

The origin and significance of cave-like features in the Karkonosze-Izera granite massif, Central Europe

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Abstract

More than seventy cave-like features have been recorded in the granite Karkonosze-Izera massif (SW Poland, N Czech Republic). Five morphological types are distinguished: crevice caves, roofed clefts, boulder/talus caves, overhangs, and caves of complex morphology. The largest one is 102 m long, but the majority of them is small, not exceeding 10 m long. Caves are irregularly distributed and tend to cluster within steep escarpments, valley sides, and inselberg relief. It is argued that a specific combination of rock and environmental factors is required to produce a cave of significant dimensions. The key controls are wide spacing of joints, bearing on large dimensions of individual blocks, high mechanical strength and high tensile stress within the rock mass. The latter provides conditions for rock slope failures to occur, and it is demonstrated that the majority of caves is genetically related to joint opening, toppling, fall and slide.

Key words

Geomorphology, granite, cave, Karkonosze.