The quality of the manuscript has been significantly improved. The authors are aware that the variables of each management system cannot be analyzed separately, and that they should discuss what system is the best and how the different variables could have caused these results. I congratulate the authors for the inclusion of Table 4, which is very useful for the readers. Moreover, the quality of the English and the writing has been clearly enhanced. I consider that the paper is now suitable for publication in Biogeosciences if the following changes are addressed.

Specific comments:

Lines 149-158: I recommend using the current CO2 equivalents for CH4 (24) and N2O (265) (Myhre et al., 2013).

Myhre, G., Shindell, D., Bréon, F.M., Collins, W., Fuglestvedt, J., Huang, J., Koch, D., Lamarque, J.F., Lee, D., Mendoza, B., Nakajima, T., Robock, A., Stephens, G., Takemura, T., Zhang, H., 2013. Anthropogenic and Natural Radiative Forcing. In: Stocker, T.F., Qin, D., Plattner, G.K., Tignor, M., Allen, S.K., Boschung, J., Nauels, A., Xia, Y., Bex, V., Midgley, P.M., editors. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 659-740.

Line 385: Methane instead of CH4 at the beginning of the sentence. Please, review the whole manuscript checking possible similar mistakes.

I do not understand your answer: “urea was used as N fertilizer and 20 kg N ha-1 in the form of rapeseed cake fertilizer was applied as N fertilizer for N3 and N4 treatments in this study. Revised accordingly Page 5, Lines 112-119”. If 20 kg N ha-1 were applied as urea, that is not consistent with the rates in Table 1 (225-375). If this was the N rate applied through rapeseed, this is not consistent with the 112.5 kg N ha-1 that you indicated in line 154. Please, clarify this and indicate in the text (not only in the footnote of Table 1) that urea was the synthetic N source.

“We have made the normal distribution and variance uniformity check. All data were conformed”. Please, indicate in the manuscript that you checked normal distribution and variance uniformity and how.

You have included Table 4 indicating how you calculated GWP. I appreciated that, but the TABLE 5 still lacks a comparative between two crops (what were all these components for rice and wheat). I think that you must include it, at least as Supplementary Material. If you did that you would provide valuable information about the relative weight of each component in each crop (for instance, CH4 and irrigation are important for rice, but less important for wheat, in which N2O losses are expected to have a higher weight) aiming to find specific mitigation strategies. Please include also in the text a brief statement about the crop and year effect (even if there was not a year effect) on GWP.

Lines 287-289: “The higher rice agronomic NUE in our study over the experimental period was primarily due to the greatly reduced N losses by leaching and volatilization as well as the improvement of N bioavailability in the rice crop season”. Be careful! You are explaining higher

NUE values using variables that you did not measure (leaching, volatilization). I recommend changing “was primarily” by “could be”, and I would add a reference(s) of lower leaching and volatilization with similar improved management strategies.

CH4 emissions were highest during rice season, but only during the flooding period. Please indicate this in the results and discuss briefly why highest CH4 fluxes were observed during flooding periods (I know that it seems obvious but maybe is not the same for all readers). Maybe the paper of Le Mer and Roger (2001) could be a nice reference.

Le Mer, J., & Roger, P. (2001). Production, oxidation, emission and consumption of methane by soils: a review. European Journal of Soil Biology, 37(1), 25-50.

Lines 306-308: you cannot state that “Additional application of Si and Zn fertilizers HAD NO SIGNIFICANT effect on CH4 and N2O fluxes, which was consistent with the result of Xie et al. (2015)”. Because of your experimental design, you cannot attribute the effect of a management system (with several variables) to only one of these variables. I recommend adding the word “Apparently” at the beginning of the sentence.

Line 321: From my point of view, you should add a brief explanation about why N2O fluxes during rice seasons were negligible (reduction of N2O to N2 thorough complete denitrification) and a reference. Accordingly, I would include a brief statement explaining why N2O emissions were higher during wheat seasons (as opposed to rice seasons) and which processes could have been involved (incomplete denitrification and nitrification –so for discuss that I would include soil moisture data during wheat season, if available-).

Lines 368-369: “This was mainly due to the enhanced incorporation of rapeseed cake and crop residue associated with higher crop productivity (Ma et al., 2013)”. Good explanation, but in the materials and methods you say that “Harvests included crop grains as well as the rice and wheat STRAWS WERE REMOVED OUT OF THE FIELD for all the treatments in this study”. Please clarify this.

Line 405: 16.33 “kg grain kg N-1” instead of “kg grain kg−1 N”.

Line 421: were, IN DECREASING ORDER, the main components of the GWP… By the way, great conclusions section (and the end of the discussion)!

Table 4: As indicated above, congratulations for Table 4. One just further recommendation: in the farm operations section, you have indicated that the units are kg/ha and I guess, that in the case of tillage, planting, etc, you present the number of operations (in the case of manure I guess you present kg ha-1). Please clarify this, and indicate below (in Eo/Ei) the units (kg CO2 eq/ha, kg C-CO2 eq/ha??).

Fig. 2 and 3. Flooding period instead of floodin. Please include the flooding period in the three years. I also recommend using the same scale in the Y axis for the three years.