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Post event flash flood analysis in ungauged watersheds

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The reconstruction of flash flood events in ungauged basins often requires a synthesis of alternative information sources to compensate for the absence of measured data. This paper presents a stochastic analysis of the flash flood event of October 17, 2006 that caused the flash flood event in Almyrida basin, a 25km2 watershed located in the northwest part of the island of Crete. A synoptic meteorological analysis shows the dynamic evolution and the path of the storm that led to the flash flood event, while METEOSAT imagery reveals critical information about the structure and timing of the storm. A 30 minute precipitation time series is generated using information from METEOSAT imagery, measurements from neighboring gauges and C-Band weather radar data. A post flood event field study produced evidence for peak flood stage and allowed for key cross section measurements, while interviews with eye witnesses revealed the exact timing of the peak stage. A distributed hydrological/hydraulic model is applied to simulate the runoff and is calibrated on the witnessed peak stage values. A stochastic component, justified on errors introduced in post event analysis, is added to the generated precipitation input producing a flow and stage ensemble. The mean discharge coefficient of the event was estimated at 0.5. This case study is being investigated as a part of the EC funded HYDRATE research project.