

GENETICAL TYPES OF THE CAVES IN THE SANDSTONES OF THE ŚWIĘTOKRZYSKIE (HOLY CROSS) MOUNTAINS, CENTRAL POLAND (fragment)

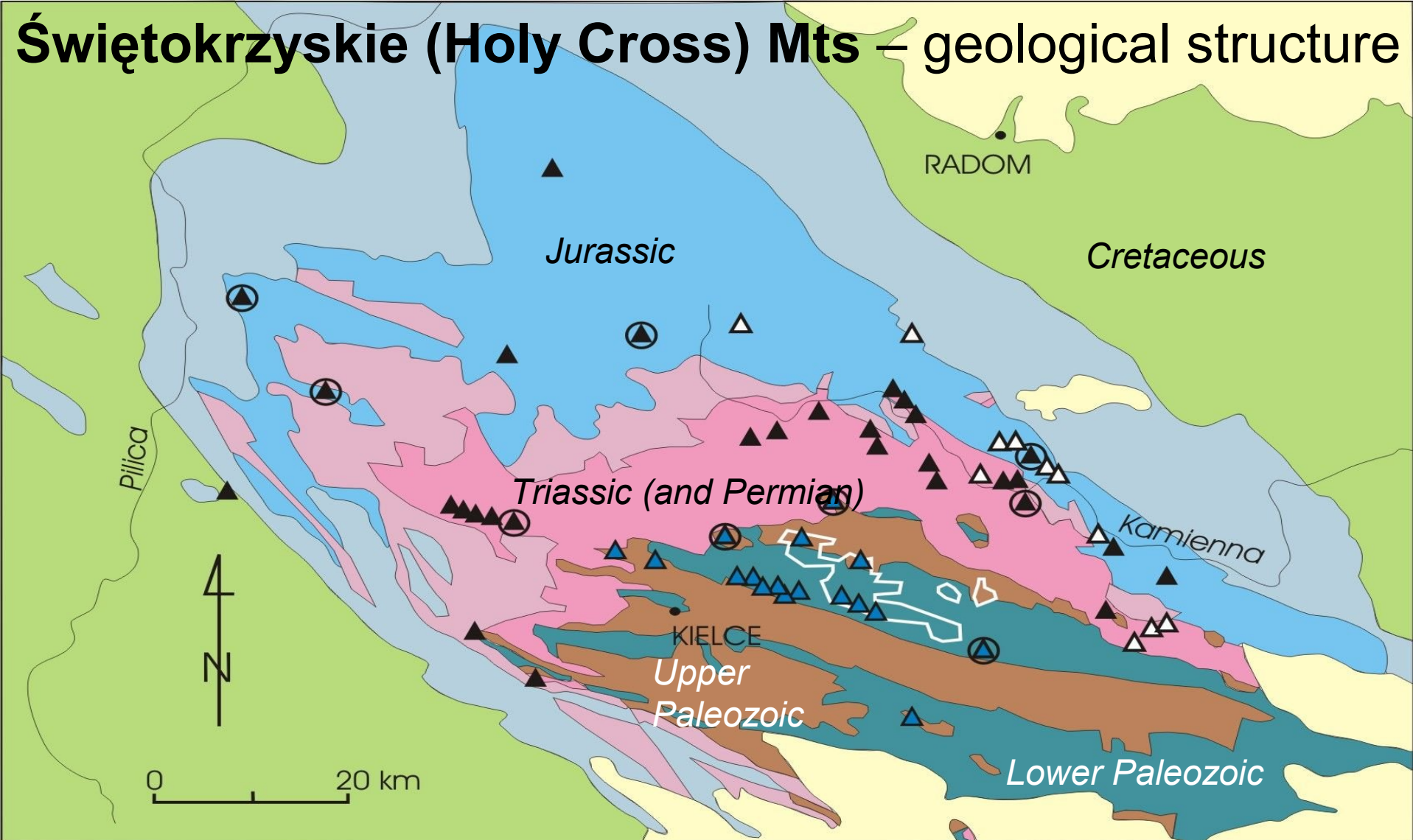
A photograph showing the interior of a dark cave. A person is crouching at the entrance, looking out into a bright, wooded area. The person's legs and feet are visible, wearing light-colored pants and dark boots. The cave floor is covered in dark, damp earth and some small plants. The entrance is a bright opening in the dark cave, showing a forest of bare trees outside.

