Combined effects of mud and vegetation on river morphology

B.M.L. de Vries, M. Van Oorschot, L. Braat, M.G. Kleinhans
Faculty of Geosciences, Universiteit Utrecht, 3508 TC Utrecht, The Netherlands
Correspondence to B.M.L. de Vries. E-mail: b.m.l.devries@students.uu.nl

Background
Both cohesive sediment (mud) and riparian vegetation interact with river morphodynamics and affect the formation of river channel patterns (for reviews: Kleinhans, 2010; Gurnell, 2014). It is still unknown how the two-way interaction between mud and riparian vegetation affects the morphological development of river systems. A better understanding of this interaction would improve predictive models for river management.

Method

Mud and vegetation cover over time

Comparison to field data

Mud, vegetation and bed dynamics

Conclusions
• New: combination mud and vegetation in numerical river model
• Vegetation causes increased mud deposition, especially near the channel
• Mud had little effect on morphodynamics and vegetation development
• Positive feedback between channel stability and vegetation development near non-erodible points may lead to a decrease in system dynamics