**Biogeosciences
Discussions**

Interactive comment on "The moisture response of soil heterotrophic respiration: interaction with soil properties" *by* F. E. Moyano et al.

Anonymous Referee #1

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General comments

This interesting, innovative study attempts to derive general patterns in the response of soil heterotrophic respiration to changes in soil moisture by combining observations across a wide range of studies, soil types, and response variables. This is a crucial question for carbon-cycling and global change science, as the authors do a nice job of pointing out, and very appropriate for Biogeosciences. I applaud the inclusion of the data and R code.

The manuscript is well written and generally clear, although there are some points in the methods and figures that could use clarification (see below). The discussion is currently quite short, which is fine although the authors should consider taking a bit more space to more fully discuss implications of their work. For example, how could

this work be integrated with recent attempts to advance respiration models (e.g. DAMM model; Davidson et al. 2011)?

Specific comments

1. Page 11580, line 2: "Amazon"

2. P. 11581, l. 21: does this mean all data sets were normalized against each other (common 0-1 scale), or individual scales? Clarify

3. P. 11581, l. 23-24: reason/citation for these assumptions?

4. P. 11582, l. 19: somewhat confusing to see "0.01" with no units attached; once I read further I understood, but clarify here if possible

5. P. 11583, l. 5: why was 50mgC/g chosen?

6. P. 11583 l. 10-13: somewhat unclear. Yes, proportional response will be high at very low soil moisture, but this is part of the 'real' response, so why is an outlier test being applied? And then why do you say on next page (lines 11-12) that "data at lower moisture extremes was generally missing"? Isn't it missing because you removed it? Please clarify

7. P. 11584, line 3: many readers will not be familiar with this product symbol; consider defining in text

8. P. 11585, l. 1: tell us what this assumption is

9. P. 11587, l. 21: "associated with"

10. Table 1: correct "SO" in column header

11. Table 2: define theta and psi terms in caption

12. Table 3: perhaps include true n, i.e. # of data points, as well as n-datasets

13. Figure 1: consider re-configuring panels to match that in Figure 2

14. Figure 2: please try to enhance contrast between significant and nonsignificant points; e.g., use alpha<1 for nonsignificant

15. Figures 3 and 4: specify mineral soils only (is that right)?

16. Supplementary info: I wanted to run your R code, but it's difficult to do so with it given in a PDF. Please put the code into a separate text file

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