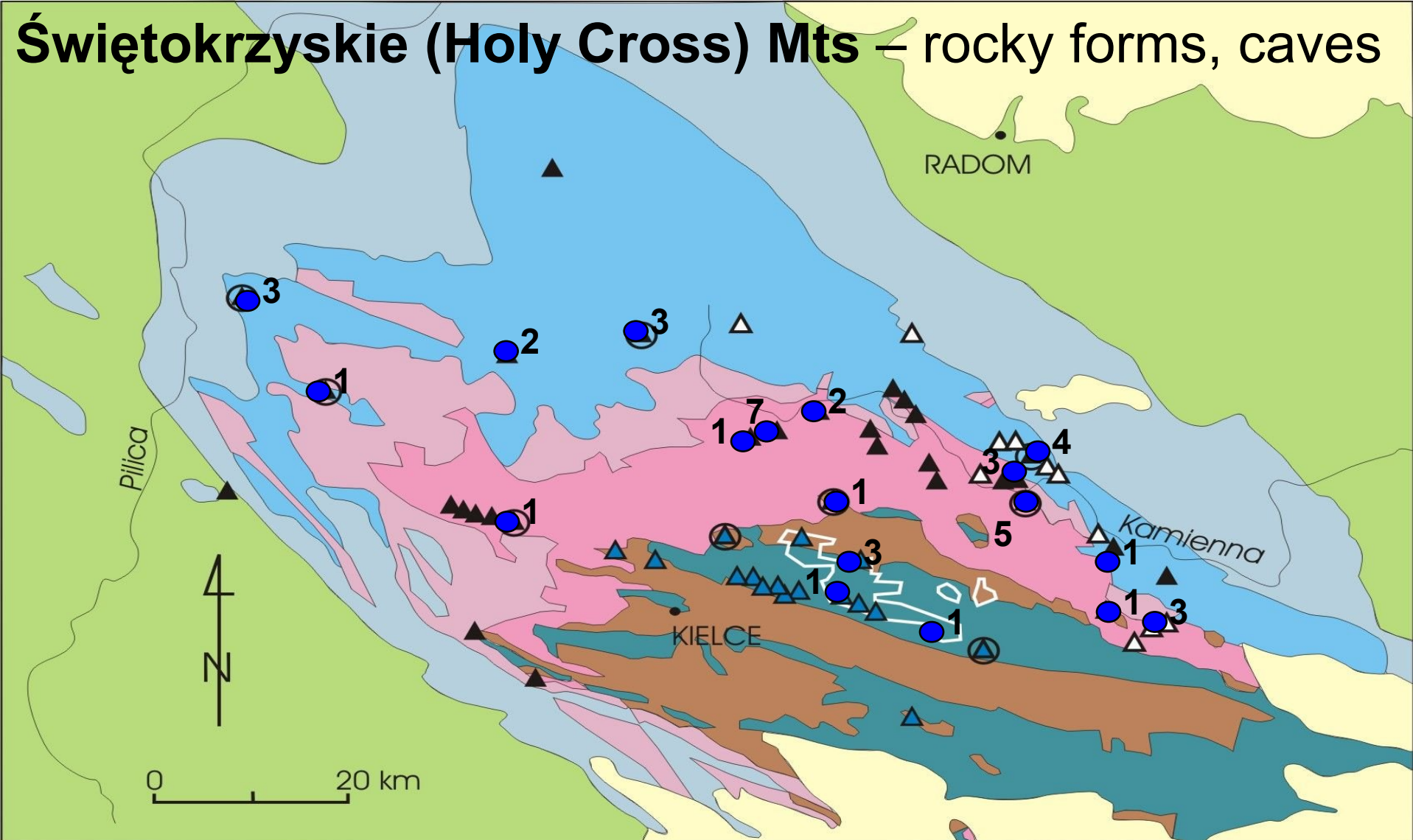
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Świętokrzyskie (Holy Cross) Mts – caves in sandstones

40 caves – total length 244 m

23 caves (131 m) – Triassic sandstones (conglomerates)

11 caves (65 m) – Jurassic sandstones (conglomerates)

4 caves (42 m) – Devonian sandstones

2 cave (6 m) – Cambrian quartzitic sandstones

The longest cave – Jaskinia Ponurego - 25 m


3 caves – more than 10 m

18 caves – 5-10 m)

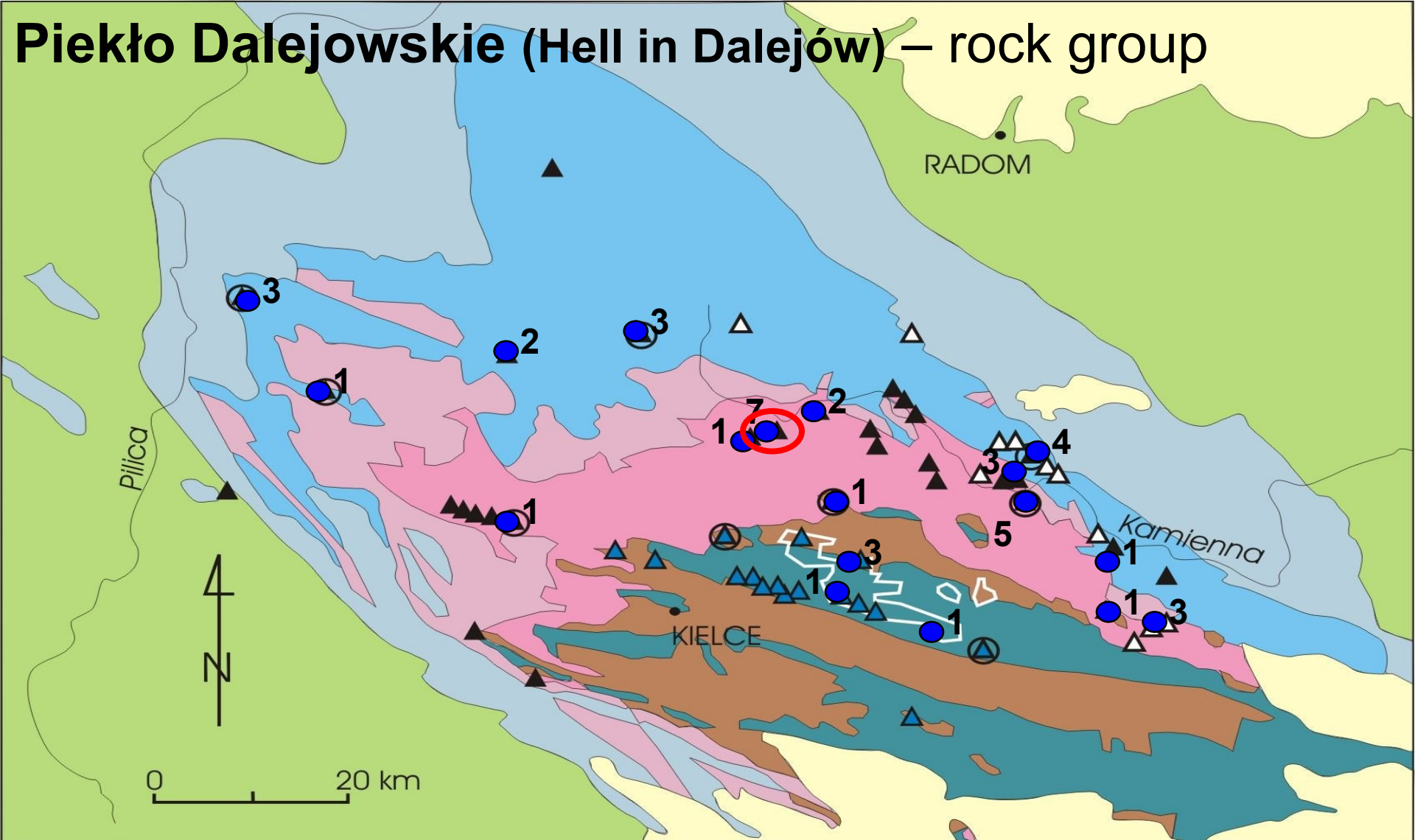
19 caves – less than 5 m

Majority of caves represent genetically complex type

formed owing to the combination of weathering, erosional and gravitational processes.

