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Shore platforms as a proxy for sea level changes

Shore platforms show several morphological features that can be use as proxies for sea level changes. However, they are frequently difficult to date and form in tidal ranges that may overcome the relative mean sea level (rmsl) changes. Shore platforms and terraces are among those morphological proxies for rmsl reconstructions.
Shore platforms develop in the cliffs'foot of worldwide rocky coasts. Their extension and morphology depend on such a complex interaction between a high number of variables and processes that their genesis is still under debate. The wave climate, coastal section orientation, rocks' structure, lithology and resistance, fracture density and orientation, subaerial weathering and biological colonization are among the variables accounting for chore platforms' generation and properties.
The present work aims to quantify the relative role of the rocks' mass properties and climate wave on shore platforms' height and extension in a meso tidal regime. The study area is located in the Algarve carbonated rocky coast (South Portugal). Shore platforms were surveyed by using a differential global positioning system (DGPS). Climate wave was monitored during two years through pressure transducers bolted into the platforms. Rocks' mechanical strength and porosity were also quantified. Additionally, downwearing were measured using a transverse micro erosion meter.
The results revealed that the rock resistance must be taken into account when shore platforms are used as a proxy for rmsl, once it controls the height at which platforms develop. The platform surface lowering (downwearing) was up to 3mm/yr at the study area, bioerosion and rocks' resistance being the main drivers. Therefore, the rocks' resistance and downwearing rates must be taken into account when the shore platforms' elevation is used as a proxy for past sea level reconstruction.