

Interactive comment on “Changes in high intensity precipitation on the Northern Apennines (Italy) as revealed by multidisciplinary data over the last 9000 years” by Stefano Segadelli et al.

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This is a paper with a very intriguing title, dealing with Holocene changes in high intensity precipitation in the Northern Apennines.

Considering that palynology is my main skill and part of my work falls in a close region and research field of this paper, I would contribute to the discussion suggesting to shorten the part dealing with pollen analysis and add some references on palynology. My opinion is that there is a poor/misleading use of pollen analysis in this paper: my suggestion is to delete this record or reduce notably its role in the text. The consideration rises from the importance and resolution that usually palynology can have - and

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has - in this type of work.

At line 80, it is written “paleoclimate (pollen)” that may suggest that paleoclimate will be studied by means of pollen. This is not acceptable and this was not actually possible in the paper. Nevertheless, the use of palynology was quite underestimated in this research because of both the insignificant number of samples (low resolution) and the inadequate interpretation of data (not updated theoretical references).

At line 208, it is reported that “Palynological analyses were carried out on 14 samples collected from core S1 to refine facies characterization of fine-grained deposits and obtain vegetation-derived paleoclimate data” = S1 is a 14 m long core, why only 14 samples were collected? and then only 11 samples were studied : This is not useful to ‘refine facies characterization’ nor to ‘obtain vegetation-derived paleoclimate data’; The pollen samples consist of two sets covering 2300 years (ca. 1.50 m) and 1600 years (ca. 1.00 m). This is a very low resolution, and in my modest opinion it not acceptable for justifying a so large discussion given to pollen from a terrestrial core.

The method for pollen extraction is missed. Pollen samples are usually labelled with P1- the top and most recent sample, and P11 the bottom oldest sample (from Fig. 10, the paper reports the contrary).

Lines 225-226 = A - “The discreet pollen biodiversity (60 pollen types: 22 woody, 32 herbaceous and 6 Monilophyta) found, suggests that flood deposits formed in a rich vegetal environment, with high floristic biodiversity.” : the correct term for ferns may be ‘Monilophyta’; please, on what basis one can affirm that ‘flood deposits formed in a rich vegetal environment’, as they intercept and transport pollen along displacements of sediments and do not contain only the pollen rain of the ‘start point’ ? B - “In particular groups composition are described in Fig. 10.” = The groups are not described and also reference literature is missed.

Line 405 = Based on all the reasons exposed above, this chapter should be notably reduced or cut – it is not useful to interpret pollen data in this approximate way.

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Other comments: Line 94 = 'absence of surrounding anthropic activities' = the sentence is in contradiction with what is said a few lines later (*Fagus sylvatica* is locally interrupted by grazing land areas).

Table 1 = what means 'Carpinus genus' ? The use is to report *Carpinus betulus* (the species) or *Carpinus* sp. (the genus without detail on the species)

Suggested references (only a partial compilation, missing most of the pollen analyses from Northern Italy)

Branch NP (2013) Early–Middle Holocene vegetation history, climate change and human activities at Lago Riane (Ligurian Apennines, NW Italy). *Vegetation History and Archaeobotany* 22: 315–334. Branch NP and Marini NAF (2014) Mid-Late-Holocene environmental change and human activities in the northern Apennines, Italy. *Quaternary International* 353: 34–51. Braggio G., M. A. Guido & C. Montanari (1991) Palaeovegetational evidence in the upper Nure Valley (Ligurian-Emilian Apennines, Northern Italy), *Webbia*, 46:1, 173-185, DOI: 10.1080/00837792.1991.10670515 Cremaschi M, Mercuri AM, Torri P et al. (2016) Climate change versus land management in the Po Plain (Northern Italy) during the Bronze Age: New insights from the VP/VG sequence of the Terramara Santa Rosa di Poviglio. *Quaternary Science Reviews* 136: 153–172 Mercuri AM, (2014) Genesis and evolution of the cultural landscape in central Mediterranean: the 'where, when and how' through the palynological approach. *Landscape Ecology* 29,1799-810 Mercuri AM, Bandini Mazzanti M, Florenzano A et al. (2013) Anthropogenic pollen indicators (API) from archaeological sites as local evidence of human-induced environments in the Italian peninsula. *Annali Di Botanica (Roma)* 3: 143–153. Mercuri AM, Bandini Mazzanti M, Torri P et al. (2012) A marine/terrestrial integration for mid-late Holocene vegetation history and the development of the cultural landscape in the Po Valley as a result of human impact and climate change. *Vegetation History and Archaeobotany* 21: 353–372. Mercuri et al. 2019 Middle- to late-Holocene fire history and the impact on Mediterranean pine and oak forests according to the core RF93-30, central Adriatic Sea. *The Holocene* 29(8):

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1362–1376. Wagner B et al. (2019) Mediterranean winter rainfall in phase with African monsoons during the past 1.36 million years. *Nature*, doi.org/10.1038/s41586-019-1529-0

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