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Interactive comment on "Validating a 1-D SVAT model in a range of USA and Australian ecosystems: evidence towards its use as a tool to study Earth's system interactions" *by* G. P. Petropoulos et al.

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R2C1: The Introduction can be improved by having a greater focus on the utility and usefulness of the SimSphere model. 2443L10 states that SimSphere is used to downscale SMOS soil moisture to 1km resolution. What features of SimSphere make it attractive for such applications? How does SimSphere differ from single column versions of weather and climate models? ANS: We have updated the introduction section and have also made it shorter, as was suggested by reviewer 1 (comment R1C1). A very important point we clarified was the fact that SimSphere is not actually used in

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this downscaling approach since the method used for this purpose is a variant of the "triangle" on which SimSphere is used, which was not so clear before. We also provided there as reference the overview paper on SimSphere use published not long ago by one of the co-authors on which interested readers can go and read more about the studies using the model. With regards to the last part of the reviewers' comment, we believe we provide in the introduction (paragraph 3) an explanation of what SVAT models such as SimSphere aim to simulate, which makes, we believe, the difference between SimSphere and single column weather and climate models obvious to the readers understand. If the reviewer wishes for us to provide more information on this, we kindly ask to let us know what specifically they wish to be added in the manuscript.

Minor Comments R2C5: 2449L1: Explain the symbols G and S used in equation 1. ANS: 'G' is the soil surface heat flux and 'S' is the above ground heat storage in the vegetation. We have added this information to the text.

R2C6: Table 1: RKS parameter: Please check whether Cosby et al 1984 provide estimates of saturated hydraulic conductivity or saturated thermal conductivity. What are the units of the RKS, THM and PSI parameters? ANS: We have added the units of the 3 parameters, and cited references where required.

R2C7: Sections 5.1 and 5.2: Please make it clear that Rg and Rnet are at the surface. ANS: We have amended the text to reflect this.

Interactive comment on Geosci. Model Dev. Discuss., 8, 2437, 2015.