Ocean Science

Discussions

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Interactive comment on "ADCP observations of migration patterns of zooplankton in the Cretan Sea" *by* Emmanuel Potiris et al.

Anonymous Referee #2

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The paper "ADCP observations of migration patterns of zooplankton in the Cretan Sea" by E. Potiris et al. presents the analysis of about 2.5 years of acoustic data from several deployment of an ADCP (RDI, 75 kHz) on a sub surface mooring in the Cretan Sea in order to infer the migration patterns of the zooplankton population in that area. The analysis is based on raw backscatter acoustic data from ADCP and ancillary data collected by a fixed open ocean observatory (E1-M3A), during cruises or from external data centers. An interesting aspect of the paper is the demonstration that ADCP data collected for other "standard" purposes (namely investigation of currents in the water column) can be also used to gather biological information (e.g., vertical migration of zooplankton). This might give new life to already existing dataset, not completely exploited yet. The paper is very well written, clear, easy to read and to understand.

The paper starts describing the processing method and the data, the environmental conditions (both during the experiment period and with a climatic perspective). The discussion about the backscattering data and the reasoning about the different groups of organisms is really amazing and nicely justified. Although, unfortunately, not fully supported by in-situ catchments, the authors were able to properly correlate acoustic data with biological information as well as with meteorological conditions. Just the latter analysis is one of the novel finding of the paper that is not usually in other biological-inspired works. The only significant migratory pattern evidenced is the normal one, with zooplankton species going toward deeper layers during the day and going upward toward the surface to feed during the night. The contribution of moon phases, as already evidenced by other cited studies, was also taken into account and discussed. The distinction of the four groups of zooplankton (A,B,C,D) is based only on a visual analysis of Sv values; maybe it could be useful to analyze the vertical velocities at different depths to better identify the migratory pattern of each group. I recommend the publication of the paper after minor revisions.

Specific comments. Throughout the manuscript several symbols ">", "<", "∼" are used. I would suggest to replace such symbols with words, i.e. greater, lower, about etc. Title of section 2 and 2.2 have some capitalized letter. Please make them uniform with the other titles. Page 5, line 10. The unit NM (nautical mile?) seems to refer to a speed. Likely it should be change to knot. Page 5, table 2. It includes the pH parameter which is not mentioned in the text nor used in the description of the ancillary data. I think it is worth discarding it. Page 7, line 5. Correct the reference to Figure 3: "Figure 3Figure b&c". Page 6, figure 2. Although the background color of the plots in the third row is grey, the used color scale doesn't allow to appreciate all lines. Especially those plotted in white are almost invisible. Please, consider to change the color scale. Page 8, figure 5. The labels above the plots and the caption seems not to agree with respect to the full moon and new moon. Page 12, figure 8. Caption is not clear and, for example, it might be re-arranged as follows: (a) Instantaneous depth averaged vertical velocities of daily segment of ADCP measurements between 350 m and 50 m, following Jiang

et al. (2007). Sunrise and sunset times are superimposed. (b) Average of the three largest speed measurements per day. Page 13, figure 9. The unit of the color bar is missing.

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