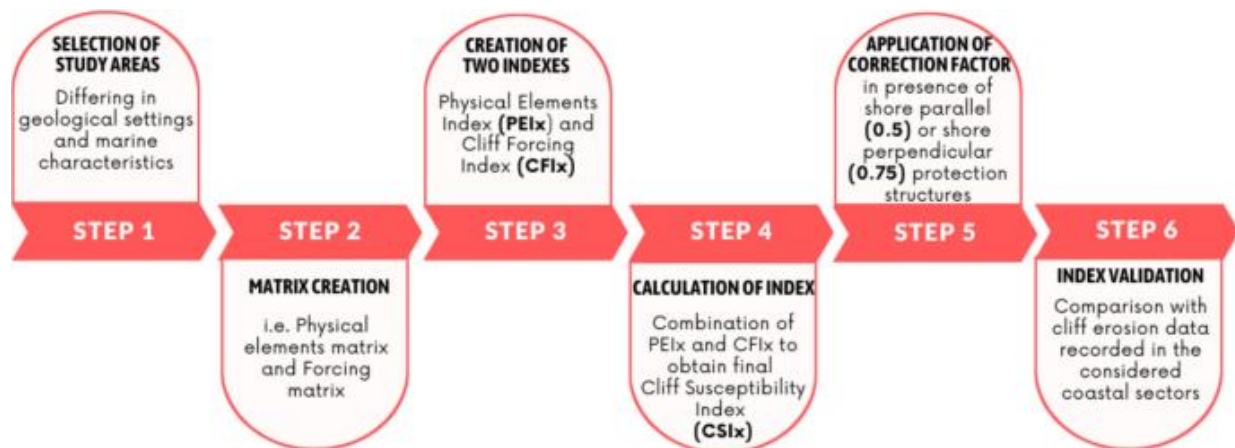


A multi component approach to predict erosion susceptibility of rocky coasts: marine, terrestrial and climatic forcing—an application in Southern Italy

Summary

Rocky coasts are the most common type of coastal environment and are presently experiencing significant erosion as a consequence of accelerated sea-level rise and increase in coastal storms. This type of coastline, like all coastal environments, is subject to the effects of a huge number of marine and terrestrial processes that continually reshape them over time. This research suggests a new methodological approach for assessing the vulnerability of rocky coasts to forcing factors that may be emphasised by ongoing climate change. The proposed approach combines two matrices: the Physical Element Index (PEIx), which assesses the most relevant morphological and geotechnical features of the considered landform to evaluate its susceptibility to erosion, and the Cliff Forcing Index (CFIx), which accounts for the marine forces impacting the specific coastal form. The method was tested on different coastal areas sited along the southwest coast of Italy, differing in geological characteristics and marine conditions. The analysis demonstrated that most of the considered coastal sectors belonged to the “Low” (Cala Rossa, Cirella 1, Guardiola, Marechiaro, Punta del Corvo, Puolo, Torre di Mezzo), “Medium” (Capo Rama, Cirella 2, Seiano 1, Spiaggia del Poggio, Torrefumo 2) and “High” (Coroglio, Irminio, Punta Braccetto, Punta Pennata) classes of CSIx due to the interaction among morphological, geotechnical and forcing factors. This procedure allows the zonation of wide rocky coastal areas according to their grade of susceptibility and the identification of areas of criticism where specific studies and monitoring programs need to be developed to adopt sound management strategies.



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