

Interactive comment on “An original interpretation of the surface temperature-albedo space to estimate crop evapotranspiration (SEB-1S)” by O. Merlin

Anonymous Referee #1

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This paper exploits the land surface temperature and albedo space for ET retrieval purposes. An interesting paper covering a highly important topic, generally well written and structured with nice figures.

The title however is too general, since it suggests that the author performs some theoretical interpretation of current used LST-Albedo space approaches. This is only partly the case. The current title is not taking into account the limitations of the region of choice and the applied methods/data sets. Hence I would greatly suggest/insist to adapt the title so to better cover the content of the manuscript. Perhaps this one: “An improved use of the surface temperature – albedo space to estimate crop evapo-

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transpiration over an irrigated agricultural area in north-western Mexico”. Considering everything, the author only uses a short time period of 5 months with only 7 cloudfree ASTER images, the author implements the method for specific soil characteristics of irrigated agricultural land, etc. Hence, again, very specific circumstances/conditions.

I wonder what could be the effect of using very detailed albedo/F data retrieved from Formosa in combination with the rougher ATSER thermal data? How will this effect the used approach (LST –Albedo space). Please comment. I missed a clear reasoning why one can defend to choose O as reference points (Fig 2b) for the estimation of EF (perhaps I missed something?). For better interpretation the observed changes over time of the LST-albedo space, I strongly recommend that the author adds another figure with a time series of NDVI, albedo, F, LST for each station and thus for different crops. This might help the reader to interpret the change over time of the LST-albedo plots, especially on the senescence of crops.

The author gives a nice overview of papers dealing with the LST-albedo-vegetation space, but I miss some references, for example the overview paper on ET/SMC of Verstraeten et al., 2008 in Sensors and references herein, Li et al, 2009, in Sensors, etc.

P6284, L13-14 and L 1920: Twice almost the same sentence: “The 90m resolution ASTER channel emissivity retrieved by the “temperature and emissivity separation” algorithm was used.” Better to merge these two sections (2.2.1 and 2.2.2), since temperature and emissivity are retrieved together with ASTER

P6285, L9-10: Why were the NIR data of ASTER not usable? Please explain.

Fig. 4: I cannot see the grey overlays. Please change figure (magnify, use red instead of grey?).

Conclusions: since the authors use thermal data, it cannot be named a optical-based ET model, but it should be optical-thermal based model..

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Considering all the data presented, models used and analysis performed I wonder if the author did this all by himself? Should the contributions by others not being recognized?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 6277, 2013.