

## ***Interactive comment on “High-resolution hydraulic parameter maps for surface soils in tropical South America” by T. R. Marthews et al.***

### **Anonymous Referee #1**

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#### General comments:

This is a very interesting paper that presents a new high resolution regional map of soil hydraulic parameters, which have a high potential for use by modellers of tropical regions. The authors used two best available sets of soil pedotransfer functions for tropical soils to generate and intercompare the output. The data used is field-based soil profiles of soil texture and chemical properties, mapped onto soil units from SOTER-LAC. A quick assessment of the new dataset is done via a comparison against several published values. Overall, this manuscript is acceptable for publication following some revisions.

#### Specific comments:

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1. The authors noted on page 6747, line 24 that the dataset should be used for profile and subprofile modelling and I agree that this is an important point, which perhaps should be highlighted further upfront in the abstract/introduction. The authors may want to include in their discussion some implications of applications at unintended scales (the issue of parameter scale).
2. The authors presented 4 soil water retention models in the Introduction. The results are presented in the context of these models, but the text could use some quick editing to provide more clarity.
3. The authors briefly introduced pedotransfer functions in the methods section. Considering that these functions are central to the development of the dataset, a more thorough discussion on these functions and their uncertainties would be beneficial in the introduction.
4. The evaluation of the new soil parameters is very limited, although understandably published values may not exist in abundance. I suggest the authors discuss the differences in the newly derived parameters from values in the literature/from Cosby (1984) PTFs in terms of compatibility with known behaviours of tropical soils.
5. Since Tomasella (2000) assumed a Van Genuchten model, is a comparison between both the Tomasella & Hodnett (1998) (Brooks & Corey) and Hodnett & Tomasella (2002) (Van Genuchten) PTFs to their values unbiased?
6. Page 6751 line 26: The authors should justify the given uncertainty value i.e. 10% of regional ranges.
7. Appendix A appears to be a technical reference for the data use within a specific model and may not be a necessary for the paper.

#### Minor comments:

1. "Land surface models" is generally written without capitalization.

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2. The overuse of parentheses can be confusing table 1's caption. Unless this is a convention of which I am unaware, I suggest removing the parentheses around long variable names.
3. Fig 2 needs to be larger. Some text labels are faint and difficult to read.
4. Table (1 and 2) captions are long. The authors should consider simplifying/moving some content to the results/discussion section.

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Interactive comment on Geosci. Model Dev. Discuss., 6, 6741, 2013.