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Coastal Environmental Change
During Sea-Level Highstands:
A Global Synthesis with implications
for management of future coastal change

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Quaternary coastal morphology and sea level changes



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Evidence for Pleistocene aeolian dune formation and wet interdune deposition in the coastal zone of NW Portugal

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Abstract

Recent investigations in the coastal area of Northwest Portugal, between Espinho and Aveiro, show evidence of changing patterns of sediment supply during the Quaternary (Granja and Carvalho, 1992; Granja and de Groot, 1996; Granja, 1999). It has been difficult however, to reconstruct the sedimentary environments and distribution patterns, due principally to a lack a sufficient information from the subsurface.

Cored boreholes, supplemented by a counter-flushed extension, and geophysical data, are being analysed in order to fill the knowledge gap. Grain-size data obtained from sediment samples in the cored parts of the boreholes, were statistically analysed. They point to a combination of aeolian to wet interdune environmental settings. This is in accordance with the OSL dates obtained from the eroded cliff faces on the beach, which indicate Pleniglacial to Late Glacial ages. The counter-flushed parts of the boreholes are not suitable for detailed analysis. They confirm at least the thickness of the Quaternary sediments on top of the Precambrian hardrock, as derived from the geophysical data. They also show more gravel-rich horizons which may correspond to interglacial marine highstands. However, this has still to be confirmed.

Although problems remain concerning the interpretation and exact dating of the different facies, the data seem to indicate a fairly stable environment after an initial outbuilding of Quaternary sediment over the Precambrian basement rocks. The question is discussed whether the coastal retreat experienced over the last decades falls within the long-term natural variation of post-glacial sea-level changes and sediment supply, or is driven by more recent impacts from, e.g. a changing global climate. If so, human impact on this particular coastal zone is only going to increase the erosional trend.

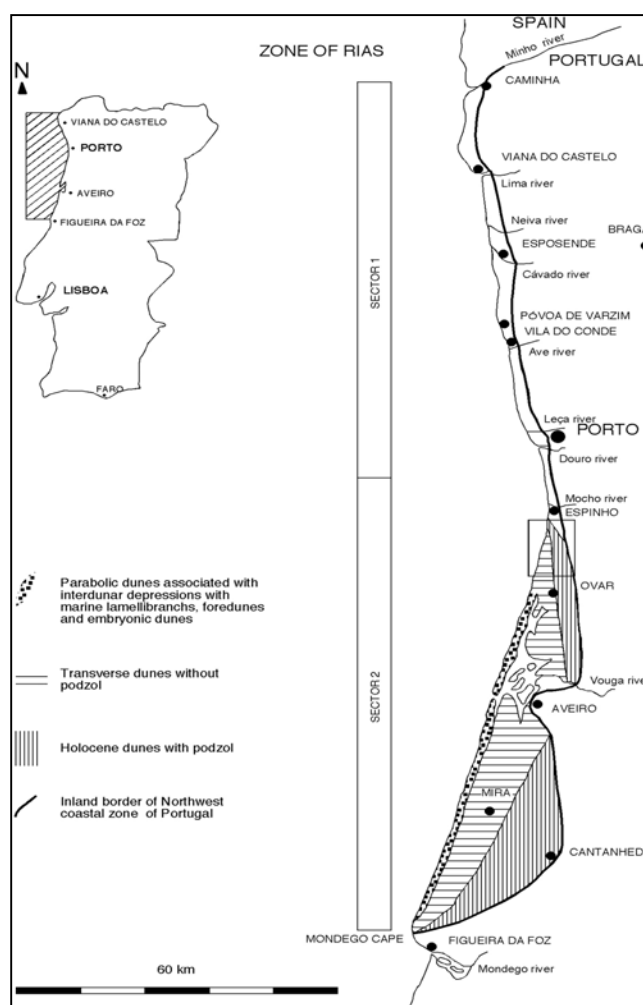


Figure 1. Location map of the coastal zone of northwest Portugal showing the different geomorphological domains. The studied area is situated between Espinho and Ovar.

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