



## **Hydrodynamic and sediment transport of middle Elbe river wetlands - a case study**

**O. Büttner** (1), F. Krüger(2)

(1) UFZ Environmental research centre, Germany, (2) ELANA Boden-Wasser-Monitoring, Germany

The objective of this case study was to calibrate and verify detailed transport model of sediment in a 4-kilometre stretch of the middle Elbe floodplains in Germany. The hydraulic TELEMAC-2D model and the TELEMAC SUBIEF sediment transport model were used. The sediment input model was verified with a flood event by detailed measurement of the surface water elevations, the velocities at six profiles, and the suspended sediment concentration and deposition (by means of 10 sediment traps). The flow was modelled for different steady-state discharges. The surface water elevations were calculated to an accuracy of less than 15 cm compared to measurements. The differences between the calculated and measured velocities were with one exception smaller than 0.2 ms<sup>-1</sup> (measured range 0.1-1.0 m/s). An average sediment input of 35 gm<sup>-2</sup>/day was calculated for the flood event studied. The highest calculated sedimentation rates of 700 gm<sup>-2</sup>/day (dry density 90 kgm<sup>-3</sup>) occurred in backwaters and abandoned channels. Twenty-five percent of the deposited sediment settled in the backwaters (which only account for 13 percent of the area). The most sensitive parameters of the sediment transport model were the settling velocity and critical shear stress. The modelling techniques used allowed sediment inputs into the floodplains of the Elbe to be realistically depicted.