

Post-congress excursion at 16<sup>th</sup> International Congress of Speleology in Brno

## **A8CZ Sandstone caves and rock cities of Bohemia**

### **BASIC INFORMATION**

Starting place, date and time: Brno, Monday July 29, 2013, 9:00 a.m.

End place, date and time: Prague Airport Terminal 1, Saturday August 3, 2013, 2:00 p.m.

Number of participants: min. 20, max. 40

Difficulty: easy to moderate

Equipment: usual caving gear needed including a light (carbide lamp or electrical light) and a helmet

Excursion fee per one person: CZK 10,800.- (approx. EUR 430.- or USD 555.- at present rates)

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16th ICS Congress homepage: <http://www.speleo2013.com/>

The field trip provides a complex insight in sandstone weathering with special reference to cave formation. Sedimentary deposits of Late Cretaceous age in Bohemia provide vast areas of sandstone exposure including spectacular “rock cities” with systems of rock pillars, grikes and a variety of small weathering forms. The caves to be visited, tens to hundreds of metres in length, include crevasse and talus caves, spherical caves formed by a combination of salt weathering and carbonate dissolution, as well as true solutional caves in quartzite. All natural landforms, ranging from ornamental pitted surfaces to the largest sandstone arch in Europe, are well accessible and motivate a discussion about the tricky boundary between karst and pseudokarst.

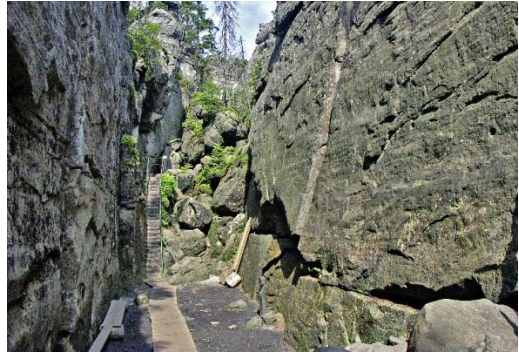
Some of the special features include fluorite-filled cavities opened by mine galleries, and artificial cavities due to subsurface mining of glass sand.

Surface walking trips are short and easy (max. 5 km) but occasionally with considerable elevation gains. Subsurface trips are generally short and easy, though requiring helmet protection and a light. Moderately difficult caving is also planned, with surface walking trips given as an option. All sites are presented by a geoscientist and a local caving club member. The field trip is in the territory of the Czech Republic with the exception of Szczeliniec Wielki table mountain in Poland, not far from the Czech border. Fluids will be provided by the organizers, and opportunity will be given to have lunches and dinners in restaurants.

The fee includes a printed guidebook, hotel accommodation with breakfasts, entrance fees, transportation from Brno, transportation during the field trip, and a transfer to the Prague airport.

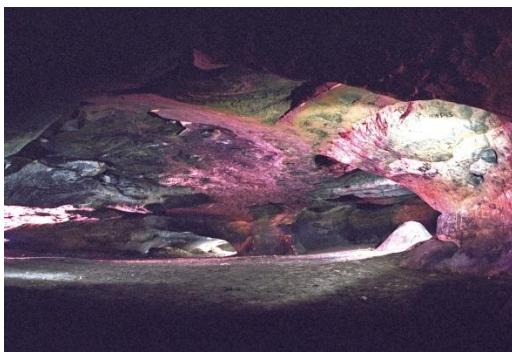
## VISITED SITES

**Szczeliniec Wielki** table mountain near Karlów, Poland, is formed by a quartzose sandstone body of Cretaceous (Upper Turonian to Coniacian) age, 150 m thick. High precipitation reduces the effects of salt weathering to a minimum, and small forms of sandstone relief are dominated by spherical cavities and gnammas. The rock massif is dissected by deep crevasses the dilation of which is monitored by the Geodynamic Laboratory. Tour length 4.8 km, elevation gain 150 m, guided by Zbigniew Gołęb.



**Teplice rock city** near Teplice nad Metují is a labyrinth of grikes, walls and pillars up to 60 m high formed in Upper Turonian to Coniacian quartzose sandstone. Besides rock shelters, talus caves are common: the visited Teplická Cave is the longest non-karstic cave in the Czech Republic. The surface tour features a variety of weathering forms and the very specific phenomenon of root stalagmites. Optional choice between caving and a surface tour. Surface tour length 5.5 km, elevation gain 200 m, guided by Jiří Kopecký and Oldřich Jenka.