Characteristic genetical examples ... 

Pieczęto Dalejowskie (Hell in Dalejów) – rock group

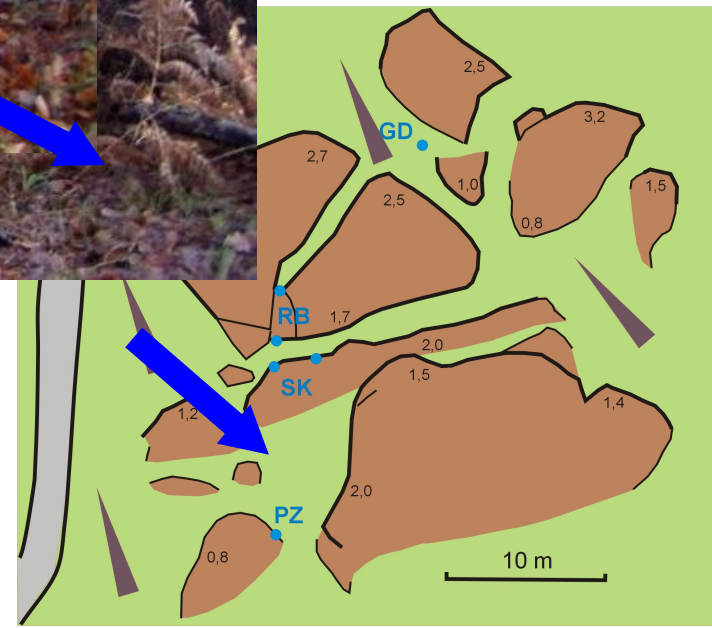


1 ▲	4 ⊕	7 □	10 □	13 □
2 ⊕	5 ▲	8 □	11 □	14 □
3 ▲	6 □	9 □	12 □	

Piekło Dalejowskie (Hell in Dalejów) – rock group

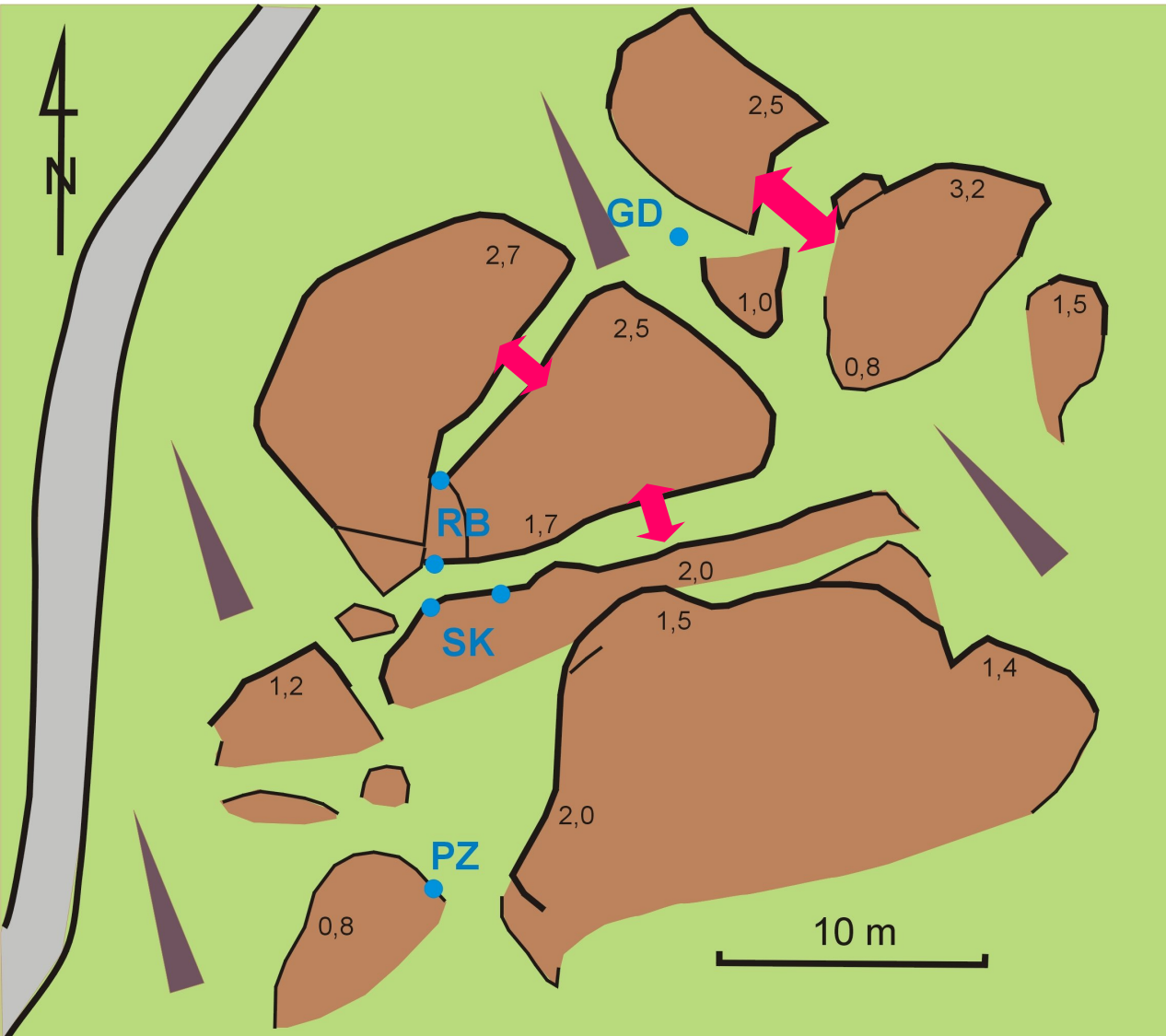


table-like forms (blocks)



Piecko Dalejowskie (Hell in Dalejów) – rock group

table-like forms (blocks) as accurate example of the gravitational spreading of rock massifs down the slope.

