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Biogeosciences Discussions

Interactive comment on "Long-term nitrogen addition decreases carbon leaching in nitrogen-rich forest ecosystems" *by* X. Lu et al.

Anonymous Referee #1

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It is my pleasure to read the manuscript by Lu et al. entitled "Long-term nitrogen addition decreases carbon leaching in nitrogen-rich forest ecosystems". In this study, the authors have experimentally manipulated N inputs in a subtropical forest for 7 years. They found that N addition decreased the concentration of dissolved organic carbon (DOC) in soil solutions, implying that this forest ecosystem might potentially sequester more C under enhanced N deposition scenarios. The experimental design is solid and the manuscript is well written. I'd support the publication of the work in this decent journal. I have a few minor comments, which I hope they'll help improve the manuscript.

1. It seems to me that this study was conducted in one site, so it might be good to change the title as" . . . in A Nitrogen-Rich Forest Ecosystem".

2. Page 4, lines 9-10. It might be not appropriate to say that "the purpose or objective

of a study is to suggest mechanisms of ". So I'd suggest you delete the last sentence here.

3. Page 6, lines 3-4. You may need to justify why this experiment included two high N levels (100 and 150 kg N ha-1 year-1), given that the rate of N deposition is in the range of 20-40 kg N /ha/year as shown on Page 5 lines 13-16.

4. Page 11, line 19. what depth? Which year?

5. Page 12, line7. You'd better specify a biological mechanism rather than say a general term "biological control".

6. It is good to make the tense be consistent throughout the text: for example, page 12, line10 "are" vs. page 12, line12 "was".

7. So, in the Discussion Section, you basically proposed that: N addition decreased soil pH, increased Fe(III), then leading to lower DOC concentrations. How about the rate of the DOC production or decomposition of complex organic polymers? Did N addition also reduce that process?

8. Figures: I'd suggest you make the labels bigger in Fig.1, especially for the X-axis.

Overall, I think this study provides some interesting results, and merits its publication in BioGeosciences.

Interactive comment on Biogeosciences Discuss., 10, 1451, 2013.