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Reply on CC1

Fabrizio Marra et al.

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 thank Gianluca Marino for his kind review and the useful suggestions to improve the completeness and clarity of the paper.

We realize that our paper, as it is, only provides a qualitative approach to the possible explanation of the occurrence of meltwater pulses events during the glacial maxima that precede the glacial termination. We provide geochronologic constraints to these events and we show that they are broadly coincident with several Heinrich-like events, as well as, with particularly moderate (mild) insolation minima. Moreover, such double correlation generate a "short circuit", implying, as Gianluca Marino remarks, that episodes of millennial-scale variability/Heinrich events might be entirely orbitally controlled. A fact that most of the paleoclimate community wouldn't welcome, and that we didn't even intend to claim.

Therefore, while we believe that our paper not necessarily has to establish the triggering mechanism for the detected episodes of deglaciation, we strongly agree that this aspect needs a more in depth, and clear discussion.

In particular, a more comprehensive spectrum of possible mechanisms should be discussed, for example the instability of the ice-sheets when approaching their supercritical size, as suggested by Gianluca Marino. Moreover, we agree that a disambiguation on the coincidence between Heinrich events and "mild" minima is necessary, with a more detailed information on the model published in Paleooceanography by Marra et al. (2008).

For what concerns the chronostratigraphic information provided in the paper, if the Editor will ask us to resubmit a revised manuscript, we will have care to shorten and clarify this section, leaving only the information that is functional to the aims of our study, and moving the detail of the stratigraphy and the tectonic evolution in the supplements.