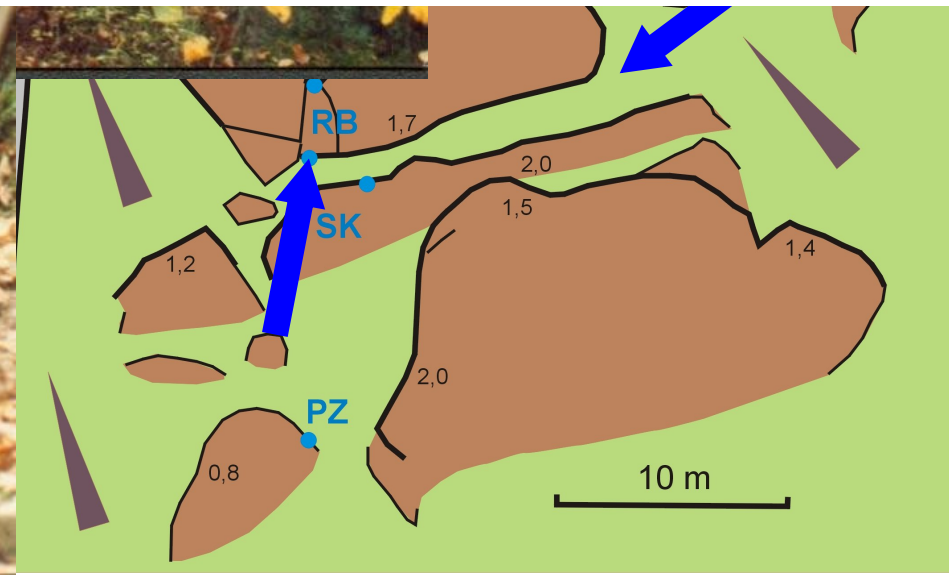
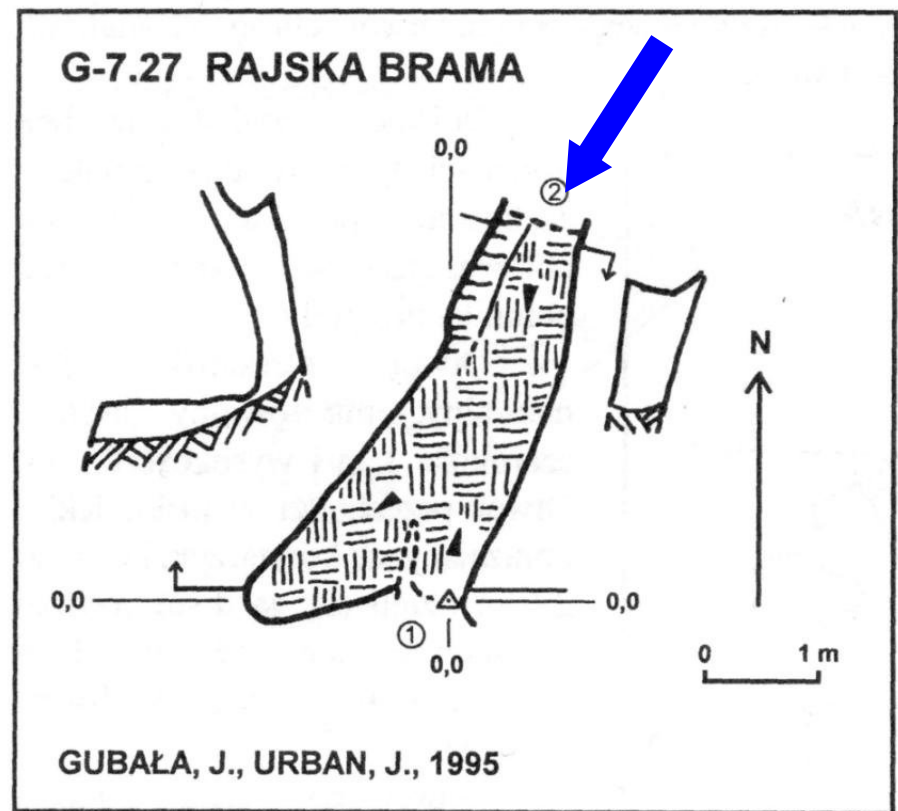


7 small caves:

7 m + 3,5 m + 3,5 m + 4 m
+ 4 m + 4,5 m + 5,5 m

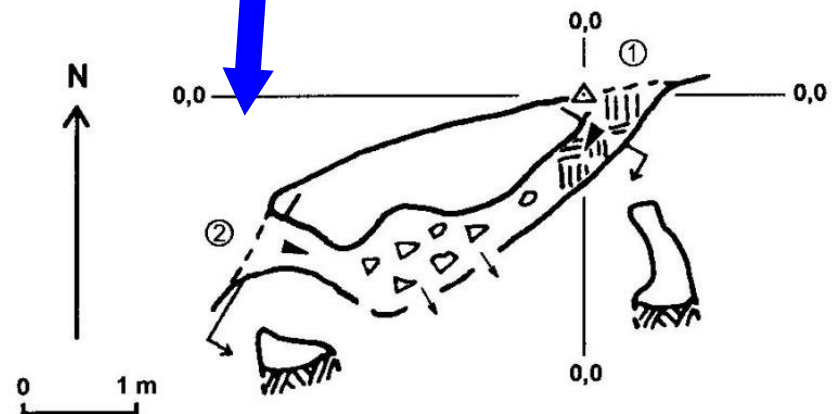
Three caves prove the
gravitational movements
of rock massifs
-crevice type caves

Four caves developed
most probably due to
the creeping of the loose
material (sand).

