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Mixing, Lyapunov exponents, and biological activity in the Benguela and the Canary upwelling systems

V. Rossi (1), C. Lopez (2), J. Sudre (1), **E. Hernandez-Garcia** (2), and V. Garçon (1)
(1) LEGOS/CNRS, Toulouse 31401 Cedex 9, France, (2) IFISC (CSIC-Univ. Illes Balears), E-07122 Palma de Mallorca, Spain

A comparative study of the horizontal mixing properties of the two eastern boundary Canary and Benguela upwelling systems is presented. It is based on Finite Size Lyapunov Exponents obtained from satellite-derived velocity fields. Each of the systems is subdivided into two regions attending to their mixing activity values, which coincide nicely with distinct biological activity. Surface horizontal stirring and mixing are inversely correlated with chlorophyll standing stocks. On the other hand, Ekman-transport induced upwelling exhibits a positive correlation with chlorophyll.