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Biogeosciences Discussions

Interactive comment on "Use and uncertainty evaluation of a process-based model for assessing the methane budgets of global terrestrial ecosystems" *by* A. Ito and M. Inatomi

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Dear Dr. Vivek Arora:

Thank you for your comments on our manuscript. We would like to reply to your comments, as follows.

Reply to Comment #1. This is our editorial mistake. In Table 1, 'Potter et al.'s scheme' should be replaced by 'Cao et al.'s scheme'.

Reply to Comment #2. We agree to explain the statement. As shown in Figure 9, our model simulation roughly implied that +1-°C warming coincided with additional ter-

restrial methane emission by 0.0416 Pg CH4 yr–1. Because we conducted off-line simulations (i.e., climate and carbon cycle were not interactively coupled), it was assumed here that the linear relationship approximates the strength of climate-methane cycle feedback at around the present climate condition. Namely, in addition to the climate-carbon cycle (by CO2) feedback, we assumed that the additional CH4 emission amplifies radiative forcing as calculated by the following: 0.0416 Pg CH4 yr–1 x 25 [GWP-100yr] x 12/44 = 0.283 Pg CO2-C yr–1. This is a first approximation we still believe useful, and apparently further investigations using coupled models taking account of non-linearity of the feedback system are required (as partly attempted by recent studies).

Interactive comment on Biogeosciences Discuss., 8, 7033, 2011.