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L. Mao, A. Dell'Agnese, F. Comiti

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**Sediment motion and velocity in a glacier-fed stream**

Mao L.<sup>1\*</sup>, Dell'Agnese A.<sup>2</sup>, Comiti F.<sup>2</sup>

<sup>1</sup> Pontificia Universidad Católica de Chile, Department of Ecosystems and Environments, Santiago, Chile

<sup>2</sup> Faculty of Science and Technology, Free University of Bolzano, Bozen-Bolzano, Italy

\* 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**

Current understanding of coarse sediment transport (e.g. threshold for motion, travel length and virtual velocity) in mountain rivers is still quite limited, and even less is known about glacial streams. However, the hydrological characteristics of these systems (strong daily discharge fluctuations, high water turbidity) pose challenges to the use of tracers to monitor bed sediment dynamics, as tagged clasts are usually located after bedload events when flow stage has receded, e.g. by means of portable antennas in the case of Passive Integrated Transponders (PIT). The use of stationary antennas, still scarcely in use worldwide, to detect PIT-tagged particles has potential advantages in glacier-fed streams. If water discharge is monitored continuously, a stationary antenna provide real time data on the actual discharge at the moment of tracers particles passage. This study focuses on incipient motion and virtual velocity of bed particles measured by a stationary antennas system in a steep mountain channel (Saldur River, drainage area 18.6 km<sup>2</sup>, Italian Alps) where significant daily discharge fluctuations and bedload transport occur as a result of a nivo-glacial regime. Four stationary antennas were installed 50-m apart in the study reach. A

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