

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

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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.

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