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New Base Levels in the Eastern Alps

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The geomorphic characteristics of many landscapes in the Eastern Alps are strongly bimodal with two observed landscapes that differ distinctly in their morphological appearance. Incised landscapes occur at low elevations and they are characterized by steep topographic gradients, incised gullies and disequilibrium landforms. In contrast, the relict landscapes are often found at high elevations and they are characterized by low slopes and gentle gradients in the channels.
Large parts of the Eastern Alps were coined by the Pleistocene glaciation cycles, dissecting the topography, creating relief and establishing new base levels. Therefore, this bimodality and the transient state of the landscape are commonly interpreted in terms of glacial erosion driven by the climate change at that time. However, it is striking that landscapes in the Eastern Alps that were never glaciated during the LGM, are also in a transient state showing a systematic pattern of non-equilibrium channels indicating different tectonic or climatic regimes at different time slices. Recently, this pattern was interpreted as reaction of the drainage system on new base levels caused by a large scale pulse of uplift since around 5 my.
In this study we present first results of a detailed analysis of the drainage system covering large parts of the Eastern Alps. We compare two north-south strips of the Alps including different lithological units from the Northern Calcareous Alps to the Bohemian Massif and focus on differences and similarities between domains with and without glacial imprint to understand the modes of alpine landscape evolution due to uplift driven topography and erosion driven relief formation.