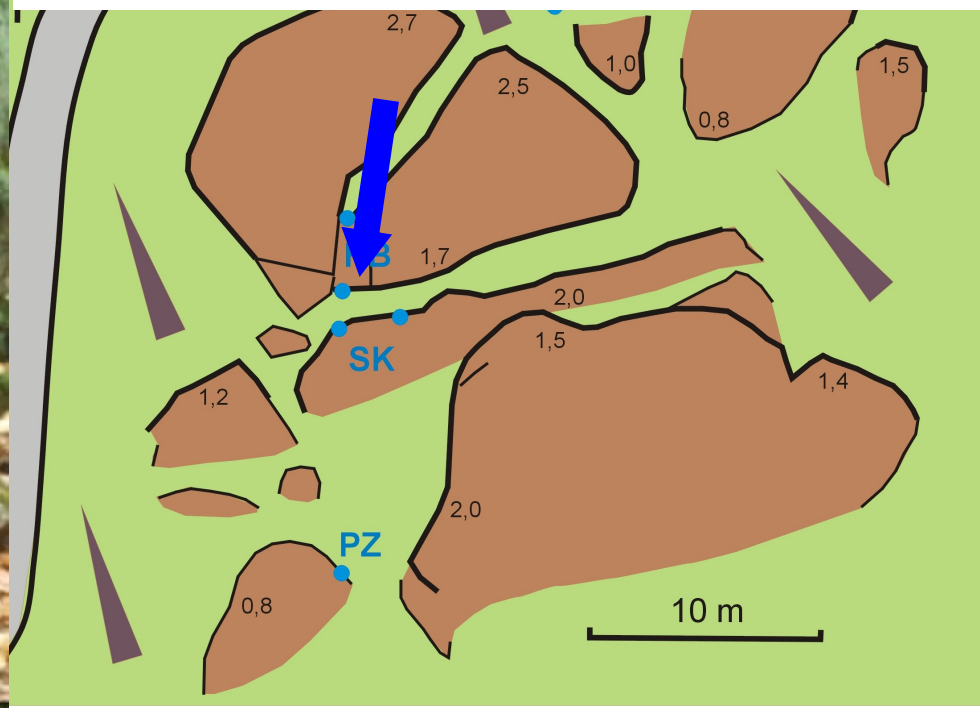


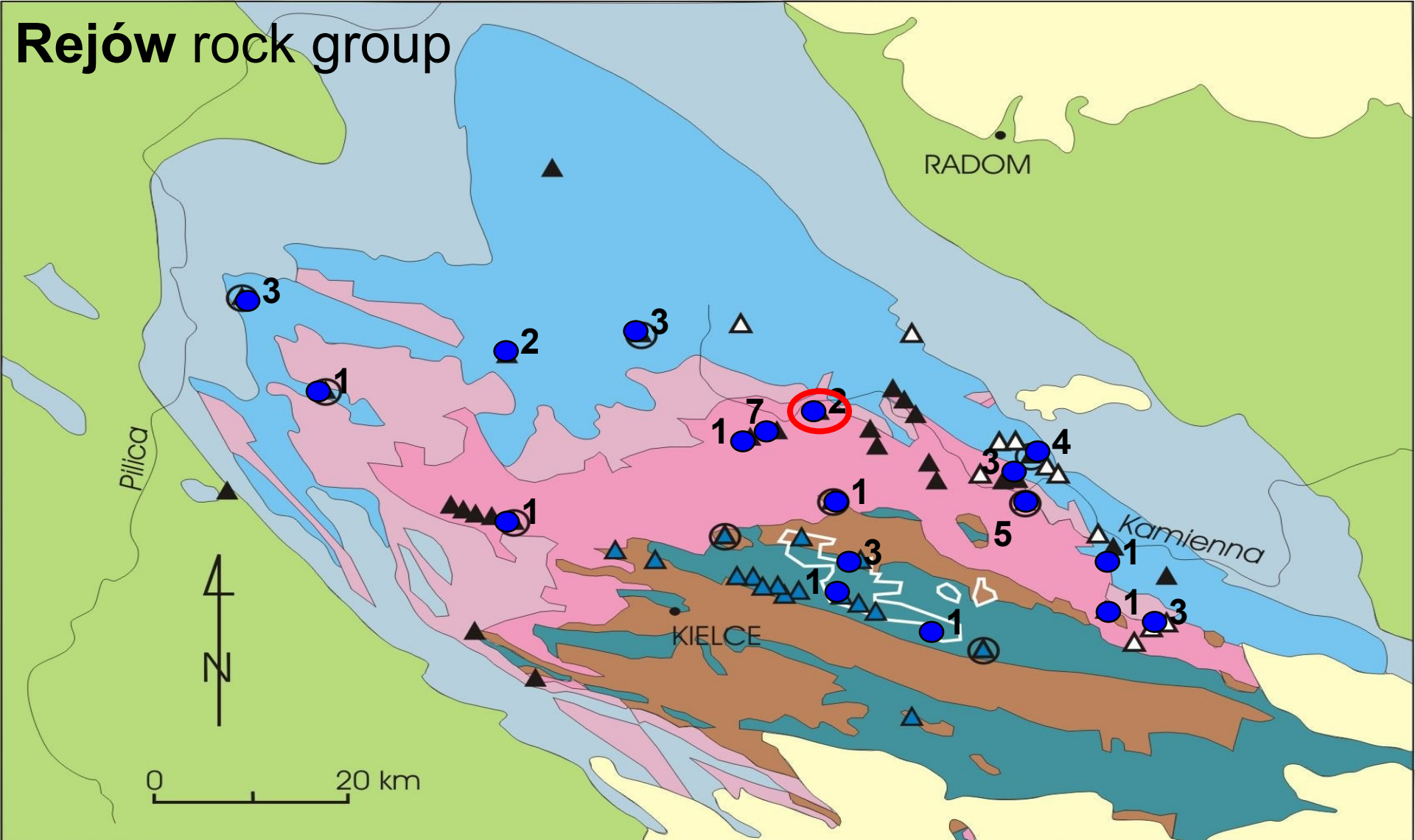


G-7.25 SCHRONISKO Z KOŚCIĄ



URBAN, J., 1996





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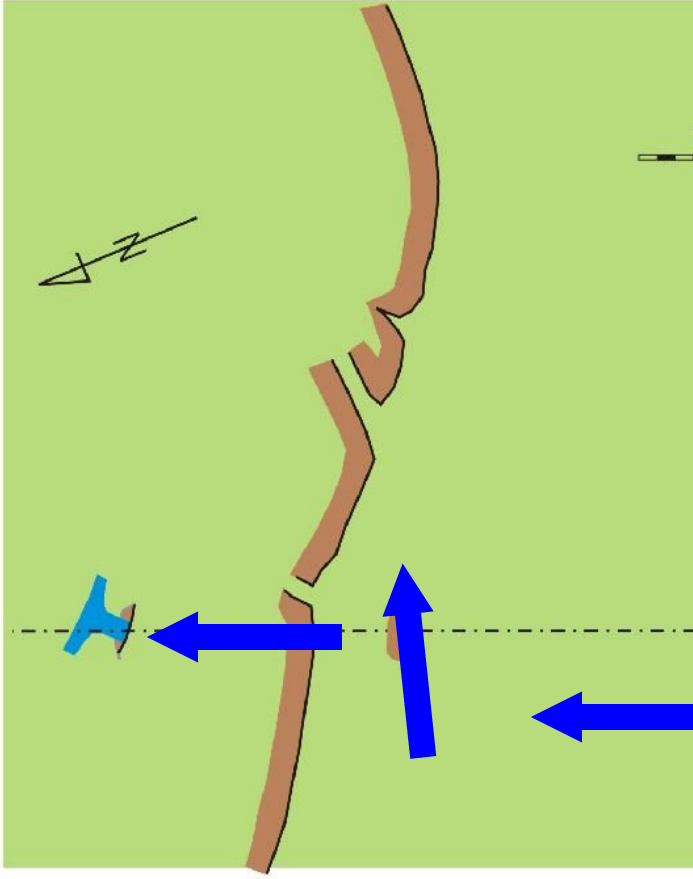
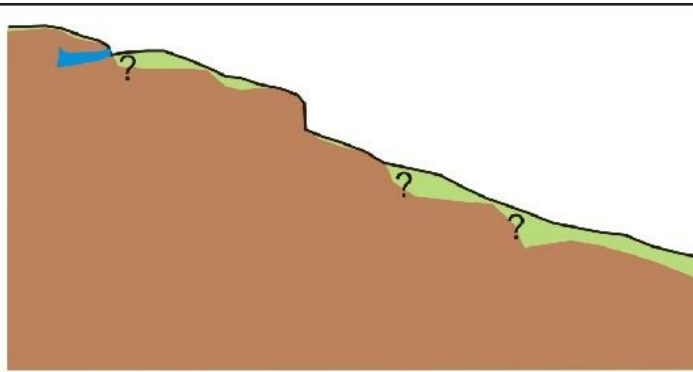
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Rejów rock group

