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Discussions

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Interactive comment on "Daily Landsat-scale evapotranspiration estimation over a forested landscape in North Carolina, USA using multi-satellite data fusion" *by* Y. Yang et al.

Anonymous Referee #1

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The manuscript "Daily Landsat-scale evapotranspiration estimation over a forested landscape in North Carolina, USA using multi-satellite data fusion" addresses the lack of spatial and temporal resolution when using satellite imagery to estimate ET over heterogeneous landscapes. The authors overcome this problem by the application of multi-sensor data fusion combined with the STARF model. Additionally, the authors introduce a new method, based on STARFM, to fill gaps in primary data sets caused, for example, by cloud cover. Their method is validated with empirical data from two eddy covariance flux towers. The study is novel and innovative, and well structured and written. Figures and tables are widely appropriate. I only have minor suggestions and comments to improve the manuscript's readability and consistency.

Specific comments: P2L14: ET also varies with different development stages, as actually demonstrated by the authors' own study. P3L11-12: "plant status" ... please be more specific, do you refer to the development stage? P3L18: Add von Bertalanffy (1968), "General Systems Theory" to the lists of references as he was one of the first addressing the equifinality problem. P4L18: What methodological challenges do the described differences between forest land cover and shorter crops cover imply for this study? P4L25-27: "We also present a new method, ..., for filling gaps ..." Sounds nearly redundant but is one of the primary novelty of the paper as far as I understand. Shouldn't it be more upfront then? Equations in general: Please add the units to the description of each parameter. Equation 2: It's not clear to me what the purpose is of presenting the general equation first and then the two equations specifically referring to canopy and soil. If redundant, remove the general version and tag the other two as (a) and (b). P5L22-23: Did you mean "... T is the air temperature measured at height Z_T ..."? P10L26: Replace "3" with "three" P12L9: Same as above. "... including one Landsat 7 scene and seven from Landsat 8 ..." P13L13-21: I think this paragraph goes beyond the classic presentation of results and should be moved to the discussion section. P13L27: Put "ET" in brackets. P14L2: "... 3 site ..." Typo? P15L1-2: Inconsistency. "... ET was 3% of the total observed flux at NC2 and -4% at NC3" In Fig. 9, at both sites the modelled ET is below the observed ET. P15L7-9: "[Note: ....]" Please use a footnote instead. P19L18: Add "(Australia)" after "Victoria". Fig. 1, caption: For consistency, replace "vegetation" with "canopy". Fig. 7, caption: Repetitive. Condense. Fig. 7, legends: "1:1 line", "LE" should be "λE". Figs. 13 and 14: Merge. The information is the same apart from the standard deviations in Fig. 14. Fig. 15, legend: Typo ... "Young Plantation"