Solid Earth Discuss.,
https://doi.org/10.5194/se-2020-10-SC1, 2020

Solid Earth Discussions

Interactive comment on "New insights into active tectonics and seismogenic potential of the Italian Southern Alps from vertical geodetic velocities" *by* Letizia Anderlini et al.

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Received and published: 14 April 2020

Dear Authors of the manuscript "New insights into active tectonics and seismogenic potential of the Italian Southern Alps from vertical geodetic velocities". This article is interesting in providing new geodetic data about deformations in this important sector of the Southern Alps. My remarks are related to the general approach that, here and in many similar works, the chronology and Quaternary stratigraphy are used for deformation rates assessment without using updated information about the landscape and sedimentary evolution of the study area. This happens because no geomorphologists or Quaternary stratigraphers are normally involved in such kind of studies. However,

because of the importance of the age assessment is a key for the conclusions of these works, a more careful attention has to be paid. In the present work, many chronological references sound obsolete for the innovative scope of the research.

I listed the specific concerns for this work as follow:

Line 48: the "last deglaciation" is meant after the Last Glacial Maximum I would include the time span (19-11 ka BP according to Clark et al., 2012), for the Alps see also Ivy-Ochs (2015).

Line 52: Spada et al. (2009) is referred to the "last deglaciation" but not to the "present deglaciation" that refers to the ice waning after the Little Ice Age.

Lines 345-350: the use of old and updated terminology (Mindel-Riss-Würm) from old literature shows how the authors have not updated their knowledge about the Pleistocene stratigraphy of the study area. This was update in a review article by Carton et al. (2009), who provided a long list of radiocarbon data for the Piave catchment.

Lines 353-354: the LGM is not at 20-18 ka but at 26-21 ka. I suggest to use Clark et al. (2009) for a global LGM or Monegato et al. (2017) for the Alpine LGM or Rossato et al. (2018) that gave the most updated chronology for the Veneto Prealps and piedmont plain. Also Pellegrini et al. (2005) included a useful chronology for the Belluno and Cesen-Col Visentin sector.

Line 366: maybe the Geological and geomorphological data appears thus not fully consistent just because the Authors need to use the proper updated dataset.

Lines 368-369: Benedetti et al. (2000) rates for the Montello are affected by the wrong age estimation of the Montebelluna megafan, whose age was already given as pre-LGM by Fontana et al. (2008, 2014). I suggest to use these references for this discussion.

Lines 394-395: Benedetti et al. (2000) cannot be used for assessing the thickness of the Piave glacier in Belluno, because the work is not about Pleistocene glaciations.

Pellegrini et al. (2005) and Carton et al. (2009) have to be considered instead. The Piave glacier was not an ice-sheet, which has to be used for the Alps (i.e., Alpine Ice Sheet).

Line 401: this is age is unreliable, the deglaciation in the Piave catchment occur after 18-17 ka, see Pellegrini et al. (2005) and Carton et al. (2009). At 10 ka valley glaciers were already waned. The collapse of the Alpine glaciers was fast but it occurred at 18-17 ka as reported also by Ravazzi et al. (2014) and Rossato and Mozzi (2016).

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Best Wishes Giovanni Monegato

Interactive comment on Solid Earth Discuss., https://doi.org/10.5194/se-2020-10, 2020.