

Reconstruction of postglacial mass movements in the Lurnigalp

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Introduction

The Lurnigalp is situated in Adelboden in the Bernese Alps. It is a 2.5 km long and 1.5 km wide SE-NW-oriented valley at an altitude between 1773 and 2149 meters above sea level. Geologically, it is located at the transition of the Helvic Nappes to the Ultrahelvic Flysch. The bedrock is mostly overlain by the Quaternary deposits and landforms. In the upper part of the Lurnigalp valley, there are two bouldery deposits. Originally they are attributed to glacial deposits. However, they appear to be the product of a landslide. We aim to understand the origin of these deposits and disentangle the postglacial history of the Lurnigalp valley.

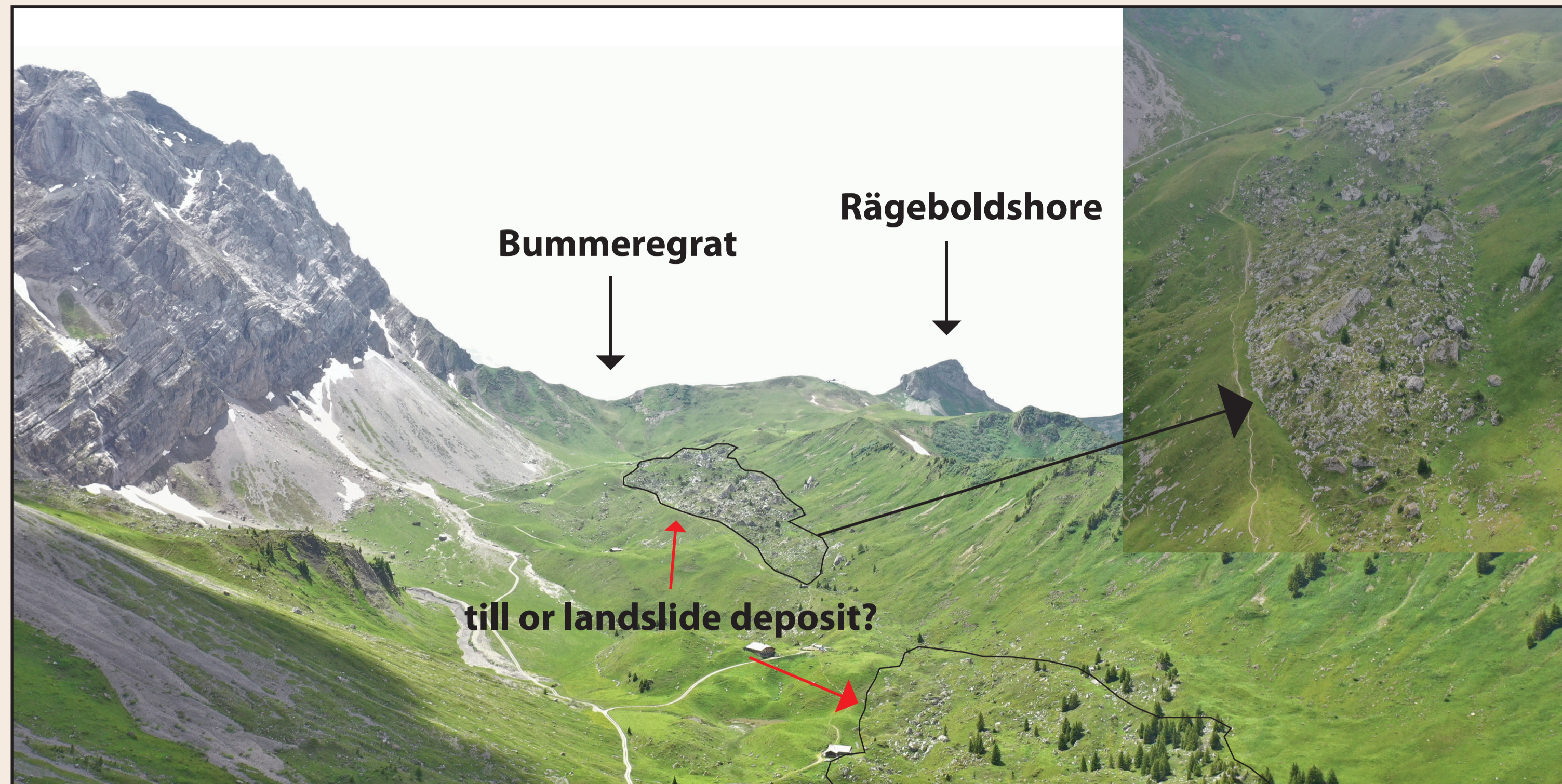


Figure 1: UAV (unmanned air vehicle) picture of the Lurnigalp valley view towards SW.

