



## **The evolution of a moraine-breaching landslide in the recently deglaciated area of the Findelengletscher, Swiss Alps**

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The recession of mountain glaciers exposes new landscapes that are characterized by a high geomorphological activity favored by the availability of unconsolidated and unstable material, which originate from drift-mantled slopes (moraines) and oversteepened rockwalls. Following the paraglacial concept (Church and Ryder, 1976; Ballantyne, 2002) it is suggested that the adjustment of the landscape is terminated, when the glacially conditioned sediments are stabilized or exhausted. However, little is known and documented about how those landscapes are developing from a glacial process regime to a non-glacial process regime, characterized by gravitational and fluvial processes.

Our study describes, quantifies, and analyzes geomorphological changes in the recently deglaciated area of the Findelengletscher, Swiss Alps, on a decadal scale. The main landforms under observation are the retreating glacier itself, the lateral moraines formed during the Holocene incl. the Little Ice Age (LIA), and a moraine-breaching landslide starting in 2008. The availability of a high number of multi-temporal and high-resolution Digital Elevation Models (DEMs) allows the detailed analysis of these landforms. The main goal is to describe the occurrence and development of the landslide, to analyze its impact on the moraine and the retreating glacier, as well as to assess the complex interaction of related processes at the glacier margin. In this context, the paraglacial concept helps to understand the spatio-temporal dynamics in a deglaciating environmental system that is rapidly changing, although the paraglacial adjustment processes are influenced by the lateral occurrence of the landslide.

Ballantyne, C.K. (2002): Paraglacial Geomorphology. *Quatern Sci Rev* 21: 1935-2017.

Church, M. & J.M. Ryder (1972): Paraglacial sedimentation: a consideration of fluvial processes conditioned by glaciation. *GSA Bull* 83 (10): 3059-3072.