

## ***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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Received and published: 5 March 2020

### General comments

We are indebted to Dr. Mercuri and Dr. Combourieu for their comments, which help us a lot especially for what concerns the role of pollen data in the paper. We recognize that this issue was not clearly reported in the manuscript. We are aware that we cannot make any high-resolution paleoclimate inferences with the adopted sampling procedure, and we will correct the text in this sense. In the context of our research, the use of pollen is to be framed only in a multidisciplinary-stratigraphic perspective aimed to: 1. Better define the environmental conditions (facies interpretation including

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evaluation of humidity/water table persistence); 2. Evaluate the role played or not by the tree cover (given by the afforestation rate) on the flow activation processes. Thus, we believe that, with the due improvements and clarifications required, our pollen data furnish useful information if referred to the aims of the paper and, consequently, to key stratigraphic intervals identified within the sedimentary succession under examination.

### Specific reply to Dr. Mercuri

Taking into account the aims of our research and the core stratigraphy (especially the presence of coarse-grained deposits), we decided to adopt a sampling procedure guided by the identification of certain intervals (and time-periods), in which we have identified significant changes (from other proxies) of thermal and pluviometric regimes to be put in relations with estimated flood activity. In this context, we believe that pollen data, although at low resolution, could be useful to enrich our analysis. However, in the light of the comments we have received so far we will add two more samples from unit 3 (P13 and P14; the basal sample P1 is sterile), and we will insert more references to the available literature concerning pollen data from the surrounding areas. The methodology followed for the pollen preparations will be included as required. In the numbering of the samples, the site numbering will be maintained to avoid confusion and since the samples were taken from the bottom upwards (following a stratigraphic order): P1 is at the base and P14 at the top. An evaluation of the anthropic impact will be insert in the discussion (as also required by Dr. Tinner), taking advantage of the addition of the two samples P13 and P14.

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Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2019-135, 2019>.