



Excursion of the Swiss Young Geomorphologists (SGmS)

The rock glacier of Lac des Vaux: hydrology, kinematics, and anthropogenic impacts

9 September 2023

The Young Geomorphologists' 2023 summer excursion took place at the Lac des Vaux, located in the Val de Bagnes (VS), and was attended by 8 participants from the universities of Fribourg, Lausanne, Zürich and SUPSI. This excursion followed the excursion of the biennial conference of the SGmS, during which the participants visited the sites of the Col des Gentianes, the Tortin Glacier and the Mont Fort to discuss about the periglacial landscape and its impacts on the infrastructures of the 4-Vallées ski resort. At the Lac des Vaux, this theme was also addressed as a ski slope was built across a rock glacier.

The Lac des Vaux rock glacier complex has been the object of several studies since the early 2000s. The excursion was opened by an introduction on the recent "remote" kinematic monitoring that has been carried out on this site with the parametrisation and launch of a UAV-flight (Figure 1). Yearly RTK UAV-flights allow to derive a high spatial resolution of surface velocities of the rock glacier complex and identify the spatial heterogeneity of its kinematic behaviour. In the lower lobes, surface velocities range between 0.1 m to 0.1 m, while one of the upper lobes (lobe B), is characterized by surface velocities ranging between 0.8 m to 2 m (Vivero and Lambiel, 2021). Because of the observed surface displacements of this rock glacier complex, each year the infrastructure of the ski slope has to be maintained.

A particularity of this site is that a spring emerges at the front of the Lac des Vaux rock glacier complex. Continuous monitoring as well as manual sampling were applied to this spring from June to October 2020 to investigate the hydrological functioning and the water origin of the rock glacier outflow. The seasonal increase in electrical conductivity and in chemical and isotopic parameters could indicate the increasing perennial ground ice melting (Del Siro et al., 2023).

The excursion ended at the Col du Creblet from which the participants could capture a general overview of the site visited during the day (Figure 3).

Organisers

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Figure 1: Launching of the drone flight (J. Wee, 2023)



Figure 2: Explanations on the rock glacier hydrology and monitoring station (J. Wee, 2023)



Figure 3: Overview of the Lac des Vaux rock glacier complex (J. Wee, 2023)

