



The October 2015 flash-floods in south eastern France: hydrological analyses, inundation mapping and impact estimations

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The October 2015 flash-floods in south eastern France caused more than twenty fatalities, high damages and large economic losses in high density urban areas of the Mediterranean coast, including the cities of Mandelieu-La Napoule, Cannes and Antibes.

Following a post event survey and preliminary analyses conducted within the framework of the Hymex project, we set up an entire simulation chain at the regional scale to better understand this outstanding event. Rainfall-runoff simulations, inundation mapping and a first estimation of the impacts are conducted following the approach developed and successfully applied for two large flash-flood events in two different French regions (Gard in 2002 and Var in 2010) by Le Bihan (2016). A distributed rainfall-runoff model applied at high resolution for the whole area – including numerous small ungauged basins – is used to feed a semi-automatic hydraulic approach (Cartino method) applied along the river network – including small tributaries. Estimation of the impacts is then performed based on the delineation of the flooded areas and geographic databases identifying buildings and population at risk.