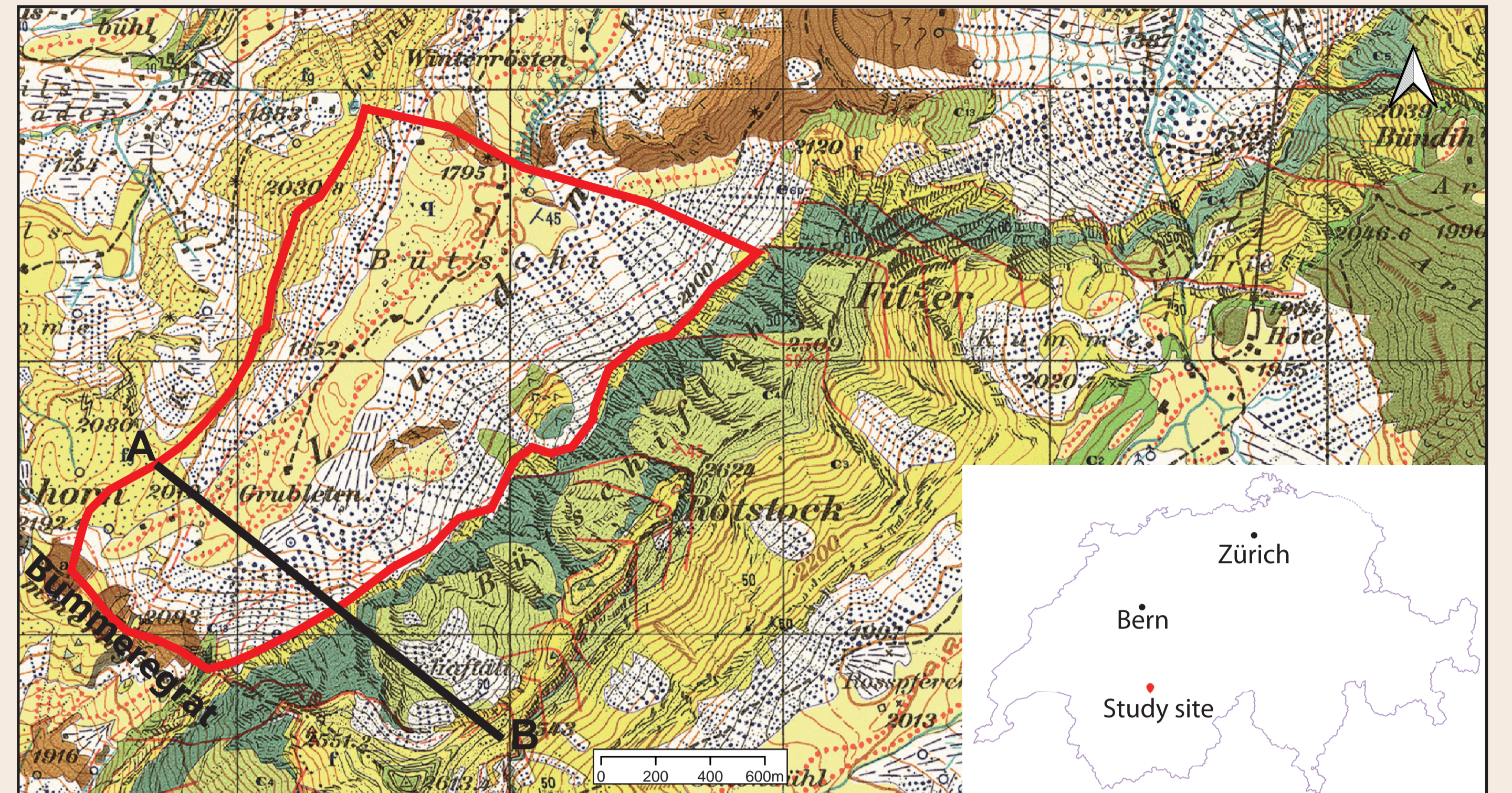


Figure 2: Geological map of the Lurnigalp valley. The extent of the study area is indicated by the red polygon. Legend: 1. Green and bright yellow color: Helvetic Nappe, 2. Brown and light yellow color: Ultrahelvic Flysch, 3. Very light yellow: predominantly till, 4. white color: undifferentiated Quaternary deposits

Methods

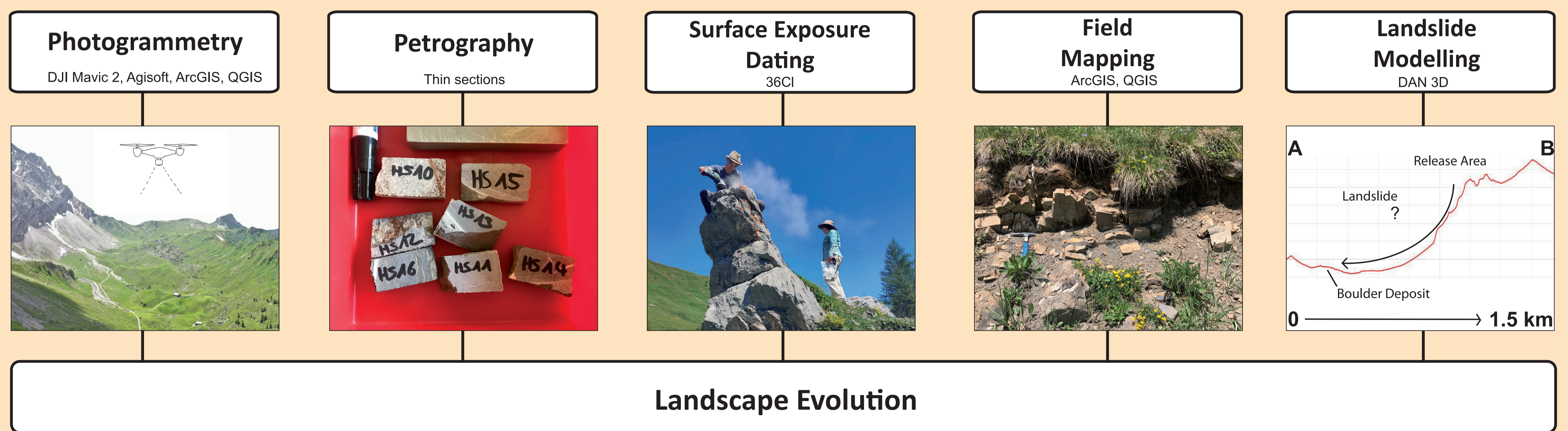


Figure 3: The workflow with the methods contributing to the understanding of the postglacial evolution of the valley.

Results and Discussion

The bedrock is exposed on the southeastern valley side. In the central part, the bedrock is predominantly overlain by till. There are two bouldery deposits with a hummocky topography containing mainly limestone and some sandstone boulders. They are possibly the product of a landslide or of glacial origin. The process behind these deposits have to be determined in subsequent steps. The western valley flanks are dominated by small-scale mass movements. Polygenetic cones cover the eastern valley side. These cones are developed by alluvial processes and slope processes.

