

Interactive comment on “The importance of mineral determinations to PROFILE base cation weathering release rates: A case study” by Sophie Casetou-Gustafson et al.

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We would like to thank the referee for their helpful comments. Abstract: We will try to simplify the abstract. Introduction: We agree with the referee that it was an oversight not to refer to the work by Hodson et al. (1997) and we will cite it in the introduction. We also thank the referee for pointing out the difficulty of understanding hypothesis 1. We would like to clarify that site-specific mineralogy is determined in terms of the minerals identified and the chemical compositions of these minerals but not determined (directly) in terms of the abundance of these minerals, which is instead calculated by A2M. Although the definitions of 'site specific', 'regional' and 'measured' mineralogy are

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given in the text of the introduction we propose also to add them to the definition section to aid clarity. Material and Methods: We agree with the referee and will cite Hodson et al. (1998) in the Material and Methods section. Since we did not mention Table S1a, S1b and S6 in section 2.5.1 and Table S5 in section 2.5.2, we should adjust for this and add a reference to those tables. Materials and Methods / Results / Discussion: We did not detect any calcite in our mineralogical analyses of the soil samples by XRD (line 224). The study by White has highlighted the importance of small amounts of calcite in intact granitoid rocks and its significance for Ca found in watershed studies. The mean value from the above-mentioned study by White is 0.25 wt. %, and the median 0.075 wt. % calcite. White also noted that in laboratory leaching experiments on the rocks they studied reactive calcite became exhausted after just 1.5 yr. Given the trace concentrations involved and the high solubility of calcite we doubt very much that calcite is or has been of any long-lived significance in the soil profiles studied, even though they are derived largely from rocks of granitic composition. Though we agree that Whites results indicate that calcite in the in-situ granitoid bedrock underlying the soils probably will contribute to Ca export from the catchment. In response, we propose to add discussion of the possible presence of traces of calcite to the discussion at the same point that we already discuss the possible presence of traces of apatite and pyroxene (lines 482-496). Conclusion: With regard to the suggestion of referencing Hodson et al. (1997) in the concluding remarks, we will try to include their criticism about the reaction rate coefficients.

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