

***Interactive comment on “Satellite-based
evapotranspiration and crop coefficient for
irrigated sorghum in the Gezira scheme, Sudan”
by M. A. Bashir et al.***

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General comments

The article deals with the application of the SEBAL method for evapotranspiration estimation and applies ETM+ satellite images. The article is of interest for the scientific community and HESS as it deals with the important topic of estimating evapotranspiration in irrigate agriculture in an area of weak infrastructure.

Specific comments

1) It is recommended that the article is checked by a native speaker (particularly check

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sentences p 794, line 20+23; p 798 line 17 "In THE SEBAL method", page 798, line 25 "The extremeS", page 799, line 4, page 799: ETr or ETo?, page 805, line 8 "...that WERE not previously available...".)

2) Abdelhadi et al., 2006 is not cited in the reference list.

3) While the general approach is known for a couple of years now, the main novelty must be seen in the application to the area of application (Sudan). Albeit it must be mentioned that Mohamed et al. (2004) (Spatial variability of evaporation and moisture storage in the swamps of the upper Nile studied by remote sensing techniques, J. Hydrology, 289, 145-164) cover parts of the region. A comparison to this work should be elaborated.

4) It remains questionable, whether 4 instantaneous ETr values can really provide seasonal and monthly values. It is admitted that the proposed interpolation to aggregated values is in line with other publications, but nevertheless, arguments for the validity of the assumptions are not convincing and must be critically reflected for every region and application. The validity of the assumptions could only be checked by direct ETr measurements, not by model intercomparison.

5) A further point is the fact that the finally estimated ETr values as obtained by the SEBAL method (and related methods) strongly depends on the choice of wettest and driest pixel, and also on the specific parameters and parameterisations chosen in the preprocessing steps (as for albedo, emissivity, roughness length, etc.). To judge the quality of the satellite derived ETr estimations, actually a comparison to ground based measurement would be necessary. At least, the impact of the parameter choice on both the satellite derived and the MD approach derived ETr estimates should be elaborated.

The article is recommended for publication after major revisions.

Harald Kunstmann

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 793, 2006.

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