

## **FIELD FORECAST VERIFICATION IN THE MEDITERRANEAN SEA. DISCRETE WAVELET TRANSFORMS OF AN ASSIMILATION EXPERIMENT IN A TWO-WAY NESTED MODEL OF THE LIGURIAN SEA**

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The verification of forecasted 3D fields is a difficult task, because of its high dimensionality. Traditional measures used in forecast verification, such as mean square error, correlation or skill scores measures are very useful to know the accuracy and skill of a model, but they summarize the comparison between two complex fields (model and observations) into a reduced set of numbers. Discrete Wavelet Transforms are used in this work to decompose the model results and the observations into several spatial scales. Field closeness can be examined at each of those spatial scales, by computing the traditional measures cited above. In that way, the scales presenting higher errors can be identified.

A system of nested primitive equation models described in Barth *et al.* (2003) is coupled with a reduced order, optimal interpolation data assimilation scheme. The system is composed by a low resolution model (25km) covering the whole Mediterranean Sea, an intermediate resolution model (5km) of the Liguro-Provençal basin and a high resolution model (1.67km) simulating the fine mesoscale structures in the Ligurian Sea. The aim of this work is to establish the benefit of the assimilation of Sea Surface Temperature over the model without assimilation, using the techniques explained above. *In situ* measurements (CTD profiles from cruises from the MEDAR/Medatlas database (Medar Group, 2002) and a SIRENA cruise (from SACLANT Center) are also used to establish the skill of the model.

### References

- Barth A., A. Alvera-Azcárate, M. Rixen M. and J.M. Beckers. 2003. Two-way nested model of mesoscale circulation features in the Ligurian Sea. *Progress In Oceanography* (accepted).
- MEDAR Group. 2002. MEDATLAS/2002 database. Mediterranean and Black Sea database of temperature salinity and bio-chemical parameters. Climatological Atlas. IFREMER Edition (4 CD-ROMs).