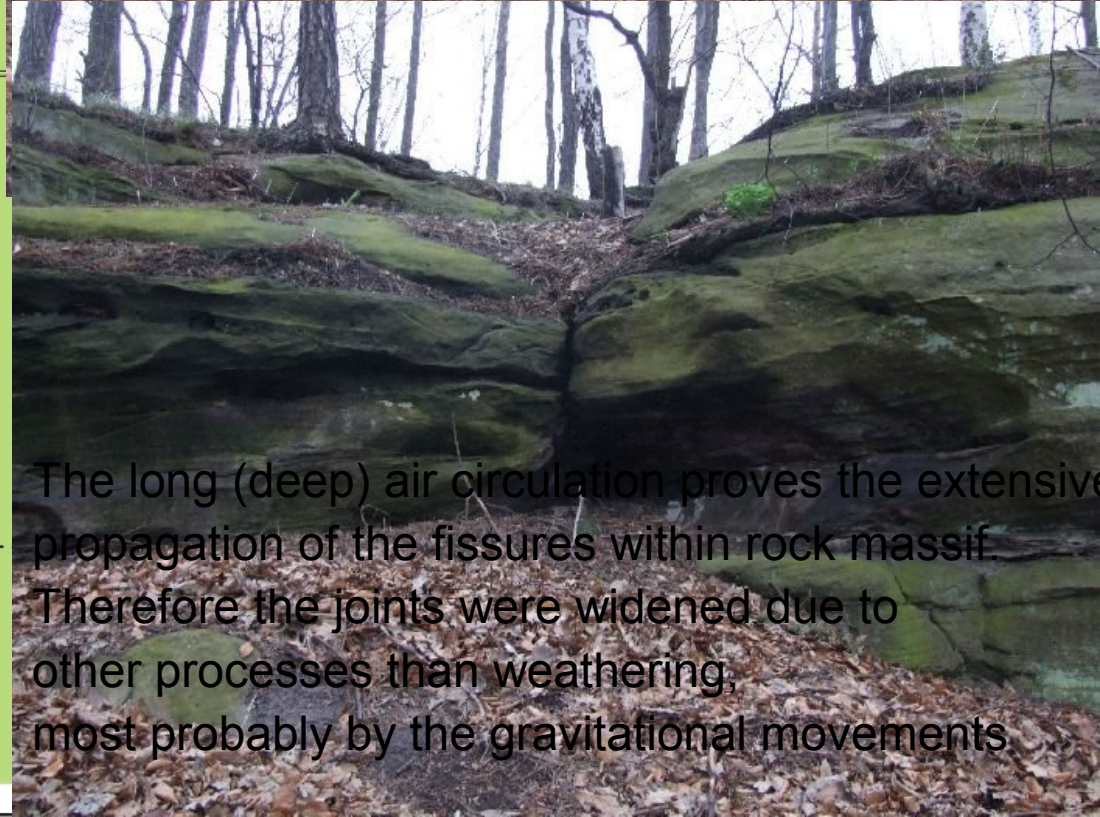
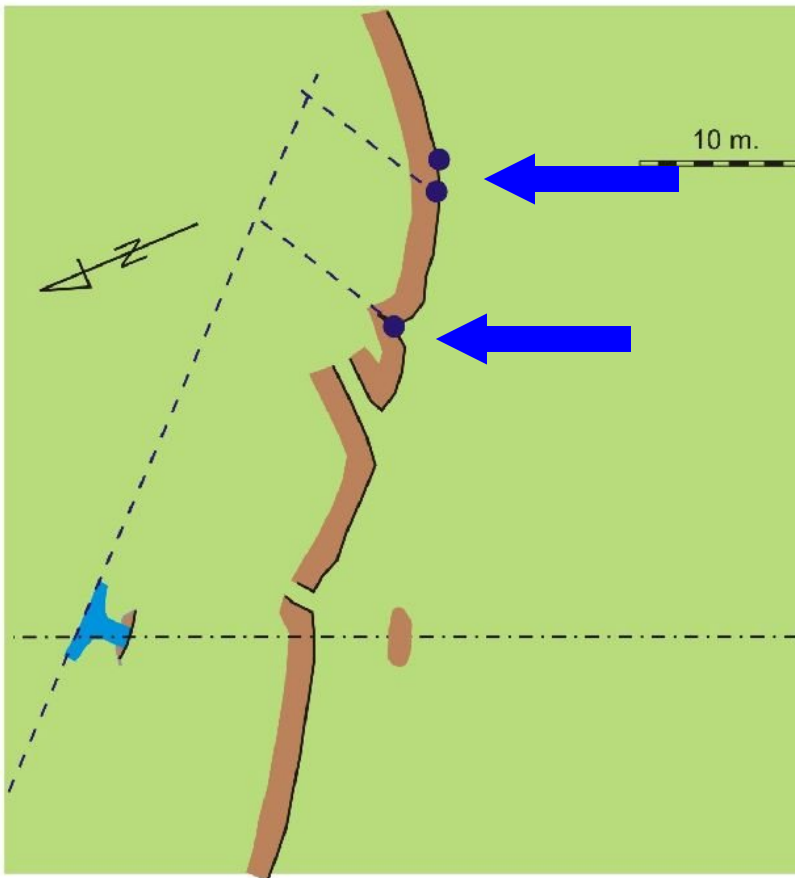
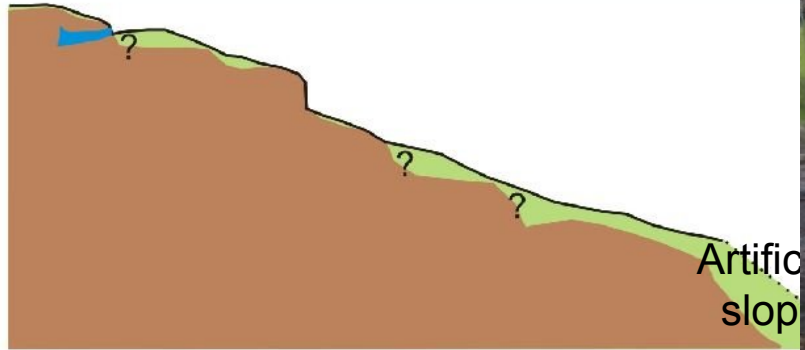
cliffs, table-like forms on the steep slope; 2 small caves: 2m + 3,5m



Rejów rock group



Rejów rock group



The long (deep) air circulation proves the