



Causes and consequences of severe coastal retreat in southern Fuerteventura (Spain)

I. Alonso (1), L.L. Cabrera (1), J.A. Jimenez (2), H.I. Valdemoro (2), I. Sanchez (1)

(1)Dept. Física, University of Las Palmas, Spain , (2) Laboratori d'Enginyeria Marítima, ETSECCPB, Universitat Politècnica de Catalunya, Spain (ialonso@dfis.ulpgc.es/ Fax: +34-928452922)

Loss of coastal areas is a common phenomenon in many continental areas. In this particular case we illustrate how the southern coast of Fuerteventura Island (Canary Islands, Spain) is under progressive erosion since the last decades. Both the coastline and the onshore land are mostly formed by sedimentary deposits, which in many areas are not cemented at all and can be easily disaggregated. Due to this fact, these sandy materials are eroded by wind, waves and currents. All these agents pull these sediments away. By means of georeferenced aerial photographs since 1963 until present, we have determined the general retreat of the coastline, with average retreats of 1.5 m/y. Nevertheless, this pattern is not homogeneous all along the coast, since the northern sector shows erosion rates up to 6.4 m/y due to the intense longshore drift that pull sediments southward, while the central sector is nearly stable and along the southern sector coastal retreat is much slower due to the input of upstream eroded sediments. Coastal erosion has originated the disappearance of beaches along more than 1000 m in the northern sector and the significant reduction of surface of a coastal lagoon. Causes of this retreat trend are related to the long term deficit in the sedimentary budget due to the smaller sedimentary inputs compared to the outputs. Reduction of inputs is consequence of a number of factors, some of which are man-induced (development of tourist resorts and roads interrupting sandy corridors, mining and extracting activities), while others are natural ones (depletion of sediments in the source area due to the strong easterly winds). On the other hand, coastal outputs are mainly due to longshore currents all along this coast. The loss of beaches and coastal areas has severe conse-

quences. Direct damage to infrastructure is very small, since there are no houses in the first meters from the coastline, but the damage due to the loss of natural ecosystems and landscapes is enormous. This area is a Natural Park thanks to its natural values, but apart from that the large beach system is the physical support for a number of tourist activities. Considering that nearly 80% of the overall income in Fuerteventura Island comes from tourism, the loss of beaches may represent in medium term the loss of tourists and, therefore the loss of jobs.