
Les Chirats du Pilat: a first attempt to set chronological constraints on the formation and evolution of peculiar periglacial landforms in the eastern Central Massif

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Résumé

A blockstream in geomorphology usually refers to a linear landform, aligned downslope, and composed of openwork, blocky, coarse rock debris that has accumulated primarily through mass wasting processes. These features are typically found on mountain slopes and are characterized by their elongated shape and the presence of large, angular rock blocks. They develop through the downslope movement of rock debris, supposedly by freeze-thaw cycles, gravity-driven processes, and, in some cases, periglacial activity involving the possible presence of ice lenses within the blockstream body. Such features appear rather common in mountain and periglacial environments scattered at various latitudes worldwide. Although these landforms have only received little attention in periglacial settings, recent studies conducted in the USA indicate that blockstreams represent dynamic, ancient, and multigenerational landform relicts generated throughout the Pleistocene. In France, blockstreams are common in the eastern Central Massif (e.g., Mezenc, Pilat and Forez massifs). While they do appear inactive today, these objects represent key witnesses of past climate and environmental conditions. However, no chronological constraint exists to discuss their Pleistocene dynamics and potential significance as paleo-climatic archives. Building on the analysis of a geographic database of > 80 blockfields situated in the Pilat massif, we first draw the main morphometric characteristics of these locally called "chirats". We then report the first

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chronological constraints obtained on the Magdelaine Chirat, one major representative of these blockfields in the Pilat massif. We use these constraints to quantify the Pleistocene activity for the Magdelaine Chirat, using both in situ produced cosmogenic nuclides (^{26}Al and ^{10}Be) and Schmidt hammer measurements collected on 12 rock blocks along an altitudinal gradient.

Mots-Clés: blockstream, periglacial process, Quaternary, TCN, Massif Central