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Evolution of recently deglaciated high mountain landforms in the Eastern Anatolia

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High mountain environments and especially proglacial systems, which are areas defined by subtracting modern glacier outlines from Little Ice Age (LIA) limits, are among the most dynamic geomorphic contexts on Earth. They are extremely sensitive to ongoing climate change and its consequences are especially intense – yet relatively poorly investigated – at middle-low latitudes, as in the case of the circum-Mediterranean mountainous contexts. This area (excluding the Alps) encompasses recently deglaciated ground from the borders of the Mediterranean Sea and comprises more than hundred ice bodies dramatically receding since their LIA extension. Most of these glaciers are completely disappeared leaving extensive proglacial areas, which differs from those described in the Alps for the timing and types of ongoing processes. Here, we present and discuss the unique characteristics of such dynamic proglacial contexts, focusing on recently deglaciated high mountain areas of Southeast Turkey that are affected by fast geomorphological evolution tuned by their specific climatic and geological settings. We compare two areas differing for climatic, structural, and lithological settings: i) the Mount Ararat/Ağrı Dağı (5137 m a.s.l.), a stratovolcano, and ii) the Cilo mountain range (up to 4116 m a.s.l.), characterized by a limestone bedrock. Since the LIA, the two areas underwent different trajectories of evolution and different rates of geomorphic processes. High-resolution satellite data from Pleiades and SPOT 6 platforms permit to investigate the overprint of specific local factors (volcanism, tectonic, and topography) on climate-driven surface evolution explains the specific evolution of each proglacial area.