

The Late Quaternary palaeoenvironmental development of Lošinj Channel, Adriatic Sea

D. Brunović*, S. Miko*, O. Hasan*, N. Ilijanić*, G. Papatheodorou**, D. Christodoulou**, M. Geraga**, A-M. Đumbir*, I. Razum***, V. Hajek Tadesse*, K. Bakrač*, M. Šparica Miko*

*Croatian Geological Survey, Sachsova 2, 10 000 Zagreb, Croatia

**Laboratory of Marine Geology & Physical Oceanography, Department of Geology, University of Patras, 26504 Rio, Patras, Greece

***Croatian Natural History Museum, Demetrova 1, 10 000 Zagreb, Croatia

Lošinj Channel is a submerged karst depression filled with sediments in the northern Adriatic Sea where palaeoenvironmental changes are exceptionally well preserved. This karst depression is separated from Kvarnerić Bay by a sill (nowadays at depth of 50 m) that had enormous impact on the evolution of the investigated area. Sill depth determined isolation and inundation of Lošinj Channel by the sea water during the Quaternary sea-level oscillations. Therefore, different depositional environments developed in Lošinj Channel and coastal zone of Island of Cres. To unravel depositional history in Lošinj Channel, we are integrating paleontological (foraminifera, ostracods), geochemical (XRF core scanner and TOC, TIC, TN, CN analyses), radiocarbon (AMS ^{14}C), mineralogical and sedimentological data from sediment cores with high-resolution geophysical survey.

High-resolution geophysical study was conducted in order to gain knowledge of the subsurface sediment distribution and to determine coring locations. This method enabled penetration into the topmost 40-50 m of sediment column. Six main seismic units were recognized on high-resolution seismic profiles (Figure 1) that imply exchange of lacustrine and marine depositional environments, intermitted with erosional surfaces, in the study area during the Late Quaternary. Moreover, a total of eight sediment cores were extracted from the water depth range of 5 to 64 m. Sediment core data further supported geophysical data and enabled detailed palaeoenvironmental reconstruction of the study area from MIS 3 stage to Holocene. Large areas of now submerged landscape were formerly exposed during the glacial low sea-levels (Late MIS 3 and MIS 2). In these periods, Lošinj Channel was isolated karst basin separated by a sill from Kvarnerić Bay and terrestrial environments (karst lake and karst polje) developed. During the interglacials, sea-level was high enough to inundate investigated area. Consequently, this karst depression became repository of successive terrestrial, lacustrine, brackish and marine sediments, offering rich and detailed archive of environmental history in the region.

Information about climate and sea-level changes along the eastern part of the Adriatic Sea are still rather scarce, especially for older MIS periods. Therefore, this study should contribute to better understanding of palaeoenvironmental changes, related to climate and sea-level oscillations, during the Late Pleistocene and Holocene along Croatian coast of the Adriatic Sea.

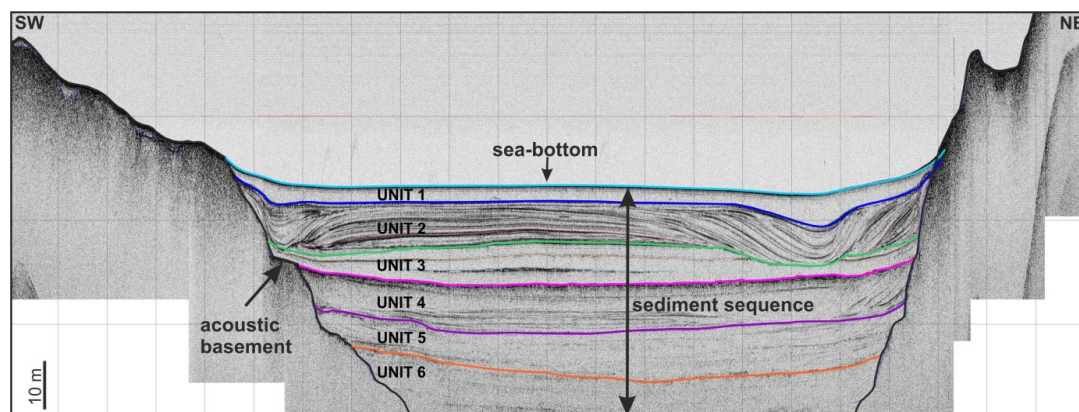


Figure 1: High resolution seismic profile from Lošinj Channel.