



Source-to-sink analysis of the Northern Adriatic Basin over the past 19.000 years: data-model comparison using a mass balance approach

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Source-to-sink analysis of sediment dispersal systems attempts to make optimal use of geo(morpho)logical information through integration of data and models pertaining to the evolution of morphology (surface elevation), spatio-temporal variations of surficial mass fluxes (generation, erosion, transport and deposition of sediments), and the stratigraphic record. In this contribution, we explore the relation between rates of net mass accumulation, recycling, and sediment supply in closed basins. We present time-averaged mass accumulation rates and their associated uncertainties within a well-documented closed basin, the Northern Adriatic Basin (Italy) spanning the time interval from 19 ka BP to the present. We will use the most recent version of a numerical model of water and sediment delivery from fluvial drainage basins to river mouths, BQART/HydroTrend, to further constrain the sediment budget of the Northern Adriatic based on palaeo-climate proxies derived from Global Circulation Models and drainage-basin physiography. The fact that the Adriatic basin is a closed system allows us to perform a data-model comparison based on the principle of mass balance, which serves as a test of the BQART/HydroTrend model. The source-to-sink analy-

sis of the Adriatic sediment dispersal system is further explored by reconstructing the pathways of fine-grained sediments on the Adriatic shelf by means of geochemical analyses of riverbed and basin samples. The resulting mass balanced patterns of sediment transport from source to sink on different spatial and temporal scales (decadal, centennial and millennial) help to systematically address the question about the extent to which geological data sets are capable of providing benchmarks for integrated models that predict the erosion, transport, and deposition of sediment and solutes in landscapes and sedimentary basins.