Geophysical Research Abstracts, Vol. 7, 09057, 2005
SRef-ID: 1607-7962/gra/EGU05-A-09057

Transport and mixing in the Mediterranean sea: comparison between Okubo-Weiss and Finite Size Lyapunov Exponents calculation

J. Isern (1), E. García-Ladona (1), F. d'Ovidio (2), E. Hernández-García (3), **C. López** (3)

(1) Instituto de Ciencias del Mar, Centro Mediterráneo de Investigaciones Marinas y Medioambientales, Barcelona, Spain, (2) Laboratoire de Metorologie Dynamique (LMD) Ecole Normale Superieure, Paris, France, (3) Instituto Mediterráneo de Estudios Avanzados (IMEDEA), CSIC-UIB, Palma de Mallorca, Spain.

We compute the Finite Size Lyapunov Exponents (FSLEs) and Okubo-Weiss (OKW) parameters from sea surface altimetry measurments of the Mediterranean sea. We then compare them with floaters' data and satellite pictures of temperature and chlorophyll distribution. Both methods provide information about transport and mixing from raw velocity data. The OKW technique is able to localize Eulerian area of recirculation and is very effective in following their evolution in time. Conversely, the FSLEs are not able to isolate Eulerian structures. However, they allow to reconstruct the Lagrangian structures present in the velocity field and predict tracers' distribution with a much better agreement than the OKW. Moreover, the FSLEs provide a direct measure of the local stretching and thus can be used to quantify the mixing.