Anonymous referee 2

- *In English, the correct appellation is "Gulf of Lions"*

Response: Corrected according to the reviewer's suggestion.

- *The months November to May-June do not accurately describe the winter months, particularly in the Mediterranean Sea. The authors should use "winter-spring" or another appropriate notation.*

Response: Corrected according to the reviewer's suggestion. "Winter" has been changed for "Winter-spring".

- *Another figure is needed in order to include all locations and rivers mentioned in the manuscript. Readers who are not familiar with the Gulf of Lions cannot follow the discussion concerning the rivers discharges.*

Response: Corrected according to the reviewer's suggestion. Figure 1 has been redesigned.

- *The Gulf of Lions needs to be mention to locate Cap the Creus (line 8).*

Response: Corrected according to the reviewer's suggestion, the location of the Cap de Creus canyon has been specified.

- *The current-meters are mentioned here (also line 8) whereas only one worked during the entire study as mentioned later in the manuscript.*

Response: Corrected according to the reviewer's suggestion.

- *The term GoL should be defined as it is the first time it is mentioned.*

Response: Thank you for highlight this mistake, GoL has been defined the first time used.

- *A reference is needed p.18574 line 29.*

Response: Two references have been included: Canals et al. (2006) and Fabres et al. (2008).

- *In the Study area, line 11: break (without e)*

Response: Text corrected according to the reviewer's suggestion.

- *Reference needed lines 9 to 14 to justify the method*

Response: Corrected according to the reviewer's suggestion, a new reference has been included (Heussner et al., 1990)

- *It is impossible to locate all the rivers mentioned. In particular, the reader must be able to locate the Rhône River. They need to be included in figure 1 or in another figure.*

Response: Figure 1 has been adjusted according to the to the reviewer's suggestion.

- *The correct term is "cumulated", not "accumulated".*

Response: Text corrected as indicated by the referee.

- *This section needs to be reconstructed. The external forcings are described but do not refer to any figures. In addition, the numbers mentioned in the text do not correspond to the figure 3 (p. 18579, line 15 and 16).*

Response: Thank you for highlighting this mistake, this section has been rewritten in order to include all the reviewer's suggestions and references to Figure 2 have been included. Furthermore, Figure 2 has also been adapted to fit al the reviewer's suggestions.

- *P.18580 line 17: the same terms need to be used in the text and in the figures: downward total mass flux instead of downward particle flux. The abbreviation TMF should also be defined here.*

Response: Text corrected according to the referee's suggestion, downward particle flux has been changed for downward total mass flux and TMF has been defined.

- As mentioned before, the current-meter did not work at CC1000. However, it is neither stated in section 4.2 nor in figure 3.

Response: The introduction of section 4.2 and the Figure 2 caption have been rewritten considering the reviewer's suggestion.

- P. 18581 line 1: the considered station is not indicated.

Response: The original station "In mid January 2010 near bottom water temperature decreased to 11.21ºC" has been changed by "In mid January 2010 near bottom water temperature at CC300 decreased abruptly more than 2ºC (from 13.40 to 11.21ºC)"

- P. 18581 line 13: needs to be rephrased.

Response: Text corrected according to the reviewer's suggestion.

- P. 18582 line 8: this statement is not true for 2009-2010. Siliclastic relative abundance is almost the same in both depths. This term should also be the same in the figure and in the text (lithogenics in figure 5).

Response: Text corrected according to the reviewer's suggestion.

- P. 18582 line 19: this statement is not true for CC1000. Also, the important decrease from December to April 2011 needs to be mentioned and a plausible explanation should be stated.

Response: The statement for CC1000 has been deleted, and a new text has been added to explain why $CaCO_3$ percentages decreased in winter 2011. We suggest that the increased arrival of OM-rich resuspended material and lithogenics, triggered a decrease in $CaCO_3$ concentration.

- P. 18584 line 2: this could actually be explained by the so-called winter months by the authors. Compared periods need to be the same.

Response: In the paper written by Schroeder et al., (2010), winter is defined as the

period November–March, in order to include all months likely to have a direct impact on deep convection. In our manuscript, the same period is used in order to better compare heat losses during our studied period with those reported by e.g Schroeder et al., (2010).

- *P. 18588 line 24: indicate La Fonera canyon on a map.*

Response: The situation of La Fonera submarine canyon has been included in Figure 1.

In the figures:

- *1: add all rivers and La Fonera canyon.*

Response: The situation of La Fonera submarine canyon has been included in Figure 1.

- *2: cumulated, not accumulated*

Response: Corrected according to the reviewer's suggestion.

- *3: what depth was the temperature recorded?*

Response: The depth were temperature was recorded has been added.

- *4: include rivers and Cap de Creus in all maps*

Response: Cap de Creus and all rives mentioned have been added to all maps.

Technical corrections:

- *The correct word is "especially", not "specially"*

Response: Corrected according to the reviewer's suggestion.

- *Mixing of past and present makes some sentences confusing at times, the manuscript should be revised by a native English speaker.*

Response: A native English speaker has revised the manuscript in order to improve the English.