



## *Development of a flash flood observation strategy*

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Lack of observations hamper advances on understanding the hydrological processes at work during flash floods, and, consequently, on forecasting the stream response to extreme precipitations.

Observational limitations mainly stem from the fact that flash floods develop at space and time scales that conventional observation systems of rain and river discharges are not able to monitor. As these events are locally rare, they are also difficult to capture during classical field-based experimentation, designed to last a few months over a given region. This also explains why a coherent picture of flash flooding in the various European hydroclimatic regimes is still missing.

The roadmap to provide the observations needed to advance flash flood research is through the development of an observational strategy capable to provide high-resolution data on storm and stream/landscape response during flash floods. The main motivation of the strategy is to observe these locally rare events wherever they occur in a region and not only in places where refined observation system actually exist. The strategy develops on three pillars:

- availability of good quality radar data;
- availability of good quality and relatively dense conventional hydrometeorological data;
- execution of post-event field surveys to provide indirect estimates of event peak discharges.

The paper provides feedback from the first applications of this observation strategy to

a number of major flash flood events, occurred in Southern France and Northern Italy. Data from these events are used to investigate the meteorological and hydrological processes at work during flash flood, and to examine their inherent scales.