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Studying the hydro-meteorological extremes. The benefits from the European Flash Flood research oriented HYDRATE project.

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The present paper summarizes the advances of flash flood research for the Greek case study, within the frame of HYDRATE EC funded project. As a first step, a collation of homogenous primary data on flash floods occurred in Greece based on various data sources resulted in 21 documented events, enriching the HYDRATE database. Specific major events were selected for further detailed data collation and analysis. A common intensive post event field survey was conducted by various researchers with different skills and experience, in order to document the 18th of September 2007, Western Slovenia flash flood event. The observation strategy and the lessons learned during this campaign were applied successfully for surveying an event in Crete. Two flash flood events occurred in Crete were selected for detailed analysis, the 13th of January 1994 event occurred in Giofiros basin and the 17th of October 2006 event occurred in Almirida basin. Several techniques, like distributed rainfall-runoff modelling, hydraulic modelling, indirect and empirical peak discharge estimation, were applied for the understanding of the dominant flash flood processes and the effect of initial conditions on peak discharge. In a more general framework, the seasonality of the hydrometeorologic characteristics of floods that occurred in Crete during the period 1990-2007 and the atmospheric circulation conditions during the flood events were examined. During the three and a half years research period, many lessons have learnt from a fruitful collaboration among the project partners. HYDRATE project improved the scientific basis of flash flood research and provided research knowledge on flood risk management.