

B. Proença, F. S. B. F. Oliveira, F. Sancho and X. Bertin, 2010. Impact of marine sand extraction in the southern Portuguese coastline. /Proceeding of International Conference on Coastal Conservation and Management/, 11-17 April 2010, Estoril, Portugal.

Abstract

The main goal of the present paper is to evaluate the impact of an offshore dredged sandpit in the coastline evolution between Quarteira and Ancão Peninsula (Algarve, Portugal). The main motivation arises from the fact that offshore sand extraction is presently seen as the main alternative to inland mining.

The wave climate at the 10 m depth contour line, in front of the study area, was obtained using the wave propagation model SWAN. Ten years of wave data were obtained from the Faro offshore buoy.

The sediment dynamics study was performed through the application of a longshore transport model, Litdrift, and a coastline model, Litline. The cross-shore distribution of the longshore transport was estimated with Litdrift, which accounts for both bed load and suspension load. The results show a clear predominance of net transport eastward. The coastline evolution was analysed for two cases: i) considering the presence of the offshore sandpit and the artificial beach nourishment at Vale do Lobo beach; and ii) considering exclusively the presence of the offshore sand mining.

The results of the obtained wave climate for the situations without and with the offshore sand mining show that, although in a small extent, the sandpit causes changes in the wave field. The trend of the coastline evolution was successfully reproduced with Litline but the erosion/accretion events seem to be overestimated. The pit was also observed to have influence on the shoreline evolution through accretion between the pit and the coast and erosion on both sides.