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Post-event field investigations: A Socio-Hydro-Meteorological analysis of the 15-16 June 2010 disastrous flash flood event in the Var (France)

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On 15-16 June 2010, the vicinity of the town of Draguignan, located in the Var area (France) was hit by torrential rainfall amounts up to 400 mm in 36 hours. The total accumulated rainfall reached 200 and 300 mm over, respectively, 2000 and 250 km2 and led to important flash flooding. Officially this event was responsible for the death of 25 persons and damages were evaluated at 1 billion euros. 2450 persons were rescued, including 1350 who were airlifted and 300 who escaped a certain death. Three municipalities concentrated the most part of the fatal accidents: Draguignan (10), Trans en Provence (5) and Roquebrune (5).

The success of the meteorological operational forecasting chain was poor due to the very small-scale of the storms, the complexity of the associated physical processes and the difficulty of data assimilation at short time scale. In addition, the rivers responsible for the inundation are monitored by a low-resolution gauge network and were not part of the operational river monitoring system managed by the national flood warning service (Service de Prévision des Crues: SPC). The warning system was only based on the meteorological forecast provided by Météo-France at the regional scale.

Learning from such extreme events is not easy as very few data are available to understand the local environmental conditions surrounding individuals' responses to the event. In fact, in such case peak discharge measurements are nearly inexistent and the estimation of direct economical and human losses is often the only "social" data collected. Nevertheless, the understanding of the hydro-meteorological conditions and social settings in which individuals managed to protect themselves or their relatives against such dangerous and fast changing situation is crucial for preventing future events to turn again into disasters. This type of physical and social information needs to be collected coherently to improve our capability to better forecast and warn for such event in the future.

This presentation will describe an original methodology to both collect the lacking physical (meteorological and hydrological) and behavioral data in the context of post-event field investigations. Based on collaborations between social and physical scientists, this field experience happens to be also an excellent opportunity and a powerful tool to truly integrate research questions across disciplines.