



Hydrological impact of spatially-variable catchment rainfall

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Precipitation is the key factor controlling the high-frequency hydrological response in catchments. Here, we present an experiment to identify those hydrological situations where and when spatially-variable catchment rainfall has a significant catchment scale impact. Conversely, we also analyze those cases where no impact is detectable.

In this experiment, we use a semi-distributed representation of catchment that we allow to vary from an entirely lumped to a highly distributed situation. We use the rainfall reanalysis developed by Météo-France over the whole French territory at 1 km and 1 h resolution over a 10 year period, along with a large catchment dataset. The results are analyzed by catchment classes and types of rainfall events based on the spatial variability of precipitation.

The results are contrasted. In all regions, natural variability allows for contradictory examples to be found, underlining once more the need to draw conclusions on a large dataset to warrant their generality.