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## Effects of sand extraction on marine environments: offshore deposits versus coastal deposits

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### Abstract

Coastal erosion is a serious environmental, social and economic issue in Europe and over the world. Much of Europe's coastline is eroding and erosion threatens some of the values and functions of the coast. It was estimated that about 15,100 km of European coastline is retreating and that about 15 km<sup>2</sup> of land is lost each year. Amongst the different techniques to stop or reduce local erosion, beach nourishment is considered to be one of the main tools for coastal management and also as the more ecologically sound, because it causes minor damage to the ecosystem, an aspect of extreme importance in the Mediterranean sea characterized by landscapes of outstanding natural value and by a large number of particularly sensitive and protected habitats.

In this framework also in Italy the research of suitable sediment sources for beach nourishment has become a key theme of national interest, included also in the "National Guidelines for the defense of the coast from erosion and the effects of climate change" of the National Table on Coastal Erosion. Sediments for beach nourishment can have different origins, ordinarily comes from terrestrial quarries, and aquatic environment such as river mouths, canals, ports and offshore deposits. In Italy, most of sands used for beach nourishment comes from the dredging of offshore and coastal deposits.

Although dredgings for beach nourishment are carried out using uncontaminated sediments, these activities can produce significant effects on the environment. Extraction can affect benthic communities and demersal fish populations, sea bottom (morphology, bathymetry and sediment) and water column characteristics (turbidity, suspended solid) and in some cases, coastal dynamics.

In this paper we present a review of the main environmental effects induced on the Mediterranean environments by coastal and offshore dredging for beach nourishment, also with the aim to develop good practices and to support administrations engaged in sustainable management of coastal zone