



Challenges for flood hazard and risk assessment in Mozambique: the case of Megaruma and Muaguide rivers

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As a consequence of climate change and rapid urbanization, floods have increased both in terms of intensity and frequency, impacting especially the less developed countries of the World, and particularly sub-Saharan Africa. In such contexts, reliable flood risk assessments are of primary importance to support local authorities and stakeholders in emergency management and planning, and in the definition of effective risk mitigation measures. Still, their implementation is often hampered by lack of suitable data and resources. The present study has the main objectives of presenting challenges and identified solutions of performing flood hazard and risk analysis for the Megaruma and Muaguide rivers in Cabo Delgado, the northern province of Mozambique and also the poorest one. The downstream paths of the rivers cross the districts of Mecufi and Metuge, rural areas covered by fields cultivated by inhabitants who live on subsistence agriculture. During the wet season, some of the villages are completely isolated, with no access to adequate health services due to the floods that periodically affect the local population and their activities. As for many developing countries, data scarcity was the first limiting factor for quantitative analysis; therefore, much effort was primarily invested into data research. The hydrologic and hydraulic modelling to determine the flood hazard in the areas rely on free or at least cheap, global data (rainfall, terrain elevation and soil cover), meeting the second requirement of low available budget. On the contrary, an intensive field survey was required to collect data on the vulnerability of exposed assets at the base of damage assessment. Particular attention was also paid in the choice of free softwares and modelling tools. The resulting approach and methods can be easily exported to similar contexts, enabling robust flood risk analyses in the support of sustainable development.