

Surface screens for maintenance of side channels

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Introduction

Floating surface screens could offer an attractive method for sediment management in the numerous side channels of the Dutch Room-for-the-River programme. The screens would remove undesired sedimentation or mitigate bank erosion without the heavy machinery that might disrupt the local ecosystem.



Surface screens

for maintenance of side channels



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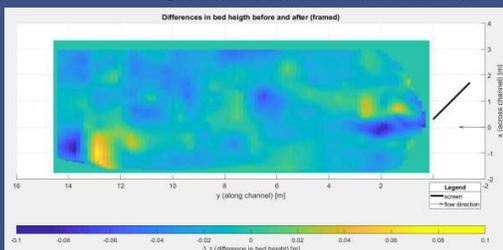
Method

- Design and construction of floating surface screen with adjustable depth of penetration into the water
- Mounting of screen on barges, attached to the banks using chains
- Field experiments in side channel of Welsumerwaard floodplain along the IJssel River
- Measurements: GPS on a pole for bed topography; current meter for flow velocities; frame with small flags for flow directions; balance spring scale for chain forces
- Eight (8) experimental runs from 18 to 28 June, 2018, with different orientations and penetration depths



Results

Bed elevation differences before and after Run 5



Settings of experimental runs

Run	Penetration (%)	Angle (deg)	Position
1	30	+20	centre
2	70	+25	centre
3	75	+40	centre
4	75	-40	centre
5	70	-45	centre
6	50	-45	centre
7	50	-45	centre
8	50	-45	bank

Conditions of experimental runs

Run	Duration (h)	IJssel discharge (m ³ /s)	Channel depth (m)
1	16.0	370	1.30
2	14.5	363	1.25
3	16.3	350	1.10
4	16.8	348	1.06
5	18.8	324	0.88
6	16.1	312	0.82
7	29.1	303	0.76
8	18.0	292	0.71

Conclusions

- Effects on flow and bed topography, despite unfavourable low discharges
- Further upscaling to be sought in a larger number of screens with longer durations, rather than in larger screens



Recommendations

Carry out a next field experiment with:

- a larger number of screens
- longer durations

Design the next field experiment to meet a predefined channel maintenance objective

Reference

Oostdijk, T.H. (2018), The influence of surface screens on morphology in side channels; An experimental study. Delft University of Technology, MSc thesis, November 2018, Delft, The Netherlands.