

Abstract Submitted  
for the DFD07 Meeting of  
The American Physical Society

**Transport routes in the North-Western Mediterranean Sea: a dynamical system perspective**<sup>1</sup> ANA MARIA MANCHO, Department of Mathematics, IMAFF, CSIC, STEPHEN WIGGINS, School of Mathematics, University of Bristol, EMILIO HERNANDEZ-GARCIA, IFSIC, CSIC, VICENTE FERNANDEZ, Instituto Nazionale di Geofisica e Vulcanologia — Vortices are a well studied ocean structure. Frequently they are long lived, and water trapped inside can maintain its properties for long time, being transported with the vortex. Jets and strong currents are also important ocean features. They can be rather persistent and, as it is difficult for particles to cross them, water at both sides can keep different physical properties. In this presentation these two relevant eulerian structures are identified at the surface velocity field of a realistic model of the Western Mediterranean Sea. We show that tools coming from the dynamical systems theory such as hyperbolic trajectories, stable and unstable manifolds and lobe dynamics are also at work in this non idealized context and supply detailed information by locating volumes of water particles that evolve in time escaping from the interior of the eddy or crossing the current or doing both things one after the other. A close link between abstract concepts such as lobes and transported scalar quantities such as temperature or salt is found.

<sup>1</sup>Supported by grants PI-200650I224 and OCEANTECH-PIF06-059 (CSIC), FIS2004-00953 (MEC and FEDER), N00014-01-1-0769 (ONR).

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Date submitted: 04 Aug 2007

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