of a SEEK filter to a 1D biogeochemical model of the Ligurian Sea. Twin experiments and real data assimilation. *Submitted to Journal of Marine Systems*.