

Interactive comment on “Soil warming in a cool-temperate mixed forest with peat soil enhanced heterotrophic and basal respiration rates but \bar{Q}_{10} remained unchanged” by M. Aguilos et al.

Anonymous Referee #3

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Review comments on BGD-8-6415-2011 Aguilos et al. “Soil warming in a cool-temperate mixed forest with peat soil enhanced heterotrophic and basal respiration rates but Q_{10} remained unchanged”

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General Comments This study conducted non factorial design experiments with only three treatments and obtained the contribution of heterotrophic respiration to total respiration and its response to climate warming. This kind of experiment has limited sig-

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nificance to global change ecology. Lack of necessary statistical analyses makes the conclusion inconvenient.

Specific Comments

Introduction A critical reference concerning climate warming and temperature sensitivity (Luo et al. 2001. Nature) was missing.

Page 6418, Line 15-20: Luo et al. (2001) has long been shown that climate warming could decrease temperature sensitivity of soil respiration. Authors intentionally avoid to cite this reference when making the argument.

Material and Methods P6419, L15: what were the diameter and depth for the “100 cm³” soil cores?

P6419, L23: what did “SD” mean? Define it before use the abbreviation.

What was the size of the chambers?

P 6420L9-10: Trenching itself could stimulate root decomposition and soil respiration and the phenomenon can last for more than 6-9 months (See Zhou et al. 2007. GCB). Thus, inclusion of the 2007 data could have overestimated the contribution of heterotrophic respiration to total respiration and the response of heterotrophic respiration to warming.

P 6420L21-25: What was the distribution of plant roots in soil profile? I do not think 30cm trenching can exclude plant roots in forest.

P6421: When did the soil respiration measurement begin in each year? How long did it last in each year?

P6423L27: What were the criteria for identifying the outliers of the data?

Results

P6424L14: Were “4 and 3%” absolute or relative differences? It seems absolute differ-

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ences. Specify it.

P6424L24-26: The results supported the above comments on P 6420L9-10: trenching itself stimulate root decomposition and soil respiration.

P6424L26- P6425L3: This kind comparison makes nonsense unless the snow-free periods over the 3 years had the same time length. Why did the soil CO₂ efflux increase with year?

P6425L13-15: Why?

P6425L15-16: This result was contradictory with that in P6424L24-26.

P6425L19-29: Were the temperature sensitivity and base respiration statistically significant from each other? If yes, how did you do the statistics? Similar comment on P6426. These kinds of comparisons qualitative rather than quantitative and make nonsense unless statistics were conducted.

P6426L24-26: Again, inclusion the 2007 data overestimated the contribution of heterotrophic respiration to total respiration

P6427L11-16: Many previous studies and this study have already shown temperature sensitivity of soil respiration changes with soil temperature itself. Why did the authors use the same temperature sensitivity to estimate the soil respiration in snow sseason?

Discussions P6431L15-25: It's over-extrapolation from one site results to regional or national scale.

Interactive comment on Biogeosciences Discuss., 8, 6415, 2011.