

General comments

Overall, I am satisfied with the way in which the authors have dealt with the/my review comments. They have taken a significant effort to address the issues raised.

The following comments regarding the revised manuscript I still regard pertinent to bring forward:

p. 5 and 6 now include statements regarding potential seasonal bias in temperature readings of water obtained from the wells. However, the information content and quality of presentation is rather poor.

- Line 29: influence *by* rather than *on* ambient air temperatures.
- Line 31: What does 'certain minor seasonal effects with variations' mean?
- Line 32: The word 'However' is confusing/unclear.
- P. 6: The reader should know what was done rather than what can be done (line 1) or should be done (line 5).

p. 10 line 5: It is not clear to me why 'Because we consider temperature rise in the aquifer' is included.

p. 12 line 8: Unclear now what is meant by : 'A possible explanation for this variation in the time lags'. The sentences before argue that a variation of one year is insignificant.

p. 16 line 9: Freezing phenomena are neglected in general. Seasonally frozen ground is more pertinent to mention for Germany than permafrost.

p. 18 line 1: It is very unlikely the observed inter-annual variability, often more than 0.5 K, could have been reproduced by imposing inter-annual variations in GST at the top boundary condition. It has certainly not been tested or evaluated. So the part of the conclusion 'due to the simplistic nature of the boundary condition' is inappropriate.

On a general note, I concur with the authors that there still exists a need for improved understanding of the impact of climate-change-induced warming of (shallow) groundwater on the thermal regimes of surface waters on the one hand, and on temperature-dependent ecosystems of surface water bodies and aquifers on the other. The authors may also be right that awareness of the way in which climate warming affects groundwater temperatures could be enhanced, even among hydrogeologists. However, without such specificities I would still want to disagree regarding the portrayed or suggested existence of a lack of comprehensive understanding of the implications of changing climate conditions for the long-term evolution of shallow groundwater temperatures (p 2 lines 15-17; p3 lines 2-3). A plethora of relevant literature exists that has established this knowledge framework, several studies of which are referred to in the present manuscript.

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