Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2019-120-RC1, 2019
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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Groundwater / meltwater interaction in proglacial aquifers" *by* Brighid É Ó Dochartaigh et al.

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Received and published: 22 May 2019

General comments

This paper addresses groundwater in a glaciarised catchment, an object still rarely considered, and even less through a multi-years and multi-technics study. And, as well argued in the paper, it is already, and will be even more in the coming years, of great interest for many areas, regarding several issues including water supply. Significant conclusions are reached, based on strong new data.

The scientific significance of the paper is thus excellent, and definitely within the scope of HESS.

It's scientific quality is high too, I have only few comments to reach full understanding

and potential reproduction of the results (see specific comments section). The method section is very clearly detailed.

The presentation is of excellent quality as well, minors corrections and suggestions are listed in the technical corrections section. Figures and references are exhaustive. Title and abstract are adequates.

Specific comments

- Shouldn't subsection 2-1 "Study site" be included in the introduction section rather than the Methodology section? And 2 subsections are labelled "2-1": the "Study site" one and the "Aquifer characterisation" one.

- section 3-1: line 5: Could you explicit what define the groundwater catchment boundaries? Except for one indication on Figure S1 there is no discussion of this.

- section 3-1: line 21: How do you know that the underlying bedrock has very low transmissivity? Thanks to tests in the 2 dedicated piezometers?

- section 3-2: lines 26-31: Could you explicit how you calculate the mean estimated annual groundwater flow through the shallow part of the aquifer and the total depth of the aquifer?

- Just to be sure I got this right: if there are tills under Virkisjökull glacier, they are not in continuity with the sandur downstream?

Technical corrections

- some of the 's-1' are not formatted properly (section 2-1 Study site mostly).

- section 2-1 Aquifer characterisation: "Within a zone extending up to 50Âăm...": use a non-breaking space to avoid line break between 50 and m

- section 2-1 Aquifer characterisation: lines 2 and 5: add the date the sandur and bedrock boreholes were drilled

- section 2-1 Aquifer characterisation: line 13: add the date the seismic survey were performed

- section 2-2: suggestion for the title: “Groundwater, Surface hydrology and Precipitation monitoring”

- section 2-2: line 22: . . . in the 8 sandur piezometers;

- section 2-2: line 24 line break after “temperature.”

- section 2-2: line 28 line break after “(Figure 1).”

- section 2-3: suggestion for the title: “Groundwater sampling and analysis”

- section 3-1 line 18: is the table referred to really Table S4?

- section 3.3: “M1, M2 and L3” instead of “M2, M1 and L3”

- section 3.3 “Within a zone extending up to 50Âăm...”: use a non-breaking space to avoid line break between 50 and m

- maybe simplify the figures numberingÂă? To have some figures labelled ÂńÂă1, 2...ÂăÂż and one ÂńÂăS1ÂăÂż is sometimes a bit confusing.

- Maybe add the piezometers drilling dates in the text and in table S1.

Why are the 3 piezometers in the bedrock not included in table S1 or in a specific table?

- Are the dates of the infiltration tests indicated in the text? It could also be indicated in table S2.

- same thing for the particle size analysis and table S3.

- add in table S4 the years of the sampling campaigns

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