

Interactive comment on “A model using marginal efficiency of investment to analyse carbon and nitrogen interactions in terrestrial ecosystems (ACONITE Version 1)” by R. Q. Thomas and M. Williams

Anonymous Referee #2

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This paper tried to propose a new C/N model that based on the carbon return with nitrogen investment. The C/N coupling is an active research area and this paper fills a nice gap by provide an advanced optimization approach that well predicted the C:N ratio. While the paper is well written, I do have a few important concerns. First, the author seems omitted an important earlier publication on this area [Fisher, J. B., S. Sitch, Y. Malhi, et al(2010), Carbon cost of plant nitrogen acquisition: A mechanistic, globally applicable model of plant nitrogen uptake, retranslocation, and fixation, Global Biogeochem. Cycles, 24, GB1014]. What is difference between author's research

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compared to Fisher's research is not clear to me.

Second, for the methodology section, it is very dense with equations. Because most of the equation comes from ACM model, it will be difficult for the readers to identify what is the new components proposed by this paper. I would suggest that the author move the description of ACM model into appendix and derive a general description of the ACONITE. This will help the reader easier to follow and also make it easier to implemented ACONITE in other models.

Finally, it is not clearly to me how the authors designed their numerical experiment for model evaluation. One paragraph describing that will be helpful.

Interactive comment on Geosci. Model Dev. Discuss., 7, 2525, 2014.

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