

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

A. Ito

itoh@nies.go.jp

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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-

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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).

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