We would like to thank both Reviewers for the time and effort provided to review our manuscript and for their constructive comments. We have addressed their suggestions for corrections/modifications in the revised version of the manuscript. Overall, we believe that the manuscript has been significantly improved, in respect to their valuable contribution. Please follow our detailed responses to Reviewer's I comments below:

Reviewer 1#

1: Check the wording of "interranual" through the manuscript.

Reply: Corrected/replaced with "interannual"

2: Lines 7-8 p. 599 need to be supported by observations (refer to a specific figure) or the literature.

Reply: A reference referring to the description of the hydrographic regime was added: 'Kontoyiannis and Lykousis, 2011'.

3: Line 15 p. 599. Check temperature units.

Reply: In the previous text, 'T' meant 'True', i.e., direction in degrees 'True'. According to this, direction e.g. $0^{o}$ means direction to the north, etc. The symbol 'T' was removed from the text to avoid confusion with temperature.

4: Line 26-28 p. 601. This has been already mentioned in p. 600.

Reply: Removed.

5: Section 5.1. Temporal variation of total mass fluxes show that fluxes recorded at the deepest trap essentially match those at the upper trap and are thus not related to "independent" events. This suggests that either the 3200 m trap is collecting less particles than supposed, or that the trap at 4300 collects particles from a wider/nearby area. How do you explain this in terms of intermediate and benthic nepheloid layers and the presence of the different water masses? Which major components contribute to this increased bottom fluxes and where they come from?

Reply: The text was modified as follows: *'The amount of particles collected by sediment traps depends on the particulate matter concentration (turbidity), as well on the current velocity; the higher turbidity and current speed, the higher mass flux. The 3200 m-trap is located at a lower turbidity and lower current velocity layer, compared to the trap at 4300 m. Presumably, the 3200 m-trap receives less material than the 4300 m-trap. The weak INLs/BNLs observed may increase slightly the* *particulate matter concentration field, thus contributing to an overall increase of mass fluxes. As it is reported in Table 1, the lithogenic fraction is the major component, which contributes to the increase of mass flux at 4300 m, followed by carbonates, probably due to lateral advection. In addition, the periodic appearance of turbid deep Adriatic water below 4000 m, could explain the increased fluxes recorded at the bottom trap in our site'.*

5: Line 12 p. 607. I don't see the elevated total mass fluxes in August 2007 at the 700 m trap but a very small peak.

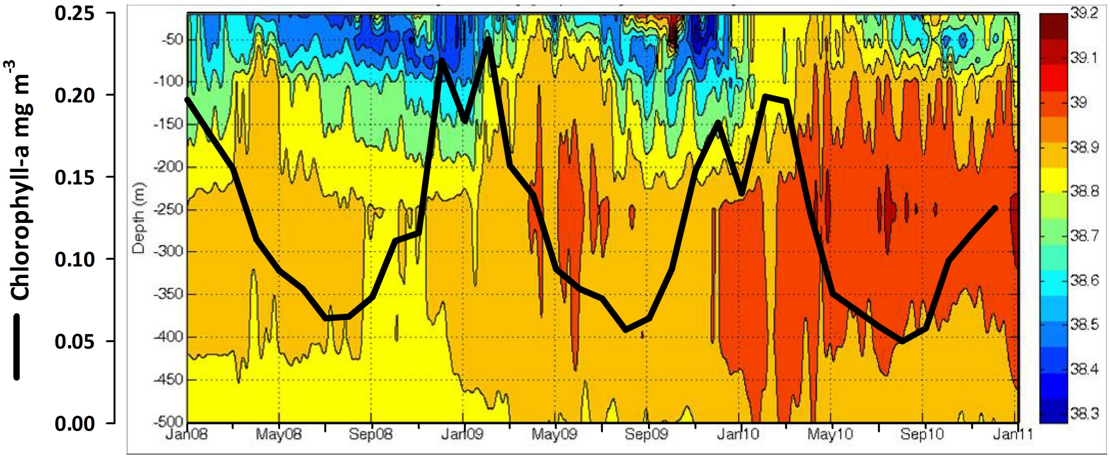
Reply: We thank the Reviewer for his comment, and we agree that this was a wrong statement. We made that note in order to stress that forest fire signal is substantially recorded in sinking material collected by sediment traps (see also Theodosi et al., 2013). In the revised manuscript, the word 'elevated' was replaced by 'small' mass flux peak.

6: Sections 5.2 and 5.3. It is not clear at which point the seasonality (and the interannual variability) is driven by winter-spring convective mixing, upwelling or aeolian transport. Please make clear. Which is the physical forcing mechanism of the upwelling observed May 2008, 2009 and 2010? How you explain that aeolian transport is seasonal? Can you provide chl-*α* time series to reinforce your interpretations?

Reply: A plausible interpretation was added to justify the observed upwelling (Fig. 9) in, **'Section 5.2. Seasonal variability'**: *'The study area is positioned at the periphery of the permanent Pelops anticyclone. As an anticyclone, Pelops causes downwelling at its centre which can extent to depths of some hundred meters (Nittis et al. 1993). Moreover, Pelops presents seasonal variability in its position and strength (Larnicol et al. 2002). This means that in the absence/weakening of Pelops, deeper subsurface/intermediate masses which were suppressed to deeper layers by the Pelops presence are now upwelled to shallower depths bringing to these layers nutrient enriched water masses. However, due to the limited field observations of the hydrodynamic regime we cannot make a strong statement about the causes and consequences of the upwelling'*.

