Establishing sediment budgets in 'Room for the River' areas in the Biesbosch inland delta

E.C. van der Deijl^a, E.Verschelling^{a,b}, M. van der Perk^a, H. Middelkoop^a

a Utrecht University, Faculty of Geosciences, The Netherlands **b** Deltares, the Netherlands



1. Introduction

Many Deltas in the world cope with drowning and loss of delta land by sediment starvation and accelerated soil subsidence. Effective delta restoration requires a thorough understanding of the mechanisms of delta aggradation and their controls. In the Biesbosch, an inland delta in the southwest of the Netherlands, water and sediment is reintroduced in former polder

4. Preliminary results

- Sediment accumulates in the channels
- Artificial islands and old dikes erode and comprise a supply of sediment
- Gradients in SSC change for different boundary conditions ullet

areas. This makes the Biesbosch the ideal trial area to study the mechanisms and controls of delta aggradation.



Four former polder areas in the Biesbosch with their main flow pathways

2. Research questions

- What is the current sediment budget of the Biesbosch delta system
- What are the major factors and mechanisms that control the sediment budget



Two different patterns in the gradients in SSC



3. Main methods

- Sediment budgets will be studied in three study areas (see above fig.) that differ in river and tidal discharges and vegetation management
- Current research focuses on area 1 (Kleine Noordwaard)
- Analysis of existing data sets (AHN digital elevation model, bathymetry of main channels)
- Measurements at permanent monitoring locations: water level (pressure sensor), discharge (H-ADCP), and Suspended Sediment Concentration (STM and automatic water samples)
- Measurements during dedicated fieldwork campaigns: flow velocity and discharge (V-ADCP), suspended sediment concentrations (STM and manual water samples), in-situ settling velocities, thickness and composition of deposited sediment, height and location of cutbanks









5. Future research

Establish sediment budgets for the study areas under different discharge and wind conditions:

- Analysis of spatial patterns of sediment deposition
- Quantification of erosion and internal sediment supply •

Permanent monitoring locations Analysis of deposited sediment

Height of erosion edge

Assessment of the origin of the deposited sediment

6. Acknowledgements

This project is financed by the Dutch Technology Foundation STW (proj.12431). We thank Rijkswaterstaat, Staatsbosbeheer and Hans de Boois for their support.

