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# Cosmogenic nuclides application on French Mediterranean shore platform development

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Rocky shorelines are among the most common elements of the world's littoral zone, and the potential effects of rising sea level on the ever increasing populations require a better understanding of their dynamics. The sinuosity and heterogeneity of the shoreline morphology at large and intermediate wavelengths (1-100 km) results from their constant evolution under the combined influence of marine and continental forcings. This macro-scale organization is the expression of the action of elementary erosion processes acting at shorter wavelengths (<1 km) which lead to the development of shore platforms by landward retreat of cliff edges.

Modern analytical techniques (laser-scaning, micro-erosion meters, aerial surveys) constitute appropriate methods to identify and quantify processes of cliff retreat to 1-100 yrs time-scales. But over this time frame, shore platform development appears imperceptible. Precise knowledge of long-term erosion rates are needed to understand rocky shore evolution, and develop quantitative modeling of platform development. Rocky coasts constitute a Quaternary sea level evolution archive that is partly preserved and progressively destroyed. One major challenges is to determine the degree to which coast morphologies are (i) contemporary, (ii) or ancient features inherited, (iii) or partly inherited from Quaternary interglacial stages.
In order to fill the lack of long term coast morphodynamic data, we use cosmogenic nuclides (36Cl) to study abrasion surfaces carved in carbonates lithologies along the French Mediterranean coast, in a microtidal environment (Côte Bleue, West of Marseille).

36Cl concentration heritage influences strongly our interpretations in terms of age and denudation of the surfaces. We propose to constrain heritage in sampling oldest relic marine surfaces at 10m of altitude, and along recent cliff scarp. 36Cl concentrations show that the lowest platforms near sea level are contemporary and the highest ones (8-14 m above sea level) marine surfaces are associated to MIS 5.5. A total of 50 samples allows to investigate the variations through time in relative sea level, climate and tectonic activity.

Key words: cosmogenic, shore platform, rocky coast, Mediterranean, erosion rate.