extensive propagation of the fissures within rock massif. Therefore the joints were widened due to other processes than weathering, most probably by the gravitational movements

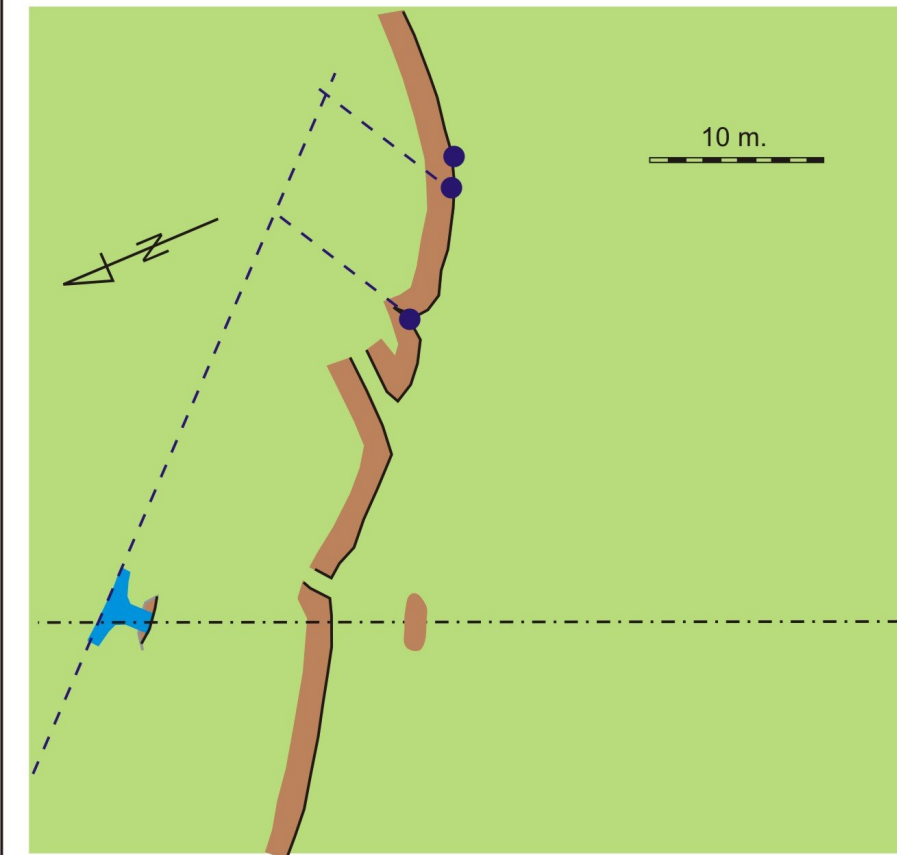
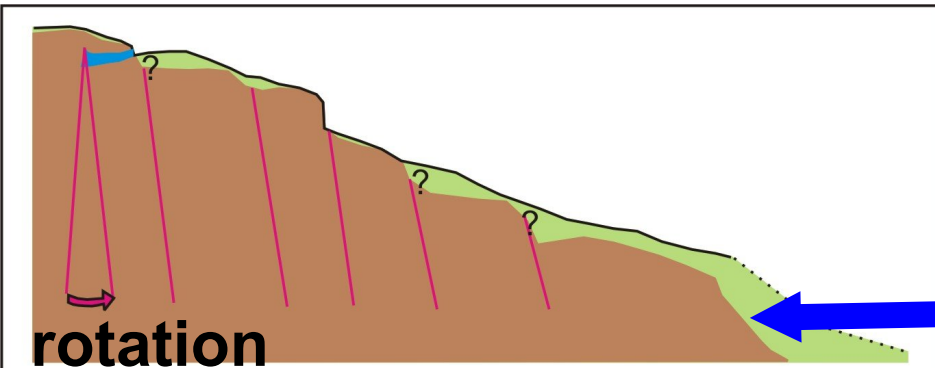
Rejów rock group



