

Comments on Certini et al

Page 269, Lines 14-18, I think it is important to acknowledge here that the idea of organic matter composition/chemistry controlling decomposition (esp in the long-term) is currently challenged in the literature (ex. see Schmidt et al 2011, Nature).

Line 17, Please replace humification with 'decomposition', 'transformation' or 'processing' (see comment above)

Page 271, Lines 1-4, here and later in discussion you have to address how measuring changes in rate of decomposition (and chemistry of decomposing litter) over 1 yr will give reliable information of SOM quality and dynamics? This is important in order to establish a logical link between the short-term dynamics and long-term dynamics when it comes to amount, composition, and decomposability of the litter that grows and decomposes on the surface, and the portion of the litter that actually enters the soil organic matter pool (even in the near-surface soil layers).

Page 273, Line 4, please include information on the type of filter was used for filtration of dissolved OM.

Page 275, lines 15-18, was there any soil material that couldn't be cleaned (i.e. was too strongly attached to the remaining litter)? If so, how was it handled?

Page 276, line 6, Please replace 'intrinsic recalcitrance' (see comment above and Kleber 2010, Environmental Chemistry in addition to Schmidt et al 2011), possibly you can say 'short-term resistance to decomposition'?

Lines 6-9, this statement is not supported by any data or conclusive evidence and should be taken out.

Table 1, please mark which of the differences in means are statistically significant. Does the statement in line 15-17, page 276 suggest that all the values are insignificant or just the C:N ratio?

Please revise the statement in Page 278, lines 26-28, what does 'side-effect' refer to?

Pages 280 (last line) -281 line 1, alkyl/O-alkyl ratio as per Baldock and co-workers and others is an index of SOM transformation/processing, not 'recalcitrance' per se (even though in some cases these two can be related). Please either provide a correlation coefficient or at least prior reference to support this statement.

Page 281, lines 5-8, this statement can also be valid only if supported by a qualifying statement as to the short-term (1yr) nature of this study and findings there in. It is possible that after a year (possibly after a year of processing by meso- and macro-organisms), it could be rendered more decomposable.

Page 283, line 1, please consider revising 'parent vegetation'

Line 2, please revise 'refractory' (see comment above)

Line 7, please revise 'higher concentration of rainfall' ... do you mean higher amount or distribution of rainfall?

Line 9, please note that your study can only suggest this conclusion for short-term. You haven't presented any model fitting (or other approaches) to demonstrate what can be expected in the long-term.

Other general comments

Please address how use of litterbags could have affected your results. This is important because several studies have shown there is a significant effect of litterbags in affecting rate of organic substrate decomposition and chemistry of decomposing litter, in addition the effect of litterbags is also modulated by soil hydrologic conditions (ex. see Berhe 2013, Journal of Soils and Sediments).

Please include error bars in Figures 3 and 4.

I think it is important to fit the litter decomposition data with one or two pool decomposition models to derive important indices (ex. long-term rate of decomposition) that would make findings of this study even more significant and easier to interpret. Please see works of Mark Harmon and co-workers (1992, 1999, 2009) as a reference for this.

RE: Author responses to reviewer comments

The authors are strongly encouraged to address EACH comment (separated by start of the new line, or page and line numbers proceeding comments) raised by the reviewers individually. Please add you response to each comment in bold, italic, indented (or other format) text for the sake of clarity. This was specially problematic in the author's response to reviewer #1.

Reviewer # 1

For information on Harmon et al 1999, see:

- Harmon ME, Nadelhoffer KJ, Blair JM (1999) Measuring decomposition, nutrient turnover and stores in plant litter. In: Robertson G, Bledsol C, Coleman DC, Sollins P (eds) Standard methods for longterm ecological research. Oxford University Press, New York, pp 202–240
- Harmon M et al (2009) Long-term patterns of mass loss during the decomposition of leaf and fine root litter: an intersite comparison. Glob Chang Biol 15:1320–1338