

Interactive comment on “The internal seiche field in the changing South Aral Sea (2006–2013)” by Elena Roget et al.

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The paper is devoted to study of seiche oscillations on the base of velocity, temperature and salinity measurements and numerical simulations with a use of Princeton Ocean Model (POM). The study aim was to compare results obtained in 2006 and 2013 and understand how spectral structure of seiche has changed due to shallowing of the Aral Sea. The Aral Sea was once the world's fourth largest lake, slightly bigger than Lake Huron, and one of the world's most fertile regions. Today it is a dying sea, little more than a string of lakes scattered across central Asia east of the Caspian Sea. During the last 5-10 years the drying off of the Aral Sea, brought about noticeable changes in climate conditions has led to irreversible shrinking the Aral Sea. That is why any information, investigations that may help to reduce or stop this process is highly welcomed. In this connection, the reviewed paper presents a number of interesting

results on analysis of dynamic of the Aral Sea and its temporal shift due to changes in depth, the configuration of the sea coastline and salinity of the Sea during 8 years. At the same time, if instrumental part of the work is not in doubt, modeling with POM raises some questions: 1. It is said about mild wind as only source the model forcing, so that such wind hardly could be a cause of generation seiches during 10-day “spinning up” of the model, at least for energetic low frequencies as 17 and 14 h. Is it enough 10 days for spin-up? Has the control of quasi-stationarity of kinetic energy been performed? 2. It is of interest to show and compare mean circulation and turbulence level for two cases: for 2006 when stratification was weak and for 2013 when it was strong. 3. How the 18-m mixed layer was reproduced, in numerical simulation, particularly in 2013, when stratification was strong and winds were weak? 4. Was it good to use equidistant sigma-levels in such asymmetrical water body as the Aral Sea, i.e., the steep western coast and the gentle eastern one? A transition T, S and V to z-levels might have a problem of misinterpretation of results obtained. 5. Was the general mean circulation after spin-up correspond to that obtained in ADCP measurements? 6. Fig. 5. Why so high level of noise is in the water elevation in the southern part of the sea? All these questions are technical but required clarifying for understanding adequateness of field measurement results and those obtained with the POM. In a whole, the work is interesting and I endorse its publication in the Journal HESS.

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