

PONTIFICIA UNIVERSIDAD CATÓLICA **DE CHILE**

Sediment management in channel networks: from measurements to best practices

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The role of hydrographs on sediment transport and bed microforms formation

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INTRODU

Sediment transport rate and dynamics under unsteady flow condition are still unclear and poorly investigated. Some recent studies suggest that bedforms formation during successive hydrographs is in function of both hydrographs duration and magnitude and sediment mixture (Ferrer-Boix et al., 2015). In a sequence of hydrographs, sediment transport change from the first to the last event, highlighting the relevant importance of the antecedent hydrologic condition on bedload transport (Mao 2018). The reason for the progressive reduction of sediment transport is usually related with the development of bedforms, and vertical winnowing of finer material, but less attention has been devoted to exploring the role of sediment clusters (a group of small bed particles accumulated around a larger central stone) on the bed surface.





The aim of this study is to shed some light on the process of sediment clusters development as a result of sequences of hydrographs of different magnitude. In order to represent different situations of flood, a sequence of hydrographs will be simulated, taking into consideration different antecedent hydrological conditions. The study would like to increase the knowledge about the prediction of the evolution of clusters, their geometric characteristics and their relationship with flood events, which can have dramatic effects on bed load sediment transport as well as bed stabilization.

Hyc	irog	rap	hs



LAPEIMENT SETUP			
an view	Lateral view		





The cause of the hysteretic behaviour of sediment transport rates (and consequently, the morphological response of the bed) is still unknown.

of sediment

Vertical winnowing

H 도 문

- Is vertical winnowing of sediment likely to occur during the rising or falling limb of the hydrograph?
- DISCUSSION OF T EXPECTED RESUI Could be vertical winnowing the dominant mechanism for sorting?
 - hydrograph What is the combined effect Of characteristics and sediment winnowing?

- Could we quantify the degree of influence of each variable (bed composition, hydrograph shape, sediment supply, and bed morphology) and their interrelationship on the type of sediment transport hysteresis?

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