

Interactive comment on “How does initial soil moisture influence the hydrological response? A case study from southern France” by Magdalena Uber et al.

L. Brocca

luca.brocca@irpi.cnr.it

Received and published: 13 March 2018

Short Comments

I quickly read the paper by Uber et al. as I have been working for several years on the role of initial soil moisture conditions on runoff generation. I appreciate the extensive analysis the authors have carried out in their study with a good experimental setup. However, I found strange that the authors didn't mention many papers on the same topic published in the scientific literature. Of course, I have authored (and co-authored) some of these studies, but I want to underline that I do not want the authors cite our

C1

papers. I simply would like that the results of this study were considered in the context of current knowledge we have gained on the role of soil moisture for runoff generation. Some of previous studies have carried out a very similar analysis, i.e., by comparing ground (and satellite) soil moisture observations with the hydrologic response at basin scale for different flood events. I added below a (not exhaustive) list of references I'd like the authors consider.

References (not exhaustive)

Beck, H. E., R. A. M de Jeu, J. Schellekens, A. I. J. M van Dijk, L. A. Bruijnzeel, (2009), Improving Curve Number Based Storm Runoff Estimates Using Soil Moisture Proxies, Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Journal of selected topics in applied earth observations and remote sensing, (2), 250-259.

Berthet, L., Andréassian, V., Perrin, C. and Javelle, P. (2009). How crucial is it to account for the Antecedent Moisture Conditions in flood forecasting? Comparison of event-based and continuous approaches on 178 catchments. Hydrol. Earth Syst. Sci., 13, 819-831.

Brocca, L., Melone, F., Moramarco, T., Morbidelli, R. (2009). Antecedent wetness conditions based on ERS scatterometer data. Journal of Hydrology, 364 (1-2), 73-87.

Brocca, L., Melone, F., Moramarco, T., Singh, V.P. (2009). Assimilation of observed soil moisture data in storm rainfall-runoff modelling. Journal of Hydrologic Engineering, 14 (2), 153-165.

Brocca, L., Melone, F., Moramarco, T., Penna, D., Borga, M., Matgen, P., Gumuzzio, A., Martínez-Fernández, J., Wagner, W. (2013). Detecting threshold hydrological response through satellite soil moisture data. Die Bodenkultur, 64(3-4), 7-12.

Crow, W.T., Bindlish, R. and Jackson, T.J. (2005) The added value of spaceborne passive microwave soil moisture retrievals for forecasting rainfall-runoff ratio partitioning.

C2

Geophys. Res. Lett., 32, L18401.

Crow, W. T., Chen, F., Reichle, R. H., Liu, Q. (2017). L-band microwave remote sensing and land data assimilation improve the representation of pre-storm soil moisture conditions for hydrologic forecasting. *Geophysical Research Letters*, doi: 10.1002/2017GL073642.

Huang, M., Gallichand, J., Dong, C., Wang, Z. and Shao, M. (2007). Use of soil moisture data and curve number method for estimating runoff in the Loess Plateau of China. *Hydrol. Process.*, 21(11), 1471-1481.

Massari, C., Brocca, L., Barbetta, S., Papathanasiou, C., Mimikou, M., Moramarco, T. (2014). Using globally available soil moisture indicators for flood modelling in Mediterranean catchments. *Hydrology and Earth System Sciences*, 18, 839-853, doi:10.5194/hess-18-839-2014.

Massari, C., Brocca, L., Moramarco, T., Trambly, Y., Didon Lescot, J.-F. (2014). Potential of soil moisture observations in flood modelling: estimating initial conditions and correcting rainfall. *Advances in Water Resources*, 74, 44-53, doi:10.1016/j.advwatres.2014.08.004.

Massari, C., Brocca, L., Ciabatta, L., Moramarco, T., Gabellani, S., Albergel, C., de Rosnay, P., Puca, S., Wagner, W. (2015). The use of H-SAF soil moisture products for operational hydrology: flood modelling over Italy. *Hydrology*, 2(1), 2-22, doi:10.3390/hydrology2010002.

Morbidelli, R., Corradini, C., Saltalippi, C., Flammini, A., Brocca, L., Govindaraju, R.S. (2016). An investigation of the effects of spatial heterogeneity of initial soil moisture content on surface runoff simulation at a small watershed scale. *Journal of Hydrology*, 539, 589-598.

Penna, D., Tromp-van Meerveld, H. J., Gobbi, A., Borga, M., Dalla Fontana, G. (2011). The influence of soil moisture on threshold runoff generation processes in an alpine

C3

headwater catchment. *Hydrol. Earth Syst. Sci*, 15, 689-702.

Trambly, Y., Bouvier, C., Martin, C., Didon-Lescot, J. F., Todorovik, D., Domergue, J. M. (2010). Assessment of initial soil moisture conditions for event-based rainfall-runoff modelling. *Journal of Hydrology*, 387(3-4), 176-187.

Trambly, Y., Bouaicha, R., Brocca, L., Dorigo, W., Bouvier, C., Camici, S., Servat, E. (2012). Estimation of antecedent wetness conditions for flood modelling in Northern Morocco. *Hydrology and Earth System Sciences*, 16, 4375-4386, doi:10.5194/hess-16-4375-2012.

Interactive comment on *Hydrol. Earth Syst. Sci. Discuss.*, <https://doi.org/10.5194/hess-2018-28>, 2018.

C4