

## ***Interactive comment on “Effects of precipitation on soil respiration and its temperature/moisture sensitivity in three subtropical forests in Southern China” by H. Jiang et al.***

**Anonymous Referee #1**

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— General comments —

This manuscript describes the effects of a precipitation manipulation experiment, conducted in three subtropical forests in southern China, on soil respiration (SR). Manipulative experiments are extremely valuable, given the large SR carbon flux and potential for climate-induced changes, and relatively few such data have been reported. The ms is reasonably well written and generally clear.

There are a number of significant problems, however. First, the authors adopt a pretty simplistic analysis (e.g. a fixed-Q10 temperature model) that really seems inadequate for use in a study specifically looking at how SR sensitivities may change with seasons

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and precipitation. (This is a somewhat ironic, given the authors' inaccurate criticism of the state of ecosystem models.) I'm also concerned that some of their results follow trivially from these models. At the very least, they need to show residual plots and justify their choices.

Second, as noted above, the authors are quite inaccurate in describing some issues in the introduction and discussion (specifically regarding SR temperature and moisture sensitivity; see comments below).

Finally, some of the tables and figures are unclear and overlap.

In summary, this is a potentially interesting ms, but needs some significant revisions in many areas. I would encourage the authors to explore using a 'better' model that, at the very least, allows for varying SR temperature sensitivity.

— Specific comments —

1. Page 15668, line 12: “modification of”
2. P. 15669, l. 2: “rising temperature”
3. P. 15669, l. 15-: this really isn't true. Many ecosystem and global models use a variable Q10, typically following Lloyd & Taylor (1994), in which Q10 falls as temperature rises; we know that the 'intrinsic' (Davidson & Janssens 2006) sensitivity acts this way from basic biokinetics.
4. P. 15673, l. 5: what distance? From the ground? Between pipes?
5. P. 15673, l. 19-20: I'm unclear what this means (measured three times per collar) and why it was done. Doesn't this contradict the next sentence, that soil respiration was calculated as the mean of five measurements?
6. P. 15674, l. 9: “cores”
7. P. 15675, l. 7: give version of SAS used

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8. P. 15676, l. 25-: it would be good (and I think is necessary) to show residual plots of the model fits. Were the constant-Q10 and linear SM models free of bias?
9. P. 15681, l. 7-11: this is much older than Davidson and Janssens; see for example Orchard and Cook (1983, doi 10.1016/0038-0717(83)90010-X) or Boddy (1983, 10.1016/0038-0717(83)90042-1), both in SBB
10. P. 15681, l. 14-16: doesn't this (negative relationship) follow trivially from your choice of a linear SM-SR model? Again, showing actual model fit and residuals would greatly help
11. P. 15689, Table 1: what exactly is being tested here? Are these mean annual values?
12. P. 15691, Table 3: what equation do these parameters refer to? Provide it in caption, or refer to a numbered equation in the text. Also reorder a-b-c if possible
13. P. 15696, Figure 3: doesn't this duplicate data presented in Table 3?

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Interactive comment on Biogeosciences Discuss., 9, 15667, 2012.