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Hydrology and Earth System Sciences
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Discussions

Interactive comment on "Inter-comparison of energy balance and hydrological models for land surface energy fluxes estimation over a whole river catchment" *by* R. Guzinski et al.

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We would like to thank Dr. Conradt for a very positive feedback. Please find our answers to the comments (indicated in *italics*) below.

Page 5911, middle of the lower paragraph: "The locations of the rain gauges and climate stations in relation to the study area are presented in Fig. 2 of Stisen et al. (2011a)."

I think it should be no problem to add these locations as red dots to Fig. 1 and I would

like to see them there. There are still many occasions in this manuscript where references to other publications may be unavoidable, especially regarding lengthy model descriptions, but here there is no need to keep readers busy searching other sources.

We will add the locations of rain gauges and climate stations to Figure 1.

Page 5916, end of first paragraph and Page 5917, end of first paragraph: "The modelled fluxes are output at 1km resolution."

The resolution(s) of the original input pixels of the satellite scans should be given, and it should be added how they were georeferenced and interpolated to this 1 km output grid.

MODIS data is provided by NASA in a georeferenced grid with 930 m resolution and Sinusoidal projection. This was bilinear resampled to 1 km resolution grid and reprojected to UTM32-WGS84 projection.

The Envisat ATS_TOA_1P, AATSR Gridded Brightness Temperature and Radiance, product, is a full resolution dataset resampled to a 1km grid for both the nadir and forward views by the European Space Agency (Scarpino and Cardaci, 2009). The split-window brightness temperatures (11 and 12 μm) for both forward and nadir were then reprojected to UTM32-WGS84 and resampled to the same 1km resolution using a bilinear interpolation. LST at the two AATSR observation angles was then retrieved by the quadratic dual-channel split-window algorithm proposed by Coll et al. (2006) for AATSR.

The above clarification will be added to the relevant sections in the revised manuscript.

Page 5917, second paragraph: "all the days between 2003 and 2010"

There are several instances (cf. the figure captions) where you wrote that you used

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seven years of data. However, there are only six years between 2003 and 2010, and including these years it would be a timespan of eight years.

2003 and 2010 were also included in the study and therefore the correct number is 8 years. This will updated throughout the manuscript.

Page 5921, end of first paragraph and Page 5923, third line from the bottom: "not shown."

This wording should be avoided. You may write about observations you made without visualising the data, but just giving the relevant numbers or showing the extra figure would be better, of course. If the latter makes no sense in your eyes, O.K., but then you may at most explain why you cannot show everything. (Read: just leave the "not showns" away!)

We will remove this statement.

Finally, all the figures illustrating the correlation of spatial patterns

These are entirely density scatter plots. I would like to see one or two triplets of maps showing the actual spatial distribution of the heat fluxes over the catchment. This would allow for analysing the deviations in specific locations with respect to special soil or surface characteristics.

Maps of energy fluxes on individual, cloud-free days might not provide much additional information. However, we will add maps showing bias/RMSE (or other relevant statistic) of the energy fluxes averaged over the whole study period.

References

M.G.Scarpino, M. Cardaci (2009) ENVISAT-1 PRODUCTS SPECIFICATIONS - VOLUME 7: AATSR PRODUCTS SPECIFICATIONS, Issue 4 / A

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Coll, C., Caselles, V., Galve, J., Valor, E., Niclos, R., Sanchez, J. (2006). Evaluation of split-window and dual-angle correction methods for land surface temperature retrieval from Envisat/Advanced Along Track Scanning Radiometer (AATSR) data. Journal of Geophysical Research-Atmospheres, 111, D12105.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 5905, 2014.