



Quantification of a rock platform bioerosion by the sea urchin *Paracentrotus lividus* (Lamarck, 1816): the Basque Coast case (Bay of Biscay).

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The French Basque Coast is an actively eroding rocky coast. In the study area it is made of flysch with a circa 40 degrees-dip; it is exposed to an average significant wave height of 1.8 m and peak period of 9.6 s. It is mesotidal (spring tide of ~4m). The current rocky shore platform is carved into the flysch layering. We focus on sea urchin *Paracentrotus lividus* contribution to rock shore erosion. Indeed, this sea urchin has a burrowing behaviour. An ecological study has been conducted for stock assessment, from shore to 10 m-deep. It indicates that sea urchins are burying their own shelter and are not reusing former ones. Below the depth of 10 m, sea urchins densities are very low and burial behavior is considered insignificant. Estimates of sea urchin density, and biomass are provided, making possible to evaluate the average erosion rate along this coast due to burying. It is of the order of 0.17 mm/y between 0 and 3 m below sea level, ~0.05 mm/y between 3 and 5 m-deep, ~0.02 mm/y between 5 and 8 m below sea level, and finally drops to negligible under 8 meters below sea-level. Close to the 0 level, it is thus between 30 and 5% of the expected value (evaluated to be 0.5-3 mm/y after 5-10 cm/y cliff retreat rate and a 1-2 degrees platform dip). The overall sea urchin contribution to shore platform erosion is not negligible.