

Interactive comment on “N and P as ultimate and proximate limiting nutrients in the northern Gulf of Mexico: Implications for hypoxia reduction strategies” by Katja Fennel and Arnaud Laurent

Anonymous Referee #3

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1. This is an important and generally well-written modeling paper which moves the discussion of nutrient loading and Gulf hypoxia further along. In addressing the question of ultimate vs. proximate limiting nutrient, which I don't object to, probably the major point to make is that there would be no P limitation on the Louisiana shelf without the excessive loading of N from the Mississippi River, which the authors refer to as “saturating”, an appropriate and significant term. 2. Though the 2008 Hypoxia Task Force Action Plan, which is still the current goal though delayed in time, is mentioned on page 3 line 12, its load reduction goals (45% N and P) are not listed in Table 2 nor discussed in the text other than as a dual nutrient strategy, and the 2007 EPA Science Advisory Report, cited by another reviewer, which is the basis for these reduction goals, is not

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mentioned or cited. This SAB report was a 300-page major review of the science status at the time and the authors cite some of the papers important to this SAB review, but not the document itself. 3. Unless I am reading it wrong, there is an inconsistency between the written legend to Fig. 2 and the labeled legend in the hypoxic area graph. The label says -60% P is light orange, and the written legend says that light orange is the -60% TN. The labeled legend in the figure appears to be correct and consistent with the following text, while the written legend appears incorrect. This labeling should be confirmed to be consistent throughout or it will prove very confusing. 4. I agree that the use of TN and DIP river load reductions is confusing and probably has more of a historic rather than scientific origin. That said, much of the river Total P load is particulate which then is solubilized when reaching the Gulf.

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