

Improved quantification of sediment transport in lowland rivers

The transport of sediments through rivers determines the morphological development of river systems, erosion and deposition patterns, and is crucial for flood protection, infrastructure stability, ecology and navigation. Even so, in the Dutch delta, there are only limited long-term observations of bedload and suspended load transport. The same is the case for many delta's worldwide. Quantifying transport rates is demanding for multiple reasons, including the large spatiotemporal variability of fluxes, amount of labor and time required, and limitations of existing measuring devices and methods. **To enable future understanding of river morphodynamics, river management and the calibration and validation of numerical morphodynamic models, this project aims to improve the quantification of sediment transport in lowland rivers, especially in the Dutch river delta.**

A part of the research project focusses on measuring sediment transport with acoustics. First, backscatter intensity, as measured by an Acoustical Doppler Current Profiler (ADCP) is used to estimate suspended sediment fluxes at a junction in the Rhine-Meuse estuary. Secondly, methods to estimate bedload transport based on multibeam echo sounding or ADCP are developed or improved. Another part of research focusses on the quantification of sediment transport using transport equations and sediment rating curves. The hypothesis is tested that there is a relation between bed forms (and with that form drag) and transport efficiency.