



Sediment dynamics and transfer efficiencies in mountain watersheds:  
insight from laboratory experiments and field cases

**Marwan Hassan**

Department of Geography, UNIVERSITY OF BRITISH COLUMBIA



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

**dimecres 25 de setembre, 12:00-13:00, aula 216, D2, Campus Nord**

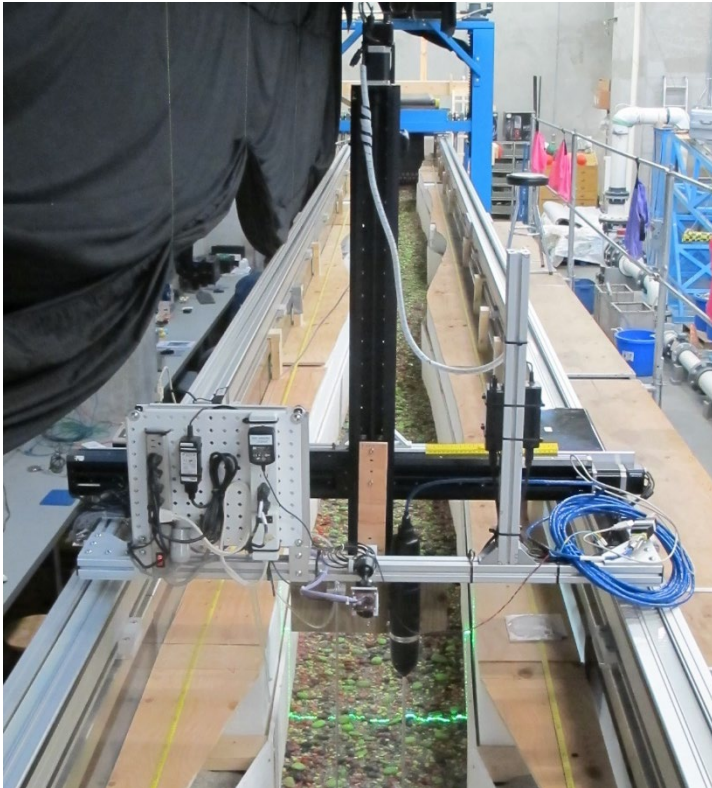
**Departament d'Enginyeria Civil i Ambiental**

contacte: Carles Ferrer Boix ([carles.ferrer@upc.edu](mailto:carles.ferrer@upc.edu)), Centre de Recerca Aplicada en Hidrometeorologia



## Sediment dynamics and transfer efficiencies in mountain watersheds: insight from laboratory experiments and field cases.

**Summary:** River systems are maintained by the mutual interactions of flow hydraulics, sediment supply, riparian vegetation, and sediment transport processes. The understanding of such interactions is critical to understand in natural flow regimes, where climatic and environmental drivers produce episodic flood and sediment supply events. In order to understand how channels response to a sequence of floods, we present the results of an experimental campaign in a laboratory flume aimed at analysing sediment storage and sediment exports. Our experiments indicate that accumulated sediment storage before floods can be used as a proxy for sediment transport exports during floods, while variations of sediment storage in the flume (increase or depletion), both between floods and during floods, can be explained by complex relations with past sediment transport rates. These complex relations between sediment storage and sediment transport rates are reproduced by a coupled mathematical model. This work highlights the crucial role that within-channel sediment storage and its history play in determining sediment export in rivers.



**Marwan Hassan** is a fluvial geomorphologist, Professor at The University of British Columbia (Vancouver, Canada). His research focuses on many diverse aspects linked with rivers and how they co-evolve with landscapes. He has worked in many different environments, from Middle Eastern desert streams to large rivers in China, but he has particular interest in mountain rivers. Although he has been very active in developing continuous field campaigns in Canadian rivers, designing flume experiments to address both fundamental and applied research questions has been an important component of his research.

