



French rivers export to the sea

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The knowledge of sediment exports from continental areas is essential for estimating denudation rates and biogeochemical cycles. Sediment exports data are thus essential for the calculation of regional or global budgets. But the estimations of current sediment fluxes to the sea are often limited by the availability and quality of sediment discharge data. This study aims at drawing a map of suspended and dissolved sediment exports from French rivers and identifying their relative contributions to the coastal areas as well as the temporal patterns of sediment flows. Sediment fluxes were mainly assessed from the French river quality database, which is characterized by a low temporal resolution but long term measurement periods. An improved rating curve approach from daily discharge data (IRCA), which allows the estimation of mean annual sediment load from infrequent sediment concentration data, was used to calculate the sediment budgets. The resulting mean annual suspended sediment loads show that French rivers export 18.91 Mt of sediments per year to the seas. Among the 88 defined French rivers to sea, the four largest basins (Loire, Rhone, Garonne and Seine) export 15.8 Mt per year that corresponds to 83.5% of total exports. Due to the variety of river basin typologies, no relation was highlighted between the mass of exported sediment and the size of the drainage basins. The differences between the considered river basins are also shown by temporal indicators describing duration of the exports which may be linked with the sediment production processes over drained areas. The balance between sediment production and exports are also discussed.