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Between May and June 2016, France was hit by severe floods, particularly in the Loire and Seine river basins. In this work, we use this case study to test an innovative framework for flood forecasting, mapping and monitoring. More in detail, the system integrates in real-time two components of the Copernicus Emergency mapping services, namely the European Flood Awareness System and the satellite-based Rapid Mapping, with new procedures for rapid risk assessment and social media and news monitoring.

We explore in detail the performance of each component of the system, demonstrating the improvements in respect to stand-alone flood forecasting and monitoring systems. We show how the performances of the forecasting component can be refined using the real-time feedback from social media monitoring to identify which areas were flooded, to evaluate the flood intensity, and therefore to correct impact estimations. Moreover, we show how the integration with impact forecast and social media monitoring can improve the timeliness and efficiency of satellite based emergency mapping, and reduce the chances of missing areas where flooding is already happening. These results illustrate how the new integrated approach leads to a better and earlier decision making and a timely evaluation of impacts.