Coastal erosion vulnerability and risk assessment focusing in tourism beach use.

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It is well established that the global market for tourism services is a key source of economic growth. Especially among Mediterranean countries, the tourism sector is one of the principal sectors driving national economies. With the majority of the mass tourism activities concentrated around coastal areas, coastal erosion, inter alia, poses a significant threat to coastal economies that depend heavily on revenues from tourism. The economic implications of beach erosion were mainly focused in the cost of coastal protection measures, instead of the revenue losses from tourism. For this, the vulnerability of the coast to sea level rise and associated erosion, in terms of expected land loss and economic activity need to be identified. To achieve this, a joint environmental and economic evaluation approach of the problem can provide a managerial tool to mitigate the impact of beach erosion in tourism, through realistic cost-benefit scenarios for planning alternative protection measures. Such a multipurpose tool needs to consider social, economic and environmental factors, which relationships can be better understood when distributed and analyzed along the geographical space. The risk assessment is implemented through the estimation of the vulnerability and exposure variables of the coast in two scales. The larger scale estimates the vulnerability in a regional level, with the use environmental factors with the use of CVI. The exposure variable is estimated by the use of socioeconomic factors. Subsequently, a smaller scale focuses on highly vulnerable beaches with high social and economic value. The assessment of the natural processes to the environmental characteristics of the beach is estimated with the use of the Beach Vulnerability Index (BVI) method. As exposure variable, the value of beach width that is capitalized in revenues is implemented through a hedonic pricing model. In this econometric modelling, Beach Value is related with economic and environmental attributes like, Beach width, distance from the city) of each sector, tourism attributes (Coastal business; Number of hotels; Number of hotel rooms; Room price; Beach attendance). All calculations are implemented in a GIS database, organised in five levels. As case study area for the application of the method is selected Crete Island, while for the small scale four beach tourist destinations in the Island of Crete, with different vulnerabilities. In the small scale vulnerability analysis, the sectors of the beach which are most vulnerable were identified, and risk analysis was made based on the revenue losses.