

***Interactive comment on* “Uncertainties in using remote sensing for water use determination: a case study in a heterogeneous study area in South Africa” by L. A. Gibson et al.**

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1 Overview

The authors present an investigation of the sensitivity of the SEBS model (Su, 2002) actual evapotranspiration to several factors. A prepackaged implementation of the SEBS model was used, in the context of a case study in a heterogeneous study area

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in the Western Cape region of South Africa.

In my opinion, this paper contains useful insights on input data selection issues for practical applications of the SEBS model and should be published after some reworking of the discussion paper in light of the other referee comments. This should not require significant additional analysis by the authors.

2 Detailed comments

* The authors mention that data collected by Jarmain and Mengistu (2009) were used to validate the results (Lines 13-15, pg 6585), however I don't see where this is reported in the discussion paper (except for calibrating f_c). Could the authors clarify?

* It would be useful to have a magnitude indicating how much larger the estimated ET was than precipitation in the water balance calculation. This would help to assess the impact of the reported variability of ET due to inputs e.g. according to Fig.4 daily ET varies by about 10% due to differences in the estimated fractional vegetation cover.

* Line 24, pg 6586 "...the satellite..." should rather be something like "...space-borne sensors..." The current phrasing implies that the required measurements can only be obtained from a particular satellite.

* The MODIS and Meteosat SEVERI data products used should have formal citations, brief descriptions and product version numbers to make their content and origin clear.

* The interpretation of Fig. 3 could be made more clear for the reader by noting in the legend that Day Of Year 193 is during the wet Winter season in this region and that DOY 324 is typical of the dry Summer season.

* How was the curve shown interpolating the data points in Fig. 4 obtained? Is it fitted through the data points for f_c determined by each method, or by repeatedly varying f_c

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and recomputing daily ET? The caption and supporting text should specify this or the curve should be omitted as it implies a behaviour that may not exist.

* There are several places in the text where the authors refer to either potential or reference ET. It isn't clear precisely what these terms refer to and whether there is meant to be a difference between the two for the purposes of this work.

* I find Fig. 6 very difficult to interpret. A more comprehensive caption and discussion of the figure would be valuable to the reader.

* The terms in Eqn. 3 haven't all been defined in this paper.

* In many places in the text, it isn't clear to me whether single MODIS pixels or collections of pixels are being referred to. e.g. Line 8, pg 6595 "...within the MODIS pixel...".

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 6581, 2010.

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