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# Mesoscale Activity in the Eastern Mediterranean: Blending Altimetry with in situ observations

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Mesoscale to sub-mesoscale surface dynamics in the ocean is a key parameter, driving, for instance, the dispersion of pollutants emanating from heavily populated coastal areas for example. Estimating the surface velocity can be challenging especially when data is sparse. In [1], the authors developed a near real-time 3D-Var assimilation algorithm that blends in-situ Lagrangian drifters' positions with altimetry data to improve the estimation of the surface velocity in the Eastern Levantine Mediterranean. The algorithm was tested near the Lebanese coast and in the case of an eddy between Lebanon and Cyprus. The objective of this work is to further validate the algorithm.

First, a Comparison with Ocean color satellite images shows that eddies' shapes and location are more consistent after the assimilation of drifter data.Independent in-situ current-meter data provided from the EGYPT campaign are also used to validate the results of the algorithm in terms of velocity intensity and direction. The comparison shows an improvement of the estimated velocity, particularly in terms of direction.

We also address the question of extending the algorithm to a larger regional scale in the Eastern Levantine Mediterranean, which is subject to a high mesoscale activity but which is less densely observed than the western part.

[1] L. Issa, J. Brajard, M. Fakhri, D. Hayes, L. Mortier, P-M. Poulain. Modelling Surface Currents in the Eastern Levantine Mediterranean Using Surface Drifters and Satellite Altimetry. Ocean Modelling, May 2016. Doi: 10.1016/j.ocemod.2016.05.006

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