The cuesta of the **Broumov Cliffs** is formed by a gently inclined body of subarkose of Cretaceous (Middle Turonian) age. Deep grike systems parallel to the cuesta edge are cut by transverse down-dip gorges with blocky talus caves hosting streams (Pod Luciferem Cave). Rock pillars, mushroom rocks and „fins“ bear thick rock crusts due to salt weathering. Optional choice between caving and a surface tour. Surface tour length 3.2 km, elevation gain 180 m, guided by Jiří Kopecký, Oldřich Jenka and Jiří Adamovič.

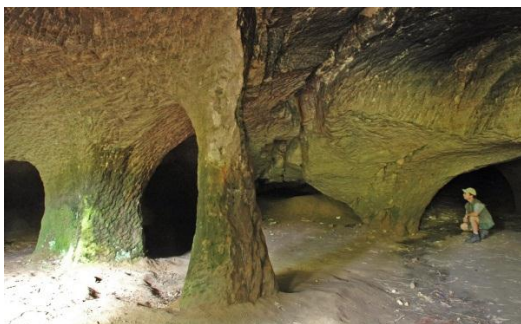


The **Klokočí Cliffs** near Turnov, Bohemian Paradise region, in Upper Turonian quartzose sandstones display the widest variety of small forms of relief due to salt weathering (honeycombs, karren, rock crusts). Specific forms (ribs and grooves) relate to tectonic structures like deformation bands. Spherical and tunnel-like caves tens of metres long were formed by the dissolution of previous carbonate cement. Tour length 3.1 km, elevation gain 160 m, guided by Jan Mertlík.

The **Sklepy Cave** is located on the southern slope of basaltic Trosky Hill with ruins of a Medieval Castle. It is a typical crevasse cave formed by movement of sandstone blocks on a steep slope. The total length of the cave is 124 m. Tour guided by Jan Mertlík.

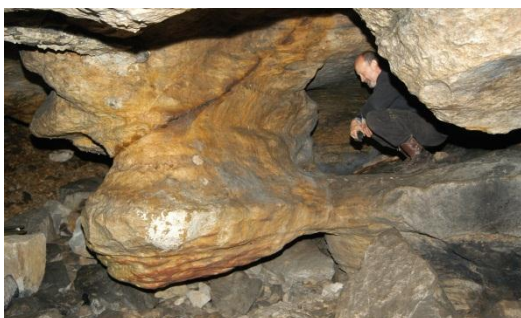
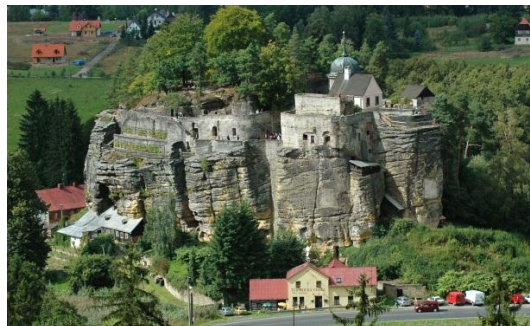






Artificial cavities in the **Velenice** area were excavated in the 18th–19th centuries in Cretaceous quartzose sandstones (Upper Turonian) to produce sand for glass polishing. The site at the banks of the Svitavka Stream displays a complex of interconnected cavities ca. 20×30 m in area, and a gallery 400 m long bringing water to a former glass-polishing factory. Tour guided by Vladimír Peša.

The Medieval **Sloup Castle** situated on a sandstone butte was completely rebuilt as a hermitage in the 18th century. It features many underground rooms designed for economic or spiritual purposes. Tour guided by Vladimír Peša.



Sandstones of Cretaceous (Coniacian) age at **Milštejn** near Cvikov are pervaded by secondary silica mobilized during episodes of volcanic activity. Some of the caves at Milštejn are solutional caves produced by the effect of alkaline fluids released during the emplacement of phonolite bodies, e.g. the visited Kovárna Cave. The site was used as a quarry of millstones for 500 years. Tour length 1 km, elevation gain 60 m, guided by Petr Havránek and Jiří Adamovič.

