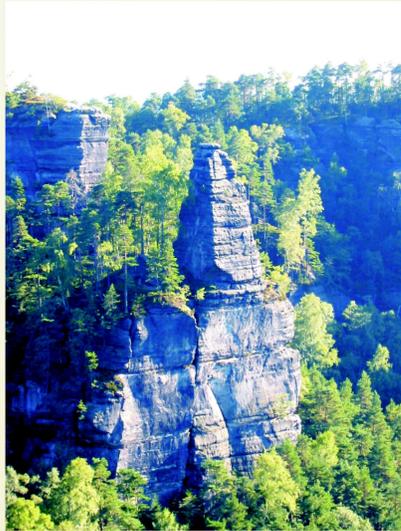




Geomorphology of the Bohemian Switzerland National Park

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Bohemian Switzerland National Park constitutes an integral and unique geological and morphological unit, protecting an area of outstanding sandstone scenery. The main objects of protection are the so-called 'rock cities' developed in the sandstone, with their unique geomorphology, weathering features and related biodiversity.



A stately rock pillar called "Homole" (Cone) in the Křídelní stěny Walls area.

The high vertical relief of the National Park area was produced by intensive fluvial erosion at the end of the Tertiary and during the Quaternary, which dissected the originally flat-topped sandstone massif. In this process, less resistant rocks were removed and a wide spectrum of characteristic landforms was created. Large morphological forms (macroforms) include **rock plateaus and canyons** of the *Kamenice* and *Křinice* rivers, rock walls as high as 150 m (even 250 m in the area of the Pravčická brána Arch) and **rock cities** or **rock labyrinths**.

Medium-sized forms (mesoforms) are represented by the renowned *Pravčická brána* Rock Arch. **Rock ledges, shelters** and **chimney rocks** are also abundant. **Rock pillars, mushroom rocks** and **rock windows** occur rarely.

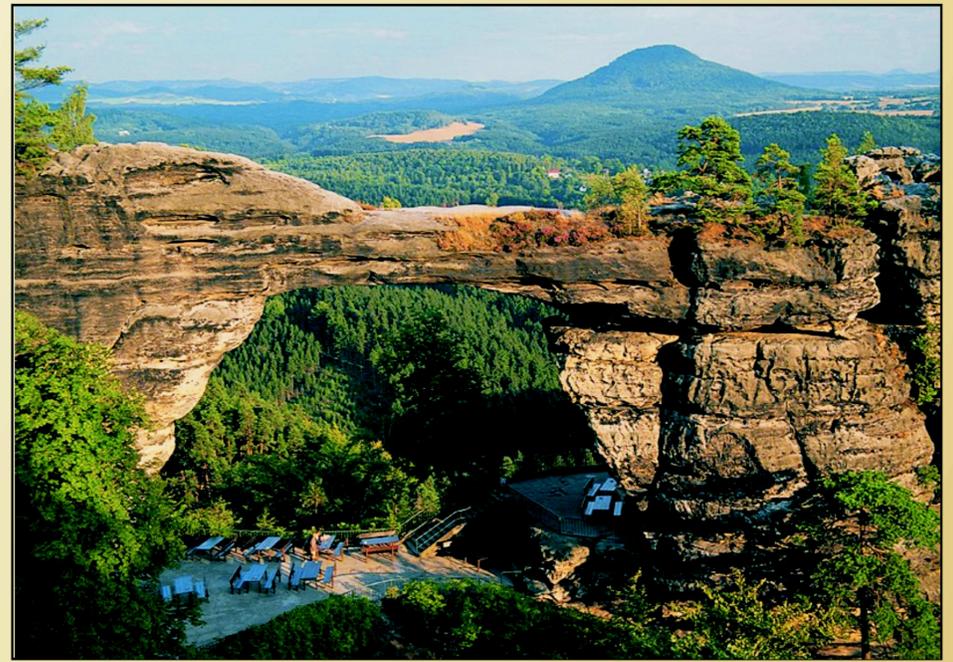
Smaller relief forms on the surface (microforms) are represented mainly by abundant **honeycombs, pits** and **rock cavities**. **Pseudokarst karren** ca. 0.7 m deep often cover the rims of the plateaus and cliffs.



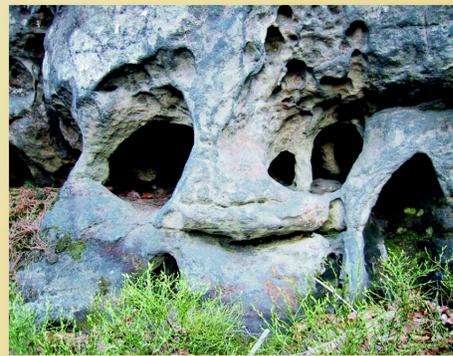
The rise of rock walls dissected into several rock blocks from which individual chimney rocks separate. Interchanging of different sandstones makes beautiful vertical articulation of these chimney rocks.



