Climate
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Discussions

Interactive comment on "Ground surface temperature reconstruction for the last 500 years obtained from permafrost temperatures observed in the Stelvio Share borehole, Italian Alps" *by* Mauro Guglielmin et al.

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Dear Editor,

The replies to (in red italic) to all the reviewers comments are in the supplement file while in the attached files there are 4 new figures that we'll add to the manuscript and that are part of our replies. The numbering of these new figures is provisionally in roman numbers to distinguish by previous figures. In addition we are attaching also the new fig. 2 because is also part of the replies. All the other requested changes on

the original figures will be added directly in the revised text in the case that hopefully will be accepted for the final revision.
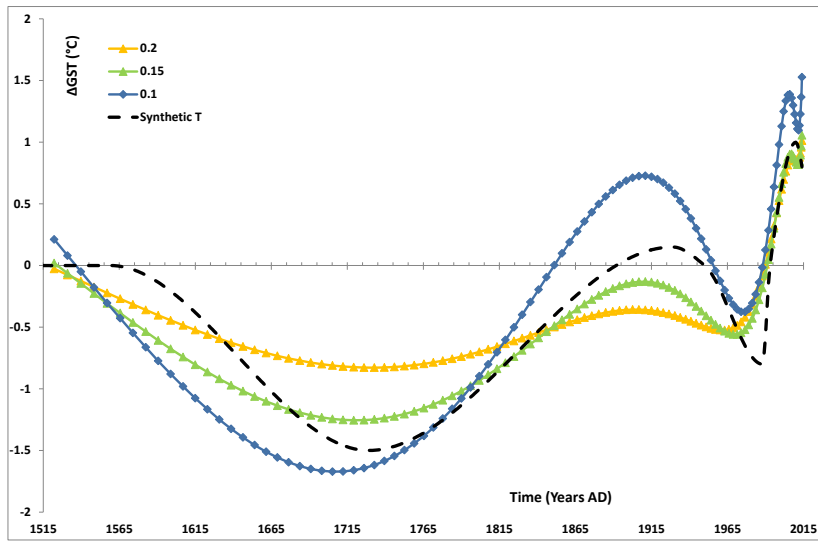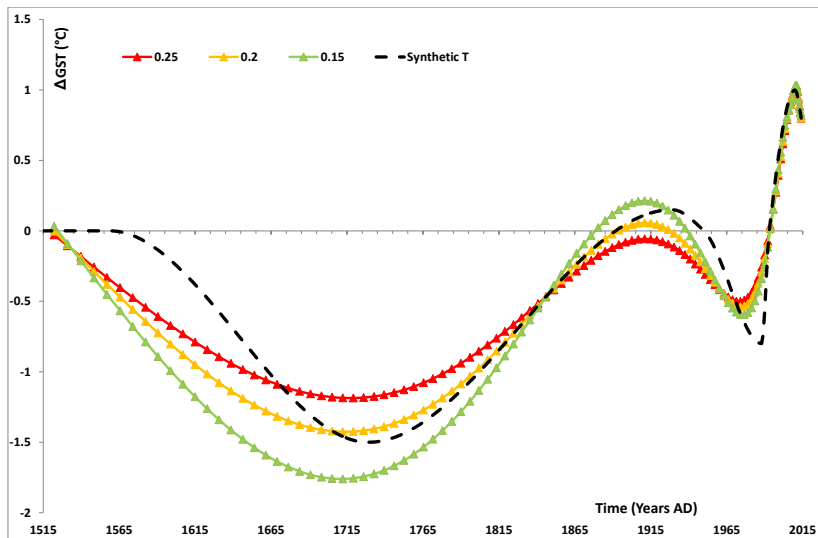
Please also note the supplement to this comment:
https://www.clim-past-discuss.net/cp-2017-23/cp-2017-23-AC1-supplement.pdf

Interactive comment on Clim. Past Discuss., https://doi.org/10.5194/cp-2017-23, 2017.

