

Interactive comment on “Sediment source attribution from multiple land use systems with CSIA” by C. Alewell et al.

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Received and published: 19 October 2015

Thanks a lot for this positive comment which is very encouraging. In our statement to use the least possible data complexity we did not want to constrain analytics of FAs but generally would like to suggest not adding more tracers (and thus more complexity) to the approach than necessary. We agree that Bayesian mixing models seem to have many advantages in complex situations. Here we argue that with no significant differences in tracer signals between the two agricultural sources grassland and arable land, Bayesian mixing modelling would also not give a clear separation between the sources. E.g., just the mere use of a complex model with mixed and random effects and/or concentration dependency will not help to reduce the uncertainty originating out of the non-significant different tracer signatures between these two sources. Of course

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the modelling would be an advantage in case of significant differences between tracer signals and if an algebraic approach would not result in an (unique) solution. We will reformulate the parts regarding the modelling throughout the paper to be more precise.

We tried to be short and concise with our title but could, of course, be more specific. Our suggestions would be: Quantitative sediment source attribution with compound specific isotope analysis in a C3 plant dominated catchment (Central Switzerland)

Reviewer 2 also comments on the usage of the terms CSIA and CSSI. CSIA (Compound Specific Isotope Analysis) is an established term in the isotope community and refers to stable isotope analysis only (e.g., not to compound specific radiocarbon analysis). Even though the reviewer is correct, that CSSIA would be a suitable abbreviation we would rather not introduce a new term, since the CSIA abbreviation is well established in the research community. If we talk about the isotopic signatures themselves, not about the analytics, the use of the term CSSI (compound specific stable isotopes) is suitable otherwise sentence structures and meaning does not make sense. Since we clearly defined our abbreviations when we first used them (with the exception of using CSIA in the title, sorry, we will change that), I do not see any fault here.

Regarding the specific comments of reviewer 2 we will carefully consider these in our revision and respond to all comments in detail.

Interactive comment on Biogeosciences Discuss., 12, 14245, 2015.

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