The scale of features attributed to salt weathering ranges from production of microforms to development of large sandstone **rock shelters**.



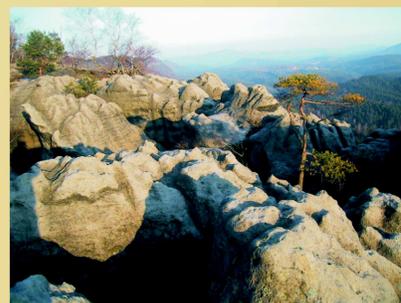
The *Pravčická brána* Rock Arch - this structure, being the symbol of the National Park, originated due to lateral erosion of a narrow sandstone rib. Its dimensions (16 m in height, almost 27 m in length) make it the largest sandstone arch in Europe.



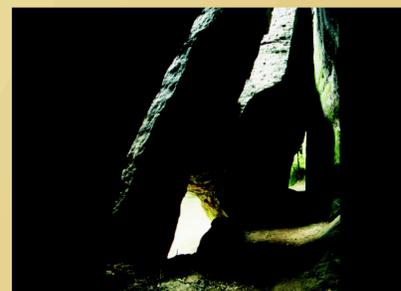
Sandstones weathering starts by small solution pits which gradually spread over the whole layer. Small pits get connected and deepen to make rock cavities and rock windows.



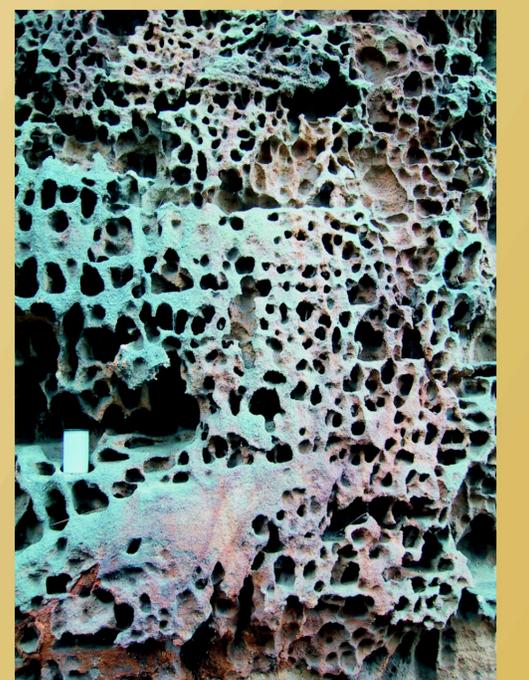
Collapsed block of sandstone in Hluboký důl valley formed a small rock gate there.



The rim of the rock walls has been frequently dissected into rock pillars covered with **pseudokarst karren**, a view from Stříbrné stěny Walls to the east.



An inner space of the *Hölle* cave in the Kamenice river gorge. It was formed by large-scale exfoliation: a passage parallel to the river course was created by slippages.



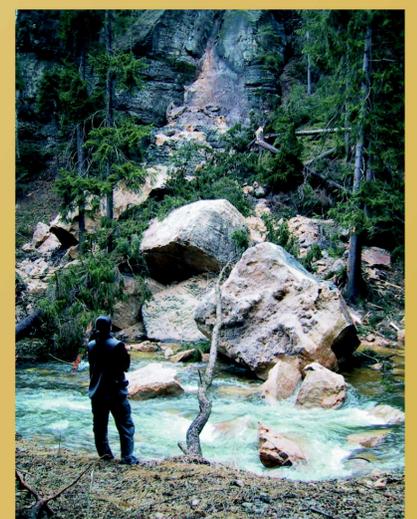
Honeycomb structures covering rock walls are ubiquitous in the Bohemian Switzerland National Park.



A winter view to the western closure of the Pravčický důl Valley over the rock pillar Homole. High rock walls, a large amount of rock ledges and shelters are characteristic features of this area.

Sandstone relief in such areas resulted from the combination of several basic genetic factors. Geological, and particularly tectonic, conditions decisively influenced the macrostructure of the terrain - e.g., by the formation of plateaus, valley networks and block disintegration of the sandstones. Lithological factors, assisted by selective weathering, participated in the formation of the sandstone pseudokarst landforms. Climatic/microclimatic factors defined the extent of capillary water transport to a considerable extent, being one of the most important causes of sandstone degradation. In the same way, biological factors - in particular bioerosion - also contributed to the creation of various perforations and rock bowls.

A leading role in the geomorphic history in this area was played by two main antagonistic processes: **surface hardening** (rock crusts mostly caused by silica and ferruginous impregnation) and **salt weathering**.



A **rock falling** in the Ferdinand's gorge of the Kamenice river - the example of irreversible deformations due to rock destruction.