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Discussions

Interactive comment on "High resolution land surface modeling utilizing remote sensing parameters and the Noah-UCM: a case study in the Los Angeles Basin" *by* P. Vahmani and T. S. Hogue

Anonymous Referee #3

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Summary: This is a welcome paper that addresses the difficult problem of parameterizing urban canopy models for use in gridded LSM simulations. Analysis and writing are clear throughout, and I have only minor corrections/comments that I would ask the authors to address before final publication.

Minor Comments:

p.7475 line 7: "2033" should be "2003"

p.7476 Equation 3: Are there no street trees in the study area? In many cities the canopy cover of street trees–which would show up as GVF–far exceeds the impervious

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area associated with tree pits, suggesting that Eq 3 would significantly underestimate impervious area.

p. 7476 line 14: If ISA is defined as a continuous variable, what does it mean to have an accuracy of 95%? Was a threshold applied to distinguish between pervious and impervious pixels?

p. 7485 line 12: MOSID should be MODIS

p. 7487 line 20: Presumably the authors mean that the lookup tables over or underestimate albedo relative to estimates calculated using RS data. This should be stated.

p. 7491 line 6: The large errors in LST estimation are one of the more interesting results of this study. While the authors attribute this to structural model issues that are addressed in other papers, I wonder how sensitive the result is to choice of forcing data. The station-based forcing used in this study probably fails to capture fine scale variability in 2m air temperature within the urban canopy. This variability could have an impact on simulated LST in an offline simulation. Could the authors comment on this possibility?

Discussion/Conclusions: It would be useful if the authors could provide some comment on how their choice of urban canopy model affects their results. The Noah-UCM is widely used in offline and coupled simulations, so it makes perfect sense to focus on it. But given the challenge of ascribing physical meaning to parameters in a single-layer urban canopy model it would be interesting to include some reflection on how the RS parameterization problem would map onto multilayer urban canopy models like the Building Effect Parameterization (BEP), which is now a standard option in WRF. My understanding is that single layer urban canopy models still outperform multilayer models in many applications, but given the greater realism of multilayer representations one might think that improved parameterization methods (such as those described in this paper) could also be usefully applied to multilayer models.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 7469, 2014.