

## ***Interactive comment on “A high-resolution $\delta^{18}\text{O}$ record and Mediterranean climate variability” by C. Taricco et al.***

**Dr. Ghil (Referee)**

ghil@lmd.ens.fr

Received and published: 2 December 2014

General. This paper extends the study of well-dated  $\delta^{18}\text{O}$  records from the Gallipoli Terrace of the Ionian Sea by roughly 33%, from the last two millennia (Taricco et al., 2009, and references therein) to 700 BC. The spectral analysis of the extended record confirms the presence of several broad peaks and the particular importance of the trend and of a bicentennial component ( $\sim 170$  yr). The extended record also shows good agreement with NH temperatures, based on a multi-proxy study of 26 records going back at least to 1000 AD (Taricco et al., 2014). This match is further improved by taking into consideration possible changes in salinity of the Ionian Sea waters, due to a decrease in evaporation for lower temperatures.

Somewhat major comments and suggestions. 1. The number of measured points has  
C2018

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



been increased from  $N = 560$  to  $N = 694$ ; this small increase in number of points vs. length of record is clearly due to the loss of information as one goes back in time, even though the sedimentation rate is claimed to be constant (mainly by identifying pyroxene peaks due to Campanian eruptions). But already at 560 points and 2000 yr, this only gives - at  $\Delta t = 3.87$  yr, and with  $\sim 11$  yr/4 yr - roughly 3 points per 11-yr cycle. Given the even lower resolution of the 700 yr added, I would not claim much about the confirmation of the 11-yr cycle in the extended record. Please remove these claims and associated portions of figures.

2. EOFs do not "explain" anything, although statisticians often use such terminology to accompany fractions of variance; they only "capture" or "describe" parts of the variance. Only theory or modeling - physical, chemical, biological - explain. Please modify the language of the text accordingly.

Pretty minor and truly minor. The paper is clear and well written, the references are plentiful and mostly correct. Here are just a couple of items I'd suggest fixing. 1. Jim Kennett used to write his name with two t's; please fix the citation in the text and the reference "Shackleton & Kennett" accordingly. 2. Page 4066 contains the important argument about the change in salinity. Its being just one single, long paragraph doesn't help following the train of thought. Please break the page up into 3 or 4 paragraphs to clarify and help understanding. 3. p. 4061, l. 4: "each sample" - sing., not pl. 4. p. 4065, l. 11: "which not only confirms" - not "what" 5. Table 1 is barely legible. Please change to landscape format, on two pages, if necessary. 6. Please state clearly, the first time you refer to a "bicentennial oscillation" - either in the text or in a figure caption - that you mean the 170-yr one,

---

Interactive comment on Clim. Past Discuss., 10, 4057, 2014.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)