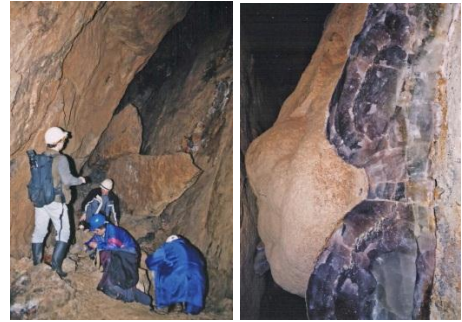
The **Přátelství Cave** near Hřensko is a blocky talus cave in steep slopes of the Labe River canyon at the level of Lower Turonian sandstones. Its total depth is ca. 15 m. Despite its near-vertical profile, it is the best accessible caves in the area. Silica speleothems found near the cave bottom are precipitated from pore waters. Tour length 0.3 km, elevation gain 70 m, guided by Jaroslav Kukla.



**Pravčická brána Arch** near Hřensko is a spectacular opening in a rib of Upper Turonian sandstone with a span of 26.5 m. Potential threats for its stability include contour scaling induced by salt precipitation and joint dilation. Great views of the North Bohemian sandstone country from the top, a rock shelter with archaeological finds at the base. The length of the tour from Mezní Louka to Hřensko is 8.5 km, elevation gain 220 m. Guided by Jiří Adamovič.

The fluorite mine at **Sněžník** near Děčín was opened in Cretaceous (Middle Turonian) sandstones near the Krušné hory Fault. Crevasses up to 5 m wide are lined with fluorite and interconnected by a mine gallery. The tour is guided by Alexander Komaško and Karel Žák.

*Photos by O. Jenka, J. Kukla, J. Brožek, J. Mertlík and J. Adamovič*



## ACCOMMODATION

### Hotel Veba in Broumov

<http://hotel.veba.cz/en/>



### Hotel Paradis in Turnov

<http://www.hotelparadis.cz/index-eng.php>



### Hotel Ostrov

<http://www.hotelostrov.com/web/en/1-home.html>



## TIME SCHEDULE

### Monday, July 29

9:00 a.m. departure from Brno  
 12:30 p.m. lunch at Náchod  
 2:00–6:00 p.m. Szczeliniec Wielki table mountain (surface tour)  
 7:00 p.m. arrival at Broumov, dinner

### Tuesday, July 30

8:30 a.m. departure from Broumov for the Teplice rock city

GROUP A		GROUP B	
9:00–11:30 a.m.	Teplická Cave (caving*) followed by lunch	9:00 a.m. – 12:30 p.m.	Teplice rock city (surface tour, caves) followed by lunch
12:30 p.m.	departure for the Broumov Cliffs	1:30 p.m.	departure for the Broumov Cliffs
1:00–6:00 p.m.	Pod Luciferem Cave (caving*)	2:00–6:00 p.m.	Broumov Cliffs – Kovářova Gorge (surface tour)
7:00 p.m.	arrival at Broumov, dinner		

### Wednesday, July 31

8:30 a.m. departure from Broumov for Klokočí, Bohemian Paradise region  
 1:00 p.m. lunch at Klokočí  
 2:00–5:00 p.m. Klokočí Cliffs (surface tour with caves), departure for Hrubá Skála  
 5:30–6:30 p.m. Hrubá Skála viewpoint (surface tour)  
 7:00 p.m. arrival at Turnov, dinner  
 9:00–11:00 p.m. Sklepy Cave near Trosky Castle (caving\* – *optional*)

### Thursday, August 1

8:30 a.m. departure from Turnov for the Velenice–Sloup area  
 10:30–12:00 a.m. Velenice – cavities after sand extraction (subsurface tour)  
 12:10–2:00 p.m. Sloup Castle & Hermitage (surface tour) followed by lunch  
 2:00 p.m. departure for Milštejn  
 2:40–5:00 p.m. Milštejn Castle with Kovárna Cave (caving\*)  
 7:00 p.m. arrival at Ostrov, dinner

### Friday, August 2

8:30 a.m. departure from Ostrov for Hřensko  
 9:20 a.m. – 1:20 p.m. Přátelství Cave near Hřensko (caving\*) followed by lunch, departure for Mezní Louka  
 1:40–6:30 p.m. Pravčická brána Arch (surface tour ending at Hřensko)  
 7:30 p.m. arrival at Ostrov, dinner  
 9:00 p.m. meeting in the hotel conference room

### Saturday, August 3

8:30 a.m. departure from Ostrov for Sněžník  
 8:45–11:30 a.m. Sněžník fluorite caves (caving\*), departure for Prague  
 2:00 p.m. arrival at Václav Havel Airport in Prague (Praha-Ruzyně)

\* *caving gear needed*