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Pontificia Universidad Javeriana, Bogota, Colombia

Modelling the effects of vegetation on river morphodynamic processes

October 31st, 2025, 11:30 -13:00

KIT, Bldg.10.81, Room 305

or online:

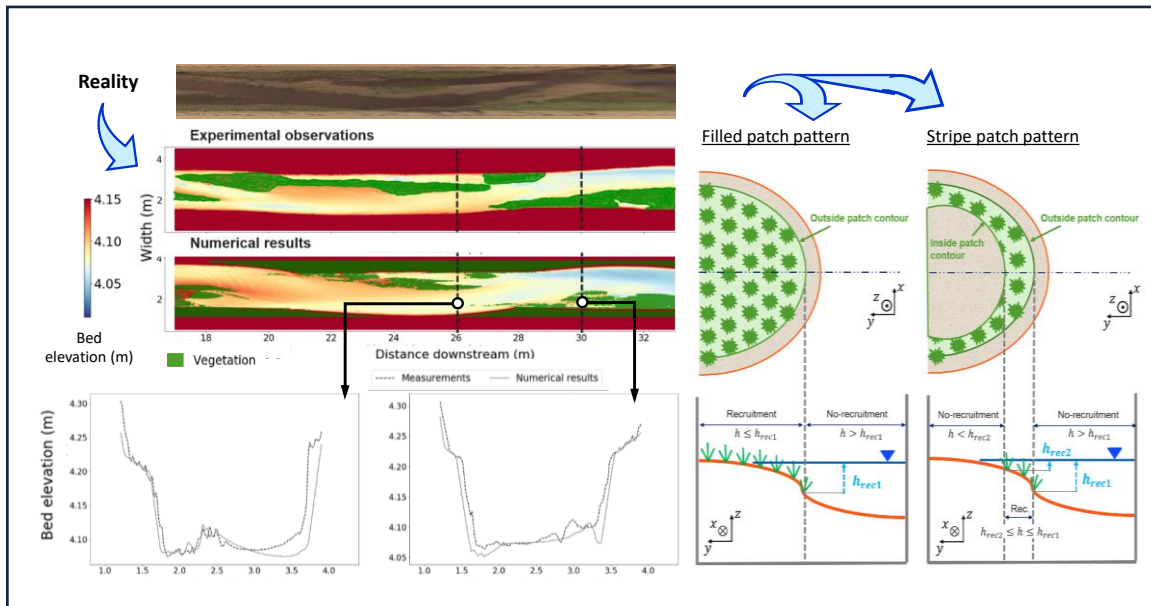
<https://kit-lecture.zoom-x.de/j/62381564089>

Meeting-ID: 623 8156 4089

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Modelling the effects of vegetation on river morphodynamic processes



Abstract

Alluvial rivers are shaped by the constant interplay of flow discharge, sediment dynamics, and vegetation. Vegetation alters flow resistance, sediment transport, and ultimately the morphology of river channels. Predicting how rivers respond to natural variability or human interventions has long challenged researchers across disciplines, and vegetation adds yet another layer of complexity. Numerical and physical models have become indispensable tools for understanding the underlying processes, exploring dynamic interactions and predicting responses. However, their application raises new questions about how to capture the living nature of rivers in practice. In this talk, Professor Vargas-Luna will share insights from his research on the effects of vegetation on river morphodynamics, combining field observations, laboratory experiments, and numerical simulations. The presentation will not only highlight key advances but also reflect on the limitations of current approaches—inviting students and researchers to engage with the exciting challenge of modelling rivers as evolving, living systems.



Biography

Andrés Vargas-Luna is Professor of River Morphodynamics at Pontificia Universidad Javeriana (PUJ), Bogotá, Colombia, where he has conducted research and teaching since 2007. Trained in Colombia and The Netherlands (TUDelft), he explores how rivers evolve—naturally and under the pressure of hydraulic structures and vegetation feedbacks. He serves as the South American representative in the Leadership Team of the IAHR Technical Committee of Ecohydraulics and as Associate Editor of the Journal of Ecohydraulics. The SEWE research group and the research incubator “Water for the future: Monitoring, Modeling and Management” at PUJ are under his leadership. His expertise is sought by NSF (USA), ERC (EU), and governments across Latin America. For him, rivers are more than systems to manage—they are dynamic, restless landscapes that challenge scientists and societies alike.

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