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Ocean Science Discussions

Interactive comment on "Acoustic Doppler Current Profiler observations in the southern Caspian Sea: shelf currents and flow field off Freidoonkenar Bay, Iran" *by* P. Ghaffari and V. Chegini

Anonymous Referee #2

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General comments

The article presents rare data of off-shore bottom-mounted ADCP measurements along with wind recording off Freidoonkenar Bay in the south Caspian Sea.

The purpose of the research based on these measurements was to characterize the shelf motion and the steady current field. Another subject was to determine the main driving forces of currents within the study area of Caspian Sea.

Due to the fact that Caspian Sea is a closed basin with no astronomical tides the

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atmospheric forcing plays an important role in the motion of the sea waters. The main driving force of currents in the southern Caspian Sea is a sea breeze system. All throughout the period of ADCP observation (57 days in August - September, 2003) there was the breeze with prevailing force in diurnal and semi-diurnal bands. This force is similar to tides in other regions of the sea.

It has been studied that long-period wave currents has got velocities much greater than direct wind-induced currents. Due to that fact the long-period wave currents dominate over the current field in the continental shelf off Freidoonkenar Bay. Therefore the continental shelf current field is influenced by remotely generated shore-controlled waves, which travel across the shelf of the southern Caspian.

Current field differs in two directions. In along-shelf orientation it is mostly proportional to lower frequencies. In cross-shelf direction it is dominated by high frequencies.

I believe that with few corrections listed below the manuscript would be suitable for publication in Ocean Science.

Specific Comments

While particular objectives and methods are very well outlined it would beneficial to specify main subject of the study.

Term “motive force” does not seem to be wide applied in oceanography. All the axes captures at figures 7 and 8 have got “cph” units and it would be good to keep the same units all the way through the article, including Abstract and Conclusion sections.

Page 3037, line 19 It would be an advantage if authors could provide quantified estimations of sea breeze input in the coastal system energy as well as a list of the other factors (i.e. in a table form).

The article could benefit from some proof-reading, particularly in Conclusion remarks.

Technical corrections

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6, C1115–C1117, 2010

Page 3020 line 14: instead of "are dominating" use “dominates”.

Page 3029 line 20: August, not “august”.

Page 3029 line 8: instead of “%41” use “41%”.

Page 3030 line 14: instead of “law” use “low”.

Page 3037 line 16: instead of “Wind and sea breeze system” use “Wind sea breeze system”.

Page 3038 line 2: instead of “produced” use “produces”.

Page 3039 line 5: instead of ”remotely” use “remote” or split the sentence on two parts.

Interactive comment on Ocean Sci. Discuss., 6, 3019, 2009.