Reply to reviewer #1 comments:

Thank you very much for agreeing to review this paper and for your comments that have permitted to improve the quality of the manuscript.

Most of your comments have been taken into account in the revised version of the manuscript and all the proposed references have been added.

Please find below a point-by-point reply relative to your comments.

From the first part of the abstract, it seems that the neodymium isotopic composition of both mixed planktonic foraminifera and cold-water corals (CWC) have been investigated at the three selected locations. This could be made clear since CWC have been analyzed only at the Alboran Sea and the south Sardinian continental margin and foraminifera only at the Balearic basin. This aspect could be clarified, also explaining how the data have been integrated. The abstract includes the main implications of the study for hydrological variations during the deposition of the S1 sapropel but the data are also relevant to the deposition of the ORL1.

The abstract has been revised in order to make clear the different archives and locations of the study. We have also added a sentence to explain how the data have been integrated. However, the deposition of the ORL1 being not the aim of this paper, we do not conclude on potential implications about it.

The introduction could better highlight the aim of the work. Moreover, the classical references on Mediterranean climate variability are cited but more recent ones could also be included, for instance Martrat et al (2014) provide interesting high-resolution data on surface water variability of the Mediterranean Sea during the last two deglaciations, including the Holocene.

The introduction has been sharpened up following your recommendations and those of the reviewer #2. Martrat et al. (2014) has not been added in the introduction as we do not think that discussing SST variability in the introduction is relevant in our paper. However, this reference has been cited in other parts of the text.

In the material and methods section, though references are provided to get detailed information about CWC cores, additional information on core description could also be included in this paper to facilitate the whole picture of the analyzed materials. Similarly, a new core recovered in the Balearic Sea has been investigated but little is said about the description of the materials sampled except for barren of any CWC fragments. It is also mentioned that samples from this core have been used for multiproxy analyses but other than dating and estimation of SST by modern analogue techniques only neodymium and stable isotopes been analyzed so this could be better specified in section 3.1.

Additional information on the CWC and SU92.33 cores have now been included in the text. The term “multiproxy analyses” has been replaced by “$\delta^{18}O$, $\delta^{13}C$ and εNd analyzes”.

Regarding the results section, there are three different subsections on core SU92- 33 that may be omitted and the results could be synthetized in just one as for CWC.

The subsections have been deleted and the results have been synthetized in two sections: CWC and core SU-92.33

Some general sentences referred to sedimentation rate as "the lowest values observed during the Holocene" could be more specific.

The sentence has been modified in order to better quantify the sedimentation rate.

In this section the information concerning the core MD90-917 is insufficient, it is cited as a well dated record but it is not clear if the references cited in the paragraph (line 294) are those providing the data included in Fig. 2a (in which a reference is not cited).

The reference for this core (Siani et al., 2004) has been integrated in the paragraph.

The discussion is relevant and highlights the most important aspects of the hydrological variations in the Mediterranean. However, some aspects could be further discussed as the role of the eolian input in the εNd variability and why it is not affected by changes in such input. Concerning this, some additional papers on eolian input could be considered, for instance Scheuvens et al. (2013) on bulk composition of northern African dust or Rodrigo-Gamiz et al (2015) on terrigenous input provenance in the western Mediterranean.

The role of the eolian input had been partially discussed in the text as we mentioned the papers by Arsouze et al. (2009) and Bout-Roumazeilles et al. (2013). However, following your recommendations, we have added an additional part of the discussion based on the paper by Rodrigo-Gámiz et al. (2015) on the terrigenous input provenance in the western Mediterranean.

In the submitted version of the manuscript, we had cited individual references (Grousset et al., 1992, 1998; Grousset and Biscaye, 2005) that are included in the synthesis paper by Scheuvens et al. (2013). In the revised version, we have decided to remove those references and only cite "see synthesis in Scheuvens et al., 2013" to make it clear.

Also regarding the Nile discharge, some other recent papers could be considered as Hennekam et al (2014).

This reference has been added to the text of the revised version.

In general, the results on SST are not sufficiently compared with other SST records, see for instance the previously mentioned paper from Martrat et al (2014) and also some recent papers on sea surface temperature variations in the western Mediterranean sea over the last 20 kyr (Rodrigo-Gamiz et al., 2014).

The SU92-33 SST record is now compared to SST reconstructions reported in Martrat et al. (2014) and Rodrigo-Gámiz et al. (2014).

It is also concluded that 18O and 13C values indicate a stratification of the water masses after 16 cal ka BP, but why the data are supporting this conclusion could be further explained in the conclusions section. The implications of the obtained results for the deposition of the ORL1 could also be included in this section.

The deposition of the ORL1 being not the aim of this paper, we do not conclude on potential implications about it.