

Interactive comment on “Potential surface temperature and shallow groundwater temperature response to climate change: an example from a small forested catchment in east-central New Brunswick (Canada)” by B. L. Kurylyk et al.

Anonymous Referee #2

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Kurylyk et al. is a well written and concise paper which clearly outlines possible responses in GWT to various climate scenarios. Most important is the separation of the impact of changes in air temperature to seasonal changes in GWT and snowpack. In addition how these effects are translated with depth is analyzed. The paper is a valuable contribution to the literature, and while focused on one watershed in Eastern Canada, the approach and analysis methods are transferable to any regions especially where snowpack influences subsurface hydrology. All my comments below are minor editorial comments.

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p. 3291 line 23 – not sure from the text itself if the stated rise 0.4-3.9C is over the period 2046 to 2065 or from present day (or observed 1961 to 2000) to 2065?

Fig. 3 – and partly related to above comment – Are you taking the period 1961-2000 to represent one baseline time period and the period 2046 to 2065 to represent one baseline period – each then with their own set of statistics. This is not clear in the paper; neither is why these periods were chosen.

p. 3291 lines 26-28 – I am very glad to see you made the statement “Thus, the intent is to examine the sensitivity of GST and GWT to external forcing rather than to make an assessment of the accuracy of predictions regarding the future state of surface and subsurface thermal regimes.” All modellers – especially groundwater modellers – should know and emphasize the accuracy of their predictions or input data.

Fig. 6 &7 – Again not clear that the period 2046 to 2065 is actually represented by a mean and variance (i.e. one point). Simply putting “(2046-2065)” will clarify. Note – the presentations in these figures are very insightful. Separating out temperature variations seasonally is important and different from many publications.

p. 3294 line 19 – no comma after Although.

p. 3299 line 7 – Personally I dislike the use of “etc.” in a sentence. To me it states one is too lazy to continue on the list. I prefer the use of (e.g. the list of examples). Then it is clear you are just giving some of the possible phenomena.

p. 3301 – Again clearly stating the limitations of the work is something that is not often done and is always needed to place ones work in context and allow for the use of the work by others.

p. 3303 lines 11 to 13 – This sentence is not clear and is fragmented. Revise.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 3283, 2013.