

Fresh water and sediment discharges variability to the coasts of Maghreb: the impact of climate change and anthropogenic activities on coastal environments

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The coastal areas of the Mediterranean countries are densely inhabited and produce a valuable part of the national incomes of many countries. But they suffered since some decades from increased salinity, changes in geomorphology, coastline regression, coastal biodiversity reduction and increased pollution of ecosystems. The very high number of dams in the region is one main driver of these changes, because they reduce water and sediment flows to the sea by storing a great part of them inland. Another driver is the increasing pressure on land due to the population increase and changes in agricultural practices, which have a very negative effect on the sensibility of the soils to erosion. This situation is worsened by both the sustainable rainfall reduction since several decades and the sea level rise due to the worldwide temperature increase. Many initiatives are developed since some years to improve our knowledge on this rapidly changing environment (CLIVAR, HYMEX and MISTRALS international projects), and to enhance international cooperation around the Mediterranean (Plan Bleu, Union Pour la Méditerranée). However, only few programs are launched from Southern countries of the Mediterranean. Three new initiatives have started in the region like the RYSCMED program on the Medjerda basin in Tunisia, the CASBA program on the Bouregreg in Morocco and the PALEOMEX program in Maghreb. Other programs follow in Morocco on the Moulouya, one in Algeria on the Cheliff basin and a European project submitted to the ERANETMED call. These programs deal with the history of sediment transport from the basin to the coast, including past transports over decades up to thousands of years, and to the impact on the coastal geodynamic and water quality. The first results on the Medjerda basin show a clear reduction of sediment transport in estuarine sediment cores since the construction of dams.