

Higher National School of Hydraulic

The Library

Digital Repository of ENSH



المدرسة الوطنية العليا للري

المكتبة

المستودع الرقمي للمدرسة العليا للري



The title (العنوان):

Spatio-temporal analysis of shoreline changes and erosion risk assessment along Jerba island (Tunisia) based on remote-sensing data and geospatial tools

The paper document Shelf mark P22-12 (: paper version not available)

APA Citation (APA توثيق):

Bousetta Amina, Niculescu Simona, Bengoufa Soumia, and other(2022). *Spatio-temporal analysis of shoreline changes and erosion risk assessment along Jerba island (Tunisia) based on remote-sensing data and geospatial tools*. Regional Studies in Marine Science, vol 55 . DOI ou URL :

<https://www.sciencedirect.com/science/article/abs/pii/S2352485522002067>

The digital repository of the Higher National School for Hydraulics "Digital Repository of ENSH" is a platform for valuing the scientific production of the school's teachers and researchers.

Digital Repository of ENSH aims to limit scientific production, whether published or unpublished (theses, pedagogical publications, periodical articles, books...) and broadcasting it online.

Digital Repository of ENSH is built on the open DSpace software platform and is managed by the Library of the National Higher School for Hydraulics. <http://dspace.ensh.dz/jspui/>

المستودع الرقمي للمدرسة الوطنية العليا للري هو منصة خاصة بتقييم لإنتاج لأساتذة باحثي المدرسة

يهدف المستودع الرقمي للمدرسة إلى حصر الإنتاج العلمي سواء كان منشورا أو غير منشور (طروحات، مطبوعات، بيداغوجية، مقالات الدوريات، كتب...) بثه على الخط.

المستودع الرقمي للمدرسة مبني على المنصة المفتوحة DSpace و يتم إدارته من طرف مديرية المكتبة للمدرسة العليا .

كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

Abstract : Jerba, the largest island in North Africa, is among the most exposed islands to the combined effects of climate change and human activities in the Mediterranean. The eastern coast of Jerba island has long been subject to intense tourist development due to its attractive natural potential. The main issue addressed in this study concerns the evolutionary trends of Jerba shoreline and the assessment of coastal erosion risk. This work focuses on the historical study of the shoreline positions based on satellite data processing. The use of geographic information system (GIS) and the Digital Shoreline Analysis System (DSAS) geostatistical calculation tool allowed for the identification of erosion and accretion rates and the description of evolutionary trends across 32 years covering three periods (1989–1999, 1999–2009, and 2009–2021). The results show an overall erosion trend (89% of the coastline). The statistics revealed that the study area, with the exception of the sandy spit, has experienced an intense and alarming level of erosion between 1989 and 1999, with an end point rate (EPR) equal to -4.12 m/year. This net rate continued to be negative in the period between 1999 and 2009, with an EPR of -0.5 m/year. Between 2009 and 2021, the net rate of shoreline change is marked by slight accretion, at an average of $+1.4$ m/year. The overall long-term trend shows the shoreline is eroding, with an average linear regression rate of -1.38 m/year for the whole period. This trend is due to a combination of the cumulative effects of sea-level rise and anthropogenic actions. Therefore, sustainable management strategies need to be implemented urgently by coastal managers to restore the sectors that are susceptible to further erosion.

Key words : Coastal erosion ; Sandy spit ; Band ratioing ; Satellite imagery ; Sandy beaches; DSAS

Available from: <https://www.sciencedirect.com/science/article/abs/pii/S2352485522002067>