

## ***Interactive comment on “Impact of maximum borehole depths on inverted temperature histories in borehole paleoclimatology” by H. Beltrami et al.***

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This is a good and highly useful paper which suitably explains certain problems in interpreting and understanding the results of paleoclimatic reconstructions of borehole temperatures. The depth of performed temperature logging used for the inversion is important and data obtained from shallow holes may provide controversial results. The paper should be carefully read by all who sometimes based their discussions on interpretation of ground surface histories from inverted  $T(z)$  records of holes less than 200–300 m deep, or mixed together data from a wide range of holes (with varying depths) attempting to describe climate evolution on a large (global) scale. The authors clearly explained the problem, derived their conclusions on a theoretical (synthetic) model and then demonstrated their conclusions on an actual temperature log. Paper

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is well arranged, discussion is transparent, and illustrations support and complement the text. Of special value is the extremely exhaustive list of references which well cover the whole problem of borehole climatology. Even when the authors solved a simple half space model of constant thermophysical parameters, they may have additionally mentioned the effect of vertically changing thermal conductivity, which in shallow holes (and when conductivity is not known in deeper uncovered depth section) may affect the proper choice of surface temperature  $T_0$  and of the steady-state gradient  $\Gamma_0$ . Also, in such an indisputable comprehensive review a note might address the potential problem of other factors affecting the surface (“climate”) history such as the change of vegetation cover, land use, snow cover etc. Such note can be useful for a reader who may be not well familiar with all details of the inversion technique. The manuscript should be recommended for publication in the Climate of the Past journal.

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