O3.38

Last ca. 250 years shifts of Benthic foraminiferal assemblages in response to natural and anthropogenic impacts, Northern Alboran Sea

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Benthic foraminifera have a wide distribution in space and time and also respond rapidly to environmental changes. The northern Alboran Sea is influenced by a torrential regime with sporadic, intense rainfalls and extended periods of aridity. In addition, anthropogenic activities such as river channel deviation have taken place during the last ca. 150 years. In order to understand the interaction between natural and anthropogenic impacts through time, shifts of most abundant benthic foraminiferal species, species richness and diversity indices were combined with sedimentological analyses and radiocarbon dating of sediment cores collected from the Adra shelf prodeltaic deposit, in the northern Alboran Sea. The strong variations of benthic foraminiferal assemblages involving significant population density changes occurred until ca. 1870 AD, and are interpreted as response to natural processes. Low population densities correlate with rainfall-driven periods of increased sediment supply to the shelf. In contrast, intervals with increased population densities, followed by a raise of successful colonizers and opportunistic species, indicate the establishment of an environment with new ecological constraints. After ca. 1870 AD, the impact of anthropogenic activities with the deviation of the main river course to the east, are responsible for a drastic reduction of sedimentation rates in the study area.