

In the revised submitted manuscript (MedOHC\_ESSD\_V10\_12Sept2018.pdf) the replies to reviewer (essd-2018-51-response\_to\_RC2-supplement.pdf and Response2 to reviewer2.pdf) were addressed.

The changes can be viewed at the file: MedOHC\_ESSD\_diff\_12Sept2018.pdf

Below, there are two additional notes to explain further how two reviewers' comments were addressed:

#### **Reviewer #2 Comment 1**

##### **P8 L20 concerning the “increases identified in other studies”: elaborate on this, where?**

###### Reply to reviewer:

*The sentence:*

*“These increases have been identified in others studies (Skiridis et al., 2018; Vargas-Yáñez et al., 2010a; Bethoux et al., 1999; Rohling and Bryden, 1992), but not with the details included in these spatial regional based views”, has been removed because:*

- a) the above references mention changes in T/S rather than the OHC/OSC 30 years changes, and*
- b) the explanation where these changes are, is given below.*

#### **Reviewer #2 Comment 2**

**P10 L10 Not really surprising? Given that this reference also uses observations, which presumably are a subset of those used here to derive the interpolated fields. What would be interesting is if the interpolated fields show discrepancies to published work, indicating the value of the enlarged dataset to derive interpolated fields.**

###### Reply to reviewer:

- The data used in Millot study, at the area 5.9 to -5.3 and 35.8 to 36.1 for the years 1985, 1986, 1994-1996 and 2003-2004, are not included in the SeaDataNet V2 data collection that was used for the current (the search was with the ODV tool). However our results agree.
- *The discrepancies to published work, can be found by comparing for example, the spatial salinity linear trends at three layers 0-150 m, 150-600 m, 600-400 m, presented in (Skiridis et al., 2018). There are similarities with the patterns of MEDATLAS 2002 climatology of 1/4° x 1/4° horizontal resolution expect from the refreshing areas at the surface and intermediate layers of north Aegean, north Adriatic, Gulf of Lions. Also, there are more areas in the current indices which are masked because of the statistical significance of the linear trend. SeaDataNet V2 data collection on which the current product is based, has almost double the salinity profiles for the period 1950-2015 the MEDATLAS collection of the period 1950-2002. Compared with the patterns of the EN4 Met Office climatology of 1° x 1° horizontal resolution, in the current product there are areas with decreasing trends at the central Mediterranean only and more spatial variability at the intermediate layers. EN4 climatology is based on a great extent to the World Ocean Data Base and the latter for the common period 1950-2015 with the current product has about 14% more salinity profiles for the common period 1950-2015 with the current product.*

*In order to keep the Results section as minimum as possible (according to the reply to the first reviewer), it was decided to keep the above text out of this revised manuscript. More extended analysis will be the subject of an additional publication.*