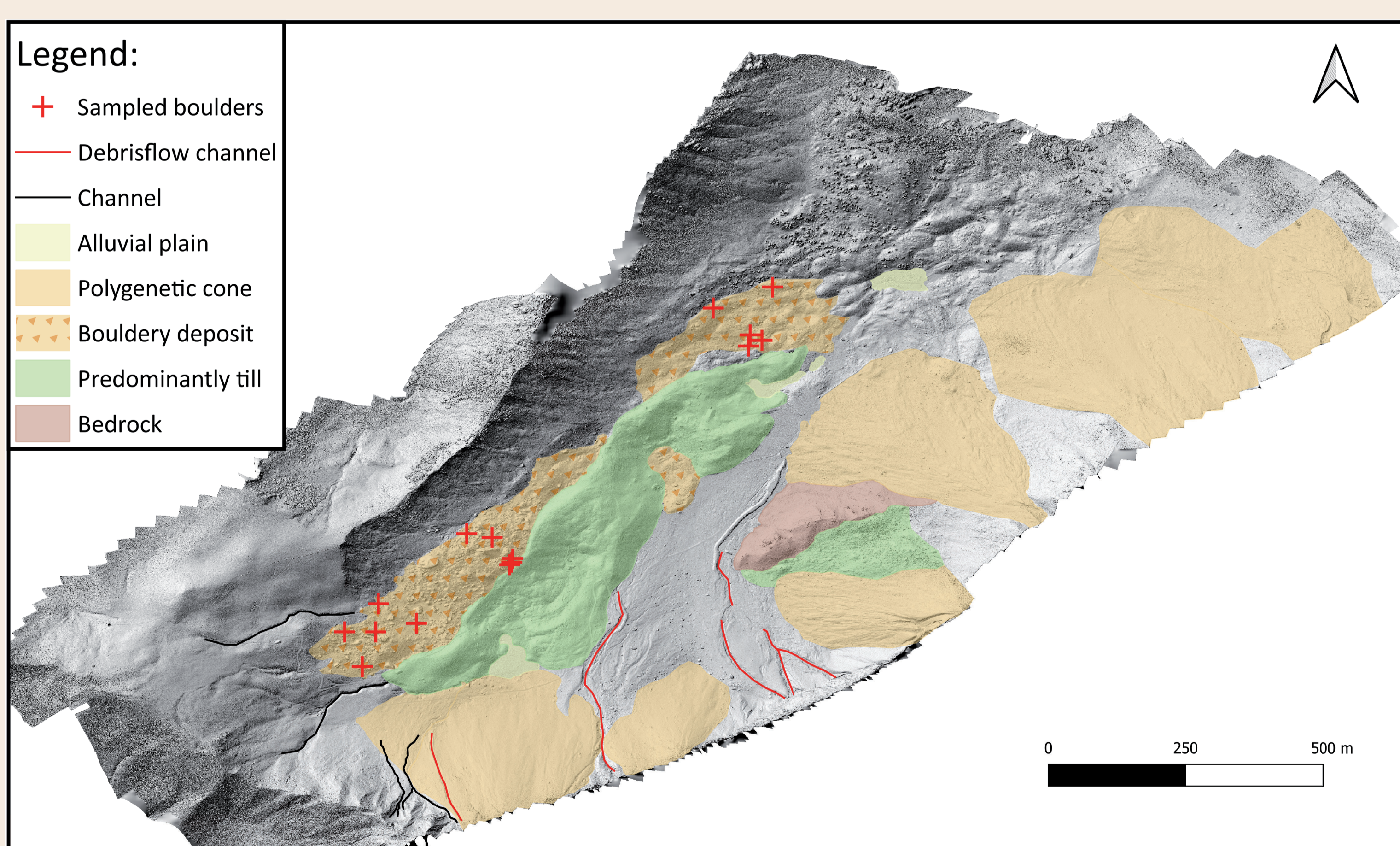


Figure 4: Preliminary Quaternary geology map. The topography is shown by a hillshade generated from UAV pictures.