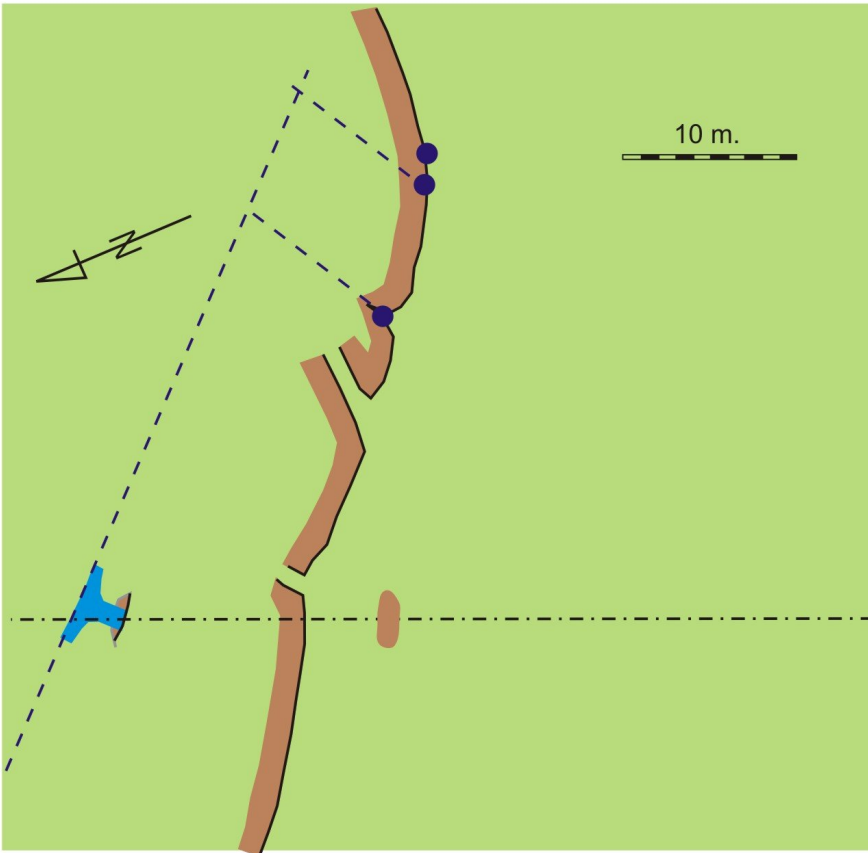
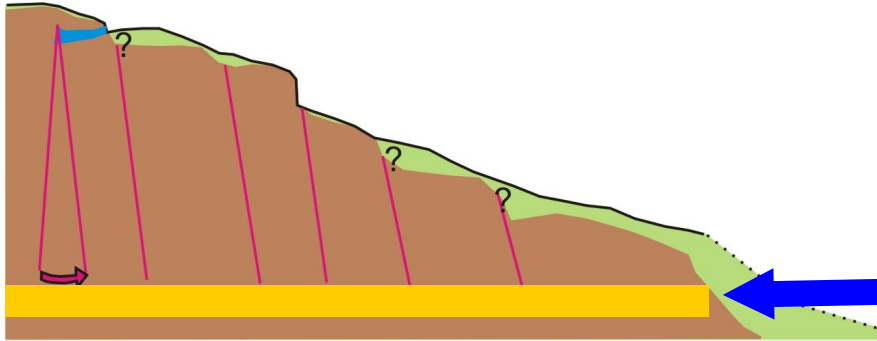
Rejów rock group



Rejów rock group



Rejów rock group



The cave represents the accessible part of the system of joints, which were widened due to the rotation of rock blocks facilitated by the occurrence of the clayey insert.

- crevice type

Caves in sandstones of the Świętokrzyskie Mts - conclusions

1. The caves in the sandstones and quartzitic sandstones are connected with the natural outcrops of these rocks (usually rock forms) and processes active in the surface parts of the rock massifs.
2. The caves were formed usually due to the combination of processes, but the predomination of one-two genetical processes and rock environments stimulating the cave development, can be usually identified.
3. The principal processes responsible for the development of the caves in the sandstones/conglomerates are:
 - a) various gravitational movements of the hard rock massifs (blocks):
 - lateral spreading,
 - toppling,
 - rotation,
 - b) mechanical weathering followed by gravitational movements of the loose (weathered) material (creeping, solifluction),
 - c) mechanical-chemical weathering followed by subsurface water (pluvial) erosion (washout).
4. The adequate examples of the effects of these processes can be found among the caves in the region.
5. The classification of J. Vitek (1983) is useful, but not sufficient for detailed description of processes generating the cave formation and transformation.
6. The caves are rather young (as the rock forms) and still transformed often by the same processes responsible for their formation.