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Wind and wave effects on surface currents in the Mediterranean Sea

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The knowledge of Lagrangian motion is of a great importance due to their impact on the properties of transported material like the Essential Ocean Variables (phytoplankton, temperature, pCO₂, etc), or other material like plastics debris, oil spill pollution, etc. In this study we analyze the influence of the wind and waves in the transport and mixing properties at the upper layers of the Mediterranean Sea. In this context, we propose a new approach for current velocity where we take into account the wind-wave interaction and the variability that it inserts into the current velocity through Ekman and Stokes components.

Surface currents, Ekman, Stokes, Lyapunov exponent