Dear Authors:

Your manuscript entitled "Remote sensing techniques for predicting evapotranspiration from mixed vegetated surfaces" under review in Hydrology and Earth System Science is a comprehensive review on remote sensing-based approaches to quantifying evapotranspiration (ET) from composite land surface. ET is the largest outgoing water flux from the Earth's surface; accurate quantifying ET is critical to developing a greater understanding of a range of hydrological, climatic, and ecosystem processes, and beneficial in numerous applications, e.g., water resources management, drought monitoring, improvement of hydrological modeling, weather forecasts, and vulnerability of forest to fire [e.g., *Anderson et al.*, 2007; *Bastiaanssen et al.*, 2002]. I am interested in the summary of the advantages and disadvantages in section 3 of your manuscript. The SEBAL model has been widely used to estimate ET across a variety of climates, ecosystems, and land covers (primarily for consumptive water use by agricultural crops). This model enriched thermal infrared remote sensing-based approaches including triangular approaches [e.g., *Carlson et al.*, 1994; *Jiang and Islam*, 2001], two-source energy balance approaches [e.g., *Long and Singh*, 2012a; *Norman et al.*, 1995], and other one-source approaches [e.g., *Su*, 2002] as you examined in your manuscript.

It would be great if you consider incorporating new advances in the understanding of these satellite-based approaches in your review, which would lend support to your conclusion that the vegetation index-based approach [e.g., *Fisher et al.*, 2008; *Zhang et al.*, 2010] could be one of the best approaches for ET estimation over large extents. The spatial variability models, i.e., SEBAL, METRIC, and triangular models tend to be context-dependent [*Long and Singh*, 2013], i.e., wet/dry pixels (edges) required to trigger these models may not necessarily exist within a specific extent of an image. As the extent of satellite image and/or spatial resolution of satellite vary, the wet/dry limits of ET could change significantly, thereby resulting in differing model outputs, i.e., the ET estimates from these models are not deterministic. Critical in SEBAL is that one does not know exactly how large extent of a study site of interest should be in order for the operator to properly select the so-called hot/wet pixels that can satisfy the assumptions that for the hot extreme, LE is assumed to be zero, and H for the hot pixel is equal to the available energy; for the cold extreme, H is assumed to be zero, and LE is therefore equal to the available energy for the pixel, and that metrological and surface conditions should be generally homogeneous so that the linear correlation between the near surface temperature difference and remotely sensed surface temperature holds true. In many cases, even the very large extent would not necessitate the existence of both hot and wet extremes. For instance, one would not be able to select a hot pixel from a large homogeneous forest; (2) there has not any approach for the SEBAL/METRIC models to automate selection of extreme pixels from images with varying extents, spatial resolutions, and clouds [*Long et al.*, 2011], and (3) even though the extremes can be properly selected from relatively large images that probably entail hot and cold extremes reflecting surface conditions after cloud and terrain effects are favorably reduced/removed, the SEBAL-type algorithms appear to be limited in providing reasonable ET patterns due mostly to constant coefficients a and b in the SEBAL H algorithm that do not accommodate the effect of variations in fractional vegetation cover on ET extremes [*Long and Singh*, 2012b; *Long and Singh*, 2013].

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