

Interactive comment on “Modelling Seasonal Circulation and Thermohaline Structure of the Caspian Sea” by M. Gunduz E. Özsoy

K. Korotenko (Referee)

kkorotenko@gmail.com

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Interactive Comments on the paper by M. Gunduz and E. Ozsoy “Modelling Seasonal Circulation and Thermohaline Structure of the Caspian Sea”

The paper devoted to investigations of the wind and buoyancy driven seasonal circulation of the Caspian Sea (CS) with a use of HyCOM which was forced with ERA-40 winds and heat fluxes, as well as major rivers' discharge. As was shown, the applied model successfully reproduces the basic elements of the circulation as the southward flowing current systems along the eastern and western coasts, the upwelling along the eastern coast and some elements of mesoscale circulation known from previous observations and modeling. I endorse publishing this paper since it demonstrates effectiveness of HyCOM for regional issues.

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Along with this, I want to point out some drawbacks of this work:

1. For the CS, period when it is covered by ice is very important for basin-scale circulation. In strong winters, ice usually covers a significant part of the NCS. So, patterns of the circulation in shallow part of the NCS presented in figures for December seems to be misleading. Need discussion.
2. It would be interesting to demonstrate a particular contribution of baroclinicity to the general circulation of the CS separately from wind-driven circulation, for which many modeling attempts were made.
3. Shown as a result of the NE winds action (Fig.9), summer upwelling is seen to occupy much narrower area than that usually observed with remote sensing (eg. NOAA-15, Aug,5, 2004, 14:55). It seems that such upwelling is governed not only by winds but, perhaps, baroclinicity too. In the work, Authors did not show the entire eastern coast in summer, along which upwelling usually occurred.
4. As to Derbent anticyclonic eddy, it really appears periodically but I am doubt that river forcing alone could spin up the eddy throughout the entire water column in Derbent Depression (Fig. 12). Need discussion.
5. Finally, I do not like that, in the paper, Authors avoid to show area of the MCS (40N–41.6N) with Apsheron Peninsula. It is extremely important part of the CS forming water exchange between NCS and SCS. To this point, schematic of circulation, presented in Fig.12, without along-peninsula current at its northern side is misleading.

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