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Prodelta sediment budget analysis in the Adriatic Basin, Italy:

Tracing sediment from source to sink

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The northern Adriatic shelf characterized by its low gradient is an excellent area to investigate the fate of sediment supplied from fluvial sources across the continental shelf to their final destination. The sedimentary pathways on the Adriatic shelf are fairly well described, and the evolution of the Adriatic basin in response to sea level change is reasonably well understood. However, the amount of sediment entering the system and reaching their final destination is still highly uncertain. Our work within EuroStrataform has focused therefore on 1) quantifying sediment budgets and 2) using the stratigraphic record to assess the forcing physical processes shaping the Adriatic continental shelf.

Sedimentary properties (grain size distributions, geochemistry, and carbonate percentages) of riverbed samples (Alps and Apennines) and surface samples of the Adriatic Sea give a quantitative overview of the provenance of fluvial sediments and fate in the (shallow) marine domain. To link the stratigraphic record to the amount of sediment entering the system over different time intervals, palaeo-discharges and sediment loads of contributing rivers are required. Reasonable estimates on these numbers are provided by the *HydroTrend* model. Simulations with a fluvio-deltaic stratigraphic model (*QDSSM*) are helpful to predict sediment transport, and explore the spatial and temporal variability of continental shelf deposits. Combining the numerical simulations and the detailed analysis of fluvial sediment properties, a quantitative assessment of sediment budgets over different time intervals can be made. Besides addressing the sediment budget analysis, the research aims to demonstrate the preservation potential of continental shelf deposits over time.