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Interactive comment on "Chlorophyll a specific $\triangle^{14}$C, δ^{13}C and δ^{15}N values in stream periphyton: implications for aquatic food web studies" *by* N. F. Ishikawa et al.

Anonymous Referee #1

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The manuscript written by Ishikawa et al. reported chlorophyll a specific Δ14C, δ13C and δ15N values in stream periphyton. The information is new and provides valuable insights on the study of stream food web. I have only some minor comments and questions to the authors.

P.11096 l. 17 1-sigma of the measurement was 0.9 permil, which seems high especially for bulk analysis. I consider the "ultra-small-scale" analysis is required for chlorophyll a, but the authors can provide more precise data for other samples.

P.11101 ll.10-16 The authors suggested two possible mechanisms explaining the difference in Δ14C values between bulk and chlorophyll in terrestrial plants. However,

both explanations are difficult to understand why chlorophyll has such an "old" signal, compared to the fact that Δ14C value of bulk tissue is almost identical to that of ambient CO2. Especially, the latter mechanism is difficult understand. The Δ14C value of chlorophyll will be higher than that of bulk tissue if the salvage pathway occurs.

Section 3.5 Implications of this study: the authors concluded that the δ13C and Δ14C values of bulk periphyton can be used as a surrogate of those of photosynthetic algal community in periphyton, which seems a good news to many ecologists who are difficult to access the technique. However, the authors need to stress on potential advantages of the technique in the study of stream ecosystems, where the study was conducted. The final paragraph is rather easy to understand, but the manuscript focused on stream food web. I don't think a potential application to "less productive stream" (p.11102 l.15) is an attractive example. Need more explanations.

Interactive comment on Biogeosciences Discuss., 12, 11089, 2015.