

Interactive comment on “Modelling the demand for new nitrogen fixation by terrestrial ecosystems” by Xu-Ri and I. Colin Prentice

Anonymous Referee #2

Received and published: 7 February 2017

Overall I think this paper is well written, and that the content of the paper is of interest to the readers of biogeosciences. I do have some questions and remarks that I will address below:

In the paper, the authors use a^{-1} rather than yr^{-1} . This may be confusing?

Introduction:

On page 2, line 24-28, the authors give numbers of N deposition, but the numbers are different while it is unclear what the difference is. E.g. Ndep over land of $50 \text{ Tg N } a^{-1}$ is rather different from the $17,5 \text{ gT N } a^{-1}$ (oxidized and reduced species combined)

Page 3, line 21-22, this sentence is unclear.

Methods:

C1

I think the methods could be worked out further. At times it is unclear what the authors mean, and they go quite quickly through the material. A table with abbreviations, range of values, units, etc would be very helpful.

Also, it was unclear to me what exactly the initial litter chemical composition was, where is the equation that uses this? It is also unclear what r_s is, since it is only explained in table 1 and not in the text.

Results:

The results are clear, but the figures are less clear (especially figure 3 and 4). The manuscript would benefit from a better quality graphics.

Page 5, line 27-28 are unclear to me.

Page 7, line 2. How do the authors get to 30%?

Discussion:

I especially like the discussion. The relevant literature is cited, and the paper really comes together at this point.

Some additional small points:

Page 2, line 13. BNF is defined at line 15

Page 3, line 13: dot after))

Page 4, line 7: take out s from decompositions

Page 4, line 8: input rather than inputs

Page 5, line 1. Where is r_s defined?

Page 7, line 14: Table 2 should be Table 3?