

Review of: "Larache's Coastal in Morocco: Evaluating Dredging's Impact on Fisheries and Shoreline evolution"

Jose Luis del Rio¹

¹ Universidad Pablo de Olavide

Potential competing interests: No potential competing interests to declare.

The article entitled "Larache's Coastal in Morocco: Evaluating Dredging's Impact on Fisheries and Shoreline Evolution" is intended to assess the effects of dredging activities, aimed at dealing with the increasing population growth in the study area, on coastal morphology, flora, and fauna. The overall approach of this paper (for me, the implications of the implementation of a socioeconomic development model, which seems to have been totally uncontrolled and disconnected from scientific advice, on coastal resilience) is far from novel, but it is of great significance. The problem tackled has been the subject of deep analysis and discussion in Europe during the last decade as part of the 'Integrated Coastal Zone Management (ICZM)' approach (<https://www.eea.europa.eu/help/glossary/eea-glossary/integrated-coastal-zone-management>), but the authors make no reference to such premises in the manuscript. The influence of anthropogenic activities, subject to economic, political, and social interests of great complexity and not easily controllable, is being addressed through the development and subsequent application of sophisticated modelling tools based on remote sensing and on-site data from many different perspectives (for instance, shoreline evolution over time, beach-dune system interactions, geomorphological evolution of beaches in the 'Anthropocene' under climate change conditions, the development of accurate morphodynamic models that enable us to understand the sediment dynamics under local conditions, the influence of coastal engineering infrastructures on longitudinal sediment transport patterns, etc.). Hundreds of research papers presenting successful methodologies based on remote sensing data to assess the shoreline evolution of coastal areas worldwide have been conducted in the last 5 years (quickly accessible on Scopus by typing 'shoreline evolution' within the search box). Therefore, the use of Google Earth for this purpose is, from my point of view, far from admissibility and from what is expected to be found in a high-impact research paper.

I hereby list some points that authors might find useful.

- As stated by other reviewers, the manuscript needs a thorough revision of formal aspects (wording, figure captions, figure quality, reference formats).
- The study lacks a recent bibliography. The distribution of sedimentary facies in the study area (Figure 1) is based on data published in 1994; the distribution of sedimentary facies on the continental shelf (Figure 2) was obtained from a study published in 1973; the wind regime is based on Mohamed Dahmani et al., 2018; it is always better to use official data collected by the competent authority. Flora and fauna were characterised on the basis of bibliography published in 1960 and 2007. The most recent source used by the authors in this section dates from 2020. I presume that authors have referred to the most recent bibliography they have been able to access; however, a deep bibliographic analysis

would be more advisable.

- The topic addressed is of high significance, but the methodology followed is a weakness, and I have serious doubts whether it could be published in a high-impact, peer-reviewed international journal in its current wording. It would be highly recommended to analyse the wide number of publications facing the analysis of shoreline evolution over time, to evaluate the viability of collecting recent satellite images (e.g., from Copernicus imagery), and to support them with on-site data (e.g., GPS surveying). With this information at hand, I consider that authors will improve the accuracy of measurements.
- I find it very interesting to improve knowledge on how the construction of the two dikes has influenced the sediment dynamics of the whole system, not only focused on the shoreline evolution of the Ras Rimel beach (where accretion might be expected considering a NW littoral drift), but also on what is happening in the river mouth (sediment accumulation leading to dredging needs? Economic costs of such actions?) and on the beach system located on the other side of the dyke (near to the ancient Medina), where erosion might be expected (Are erosion rates available? Do we know the social/environmental implications of coastal erosion, such as loss of biodiversity, increasing vulnerability due to sea level rise during storm conditions? Economic and social costs of such damages? Any actions to mitigate the problem?) These are some questions that come to me.
- The identification of mitigation measures is a strength, but some of them seem to be hardly feasible (e.g., "Monitor changes that occur on the coastline (beaches, bathymetry, and general coast morphology)") considering that the environmental setting description presented in this study is supported by official and scientific bibliography published several decades ago.

Even though I consider that the results obtained through Google Earth are not sufficiently trustworthy to support the decision-making process, I was somewhat surprised after reading the conclusion section. It is concluded that the dredging process is not causing major negative impacts on the environment and marine resources due to its implementation scale (at a very local scale); what is then the interest and expected impact of this research line? What problem are you then addressing? If no huge, adverse impacts are affecting the environmental system as a result of dredging activities, then the discussion should be focused on the resilience of the coastal system and the apparent equilibrium state of the sediment dynamics, with it being imperative to use morphodynamic models.