

***Interactive comment on “Climatic changes in the Urals over the past millennium. An analysis of geothermal and meteorological data” by D. Yu. Demezhko and I. V. Golovanova***

**Anonymous Referee #4**

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General comments

Two important problems of paleoclimatology are under discussion. 1. An estimation of variability regional (Middle and South Ural) paleoclimat for the last 1200 years on the basis of two average lines of: meteorological and geothermal data 2. Receiving reliable average (generalized) GSTH-reconstruction on ensemble of individual reconstructions. Application of a new technique - “The Interval Estimate Method” - results in higher range estimations of amplitude of paleotemperature fluctuations and, hence, to reassessment of the magnitude of modern global warming.

Specific comments

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1. The essence of the technique is rather difficult for understanding from one only text of the paper, not resorting to the reference (Demezhko et al, 2005). In particular, how optimum curve GSTH is determined?

2. The question is debatable enough - how much ground surface temperature changes repeats change of air surface temperature on time scales from century-long and more. In work (Demezhko, 2001) it has been shown, that the major factors determining mean annual soil-air temperature difference in Ural are: the snow cover depth, the annual amplitude of air temperature and the mean annual air temperature. There is no reliable evidence on how these factors varied during last millennium.

3. It was necessary to present and other evidences of paleoclimat change in Ural region if any and to describe, how they correspond with the presented geothermal reconstruction?

4. According authors, selected for analysis temperature logs have “no evidence of water flow” - this statement needs more argumentation, like heat flow data versus depth, resistivity(salinity) logs, geochemical composition of ground water with depth, radiogenic heat generation , elevation amplitude of well head, etc.

Technical corrections.

1. On fig. 1 I recommend to give generalized relief contour 2. Of course black and white limitation for pictures (fig.3 and 4 for example) looks like “hand-to-scan document”.

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