

Interactive comment on “Pathway of CH₄ production, fraction of CH₄ oxidized, and ¹³C isotope fractionation in a straw incorporated rice field” by G. B. Zhang et al.

Anonymous Referee #3

Received and published: 31 January 2013

The manuscript evaluated the effects of 'straw incorporation' on the production and emission processes of CH₄ in rice paddy fields. The authors tried to estimate important components of production, oxidation, emission of CH₄ including isotopic discrimination during the oxidation in different parts of plants and soil based on the incubation experiments and in the fields. They tried to find the difference in the processes between with and without the 'straw incorporation' based on the experiments. They found that the 'straw incorporation' increased the emission of CH₄, and tried to make clear the mechanism. The topic is relevant to the special issue of iLEAPS and there is no serious criticism on the basic approach of the study including the experimental design.

C7861

There is some scientific significance in the manuscript such that the authors clearly demonstrated the effects of 'straw incorporation'. Although this is a case study and the interpretation of results would be limited in particular conditions, the results included in the manuscript would be still valuable for future studies, because the data and the understandings of throughout process of CH₄ production, oxidation, and emission were very limited in ecosystem levels.

But before considering publication, there are still some flaws in the manuscript. Firstly, presentation style is not sufficient for easy understanding. Sentences are sometimes too long and redundant, and it is hard to find the logic clearly. Secondly, I would prefer to read conclusion separately after discussion section. The authors are encouraged to summarize the study in the conclusion by stating key findings and recommendations, implications for further research, and what extent authors' original questions have been answered. More importantly, the impact of the present paper on global greenhouse gas cycles studies is not clear at present style. The authors should state the originality of the study and the impact of the new findings on global issues more effectively. Finally, please reconsider the presentation of figures particularly in Fig. 1b, Fig2b-c-e-f, and Fig3b-d. You can use a bar graph to show such variables as production and reactive velocity, however, plotting with symbols and error bars would be more desirable to express such variables as oxidation reduction potential and isotopic composition.

Interactive comment on Biogeosciences Discuss., 9, 14175, 2012.

C7862