

Preliminary flood hazard assessment for monuments in urbanized areas

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ABSTRACT

Ancient monuments located in urbanized areas are subject to numerous short- and long-term environmental hazards with flooding being among the most critical ones. Flood hazard in the complex urban environment is subject to large spatial and temporal variability, and thus requires location-specific risk assessment and mitigation. We devise a methodological scheme for preliminary assessing flood hazard in urbanized regions—at the monument’s scale, by coupling rainfall data from a local raingauge with a 2D hydraulic model of the monument’s sub-basin. Return periods of flood depths based on rainfall extremes are estimated using a novel statistical methodology (k-moments). As a case study, we perform a pilot assessment of the flood hazard in the Roman Agora, a major archaeological site of Greece located in the center of Athens. The scheme will be incorporated in a real-time monitoring platform for risk assessment in monuments (ARCHYTAS).