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Deciphering the forcing factors of coastal evolution from a numerical chronology for a coastal sediment succession, Eastern Hengchun Peninsula, Taiwan

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Taiwan, an island with a high mountain area attaining almost 4000 m, is located in a unique position in East Asia at the transition from the subtropical to the tropical zone. The climate is driven by the East-Asian monsoon, which is responsible for a humid climate during the whole year. In addition, earthquakes, tropical storms, and typhoons trigger morphodynamic processes. Taiwan's coastal landscape is the result of complex interactions between marine and subaerial processes, sediment supply and local geology, plate tectonics, climate change, and global sea-level fluctuations. Unconsolidated sediments in coastal areas are known to preserve valuable information about these processes driving the coastal landscape evolution.

In the Ganko river basin, located on the Eastern Hengchun peninsula in south-eastern Taiwan, climatic and tectonic forcing factors may have significantly influenced the natural sediment yield and sediment storage over time. In addition, in the recent past human influence within the river catchment may significantly have altered the sediment yield in the coastal areas close to the rivermouth. In order to reconstruct such variations and ideally relate them to either tectonic, climatic and anthropogenic forcing, a detailed analysis of sedimentary archives is essential. The area under investigation comprises a complex terrestrial river terrace record as well as a coastal sediment succession at the river outlet, both in parts aggraded above presumably tectonically uplifted near-shore sediments. Establishing a high resolution numerical chronology for these sediments may allow a reconstruction of sediment aggradation phases and stability phases for different sections of the catchment area from upstream fluvial terraces to coastal deposits, as well as the underlying near-shore deposits. A combination of two independent dating methods, optically stimulated luminescence (OSL) dating using the pIRIR150 signal of feldspar, as well as radiocarbon dating, was applied to establish the chronology to be presented at the meeting.