



## **Long-term monitoring of SPM and trace metals transport to the Bay of Biscay via the main river systems of the Adour-Garonne Basin, France**

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We present fluxes of river water, suspended particulate matter (SPM) and dissolved and particulate trace elements (As, Cd, Cr, Cu, Hg, Ni, Pb and Zn) at the continent/ocean interface via the Gironde, the Adour and the Charente estuaries. Six sites on the major tributary rivers of the three estuaries were selected: the Garonne, Dordogne and Isle Rivers (Gironde Estuary), the Adour and Gaves Rivers (Adour Estuary) and the Charente River. Sampling has been carried at the limit of the dynamic tidal zone to exclude estuarine influences and to integrate a maximum of the watershed. River water and SPM flux estimates, derived from daily discharge and SPM concentration, represent 60 months for the Gironde estuary and 40 months for the Adour and Charente estuaries. Trace element fluxes were estimated from monthly measurements of particulate and dissolved metals concentrations in the Gironde's tributaries (1999-2003) and the Charente River and the Adour/Gaves system (2001). Additional sampling was performed during contrasted hydrological situations including very dry periods and an exceptional flood with a fifty-year return period in the Garonne watershed. Annual fluvial water transport to the Bay of Biscay via the studied systems ranged from 31.3 to 44 km<sup>3</sup>. Annual SPM fluxes via the Gironde, Adour and Charente estuaries were 2.96, 3.48, 2.17 and 1.75 10<sup>6</sup> t in 1999, 2000, 2001 and 2002, respectively. Dissolved and particulate trace element transport in the studied systems reflected water and SPM transport. The sum of dissolved and particulate trace elements transported in the six studied rivers in 2001 indicate important fluxes of As (107 t), Cd, (6.35 t), Cu (240 t), Cr (225 t), Hg (0.412 t), Ni (202 t), Pb (149 t) and Zn (1,380 t) to the coastal zone.