

## ***Interactive comment on “Evaluation of PERSIANN database in the framework of SMOS Calibration/Validation activities over Valencia Anchor Station” by S. Juglea et al.***

**Anonymous Referee #1**

Received and published: 8 March 2010

Review of

Evaluation of PERSIANN database in the framework of SMOS Calibration/Validation activities over Valencia Anchor Station

by Juglea, Kerr, Mialon, et al.

General comments:

The added value of the satellite-derived PERSIANN precipitation product is assessed through the performance of a land surface model over a Spanish site. The evaluation of precipitation products is a particularly important and timely issue. However, the objec-

C95

tives of this work are unclear. The “Evaluation of PERSIANN” is rather disappointing as only few (one?) rain gauge stations are used and as no comparison with other gridded rainfall products is made. I don’t see why SMOS should be mentioned in the title as no real nor synthetic SMOS data are used. Similarly, I could not perceive any SMOS CAL/VAL activity in this study. The English is rather poor. This indicates that this paper was written too rapidly and without sufficient verification of editorial issues by the authors. This study gives little clue about the added value of PERSIANN, as the only given scores concern simulated surface soil moisture, with no independent verification of the simulated soil moisture (e.g. in situ observations). The accuracy of soil moisture simulated by a land surface model is not a direct measure of the quality of the precipitation used to drive the model. Indeed, many physical processes simulated by the model influence the soil moisture simulation, generating uncertainties and errors. Do the authors assume that their model is “perfect”, after the calibration performed by Juglea et al. HESSD, 7, 649-686, 2010, for SURFACE soil moisture ? But even so, surface soil moisture is probably less sensitive to the quality of the estimates of precipitation amount than the root-zone soil moisture. Surface soil moisture is a good indicator of the occurrence of rain but has less connexion to the magnitude of the rainfall events (as opposed to root-zone soil moisture). The comparison with AMSR-E data performed in this paper is, again, purely qualitative. Finally, it seems that the existing literature is not sufficiently cited (e.g. evaluation of AMSR-E products, LSA-SAF products, global precipitation products, ...). This paper cannot be published in HESS in the present form.

Particular comments:

- P. 1144, L. 6-8: “the Valencia Anchor Station (VAS) experimental site, in Spain, was selected to be one of the main test sites in Europe for the SMOS Calibration/Validation (Cal/Val) activities”. Is this site really suitable for the SMOS CAL/VAL (RFI problems in Spain have been extensively described and commented on the CESBIO web site) ?
- P. 1145, L. 6-8: PERSIANN is not the only global gridded precipitation product. Why

C96

using PERSIANN only ? Why not comparing PERSIANN with other products (e.g. GPCC, GPCP, ERA-Interim,...) ?

- P. 1146, L. 4-5: the accuracy of soil moisture simulated by a land surface model is not a direct measure of the quality of the precipitation used to drive the model.

- P. 1146, L. 25: what do the authors mean by “fully equipped meteorological stations”?

- P. 1147, L. 5-7: “The shortwave was extracted from Meteosat, a geostationary weather satellite launched by the European Space Agency (ESA)”: what do the authors mean by “shortwave” ? Downwelling shortwave radiation ? What is the origin of this input ? Have the authors generated this quantity themselves? Have they used the EUMETSAT LSA-SAF product ?

- P. 1147, L. 7: “while the longwave was calculated”: how, inputs?

- P. 1147, L. 8: here, and several times in the text, “precipitations” (precipitation).

- P. 1147, L. 8: “were taken” ?

- P. 1150, L. 21: to what extent precipitation is overestimated by PERSIANN ? Please give numbers (e.g. in situ vs. PERSIANN monthly accumulated precipitation). Fig. 1 is difficult to understand and it is difficult to extract quantitative information from it. Same for Fig. 2.

- P. 1151, L. 27-28: “These differences are due mostly because of rainy events”, English?

- P. 1152, L. 17: “the use of the PERSIANN rainfall demonstrates the interest of using these satellite data”. This sentence and the whole paragraph do not demonstrate anything. This is confusing.

- P. 1152-1153 and Tables 2 and 3: RMSE units? What about the bias ?

- P. 1154, L. 7: “the AMSR-E signal is perturbed by the vegetation” what do you the

C97

authors mean by “AMSR-E signal” ? Do the authors think that PR at C-band is sensitive to soil moisture ? If so, please state this clearly.

- P. 1166, Fig. 5: is this figure is adapted from Juglea et al. HESSD, 7, 649-686, 2010 ?

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 1143, 2010.

C98