

## **Anthropic signature on the Danube Delta evolution and Danube mouths dynamics**

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In natural conditions, the Mid- to Late-Holocene Danube delta evolution was driven by the complex interactions at the river mouths areas between fluvial sediment deposition, wave climate and longshore and coastal currents. The latest two have a high sediment transport capacity due to the acute wave angle attack ( $< 60^\circ$ ) to the mean shoreline orientation, efficient for the river-borne sediment dispersal and coastal sediments reworking.

Recent studies on human pressure evolution on the Danube watershed highlight that forest clearances intensified during the Roman times, which after a long stagnation in Early Middle Age (which reclaimed the reforestation) have restarted since 12<sup>th</sup> and 15<sup>th</sup> centuries in the Upper, respectively Lower Danube watershed, leading to the rejuvenation of the denudation processes and the artificial increase of the river solid discharge. During these influences (last 2000 years) the delta surface area grew much faster, forming ca. 40% of the total Danube delta. Nevertheless, the human influence became critical during the second half of the 20<sup>th</sup> century when the hydrotechnical works from Danube watershed lead to a dramatic reduction of the solid discharge and changes in sedimentation rates along with the progradation and erosion pattern changes. Currently, the river mouths areas are confronted with a substantial increased influence of the marine controlling factors (waves and currents) which trigger their present morphodynamics change from river-dominated to wave-dominated delta morphology (Chilia) or from the assymmetric wave-dominated to deflected lobes (Sfântu Gheorghe).