nutrients and pollutants. The aim of our study is to reconstruct the eutrophication history and deposition of nutrients in the sediments. The ‘memory effect’ of the sediment for recycling of nutrients plays a major role in the pelagic productivity and thus maintaining eutrophic conditions in enclosed seas with long water residence times such as the Black Sea. Here we present results from sediment cores taken in the Danube River plume on shelf of the Black Sea. Our study is supported by geological, geophysical and radiogenic techniques. Sediment cores were sampled in upper unsupported 137Cs and higher values of supported 137Cs. In between and below the clay layers, unsupported 137Cs and 14C increase again. Low values of the fallout radionuclide and of unsupported 137Cs combined with higher supported 137Cs point to a deep in unsupported 14C pool. We hypothesise that the clay core represents material eroded from the Danube Delta and transported to the sea in pulse-like events during flash floods of the Danube River.

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WESTERN SAHARA: HYDROLOGY AND LAND USE OVER THE LAST THREE MILLENNIA: SEPARATING NATURAL VARIABILITY FROM ANTHROPOGENIC INDUCED CHANGES

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The African Sahel is a semi-arid ecosystem extremely prone to precipitation fluctuations and therefore we find many features that bear the signature of relatively recent changes during the Anthropocene. However, the reasons for severe droughts in the 1970s and 1980s and most recently in 2010 are not fully understood. These decadal-scale variations seem to be related to temperature variations in the Atlantic and Indian Ocean and may be overprinted by anthropogenic activities. We therefore need a better understanding of past Sahelian climate variability.

With our study, we aim at disentangling land-use effects from natural variations during the Late Holocene. We present a record of the past 3100 years from a marine site offshore Mauritania using δ13C of paired phosphate and nitrate and the dinocyst (dinosct) record to reconstruct vegetation changes on the continent whereas the organic-walled dinoflagellate cysts (dinosct) reflect local oceanographic conditions including tergimentary input. Variations between 14C δ13C values from 400 to 1300 AD are used as a basis for investigating the local variability within the last 300 years are interpreted as anthropogenic influence. Further, we use 137Cs and 210Pb values to distinguish a drop in unsupported 137Cs and 210Pb as a result of changes in riverine inputs rather than small changes in rainfall and terrestrial input. From 1700 AD onward, relative abundances of the dinocyst species Lingulodinium machaerophorum increase consistently. This species is typically for high sediment<input> rates and productivity and the influx is influenced by riverine inputs. We assume that the increase coincides with increasing dust and river input recorded at the same core site which have been attributed to the onset of the commercial agriculture in the Sahel by Mulletz et al. (2010). At the same time, an increase of Saharan elements in the pollen 210Pb record reduces in an area by up to 10 m high, have partly been set aside as nature reserves, or are being used for agriculture and forestry. A non-linear relationship between grain size data and the concentration of some trace elements was identified. A pattern was also recognized along a latitudinal transect from the equator to 30°N, which indicates a modification of the depositional environment. Another pattern was observed along a longitudinal transect from the eastern African coast to the Namib desert, which suggests a modification of the chemical cycling of some trace elements due to the impact of the Namibian current system. These observations indicate that the Namibian current system is a major factor in controlling the chemical cycling of some trace elements in the Namibian shelf area.