

Interactive comment on “Temporal variations of zooplankton biomass in the Ligurian Sea inferred from long time series of ADCP data” by R. Bozzano et al.

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We would like to thank the reviewer for carefully reading the paper and the positive feedbacks.

Below you may find the replies to the specific comments.

- Figure 3 has been modified: monthly average time series were detrended to emphasize the variations, uncertainties in the estimation of the monthly average values were added as error bars, and time axis of all subplots were aligned. Monthly minima and maxima time series were aligned and provided as separate subplots.

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- The high Sv value observed in December 2003 fitted quite well with the maximum in NPP data of November 2003, taking into account the delayed between primary production peak and increase in zooplankton biomass.

- The offset between the monthly average of second and third deployment is about 7.7 dB re (4pim)⁻¹ and it can be ascribed to several issues:

a) although the ADCP model used in all deployments was a RDI Sentinel 300 kHz, the instruments of the last two deployments were different.

b) although the mooring line hosting the ADCP consisted of the same parts for all deployments and ADCP was planned to be nominally positioned at the same depth, considering the bottom depth (about 1300 m) of the deployment and irregular morphology of the sea bottom, the ADCP depth changed along the water columns.

c) the raw ADCP echo data of the third deployment are generally lower with respect to the previous period, but derived currents are substantially in agreement.

- Point 3.4. Peaks at 24h and 12h of the power spectrum are related to the presence of different zooplankton species that show a different migration pattern. The 12h peaks is clearly visible in all deployments despite the temporal resolution changed from 1h to 30min between the first and second deployment to the third one.

- Point 3.5. Some studies indicated a general vertical velocity of populations in situ of 2-6 cm/s (Heywood, 1996). Plueddemann and Pinkel (1989) measured vertical migration rate with a sonar and found it varied between 1 and 4 cm/s, the deepest animals migrating the fastest. Finally, Smith et al. (1989) used an uncalibrated 307 kHz ADCP (scattering primarily from animals of size 0.5 cm or larger) to study zooplankton patchiness, and estimate vertical migration rates of 5-8 cm/s during ascent and of 3-4 cm/s during descent from the peaks of backscatter.

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