

Interactive comment on “Geostrophic currents and kinetic energies in the Black Sea estimated from merged drifter and satellite altimetry data” by M. Menna and P. -M. Poulain

E. Stanev

emil.stanev@hzg.de

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Comment on “Geostrophic currents and kinetic energies in the Black Sea estimated from merged drifter and satellite altimetry data” by Menna and Poulain.

This paper presents an interesting approach merging drifter measurements and satellite altimetry data in the Black Sea during 1999–2009. The reconstruction of the surface geostrophic circulation is new and convincing. A number of new estimates on the inter-annual variability of circulation and patterns of kinetic energy are presented. Sub-basin and mesoscale circulation is also addressed. I find the paper suitable to be published in Ocean Science after some minor changes.

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Some specific comments and suggestions are given below.

1. Please, explain in more detail the drifter data you use. For me referring to your earlier paper only is not enough.
2. Please check Eq. 1: perhaps error₁ and error₂.
3. When describing the state of the art the authors could cite Stanev, E. V., P. Y. Le Traon, and E. L. Peneva (2000) Sea level variations and their dependency on meteorological and hydrological forcing: Analysis of altimeter and surface data for the Black Sea. *J. Geoph. Res.*, 105, C7, 17203-17216, which is relevant to their study. In this context they should identify more clearly the specific development in the present study compared to the existing ones.
4. The winter to summer anomalies (e. g. intensification of the Batumi eddy in summer) are well explained by Staneva, J. V., D. Dietrich, E. Stanev, and M. Bowman (2001) Rim current and coastal eddy mechanisms in an eddy-resolving Black Sea general circulation model. *J. Mar. Sys.* 3, 137-157. The authors can also find in this paper and also in Stanev, E. V. (2005) Understanding Black Sea Dynamics: Overview of recent numerical modelling, *Oceanography*, Vol.18, No.2, 52-71. some relevant to their study analyses (south of Kerch and along Caucasus coast, for instance) as well as more information about the evolution of the mesoscale field. I assume that citing the above works and other papers in this field is very important in order to identify what was known (not known) before.
5. Consider changing this structure can moves as this structure can move
6. Can you make/show a spectral analysis of the signals in Fig. 6, 7a, b.

I hope this helps. Emil Stanev

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