

Interactive comment on “Paleohydrology reconstruction and Holocene climate variability in the South Adriatic Sea” by G. Siani et al.

Anonymous Referee #2

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The manuscript entitled "Paleohydrology reconstruction and Holocene climate variability in the South Adriatic Sea" by Siani et al. focus on Holocene paleoclimatic and paleohydrological reconstructions performed on sediment core MD90-917 collected in the South Adriatic sea. The investigation is based on foraminifera stable isotope analyses and sea surface temperatures. In my opinion, the manuscript contains interesting results and the discussions are generally convincing. This work includes an important data set even if some data from this core were already published. I recommend to publish it after moderate revision.

General comments:

-The organization of the manuscript is good. Nevertheless some sentences are confusing (see below).

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I recommend to reorganize the paragraph 6.1.1 and 6.1.2 in order to better evidence the new contributes with respect to the previously published data from the same area (for example the comparison with Piva et al., 2008; Sangiorgi et al., 2002; 2003).

Regarding the short-term hydrological changes I suggest to consider non only the influence of Po river but also the contribute of the other river as discussed in Frignani et al. (2005) and in Palinkas and Nittrouer (2006).

General language:

In my opinion the English is generally good even if there are some spelling mistakes (but I am not English-mother tongue).

- please adopt the same word “planktic” or “planktonic” in the text

- I suggest to change “tephra markers” with “tephra layers”

Minor comments:

Title - I suggest: Holocene hydrological changes and climatic variability in the South Adriatic sea

Abstract

There are several repetition through the text, I would suggest to shorten the abstract

Line 1: adopt the same word “planktic” or “planktonic” in the text Line6:I suggest to change “tephra markers” with “tephra layers”

Introduction

Line 24: The sentence “However, comparison between land and marine proxies...” is not clear

4359 Line 5: many informations are provided also by Sangiorgi et al., 2002

4359 Line 20: .. tephra markers. : tephra layers

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Material and methods

Line 5 ...double deposits sapropel S1...: I do not understand double deposits, may be “two sub-unit”

Line 28 sampling resolution every 2 cm: I suggest to indicate the resolution in time

Results

5.1 : It may be interesting to add also the distributional pattern of *N. pachyderma*. The cold events are associated to the *N. pachyderma* right coiling or left coiling? Please, give attention at the ecological requirements of this taxon.

5.3: line 18: ..sapropelic horizons...why “sapropelic”?

Discussion

6.1.1

4371 line 14: ...sapropel S1b event...I suggest S1b “phase”

4371 line 15: ..increase in the abundance of the benthic foraminifera *Cibicidoides*... This is wrong: the return of the oxic conditions are testified non ONLY by *Cibicidoides* but by different species of benthic forams (see literature)

6.2

It may be interesting to perform comparisons also with the eastern Mediterranean region in order to understand and provide additional informations about the origin of the identified climatic events.

The authors can also discuss here the data provided by Combourieu-Nebout et al. (1998) and Giunta et al. (2003) about the continental and marine paleoenvironmental evolution in the Adriatic sea basin during the last deglaciation and the early Holocene.

6.3 I suggest as title: Frequency of the Holocene climatic variability in the SAS

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Figures

Fig.1-caption: please, change in the lithological log the thickness of the grey lines (Astroni and Agnano are the same square). Grey lines mark...their origin (I suggest their source)

Fig.2: ...two step sapropel unit...I suggest two “phases” or “units”

Fig. 6...two step of sapropel.... I suggest two “phases” or “units”

Insert in the caption: the yellow lines correspond to...

Fig 8 – I find the Fig 8 not convincing.

References used in review

Combourieu-Nebout N., Paterne M., Turon J.L., Siani G. 1998. A high-resolution record of the last deglaciation in the central Mediterranean Sea: palaeovegetation and palaeohydrological evolution. *Quaternary Science Reviews* 17, 303-317.

Frignani M., Langone L., Ravaioli M., Sorgente D., Alvisi F., Albertazzi S., 2005. Fine sediment mass balance in the western Adriatic continental shelf over a century time scale. *Mar. Geol.* 222–223, 113–133.

Giunta S., Negri A., Morigi C., Capotondi L., Combourieu Nebout N., Emeis K.C., Sangiorgi F., Vigliotti L. 2003 Coccolithophorid ecostratigraphy and multi-proxy paleoceanographic reconstruction in the Southern Adriatic Sea during the last deglacial time (Core AD91-17). *Palaeogeogr., Palaeoclim., Palaeoecol.*, 190, pp. 39-59.

Palinkas C.M. and Nittrouer C.A. 2006 Clinof orm sedimentation along the Apennine shelf, Adriatic Sea *Marine Geology* 234 (2006) 245–260

Sangiorgi F., Capotondi L., Brinkhuis H. 2002. A centennial scale organic-walled dinoflagellate cyst record of the last deglaciation in the South Adriatic Sea (Central Mediterranean). *Palaeogeogr., Palaeoclimatol., Palaeoecol.* 186, pp.199-216

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