

## ***Interactive comment on “Net global warming potential and greenhouse gas intensity in rice agriculture driven by high yields and nitrogen use efficiency: a 5 year field study” by X. Zhang et al.***

### **Anonymous Referee #1**

Received and published: 21 December 2015

**GENERAL COMMENTS** The authors present an interesting and complete assessment on Global Warming Potential (GWP) and greenhouse gas intensity (GHGI) during three years in a rice-wheat rotation. The number of crop seasons, as well as the complete overview the sustainability of the agro-ecosystem (soil GHG emissions, SOC, CO<sub>2</sub> equivalents from inputs and operations, and crop yields) are, from my point of view, the main strengths of the this study, which fits well into the scope of the journal. Conversely, the manuscript requires additional details and explanation before it can be considered for publication. Moreover, I do not understand why the authors did not set some variables (e.g. Zn fertilization -which has been reported to influence crop yields and GHG emissions- plant density, water management...). That would have

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simplified the discussion and maybe would have allowed obtaining some conclusions about management techniques (and not only about the overall scenarios) and the possibilities of combining scenarios. The authors should also improve the Materials and Methods section, explaining much better the GWP calculations and other issues of major interest. The conclusions are adequately presented: since each scenario is a combination of several management techniques, the authors cannot recommend any single practice, only the full scenario. Conversely, ALL the management factors that could have influence the measured variables (yields, GHG fluxes, GWP) should be briefly discussed.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/12/C8622/2015/bgd-12-C8622-2015-supplement.pdf>

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Interactive comment on Biogeosciences Discuss., 12, 18883, 2015.

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