

## ***Interactive comment on “Combined North Atlantic and anthropogenic forcing of changes in the marine environments in the Gulf of Taranto (Italy) during the last millennium” by Valerie Menke et al.***

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The manuscript is of interest, as it focuses about the disentangling the natural and the anthropogenic forcing during the last millennium in a shelf environment off area presently densely populated (Mediterranean, Gulf of Taranto). The interpretation of the results of the study, carried out with a multiproxy approach, is quite complex, as expected, making the reading not always easy. The applied methods, although not new, are appropriated. Figures are all necessary and the quality is very good. Although I am not mother language, I had not problem to read the manuscript.

I have some comment, below listed, I wish the authors take into account:

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Section: Environmental setting Page 3, lines 36-38: “The WAC (<37 psu; Lipizer et al., 2014) moves as a narrow coastal band along the western Adriatic margin and is further enriched in nutrients and sediment by smaller river systems of the Apennines before it reaches the Gulf of Taranto.” The reference cited (Lipizer et al. 2014) does not seem to me to treat the path of the WAC beyond Otranto channel into the Gulf of Taranto, as well as other references cited in the same section, such as Budillon et al 2010, Artegiani et al. 1997, Turchetto et al., 2007. It is important that the authors provide the correct references for this topic, as the results of the study are linked to paleoclimatic scenarios of the northern Adriatic basin (Po river area). Moreover, the authors should report an appropriated reference (not Milligan and Cattaneo 2007) reporting the path of the Padane sediment flux aside (and not mixed with) the Appenine flux, as illustrated in Fig 1.

Page 3, lines 38-39 and page 4 lines 1-3: “The sediment supply from the southern Apennines is relatively small, but detectable near the coast through elevated smectite concentrations (Degrobbis et al., 1986; Tomadin 2000; Milligan and Cattaneo, 2007) (Fig. 1 A). The stronger Padane detrital matter flux dominated by illite (from rivers Po, Brenta, Adige, Reno) is seen in a parallel band further in the basin (e.g. Milligan and Cattaneo 2007; Tomadin 1979, 2000) (Fig. 1 A).” Milligan and Cattaneo (2007) is the introduction to a special issue dedicated to the sediment dynamic in the western Adriatic Sea. I recommend the authors to go through the papers of the special issue for a more complete presentation of the Adriatic sediment deposition and path (for instance Syvitski and Kettner regarding the sediment contribution of the Appenine rivers vs total Adriatic sediment load (ca. 50%))

Section Methods: Regarding the age-depth model, it seems from table 1 and fig. 2 that the modern time (2011 year of the core collection) is present. It is not clear to me if the authors assumed that the modern sediment is present or they based on other data (the sentence at page 5 line 5-6: “The core tops contain basically undisturbed surface sediments as indicated by the presence of an oxidized sediment layer” seems to me

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not enough strong to support this assumption).

Page 6 lines 8-9 "The age model for GeoB15403-4 is based on 11 analyses of surface-dwelling planktonic foraminifera by the AMS 14C method". Please report the species of planktonic foraminifera picked up for the radiocarbon dates.

Page 6 lines 9-11: "Radiocarbon dates were converted to calendar years using the MARINE13 database (Reimer et al., 2013) with a Delta R value of  $73 \pm 34$ ". Please explain how the Delta R has been calculated.

Section 5 Discussion Page 9 lines 6-7. "Low Sm/III ratios therefore document a strong influence of the Padane flux. Minima occur around 1750 AD, 1470 AD and 1250 AD (Fig. 9 D). They coincide with high abundance of SIIBF (Fig. 9 B),...". I agree regarding the correspondence between 1750AD minima and abundance peak of SIIBF, but it is not much clear the correspondence between the other more recent Sm/III minima and SIIBF peaks, as the amplitude of the SIIBF fluctuations before 1750AD is not very high and it seems difficult to select the abundance peak corresponding to the Sm/III minima. The authors may trace correlation lines among the peaks.

Please check the text for typing errors (for instance Despart instead of Desprat page 2 line 30; Degrobbis instead of Degobbis page 3 line 39) while some reference in the list is not complete (for instance, Lipizer et al. 2014, Luterbacher et al., 2012, Rodolfi 1988)

I thank you very much for offering the opportunity to review this interesting paper.

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