

Interactive comment on “Short scale (6 h) temporal variation of sinking fluxes of planktonic and terrigenous lipids at 200 m in the NW Mediterranean Sea” by L. Méjanelle and J. Dachs

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Answers to the review of the referee 2

The authors thank the referee for the comments on this version as well as on the previous one which have contributed to significant improvements of the manuscript. The comments have been considered and the new version of the manuscript have been corrected to take them into account, when possible. Our answers to the comments of the reviewer and related changes to the manuscript are listed point by point here below.

- “Meanwhile, however, a study was published by Marty et al. this year in Biogeosciences (6, 887-899) which overlaps thematically with the present study. and write two separate papers about it.”

One of differences of both works is that they address a distinct selection of samples: 31 samples for the molecular study and 74 (the whole series) for the study of Marty et al.. Another discrepancy is that, even though some information borne by the different analytical tool may address the same information (the degree of degradation of the organic matter, the importance of fecal pellet to the exported flux), others are specific to the molecular study: biomarkers of higher plants and of oil pollution, occurrence of haptophyte fall bloom. In addition, an important aspect of the discussion of the molecular biomarkers tackles an implementation of the significance of phytoplanktonic biomarkers profiles through a comparison with phytoplanktonic community composition, and this task has no equivalent in the questions addressed in the other paper. In consequence, discussing all the data together may have been confusing and difficult to balance; this is why we agreed to write two separate papers. As they are submitted to the same special series, the reader will easily find the complete information.

“Mechanelle and Dachs cite Marty et al.’s 2009 study with reference to the primary production, particle flux and pigment data which they include in their Figures. However, the results of the lipid analyses presented by Marty et al. is not referenced (with the exception of one sentence in the Conclusion section).”

In fact, the lipid analyses presented by Marty et al. were also referred to in the section 2.1 “The other fractions were dedicated to bulk analyses (2/10th), pigment (2/10th) and lipid class analyses (1/10th) and the results are reported and discussed in detail by Marty et al. (2009).”, and the figure S1 of supplementary material which combines results of both studies. However, we agree with the reviewer that the conclusions borne by lipid classes needed to be much more documented in the revised version. We presented these results in the introduction, lines 64-69, in the discussion lines 459-461 (diel variation of fluxes of POC and lipids), 526-528 (lipid class composition changes) and 547-548 (higher contribution of zooplanktonic wax ester in the D series).

-“Thus, my recommendation is that Mechanelle and Dachs focus on those data only that warrant additional interpretations (not previously published) of this valuable data set.”

None of the data on molecular lipids have been previously published. The lipid class data comes from separated and different analyses on distinct sample aliquots. The revised figures only present the biomarkers associated to a specific sources, and such an information is not provided by the paper of our colleagues. Biomarkers specific of higher plants are shown on figure 3, biomarkers of haptophytes (alkenones in and brassicasterol on figure 4 and on figure 6), biomarkers of eustigmatophytes, dinoflagellates and diatoms (diols, dinosterol and 24-methylenecholesterol, respectively) on figure 6. The figure with C29 sterols have been removed to supplementary material. This selection of compounds to be presented in the figures was also asked for by the referee 1.

-“Note that it is not helpful to have these extensive Tables (Tables 2-4) included in the text, these need to be moved into the Suppl. Section.”

OK, the Tables have been moved to the Supplementary Materials.

Interactive comment on Biogeosciences Discuss., 6, 7673, 2009.