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# ***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.***

## **Anonymous Referee #2**

Received and published: 16 November 2013

As the title suggests, this is an analysis of ADCP back-scatter and allied/ancillary information for temporal (and depth) variations of zooplankton, in the Ligurian Sea. The authors are fortunate in having three contrasted (incomplete) years in their data. The data allows inference of changes in zooplankton concentration/biomass in time and in depth, and vertical velocities indicating (diurnal) vertical migration. Species interpretation depends on observations (by others) at different times and places, so is somewhat speculative.

Signal:noise ratio is mentioned several times but there are no estimates of statistical significance of the variations through time. This question is raised by figure 3 where the choice of scale makes the variations look very small. Figures 5 and 8 are much

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more convincing!

There are several places where statements are rather unclear or should be supported by more careful argument or evidence. The structure is generally OK and straightforward apart from a few cases detailed below. The use of English is generally good.

Detailed comments.

Page 1369 lines 18-20. This sentence is rather unclear, especially the last line (20). Does “one of the most dynamically active regions” refer to the Ligurian Sea?

Page 1370 line 3. A map would help – and should include the mooring location.

Page 1371. Lines 11-13 and 21-27 seem to be about seasonal variations of some species and should go together. Likewise lines 14-20 and 28 – 5 (on page 1372) might be better together – and would be if lines 21-27 are moved.

Page 1371 line 15. Please describe the “three main assemblages” (better than just something about their biomass).

Page 1372 line 22. Which are “those years”? I guess 2004 and 2005 (the last-mentioned) but then 2005 “warming and salinification” was after the data which was only to April?

Page 1373 line 20. Presumably “2006” refers only to the period January to 22nd February of the record, and “commonly a few hundred metres” only to (late) winter. Please clarify.

Page 1374 lines 10, 11, 12. Might be clearer with a), b), c) before “if”, “if”, “for” respectively.

Section 2.4. We have to wait a long time for the definition of R – out of sequence presumably because it is discussed at length. It might help to say soon after (1) that R is defined in (3) or (6).

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Page 1378 line 12. I do not see what is the “unusual high value found in September 2005 (Fig. 3 bottom). The value is less than in the previous two years. Perhaps September 2005 is an unusual increase on July and August but the data are not there in other years to show this.

Page 1378 line 14. The observed time series is at one point. I do not understand how it can “agree with” a distribution.

Section 3.3. This is headed “Diel vertical migration” and the first paragraph is about this. However, the data description in the second and third paragraphs does not seem to be related back to vertical migration.

Section 4. I think this should be headed “Discussion and Conclusions” to reflect the content.

Page 1384 line 23. There is no data shown for “September 2006”. Moreover, this sentence (lines 21-23) should relate to something already stated in the previous text (especially if this is supposed to be a “conclusion”) but I do not see where.

Almost all the figures need larger lettering and thicker lines if there are to be printed copies of this paper. This especially applies to figures 1 to 4.

Figure 3 (and possibly figure 7) might be better if the months were vertically aligned, i.e. all Septembers are above each other, likewise October, . . . February.

Figures 9, 10; what depth do these represent? This should be in the caption.

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Interactive comment on Ocean Sci. Discuss., 10, 1367, 2013.

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