

Interactive comment on “Quantifying nutrient uptake as driver of rock weathering in forest ecosystems by magnesium stable isotopes” by David Uhlig et al.

Anonymous Referee #1

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The manuscript by Uhlig et al. used Mg stable isotopes to calculate Mg weathering and Mg uptake by trees (mainly). My comments are as following:

1. It would be nice that the authors could give a schematic figure showing Mg fluxes in the studied system with respective delta values, fractions, flow strength, etc.
2. There are many notations and symbols. I found it difficult to remember all of them while reading and had to go back to the text to look for them for the definition. So I recommend to make a list of the notations, providing necessary information, such as definition, link to the section, etc., similar in Bouchez et al., (2013).
3. Repetition: page 5 line 145: The abundance of ... of XRD.

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4. Typo: page 8 line 220: Section 4.9 instead of 3.9
5. Equation 2. is generally hard for me to understand, why deltaMg of creek water (deltaMg_diss) is used? How it is comparable with the closed system in Black et al. (2008)? Shouldn't the calculation of fraction (given % as in the manuscript) be based on mass fraction rather than delta values? Similar question is raised for Eq. 4.
6. page 7 line 187-188: The combination of ... to the transient growth of biomass. Please explain.
7. Typo: page 10 line 293: Sect. 4.3 instead of 3.3
8. sect. 4.6, Na is a nutrient, why not taken up by plants, as indicated on page 11 line 304-305? The percentage of those elements in streams dissolved load should be re-considered.
9. page 11 line 309, such as and for example are repetition
10. line 318: ... by chemical weathering that results in ...
11. Sect 4.7, if 60% K solubilized from rock is in the streams dissolved load, how K is relatively highly recycled compared with other elements studied? What the relation between DEF and Rec?
12. Fig. B1 is not very high quality, may be replaced by above mentioned schematic of the fluxes in the system.

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