**Hydrology and
Earth System
Sciences
Discussions**

Interactive
Comment

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 #3

Received and published: 5 April 2010

General:

The authors present a study to evaluate the potential of the PERSIANN database to simulate distributed soil moisture fields. Although, this is an interesting research field, I would not recommend the paper to publication in its current state. Prior to publication, the authors need to clarify their objectives and provide further analysis of experimental data. English should be reviewed.

The authors state in the abstract that 'The goal of this study is to quantify the gain of using PERSIANN instead of distributing sparse rain gauge measurements.' It should be specified for what purpose. When reading the paper it seem to me that the aim of

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the paper was to obtain a distributed soil moisture (P1149 L26-27), however, this is not clearly stated in the abstract nor in the introduction. Also, what is the purpose of the comparison of soil moisture data with AMSR-E data? This is also confusing.

The differences between measured precipitation and PERSIANN product should be further analysed. First I would expect to see a map with all the rain gauges and the PERSIANN grid. Also, only one gauge is showed. I would expect at least to see a Table with the precipitation RMS and bias for all the gauges. It is difficult to see anything in Fig 1 or Fig 2, a scatterplot would be better. The comparison between the gauges and PERSIANN is not good at all for me. The authors state that 'The PERSIANN patterns in the occurrence of rainfall are better reflected than patterns in rainfall amounts' however I don't see any data that supports this statement. They also attribute precipitation 'differences between the rain gauges and the satellite estimates can be due to the fact that the satellite data represent areal rainfall, while the gauge data represent point rainfall.' The authors have enough experimental data so that this hypothesis be further developed. How the interpolated precipitation compared to the PERSIANN precipitation? To me points 4.2 and 4.3 are useless if this question is not solved before.

Finally, the conclusions of the study 'that satellite-based rainfall estimation products can represent the main seasonal and spatial features of rainfall. Results indicated the usefulness of PERSIANN rainfall estimates for supplying rainfall inputs where gauge measurements are not available.' are not proven to me. Concerning seasonal features, during the rainy season, rainfall is largely overestimated (from 5.2 mm/day to 0.89 mm/day). Concerning spatial features, nothing is shown, since only data from 1 gauge is compared to PERSIANN.

Specific Comments:

Abstract: Should include something about your results.

P1149 L17: Were the other variables point or spatialized?

P1149 L27: Which precipitation were you using?

P1150 L16-17: 'As the results are similar over the whole VAS area' Please provide further information about the comparison between PERSIANN precipitation and gauges.

P1151 L1-2 'During the summer season, the rain gauge as well as the PERSIANN products compare well.' Actually, during the summer there is very little rain.

P1151 L5 Delete 'Anyway'

P1151 L5-8 'These differences ... point rainfall' Please provide further data to support this statement.

P1151 L15- 16 'the recorded rainfall at the two stations is not very highly correlated' what were you comparing here, daily rainfall, hourly?

P1151 L27-28 'These differences are due mostly because of rainy events' I understand that all other variables are the same, aren't they? What else can make a difference?

P1152 L21-22 'the satellite data represent areal rainfall, while the gauge data represent point rainfall.' The authors should provide more data to support this statement.

P1153 L26-28 'As the vegetation has an important influence on the measured signal at these frequencies, the polarization ratio is used.' In P1148 it was mention that the PR depends on vegetation as well.

P1154 L3 What is the depth of the layers? That should be mention in the methodology.

P1154 L21-22 'the PERSIANN satellite estimates do not compare very well mostly due to the variability of the rainfall observed over the VAS area.' That was an hypothesis, you have not proven it yet.

P1154 L23 Please delete 'Anyway'

P1154 L24-27 not clear, please rephrase.

Table 1. Maybe a map with all rain gauges + the PP grid would be more illustrative.

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Fig 1 and Fig 2 are difficult to read.

Fig 5. Why PR increases after DOY 150?

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

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