



## **Evolutionary patterns and “laws” deciphered in the Holocene built-up of Danube delta: natural variability and human influence**

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Deltas are large-scale coastal accumulation features continuously evolving to adapt to natural and anthropogenic-induced environmental changes. The Danube delta is a world heritage natural reserve, famous worldwide for its bio- and geodiversity supported by the numerous pristine deltaic landscape which diversity is a testimony of a long term and complex deltaic evolution. Here, the concurrent controlling factors sort out locally into the prevalence of different morphodynamic processes which lead to the coexistence of divergent morphologies, trends and related features such as wave- and river-influenced lobes, asymmetrical or symmetrical lobes, erosive and accumulative coasts, subsiding and stable areas.

This work presents the latest progresses made on Danube Delta evolution based on new cores, sedimentological and morphological analyses which together with the newly obtained absolute ages (AMS 14C and OSL) shed a new light upon the delta formation and its evolutionary phases (chronology). For the first time, it is proven that the early stage of delta plain formation preceded with more than a millennium the relative stabilization of the sea level, whilst the fluvial delta morphology is reinterpreted showing that most of the present landscape is the recent result of fluvial aggradations which followed after the initial topography (former delta plain) was drowned through the concurrent action of subsidence and sea level rise.

With regard to the maritime delta, we highlight the evolutionary patterns which governed the evolution of each of the six open-coast lobes emphasizing “the common denominator”, respectively the specific processes which succeeded to replicate a common lobe morphology and stratigraphy into all deltaic lobes. Specific discussions highlight the common growth patterns of different asymmetric lobes features – beach ridge plains, barrier-marsh plains, barrier islands and spits, river mouth bars - in relation with their chronology, progradation rates or spatial extension and with the Danube flow changes.