

# Author response to

## Interactive comment on “Controls of terrestrial ecosystem nitrogen loss on simulated productivity responses to elevated CO<sub>2</sub>” by Johannes Meyerholt and Sönke Zaehle

**Anonymous Referee #2**

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We are very grateful to Anonymous Referee #2 for the positive comments on our manuscript and constructive suggestions to further improve its quality.

**The result that N loss showed minor impact on carbon sequestration is unexpected, in particular in northern temperate and high-latitude regions where ecosystems are usually thought to be strongly N-limited. The authors did not give exact reasons for this phenomenon but inferred that the varying C:N ratio in the O-CN model is a possible explanation, although it cannot fully explain the result. Here, in my opinion, it will be more persuasive to simply give the changes in plant N uptake which directly controls vegetation productivity.**

Following the Referee's advice, we will conduct an additional analysis that tracks the evolution of vegetation N uptake in our simulations. This will most likely result in another supplementary figure that illustrates model eCO<sub>2</sub> responses in vegetation N uptake that correspond to the small differences in productivity responses.

**Other comments: Line 28 Page 10: change "N available" to "N availability"**

Agreed.