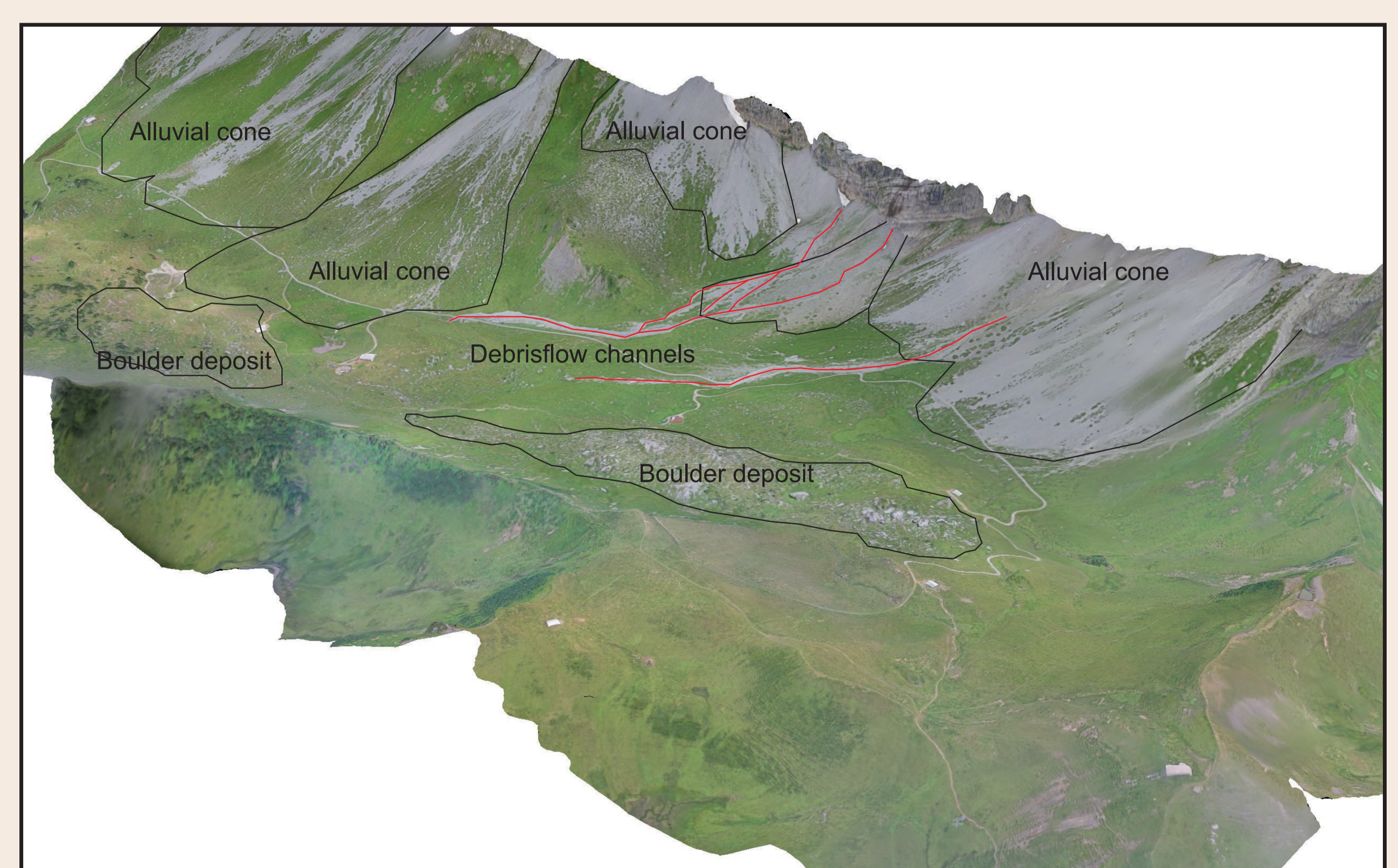


Figure 5: A perspective aerial view based on aerial orthophotos of the Lurnigalp valley. View direction towards the east.

References:

Bundesamt für Landestopographie swisstopo®: Landeskarte, Geologischer Atlas GA25, Geocover
Furrer H. (1962): Gemmi (LK 1:50 000, vergrössert). - Erläuterungen