Biogeosciences Discuss., 10, C556–C558, 2013
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Biogeosciences Discussions

Interactive comment on "Downward fluxes of sinking particulate matter in the deep Ionian Sea (NESTOR site), Eastern Mediterranean: seasonal and interranual variability" *by* S. Stavrakakis et al.

Anonymous Referee #2

Received and published: 27 March 2013

General Comments

This is a nice study describing seasonal and inter-annual variations in the downward fluxes of particulate matter in the deep Ionian Sea. It fits the scope of the journal and most likely will represent a reference for similar future studies. The manuscript is fairly well written and data are clearly presented (but see below specific comments for data treatment). The investigation has been technically well conceived and the sampling and laboratory methods are appropriate. The abstract is sufficiently informative and it describes the major outputs of the study. Nevertheless, it is my opinion that the authors should make an additional effort to provide multivariate statistical analyses

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of the observed patterns as well as more robust evidences of the links between the observed temporal patterns in particulate fluxes and primary productivity.

Specific comments

Abstract. "Assessing seasonal and interannual variability" of particulate export does not represent a scientific hypothesis. The authors should more clearly state that their objective was linking temporal patterns of particulate export with processes including primary productivity, upwelling of intermediate waters and influence of episodic events of dust deposition.

Introduction. This section is well written and fluently readable and does not need any major change. The only suggestion is to clearly state the objective of the study (as suggested for the abstract) at the end of the paragraph.

Results. P. 596 para 2.1. The description of the morphological setting could largely benefit of a figure or a panel of figures illustrating sub-bottom seismic profiling data.

Results. P. 596, para 2.2. This section is too long, specifically in the description of the different water masses, which does not find a consistent counterpart in the discussion.

Results. P. 600, para 4.2. Any comparison with previous data should be moved in the discussion.

Discussion. As a matter of fact, all the relationships between fluxes and regulating factors are inferred observationally, but are not tested statistically. This denotes that these inferences should be somehow passed through some statistical tests. I specifically suggest the authors to use their complex data set to identify major shifts in the composition of fluxes among different seasons, years, and/or in coincidence with peaks in primary productivity or dust deposition events. This can be performed using multivariate analyses (MANOVA or similar) and their relative representation in bi-dimensional plots (like PCA or similar). I'm not really sure whether the region under scrutiny is monitored for remotely-sensed primary productivity data, but, if so, I would suggest

BGD

10, C556–C558, 2013

the authors to relate their flux data with the data on primary productivity in the surface waters.

Interactive comment on Biogeosciences Discuss., 10, 591, 2013.