Fig. 1. Fig. I Synthetic data for the present time. It is remarkable that also varying the alpha value by 33% the reconstructed GST does not vary significantly.
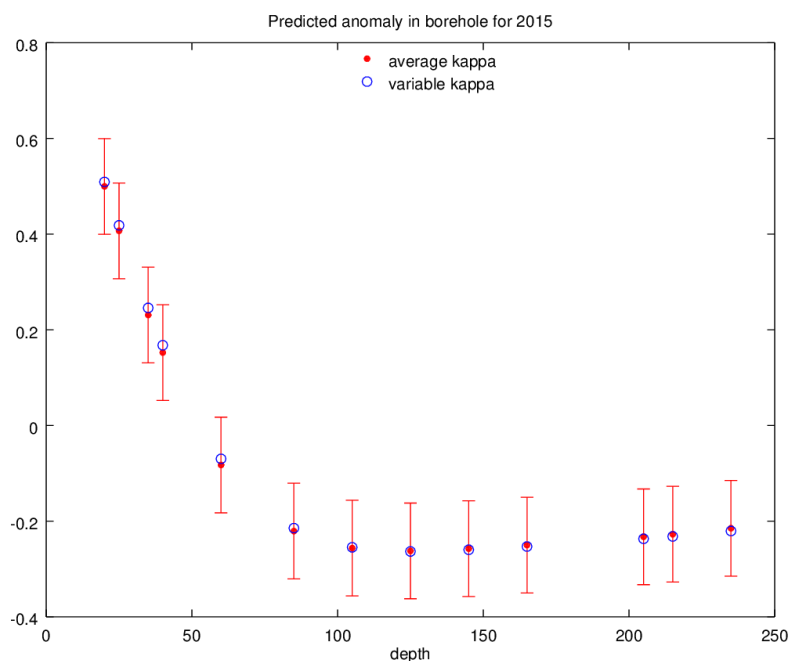
C3

Fig. 2. Fig. II Synthetic data for three past years (2013,2014 and 2015).It can be seen that the inversion in the last 50 years is more accurate than the inversion of Fig I.
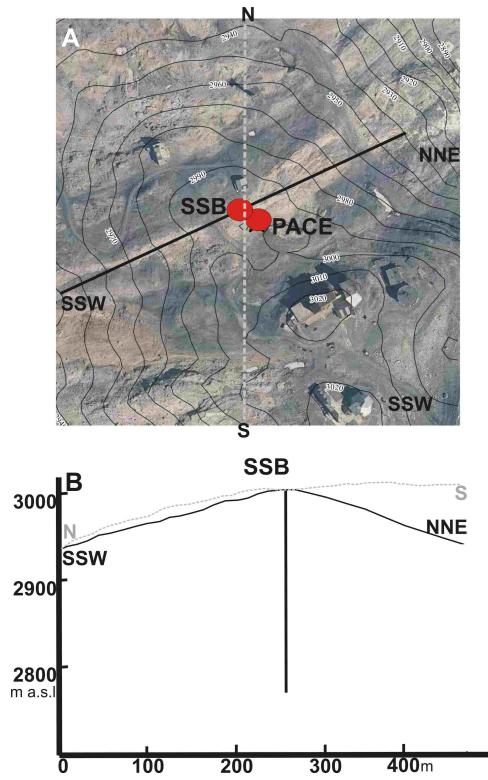
C4
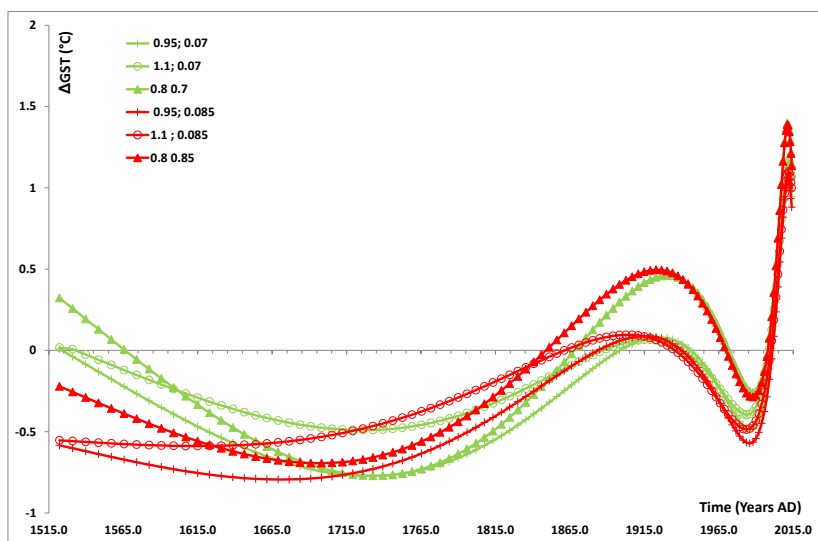
Fig. 3. Fig. III Example of different GSTh with different alpha with the extreme of heat flow values known for the region.

C5

Fig. 4. Fig. IV Comparison of the temperature profiles of 2015 obtained in the case of a constant thermal diffusivity (facies a; red dots) andB) with a multilayers thermal diffusivities according the differen

Fig. 5. Figure 2. Topography of the SSB site: a) Digital Elevation Model (res. 5 m) of the SSB site and b) SSW-NNE and N-S transects through the Stelvio summit. Horizontal and vertical scales are the same.