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Interactive comment on "Overview on radon measurements in Arctic glacier waters" *by* A. Kies et al.

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I enjoyed reading this paper very much. I think that the method has great potential, and the data sets seem very interesting. The paper is hard to get through and to understand easily, because the structuring of the material is not optimal. The enthusiasm and understanding the authors have with the topic comes through loudly none-the-less. This might seem a harsh thing to suggest, but I feel that the paper should have a major revision. The authors convey a lot of information about the sites and the hydrology that is just in the wrong place for a new reader of the manuscript. I don't feel that the revisions will take too long, and the great benefit to the authors is that they will get a lot more folk reading the paper and pondering on the glaciological significance of the results.

Here's what I suggest you do.

Introduction: what are the problems with EC-based/major ion subglacial flowpath determinations in High Arctic glaciers? What is the characterisation of a better flowpath indicator? Why does Rd222 fit the bill?

How does radon222 get out of the silicate lattice? In what sorts of subglacial environment is this optimised? How much rock needs to interact to give a measureable Rd222 concentration?

Study Site: describe the glaciers and their hydrologies here. Let the reader know what is know for certain, what is conjecture, and what the balance of argument suggests.

Methods: what is the limit of detection for Rd222? What is precision of measurement typically across the range of concentrations you find? How is accuracy determined? How is calibration of the instruement undertaken?

Results: what are the principal features in the data set that can be easily explained, given information in your introduction and study site, and what results are not.

Discussion: why should we all be measuring Rd222 from now on, and as a matter of routine? What are the pitfalls to the methodology? What data combinations give rise to interpretations that are equivocal? Which combinations give rise to unequivocal explanation.

It will be much easier to give a more detailed and critical review when the text is restructured. I'd want this second review to be supportive, in line with the effort the authors have put into the text.

Hope that this helps,

Martyn Tranter.

Interactive comment on The Cryosphere Discuss., 9, 2013, 2015.