

Interactive comment on “Verification of the new ECMWF ERA-Interim reanalysis over France” by C. Szczypta et al.

C. Szczypta et al.

CALVET@METEO.FR

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Response to Reviewer #2

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The authors thank the anonymous reviewer #2 for his/her comments. For an easier comprehension of the authors response, the comments of the referee are reported (2.XX).

2.1 [The paper by Szczypta et al. compares soil moisture and screen level parameters from a global reanalysis product (ERA-Interim) to high resolution reanalysis data (SAFRAN) and interpolated observations over France. This could have resulted in an

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interesting discussion of the effect of different scales and model parameterisations.]

RESPONSE 2.1

In this study, the ERA-I surface atmospheric variables are considered, only. The ERA-I analyzed soil moisture is out of the scope of this study.

2.2 [Unfortunately the authors do not provide an in depth analysis of the obtained results but just present some statistics and a superficial interpretation of the observed differences. As the analyzed data shall later be used to great a soil moisture and vegetation climatology it is of critical importance to understand the causes of the observed differences.]

RESPONSE 2.2

The authors agree with Reviewer #2 that in the HESSD version of this work, the interpretation of the ERA-I shortcomings is not complete. The responses to Reviewer #1 regarding the attribution of discrepancies will be included in the final version of this work.

2.3 [Before publication as a HESS paper I therefore recommend that the authors completely revise the discussions section. Currently this section only presents the results of the data comparison but these are not discusses/interpreted.]

RESPONSE 2.3

Indeed, most of the current Discussion section is dedicated to the results of offline model simulations. Most of this section will be included in the Results section and renamed accordingly. A revised Discussion section will be added, including the responses to the reviewers' comments.

2.4 [Consequently also the conclusions are superficial and limited to a summary rather than real conclusions.]

RESPONSE 2.4

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We agree that the conclusion section should be improved.

2.5 [Further I recommend focusing the comparison to the most relevant datasets. Including that many datasets does not add any value to the comparison but is only confusing. For example using GPCC and GPCP does add only little additional information. Also it is not clear to me why the PERSIANN data set is used considering its low quality over France.]

RESPONSE 2.5

We agree that the Persiann analysis is not fundamental to our study and this discussion will be removed. On the other hand, a key objective of this study is to assess the added value of rescaling the ERA-I precipitation (ERA-I-R) using GPCP, and to assess the quality of ERA-I and ERA-I-R, relative to other global precipitation estimates like GPCP and GPCC.

2.6 [In addition to these general comments I have following minor issues. 1.If I understood correctly different data product have been compared for different time periods. This is very confusing. Why is the data not compared for the same period?]

RESPONSE 2.6

The authors agree with Reviewer #2 that the different comparisons performed over different time intervals are not clearly explained in this paper. Note, moreover, that in response to Reviewer #1, the analysis of ERA-I and ERA-I-R was extended from 2001 and 2003 to the whole 1991-2008 period. The reason why we worked with different time intervals is related to the availability of the different data sets:

[1991-2008]: ERA-I, ERA-I-rescaled and SAFRAN data availability

[1994-2007]: Brion data availability

[2001-2007]: The field campaign of SMOSREX has been in operation since January 2001

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[2005-2007]: Fluxes (CO₂ fluxes and sensible and latent heat fluxes) have been measured at SMOSREX since 2005.

These explanations will be clearly stated in the Methods section of the final version of the manuscript.

2.7 [2.Add a brief discussion about the differences in the model physics and the data which is assimilated in the reanalysis products. This would help to understand the observed differences.]

RESPONSE 2.7

While the SAFRAN precipitation product is based on in situ observations from a dense rain gauge network, the ERA-I precipitation is derived from an atmospheric model and ground-based precipitation observations are not yet assimilated. More information is given in Balsamo et al. (2010).

2.8 [3.For the comparison did you use analyzed fields or forecasts?]

RESPONSE 2.8

Precipitation data within ERA-I represent 3-hour averages, and to avoid the initial spin-up the 3-hourly forcing surface fluxes correspond to the 09-21h forecast interval from initial conditions at 00:00 and 12:00 UTC (Balsamo et al. 2010). Further details of the full ERA-Interim reanalysis products can be found in Simmons et al. (2007).

2.9 [4. It is difficult to interpret the observed differences in the statistics (for example the correlations in Table 2) without an indication if the differences are statistical significant.]

RESPONSE 2.9

All the correlations given in Tables 1-7 are significant.

2.10 [5. In table 5 what is the meaning of the abbreviation TU]

RESPONSE 2.10

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“TU” stands for “UTC”. This typo will be corrected in the next version of the manuscript.

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