BEACH EROSION

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Summary

During the last century, a general rise (1.5 mm/year) level is observed. This phenomenon explains the erosion of some beaches.

Our research in Calvi (Corsica) shows that the erosion (1,4 m/year) is mainly accelerated by the housing development on the fringing dunes and on the beach since 1980.

According to a recent survey carried out by the Commission for the Coastal Environment of the IGU (International Geographical Union) most of the world's beaches are undergoing retreat. To give an example, retreats at a rate of 4 m/year can be observed in the Gulf of Taranto (Italy) and the coasts of Languedoc (France). This phenomenon, which occurs even on desert coasts, can be explained mainly by a general rise in sea level which has amounted to 1,5 mm/year during the last century. We are dealing with the consequence of the increase in CO_2 content of the atmosphere caused by the use at an ever increasing rate of fossil fuels. This layer of CO_2 serves as a greenhouse for the globe, leading to a temperature rise which is responsible for the retreat of most glaciers but above all for the melting of the western part of the Antarctic ice sheet. According to BRUUN's law (SCHWARTZ &FISHER, 1980), any rise in sea level triggers the erosion of a beach which is in equilibrium and leads to its landward retreat.

Our research in the Bay of Calvi (Corsica) shows that its beach as a whole is undergoing erosion. Air photo analysis (5 flights between 1960 and 1985) makes it possible to establish that the beach is retreating at rates which locally attain 1,4m/yr.

As no recording tide gauges are available for this area we have to depend on data from the nearest stations, namely Marseille (1885-1978) and Genoa (1884-1981) where the rise in sea level is of the order of 1,3 mm/year (PIRAZZOLI, 1986).

But careful inspection of the site shows that the rise in the level of the Mediterranean cannot alone explain the observed coastal retreat. In fact the rates of retreat are greatest where human agency has accelerated the process.

Thus at Calvi the halt in the longshore movement of sediment (following the construction of a jetty), the extraction of pebbles from the beach itself, but above all housing development on the fringing dunes and even on the beach, have destroyed the fragile equilibrium between beach and dunes and accelerated erosion.

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