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Interactive comment on “Measurements of soil respiration and simple models dependent on moisture and temperature for an Amazonian southwest tropical forest” by F. B. Zanchi et al.

Anonymous Referee #2

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The manuscript by Zanchi et al. , Measurements of soil respiration and simple models. . . presents continuous respiration data from the Brazilian Amazon that covers a period of about 10 months. These measurements are still rather sparse for tropical regions, so it is probably useful to try to publish the data set. However, the manuscript still needs substantial work before it is ready for publication.

The overall quality of the work would benefit from being placed into a hypothesis testing framework, and from more thorough data quality control. As it stands, the data are reported as observations, some models are fit (poorly) to the data, and the story ends. The manuscript lacks structure which would help guide the reader through the morass

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of results; if the writing were revised to include paragraphs, rather than pages-long sections with no breaks, it would be a great improvement. Before resubmission the authors need to make sure a native English speaker helps them edit the manuscript. Other shortcomings of the work will be more difficult to address, such as the placement of the soil thermocouples at 10-cm depth rather than a shallower depth, and the lack of ancillary biological measurements (e.g., root biomass and litterfall that coincided with periods of soil respiration measurements).

The authors should start with a thorough effort at data cleaning. It is apparent from Fig. 4 that the data are still in very rough shape. Certainly spikes are expected following rain events, but the many large drops to zero must result from diffusion problems, plugged tubing, or some other technical issue. In three places offsets occur that appear to be scale or calibration issues. The vertical dashed line in the top plot is a mystery. Worst of all, the x-axis seems to be erroneous, and the precipitation events in the top plot do not match the changes in soil moisture in the bottom plot, making the reader wonder whether the respiration data actually match the temperature and moisture data in the modeling section. Even if the data cleaning results in the removal of half the data points, any efforts at modeling this dataset are wasted before the errors are fixed.

More specific comments are not warranted at this time, although this reviewer would prefer to read about soil respiration models that are named consistently after the equation type, which would convey more information than randomly chosen names using improper citations.

Interactive comment on Biogeosciences Discuss., 6, 6147, 2009.

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