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**Hydrology and Earth System Sciences Discussions**

# *Interactive comment on* "Assimilation of ASCAT near-surface soil moisture into the French SIM hydrological model" *by* C. Draper et al.

**C. Draper et al.**

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We appreciate Dr Feng's interest in our paper. Dr Feng's comments are reproduced below, with our response to each provided as a bullet point.

A few minor comments: 1) There is only one single SIM model (no other SIM models). Hence the title perhaps should be "Assimilation of ASCAT near-surface soil moisture into the SIM hydrological model over France".

- The title has been changed, as suggested.



2) What is "data cut-off"?

- "real time data cut-off" refers to the cut-off time after which data cannot be accepted into the assimilation. This phrase is used commonly, and has not been changed.

3) Is "anomaly correlation" really needed given absolute correlation? Does it really add new information that is not given by absolute correlation?

- The absolute correlation is strongly influenced by the agreement in the seasonal cycle, whereas the anomaly correlation measures the agreement over much shorter time scales (from daily to weekly with the anomaly formulation used here). Since data assimilation is designed to correct errors with these shorter time scales, the anomaly correlation is a very important metric to report.

4) The details in Fig 7 and Fig 8 are not obvious with the current y-axis scale selection. Using the minimum and the maximum values as the y-axis limits could help.

- Within each of these Figures, the same resolution has been used for the vertical axes to allow direct inter-comparison between the different panels. Scaling each term between its min and max would exaggerate the importance of the less variable terms, and so has not been done. However, sub-panel 7c was not scaled consistently in the initial submission, and this has been amended.

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