**Flood Assessment Method for Heritage Conservation at the Site Scale: A Case Study of PuZhou Ancient City Site, China**

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***ABSTRACT***

The concept of "preventive conservation" has become the focus of heritage conservation worldwide, risk assessment is one of the important elements of preventive conservation. Current flood risk assessments tend to focus on larger scales such as cities or river basins and fail to adequately refine the risk to individual buildings. This paper presents a flood risk assessment methodology tailored to the scale of cultural heritage units, to enhance the accuracy of identifying site-specific risks. The method couples hazard with vulnerability to assess flood risk. Regarding hazard, to solve the issue of the minimal contribution of slight geographical variations in water and environmental indicators at the scale of cultural heritage units to the classification of storm flood danger， we employ the Storm Water Management Model (SWMM). This model is utilized to establish rainfall scenarios and conduct numerical simulations, translating these into intuitive risk parameters like depth and extent of inundation. Additionally, a vulnerability assessment procedure for cultural heritage was designed. This procedure analyzes structural stability using finite element simulations, quantifies the sensitivity of cultural objects to floods, evaluates exposure based on potential value loss, and assesses disaster prevention and mitigation capacity considering protective measures and restoration possibilities. Flood risk can be obtained by weighing the results of hazard and vulnerability analyses. The methodology's feasibility was verified through a case study of the PuZhou ancient city site. This approach, integrating both natural hazard factors and unique cultural heritage characteristics, provides a framework for flood risk assessment, prevention strategies, and mitigation measures specifically tailored to cultural heritage sites.

**Keywords:** ancient sites, cultural heritage, flood disaster risk assessment, hazard, vulnerability