1. Introduction
Successful delta restoration by measures such as the creation of new wetlands and re-activation of sedimentation through river diversions requires a sound understanding of water flow pathways and sediment deposition patterns within wetlands and their feeding channels.

This study aims to determine flow pathways, sediment fluxes and sediment deposition in the Biesbosch, a small inland delta within the lower Rhine and Meuse delta - the Netherlands. This is a former polder area that has recently been converted to a freshwater tidal wetland and in which water and sediment have been reintroduced.

2. Methods
- Bathymetry of main channels (Multibeam echosounder data from Rijkswaterstaat)
- Synoptic measurements during 13 field surveys from a small boat:
  - Suspended sediment concentration (STM + water samples)
  - Flow velocities (VADCP)
  - Electrical conductivity (EGV)

3. Results
3.1. Bathymetry
Sedimentation primarily occurred in the large and deep channels, while small and shallow channels experienced erosion. Channel bed sedimentation was on average of 12.8 mm yr\(^{-1}\) over the period 2007–2013, with highest values in the newly de-poldered wetlands.

3.2. Rhine versus Meuse water
Rhine water (high EC) penetrates into the north of the area (orange/red), while the Meuse water (low EC) feeds the south (blue). There is little mixing of flows.

3.3. Water flow
Most channels experience a change in flow direction due to the tide. In tidal channels, the average velocities are larger for ebb then for flood tide. In the river side channels, the magnitude of the flow velocities is slightly larger.

3.4. Sediment deposition
The major part of the study area functions as a local sink (blue) for sediment both during flood and during ebb tide, but the magnitude is larger during ebb tide.

4. Conclusions
- Sedimentation takes mainly place in the northern half of the study area, which receives a relatively large input of sediment from the River Rhine, compared to the south of the study area, fed by the River Meuse;
- Sedimentation was on average of 12.8 mm yr\(^{-1}\), with highest rates in the depoldered areas, where morphodynamic equilibrium sets in;
- Sediment supply and flow path are the major factors determining the sediment budget of a wetland compartment;
- Synoptic measurements of water flow, EC and SSC are efficient means to document water flow and sediment budgets in wetland systems.

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