

Interactive comment on “Ionic aluminium concentrations exceed thresholds for aquatic health in Nova Scotian rivers” by Shannon Sterling et al.

Anonymous Referee #1

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Overall this is a well written manuscript that contributes new information on an important topic in relation to aquatic ecosystem risks from labile Al.

Line 134 - re: Bond Elut Jr column - I am unfamiliar with these specific columns and it would be good to specify what the active cation binding phase is. Further discussion on the limitations of this binding phase for determining Al_i would be useful. Would weakly complexed Al-organic species be retained on the column? This may need further discussion as if so it may mean less toxicity than what is assumed. This paper may have some useful information on this:

Robert W. Gensemer & Richard C. Playle (1999) The Bioavailability and Toxicity of

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Aluminum in Aquatic Environments, Critical Reviews in Environmental Science and Technology, 29:4, 315-450, DOI: 10.1080/10643389991259245

Were any QA/QC checks performed on column performance (e.g. passing labile Al solution through and/or spikes).

Lines 163-167 - Also these speciation results appear quite similar to Simpson et al. (2014) from acid sulfate soil environments. Chemosphere 103, 172–180

Lines 189-194 - I suspect some of the lack of correlation is also due to a relatively low pH range within the data set. Hence any small uncertainties in analytical parameters such as pH become more influential. Maybe a little more caution could be applied to last sentence in this paragraph as this is not the case for some other streams globally. Before streamwaters I would suggest adding "acidified Nova Scotia..."

Some more discussion would be good also on the potential role of colloids affecting the results (and how they may bias measured Al_o fraction?). I would suggest ultrafiltration could be used in future research to try to understand this further.

Table 1 - check subscripts on Al species

Figure 1 - suggest note in caption that shaded region corresponding to individual sites is the catchment area?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2019-438, 2019.

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