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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Confronting vicinity of the surface water and sea shore in a shallow glaciogenic aquifer in southern Finland" *by* S. Luoma et al.

S. Luoma et al.

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Reply to the comments received from Anonymous Referee #1

We appreciate the comments received. We have tried to answer all the comments thoroughly and make all the appropriate suggested improvements. The manuscript has been improved and revised according to specific comments received. A detailed description of the changes and answers to comments are given below:

1.- p.8657 line 15: the multilevel samplings have been performed by inflatable packer? By multilevel systems placed in the borehole? Please, add information about the proce-

dure. If not multilevel systems have been applied, how you can consider the samplings representative of the different levels? This approach can affect your results and has to be carefully discussed.

#Yes, they were, the multilevel samples were collected by using inflatable packer. More explanation was added to the manuscript: "If there were variations in the profile, the partition samples were taken by placing an inflatable packer at the discrete depth of the selected zones, and a single groundwater sample was collected at a time from the top section and moved downward to the bottom section."

2.- p.8660 line 14: please add reference of the statistical program you used.

#A reference was added to the manuscript: "(IBM SPSS Statistics, 2013)"

3.- p.8661 line 26: please specify if you use the kriging algorithm or other

#Explanation was added to the manuscript: "ArcGIS/ArcMap program was used for visualization for geochemistry data points and groundwater level was mapped by using kriging."

4.-p.8663, line 5: both periods for stable isotopes? have you find significant differences? The time changes do not seem to be discussed in detail.

#Yes, the multilevel water samples (top and bottom) were taken in two observation wells: Obs6 and Obs8 for stable isotopes analysis. High seasonal and spatial variations of the δ2H and δ18O were observed in Obs8 and also in Obs7 and Obs2, wells that locates nearby the gravel pit excavation and lake water. Narrow variations of the δ2H and δ18O were observed in Obs6 and also the majority of groundwater samples. High seasonal and spatial variations may indicate a short percolation time and influences of surface water from the gravel pit excavation and lake water. More discussion was added to the manuscript.

5.- p.8670 line 4-6: this sentence is obvious, you can cancel

#Done. The sentence was removed from the manuscript.

6.- p.8672 line 27: what about "potentially contaminated" groundwater?

#The term “potential contaminated” groundwater was used to represent group of groundwater that has been observed the increased trends of EC, NO3, Sr, and metals concentrations in groundwater from wells in the gravel pit excavation, concrete factory, and area nearby the water intake well, which has been revealed also by PCA. We now changed "potentially contaminated" in this section into "anthropogenic effect".

7. Highlight the main findings and what is the novelty included in this work.

#The conclusions were rewritten to make it more concise and more highlight on the main finding based on the aims of the study that earlier stated in the introduction part.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/11/C5348/2014/hessd-11-C5348-2014-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 8651, 2014.