Geophysical Research Abstracts
Vol. 14, EGU2012-5393, 2012
EGU General Assembly 2012

Oceanic three-dimensional Lagrangian Coherent Structures in the Benguela ocean region.

J. H. Bettencourt, C. Lopez, and E. Hernandez-Garcia

IFISC - Institute for Cross-Disciplinary Physics and Complex Systems, University of Balearic Islands - CSIC, Palma de Mallorca, Spain,(joaob@ifisc.uib-csic.es)

We study three dimensional oceanic Lagrangian Coherent Structures (LCSs) in the Benguela region, as obtained from an output from the ROMS model. To this end we first compute Finite-Size Lyapunov exponent (FSLE) fields in the region volume, characterizing mesoscale stirring and mixing there. LCSs are extracted as ridges of the calculated FSLE fields. They present a "curtain-like" geometry in which the strongest attracting and repelling structures appear as quasivertical surfaces. LCSs around a particular cyclonic eddy, pinched off from the upwelling front are also calculated. The LCSs are confirmed to provide pathways and barriers to transport in and out of the eddy.