'The seasonality of the aeolian dust transport in the open Eastern Mediteranean has been recently documented for the whole Mediteranean (Pey et al., 2013), and the Greek territory (Athanassiou et al. 2013). This information has been added in the revised manuscript.

Finally, Chl-*α* time series provided by Giovanni online data system (NASA GES disc) were super-imposed on POSEIDON salinity time series (see below). Overall, there is poor correlation between the two parameters examined. This could be attributed to the fact that satellite sensors penetrate some meters into the water column (cannot be defined) and usually miss deep chl-$\alpha$ maximum (deeper than 70 m in the study area; e.g. Karageorgis et al. (2012)).




7: Line 10 p. 612. Remove POC and use OC throughout the manuscript

Reply: POC was replaced by OC throughout the entire manuscript.

8: Section 5.5. OC flux vs. ballast mineral fluxes will definitely exhibit good correlations because they all essentially follow variations of the total mass fluxes (as stated by the authors in pags. 600 and 601). I found the discussion related to the ballasting processes a bit speculative and with no direct of observation/evidences. Is chl-a time series giving additional information that help reinforcing your interpretations?

Reply: Section 5.5 has been re-worked to comply with Reviewer's comment. Correlations of total mass flux with ballast minerals and chl-a time series is now discussed also in terms of the statistical analysis, included in our revised manuscript in respect to Reviewer's II comment # 5.

9: Please expand the quite interesting (and a bit too straightforward) last paragraph of the paper and link with sections 5.1 and 5.2. **Are lateral inputs at the 4300 trap (composed of mostly lithogenic and carbonate material) contributing to this power function? Can you compare this power function at the deepest basin of the Mediterranean with other found in continental slope areas of the Mediterranean Sea (see for instance Fig. 14 of Heussner et al., 2006)?**

**Reply to the comment: Are lateral inputs at the 4300 trap (composed of mostly lithogenic and carbonate material) contributing to this power function?**
We would like to thank the Reviewer for his comment. In our previous version, we have omitted to notice that in our power function calculations we excluded the OC

flux at 4300 m depth. The reason is that the near bottom trap collected material and from INLs and BNLs, as we note in section '**5.1. Vertical fluxes in the deep layers of NESTOR site'**: *"Thus, the increase of total mass flux from 3200 m down to 4300 m could be either due to resuspension/lateral advection from the slope – margin and/or to the higher turbidity (higher particulate matter concentration) water of Adriatic origin (EMDW), as it was detected at depths below ~3600 m (Kontoyiannis and Lykousis, 2011)".*

**Reply to the comment: Can you compare this power function at the deepest basin of the Mediterranean with other found in continental slope areas of the Mediterranean Sea (see for instance Fig. 14 of Heussner et al., 2006)?**

In section '**5.4 Organic carbon export**' we have already compared our power function with other found in Mediterranean. It reads: '*Francois et al. (2002) reported b values ranging between −2.01 and −0.59, from numerous sites distributed ocean-wide. Sanchez-Vidal et al. (2005) determined the exponent b for data of the Alboran Sea and give a value of -0.753, while Zuniga et al. (2007) for the Algero-Balearic basin provide a value of -0.918.* We added a last sentence saying *"… and Heussner at al., (2006) a less negative value of -0.687 on the continental slope of the Gulf of Lions, related probably to the occurrence of resuspension processes from the continental shelf. Recently, Gogou et al. (2013) have reported the carbon export power functions recorded in three open sites of the Southern European Seas (Mediterranean and Black Sea). "*

10: Table 1. In the caption, replace underline by bold. In addition, I would suggest to delete this table as most of the information is included in table 2. I don't think it is necessary to specify which time weighted mean of total mass flux has been used, it is obvious from the time weighted (and flux weighted) definition that only total mass fluxes from where major constituent data exists are be used.

Reply: Table 1 was removed.

11: Table 2. Specify in the caption if "Mean" corresponds to time weighted flux and flux weighted percentages.

Reply: The note *"Mean corresponds to time weighted mean fluxes and flux weighted percentages"* was added.

12: Figure 2. Show in the figure which constituent corresponds to each time slot.

Reply: Corrected.

13: Figure 3. I would suggest using the same scale to better compare currents at each depth (then the interesting differences in current speeds between water depths will be more evident!).

Reply: Figure 3 was revised to allow for a detailed visualization of the duration of all records within each year and thus for an estimation of the current speeds. A common scale for all figure panels is not feasible because the record at 3200 m is very short in time and involves very small progressed-distances.

14: Figure 4. Explain what shaded areas represent.
Reply: The shaded bars represent periods with high mass flux which were recorded at all collecting depths. They have been removed in order to avoid any confusion to the reader.

15: Figure 9. The figure caption does not match the figures in the manuscript, there is not any buoy plotted in figure 4, and if it refers to figure 1 it is not a cross.
Reply: Corrected.

16: Figure 11. The data is already shown in figure 4 so I would suggest to remove it.
Reply: Figure 11 was removed.

**References**

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