Statistical properties and robustness of dispersion from surface velocity data

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We have analyzed surface velocity data of the Mediterranean Sea as obtained from a primitive equation circulation model. We have computed the Finite Size Lyapunov Exponents (FSLEs) from this data set, which provides a measure of oceanic horizontal stirring. In order to study the intermittency and its impact in transport and mixing, the robustness and other statistical properties, the FSLEs are computed at different spatial resolutions, both above and below that of the velocity field. In particular we have analyzed: i) the robustness of the FSLEs by introducing a small error in the velocity data, ii) the influence of the eddy diffusivity in the filamental and vortex structures, and iii) the multifractal character of the spatial distribution of the FSLEs.