

**Topic: INFLUENCE OF VEGETATION ON THE LONG-TERM MORPHOLOGICAL  
PROCESSES IN THE COMMON MEUSE RIVER (GRENSMAAS) – THE  
NETHERLANDS**

By Ir. Jairo Alberto Villada Arroyave. MSc  
MSc WSE Hydraulic Engineering and River Basin Development  
UNESCO-IHE  
Civil Engineer Politecnico Colombiano Jaime Isaza Cadavid  
Medellin - Colombia  
E-mail address: [jvillada21@yahoo.com](mailto:jvillada21@yahoo.com)

**ABSTRACT**

The Common Meuse River is one of the most natural rivers in The Netherlands. Restoration works have been implemented to increase the safety against floods, combined with the development of riparian biodiversity. Space for the river is needed to maintain the safety under extreme conditions, which is obtained by increasing the conveyance capacity of the river.

The current river management policy in the Netherlands is to give rivers more space, mainly by main channel widening and floodplain lowering. The aim is to reduce flood water levels and to create more favourable conditions for river ecology. However, the effect on water levels gradually disappears due to sedimentation and vegetation growth on floodplains. Key questions are how effective these measures are and how long the desired effect remains. We applied a 2D, depth averaged, morphological model to the Pilot Project Meers on the Common Meuse River, which consists of channel widening by floodplain excavation, carried out over a short reach. We included spatially varying floodplain vegetation.

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The results showed that the Pilot Project Meers is effective in lowering local water levels during a period of 20 years for floods having return period of 1-4 years, but not for floods having return period of 100 years. In the latter case, water levels are dominated by a restriction in floodplain width, causing back water effects. Floodplain vegetation is found to shorten the lifetime of the project by enhancing sedimentation.

This has produced changes in the morphodynamics processes with the development of softwood forest and new vegetation types in the rehabilitated zones. Vegetation grows on the floodplains decreasing conveyance capacity of the river; therefore regular maintenance of the restored areas is needed.

Jairo Alberto Villada is a Private Consultant in Medellin, Colombia. He holds a Master of Science in Hydraulic Engineering and River Basin Development from UNESCO-IHE. He is currently designer and modeler engineer for private and public projects in Colombia. His main research interests refer to the effects of vegetation on the long-term morphological changes and large scale restoration works.

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