



Assessing Mediterranean UNESCO World Heritage at risk from coastal hazards associated with sea-level rise

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UNESCO World Heritage sites (WHS) located in coastal areas are increasingly at risk from coastal hazards, such as flooding and erosion, due to accelerated sea-level rise. So far research has put little emphasis on assessing the impacts of these hazards on WHS, even though such assessments are crucial to inform stakeholders and policy-makers about the respective adaptation needs. We assess cultural WHS at risk from a 100-year flood and from long-term coastal erosion until 2100 under three sea-level rise scenarios, focussing on the Mediterranean coastal zone. For this first-order assessment, we use a simple methodology that can also be applied in other regions. We calculate a flood risk index and an erosion risk index based on spatially explicit data produced in this study, which represent the location and shape of each UNESCO WHS. We combine both indices to be able to compare WHS at risk from both hazards with each other. Of 49 cultural WHS located in low-lying coastal areas of the Mediterranean, we find 84 % to be at risk from a 100-year flood under the highest sea-level rise scenario, and 88 % to be at risk from coastal erosion until 2100. In total 98 % of all sites are at risk from either of the two hazards. The largest number of WHS at risk are located in Italy (13), Croatia (7), Greece (4) and Tunisia (4). Our results provide a first-order estimate of where adaptation is most urgently needed and can support policymakers in steering local-scale research to devise suitable adaptation strategies for each WHS, thereby ensuring that their status as UNESCO World Heritage is preserved.