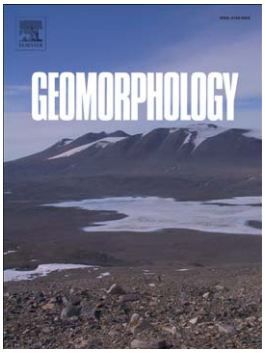

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Luca Mao, Ricardo Carrillo

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Temporal dynamics of suspended sediment transport in a glacierized Andean basin

Luca Mao* and Ricardo Carrillo

Pontificia Universidad Católica de Chile, Department of Ecosystems and Environments, Santiago, Chile

* Correspondence to: Luca Mao, Department of Ecosystems and Environments, Pontificia Universidad Católica de Chile, Av. Vicuña Mackenna 4860, Macul, Santiago, Chile. Email: lmao@uc.cl

Abstract

Suspended sediment transport can affect water quality and aquatic ecosystems, and its quantification is of the highest importance for river and watershed management. Suspended sediment concentration (SSC) and discharge were measured at two locations in the Estero Morales, a Chilean Andean stream draining a small basin (27 km^2) hosting glacierized areas of about 1.8 km^2. Approximately half of the suspended sediment yield (470 t $year^{-1}$ km^{-2}) was transported during the snowmelt period and half during glacier melting. The hysteresis patterns between discharge and SSC were calculated for each daily hydrograph and were analysed to shed light on the location and activity of different sediment sources at the basin scale. During snowmelt, an unlimited supply of fine sediments is provided in the lower and middle part of the basin and hysteresis patterns tend to be clockwise as the peaks in SSC precede the peak of discharge in daily hydrographs. Instead, during glacier melting the source of fine sediments is the proglacial area, producing counterclockwise hysteresis. It is