

Flood risk and cultural heritage: the case study of Florence (Italy)

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Cultural heritage plays a key role for communities in terms of both identity and economic value. It is often under serious threat by natural hazards, nevertheless, quantitative assessments of risk are quite uncommon. This work addresses the flood risk assessment to cultural heritage in an exemplary art city, which is Florence, Italy. The risk assessment method here adopted borrows the most common definition of flood risk as the product of hazard, vulnerability and exposure, with some necessary adjustments. The risk estimation is carried out at the building scale for the whole UNESCO site, which coincides with the historical centre of the city. A distinction in macro- and micro-damage categories has been made according to the vulnerability of the objects at risk. Two damage macro-categories are selected namely cultural buildings and contents. Cultural buildings are classified in damage micro-categories as churches/religious complexes, libraries/archives and museums. The damages to the contents are estimated for four micro-categories: paintings, sculptures, books/prints and goldsmith's art. Data from hydraulic simulations for different recurrence scenarios, historical reports of the devastating 1966 flood and the cultural heritage recognition sheets allow estimating and mapping the annual expected number of works of art lost in absence of risk mitigation strategies.