UNIVERSITÉ DE GENÈVE
FACULTÉ DES SCIENCES
Département des sciences de la Terre

Seminar of the Department of Earth Sciences, UNIGE
March 27, 11h15 in Room 001
Rue des Maraîchers 13, CH-1205 Genève or via Zoom

Catching turbidity currents in the act: What happens inside subaquatic delta channels

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Abstract

Turbidity currents, gravity-driven sediment-laden flows, govern material transport and shape underwater landscapes across diverse environments. While extensively studied in marine settings, their behaviour in freshwater systems remains underexplored. We present multi-temporal, multi-scale observations from the Aare Delta of Lake Brienz (Switzerland), combining Acoustic Doppler Current Profiler measurements with high-resolution repeated bathymetric surveys to capture turbidity currents and the resulting lake bottom changes. We document the upslope migration of a bedform triggered by a single flow event, demonstrating how discrete turbidity currents can rapidly reshape the channel floor. We further place these observations within a broader geomorphic context using a rare 125-year bathymetric time series. This longer-term perspective reveals how turbidity currents influence channel morphology over centennial scales. Together, our results highlight the value of lacustrine settings as accessible, scaled-down natural laboratories that bridge the observational gap between controlled experiments and deep-ocean canyons, offering new insights into turbidity-current processes

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