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The Tahaddart estuary, NW of Morocco: evidence of marine submersion events during the last 3500 years

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The Atlantic coast of Morocco has been confronted with several marine submersion events. Historically, some of them have resulted in significant economic and human damage, including the 1755 AD event (known as the tsunami of Lisbon). This indicates the need to implement adaptation and mitigation strategies, based on long-term studies of these extreme events to deduce their spatial and temporal variability. Using two cores (TAH17-1 and TAH17-3) collected from the Tahaddart estuary (NW of Morocco), this work aims to identify deposits, set up by these high energy events during the mid to late Holocene period. The sedimentological, geochemical and geochronological analyses carried out on these geological archives show two fining-upward sequences, indicating a progressive change from a purely sandy marine facies, between 6500 and 3500 BP, to another finer and more terrigenous one. The fine sedimentation, which has dominated in the estuary during the last 3500 years, has facilitated the recording of several marine submersion events in the form of isolated sandy layers. Chronological data have made it possible to date four deposits. Two (1-E1 and 3-E1) were put in place about 250 years ago, which corresponds, according to historical records, to the 1755 AD Lisbon tsunami. Two other deposits (1-E13 and 1-E14) are dated around 3200 BP and represent unknown submersion events on the Moroccan Atlantic coast.