

Clim. Past Discuss., author comment AC4  
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## Reply on RC2

Fabrizio Marra et al.

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Author comment on "Terrestrial records of glacial terminations V and IV and insights on deglacial mechanisms" by Fabrizio Marra et al., Clim. Past Discuss.,  
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We are really puzzled with this second review. It replicates, almost point by point, previous comments by anonymous Reviewer #1, which also was a sedimentologist and not an expert on paleoclimatology. It seems like the second reviewer didn't read the reply to the former one.

First of all, ours is not a sedimentologic work and Climate of the Past is not a sedimentology journal. It is not the aim of our work describing in detail the stratigraphy of the Liri Lacustrine Basin which has been already documented in great detail by Devoto (1965). It is ridiculous to state that this paper is not easily accessible and therefore we should replicate the study performed by this author.

Moreover, we don't understand which kind of facies analysis should be performed on this very localized fluvial-lacustrine sections which may add useful information for the scope of this paper.

The facies analysis that the Reviewer #2 claims for cannot be carried out on the borecores and on most of the described sections which are no more exposed; in any case, it would not add anything to this work which is based on a very simple, yet straightforward principle:

<< here we adopt a relatively simple but effective sedimentological approach based on the identification of three main granulometric classes, aimed at providing information on the energy of transport and the related sedimentary environments within the Sacco-Liri catchment basin:

- coarse gravel (max diameter of pebbles >2 cm), tractive fluvial environment of high transport energy;
- coarse sand with sparse fine gravel (max diameter of pebbles ≤2 cm), fluvial environment of mid transport energy;

iii. silt, clay and carbonate-rich mud; lacustrine and, subordinately, alluvial environment of low transport energy.>>

Our scientific approach relies on the changes in the energy of the fluvial-lacustrine basin

which is expressed by the water capacity of transport. Our stratigraphic study evidences the occurrence of two coarse gravel layers the continuity of which is very well documented and supported by the geochronologic constraints provided through  $^{40}\text{Ar}/^{39}\text{Ar}$  dating.

Scope of this paper is demonstrating that the coarse gravel input which occurs twice within the basin is originated by melting of the Apennine glaciers, and investigating the possible orbital trigger of these events.

To do so, we correlate stratigraphically two gravel layers 3-4 m thick, occurring at the same elevation through a 20 km wide area. We provide very precise radiometric ages to these gravel layers supporting the reconstruction in an objective way, as opposed to facies analysis which cannot provide age constraints for correlation.

By doing so, we demonstrate that emplacement of these gravel layers is also coincident with the emplacement of identical gravel beds in the Tiber River basin, for which the direct link with the deglacial process has been demonstrated in previous literature.

We don't think that the lengthy specific comments on sedimentologic aspects by Reviewer #2 need a reply, since they are identical to those provided by Reviewer #1 and in any point they affect the scientific approach, the interpretations and the conclusion of our paleoclimatic study.