Reviewer's report: hess-2016-198

Reviewer #2:

This manuscript describes the application of a multi-product (GOES, MODIS and Landsat) data fusion approach for estimating evapotranspiration (ET) at high spatial and temporal resolution in a heterogeneous landscape. ET is resolved with sufficient spatial resolution to determine differences in fields or plantations with different vegetation types or histories, and the model is validated against eddy covariance observations. A new approach for gap-filling Landsat scenes contaminated by clouds or the scan-line corrector failure is described.
In general, the manuscript is well written and clear, will be of interest to the HESS readership and represents a valuable contribution. Some comments regarding the manuscript are provided below to help with improving clarity.

Thank you for the review. We appreciate the feedback.

Specific comments
Methods
The section on the parameterization of aerodynamic resistances, to which the expressions for the soil and leaf boundary resistances could also be added. When referring to Fig 1 (and in the fig caption) the reader can be referred to the supplementary information for the expressions for the resistance terms.

We agree that the expressions for the soil and leaf boundary resistances could also be included. Since there are already papers listed these equations in details, we referred the readers to the citation.

I appreciate that the experimental site and datasets are included in a single section, however, it might improve clarity and flow if the section concerning ALEXI/DisALEXI model inputs (3.3) were moved to be closer to the description of the models (e.g., immediately after section 2.1). There are important details in section 3.3 [e.g., parameterization of f(ϕ)] that would be better situated nearer the description of the models.

We prefer to keep the details regarding specific sources of model inputs separate from the discussion of the models themselves. However, we did add a reference to the use of Beer's Law to compute f(ϕ) from LAI in Sec 2.1.

Was the storage flux estimated from profile measurements and used when computing net ecosystem water vapor exchange at the eddy covariance sites?

It was not bias-corrected using the energy balance method, so no consideration was made regarding change in storage of heat within the forest profile. Since we are mostly focused on daily timescale, the impact should be small.

Results/Discussion
Were there any cases where the flux towers were obscured by clouds in Landsat scenes? If so, how, did the Landsat gap-filling perform under such circumstances?

We did not use scenes that were largely cloudy – these tend to be difficult to fill and thoroughly cloud-clear. The remaining scenes were clear over the tower sites.

What is the latency of the "finished" ET product (Landsat-like resolution)? How feasible would it be for using this for water management planning throughout the growing season?

This is a good question. We have added a paragraph to Section 5.1 under Discussion:
"For real-time applications in water management, STARFM can be used to project water-use information beyond the date of the last Landsat overpass within some limited time-range, assuming MODIS data are available with low time latency. Practical limits to a viable projection time range may vary with site and season, and will depend on the rate of change in weighting factors governing the STARFM fusion process."