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Hydrology and Earth System Sciences Discussions

Interactive comment on "Mapping daily evapotranspiration at field to global scales using geostationary and polar orbiting satellite imagery" *by* M. C. Anderson et al.

M. C. Anderson et al.

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We would like to thank Referee McCabe for the helpful comments on the submitted manuscript.

1) "Some intercomparison or assessment of the retrievals as undertaken over Africa or selected regions of Europe would have been useful, and given the paper a significant scientific impact for global scale estimation. Whilst it is certainly true that the ALEXI/DisALEXI approach has been well documented elsewhere, some additional evaluation in these new environments - especially with the application to a new satellite

sensor - would have been informative. This is particularly true for the higher resolution studies in Spain and Italy, where one would expect some in-situ validation data to have been collected and available. Alternatively a comparison with modeled output or other data, such as that undertaken in the US with the drought indices (published previously??) would have broadened the scope of the research - particularly if it had focused on the European heat wave of 2003, enabling comparison with many associated publications. Evaluation against remotely sensed soil moisture or precipitation anomalies may also have illustrated some qualitative agreement? Presumably there will be companion papers that develop this research and the current paper is perhaps an introduction to the global scale effort currently underway and the planned future work discussed. If this is the case, I consider that the manuscript will be of interest to many readers of HESS - particularly since the application illustrates efforts being undertaken over Europe and northern Africa. Perhaps it is worth considering a title change to better reflect the intermediate step that this paper presents – although this is not critical."

This paper was intended as an overview of the current status of the ALEXI modeling effort, documenting first efforts to expand beyond CONUS toward global application. It was submitted as part of a special issue resulting from the Earth Observation for Water Cycle Science Conference organised by ESA, GEWEX, EGU and ISPRS in Frascati, Italy, 18-20 November 2009, expanding on an overview presentation on recent advancements in ALEXI applications. Porting of the ALEXI infrastructure from GOES to MSG has occurred over the last year, and collaborations in Europe and Africa are in an early stage.

Manuscripts describing results from the validation/intercomparison studies in Italy, Spain, and the Nile basin discussed in this paper are being developed by the individual collaborators, and we did not feel that this overview paper was the proper place to introduce preliminary results without full description of each experiment. However, these preliminary results are quite encouraging, and our hope is that this overview

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paper will help us to identify new areas of potential collaboration with researchers operating within the MSG imaging domain. We have included one new figure with results from Italy, summarized from another article to appear in the same special issue.

The analyses of the European heat wave of 2003 and comparison with moisture/precipitation anomalies suggested by the reviewer are excellent ideas, and we will pursue these when we have processed more years of ALEXI-MSG model runs. At present we have processed only 2007-2010 (extent of publically available LandSAF product archive), but with time and resources there exists the potential for extending back to earlier in the Meteosat era.

The title was changed from "...Field to Global Scales..." to "...Field to Continental Scales..." in response to comments from Referees #1 and 2. The paper suggests a plan toward global applications, but no global application is actually presented here.

2) "5959, Line 25. remove comma after "...US, Europe, Africa and..." 5960, Line 13. remove "global" 5961, Line 14. "...any of THE satellite based...""

These have been fixed.

3) "If required, a reference to the GEWEX LandFLUX activities can be ascribed to: Jimenez C, Prigent C, Mueller B, Seneviratne SI, McCabe MF, Wood EF, Rossow WB, Balsamo G, Betts AK, Dirmeyer PA, Fisher JB, Jung M, Kanamitsu M, Reichle RH, Reichstein M, Rodell M, Sheffield J, Tu K, Wang K (2010) "Global inter-comparison of 12 land surface heat flux estimates" Journal of Geophysical Research (in press)"

Thank you. This reference has been included.âĂČ

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 5957, 2010.