

***Interactive comment on “Mapping daily
evapotranspiration and dryness index in the East
African highlands using MODIS and SEVIRI data”
by Z. Sun et al.***

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Thank you for your comments. Our responses are shown below.

“You have assessed the accuracy of the new methodology against the flux tower measurements at one site in Sudan where the elevation is 610m asl and mean annual rainfall is 320mm. But I am not sure if that can give us better confidence on the model. This flux tower measurement cannot represent the East African Highlands where you have diverse land cover types and elevation ranges (most are between 500-4600m asl, Fig. 1). Hence I am afraid the title of the paper reflects the content regarding study

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area.”

1. Flux sites are sparse in Africa, especially in the East African highlands. Among the CarboAfrica flux network, we only found the SD-Dem flux site in the East African highlands. So our site selection was dictated by data availability.

2. We have added new quantitative analysis that reveals the error contributions from various error sources (net radiation, EF, and assumption of constant EF during the daytime). We believe that these results are also indicative of the results in the higher elevation areas. For example, our results show that cloudy sky conditions lead to underestimation of net radiation, and we expect this to hold true in higher-elevation areas as well. So the diagnostic nature of our study provides lessons for satellite-based ET estimates in the whole East African highlands.

“P6290 L9 and10, it is good if the authors review similar models that have been used to calculate ET MODIS and Q MODIS. Then of course it is possible to start explaining about the recently developed Sim-ReSET algorithm. This will give the reader a short background about work.”

We have added reference on similar models in the introduction Section as follows “Few researchers have used MODIS data to produce ET maps in different regions for some periods (Nagler et al., 2005; Patel et al., 2006; Mu et al., 2007; Wang et al., 2007; Cleugh et al., 2007; Mallick et al., 2007; Leuning et al., 2008; Venturim et al., 2008).”

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/7/C3460/2010/hessd-7-C3460-2010-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 6285, 2010.