

SEDIMENTATION IN A DISEQUILIBRIUM RIVER-DOMINATED ESTUARY. THE RASA RIVER KARSTIC ESTUARY (CROATIA)

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The paper describes sedimentation of terrigenous suspended matter in a small, rock-bounded, low-tidal estuary in the Croatian karst region : the Rasa River mouth in the northeastern Adriatic. It can be regarded as a model example of a disequilibrium river- (or input-) dominated estuaries (FAIRBRIDGE, 1980; KING, 1980).

Most of the incoming particulate material (more than 90 percent) is brought into the estuary as suspended matter, rather than as bed load. Suspended matter originates from the intensive weathering of Eocene flysch marls in the upper part of the drainage area (only 106 km² out of total 205 km²) and, occasionally, from strong karst springs having catchment areas beyond the Rasa River topographic drainage area. The estuary is characterized by rapid sedimentation of fine grained, mostly clay mineral particles (BOLDRIN *et al.*, 1992; JURACIC, 1992). The rapid sedimentation in this salt-wedge estuary is enhanced by flocculation of fine-grained particles. A progradation of the estuarine (or bay-head) delta shown in Fig. 1.

A quantification of sediment accumulation in the prodelta zone (3 km long) indicates a mean load of approximately 80.000 t/y during the last thirty years (SONDI *et al.*, 1994). Classification schemes of transitional fluvio-marine environments, including estuaries (DALRYMPLE *et al.*, 1992), and the conceptual classification of estuarine morphologies (COOPER, 1993) are considered.

On the basis of the results of investigations in the Rasa River estuary, it is proposed as a new typical model for disequilibrium river-dominated estuaries.

Indeed on the basis of its characteristics, it should be the foremost example of fluvial (input) dominated estuaries in the classification scheme in the ternary diagram involving wave, tidal and fluvial processes.

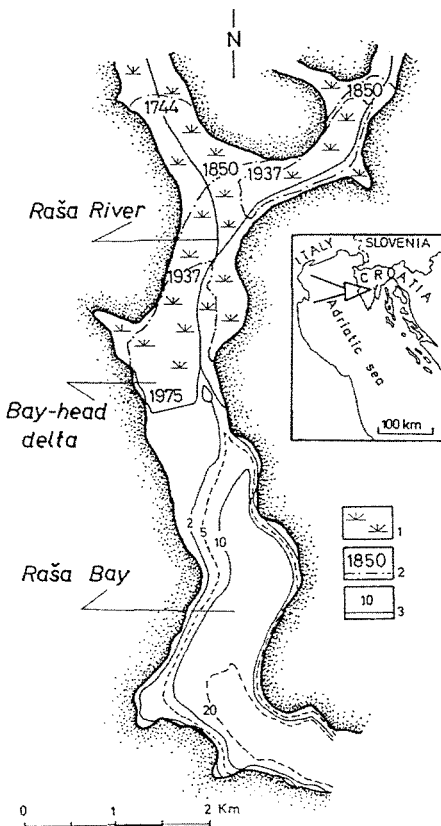


Fig.1. The Rasa River mouth. The time dependent filling of the rock bounded estuary is shown with indication of estuarine delta progradation: 1. alluvial sediments 2. historic progradation indicated by shore positions in respective years (after BENAC *et al.*, 1991); 3. recent isobaths in meters.

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