

New opportunities for geotourism development at geoarcheological site Holedná Hill (Brno, Czech Republic)

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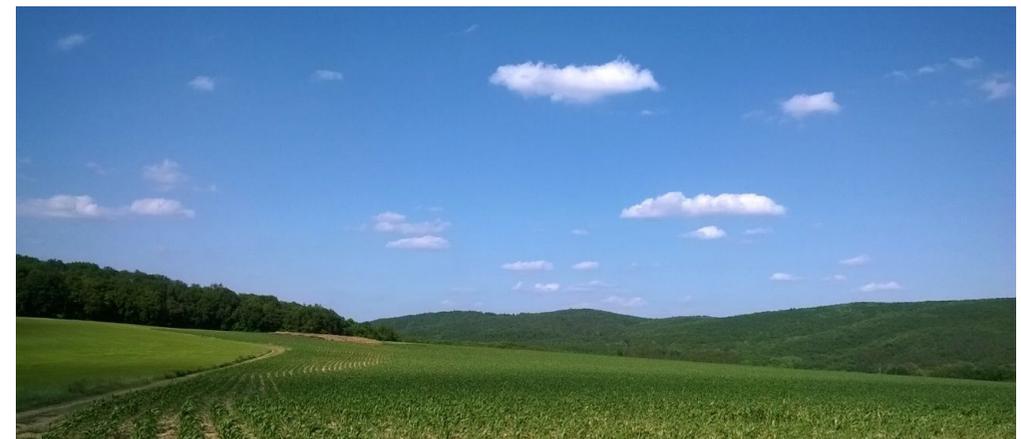
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Geotourism as a type of Special Interest Tourism

- Special Interest Tourism is often seen as a form of ‘alternative’, ‘ethical’ or ‘environmentally responsible’ tourism
- classified according to the typology of niche tourism, e.g. cultural tourism, energy tourism, dark tourism, agrotourism, ecotourism, industrial tourism, spa tourism and many others
- geotourism meets the criteria that define Special Interest Tourism (sustainability, environmental responsibility, existence of special interest – in this case, geodiversity and landscape)
 - Natural sites (geological, geomorphological, hydrological, palaeontological...)
 - Geocultural sites – with strong relevance for cultural issues (e.g. history, archaeology, mythology, religion, arts...)

Geoarcheological site Holedná Hill

- Geoarcheological site as an example of geocultural site
- Importance for geotourism
 - it is both significant from the Earth-science point of view and it includes archaeological issues closely related to the geodiversity
 - high relevance concerning the living nature
 - traditional recreational and tourist background for Brno citizens (including tourist infrastructure – marked paths, shelters, lookout tower)
- it can be supposed that the area is going to be more and more used for recreational and tourist purposes → it is necessary to design such rules and activities that would help visitors to recognize the importance of this area and assure its sustainable use

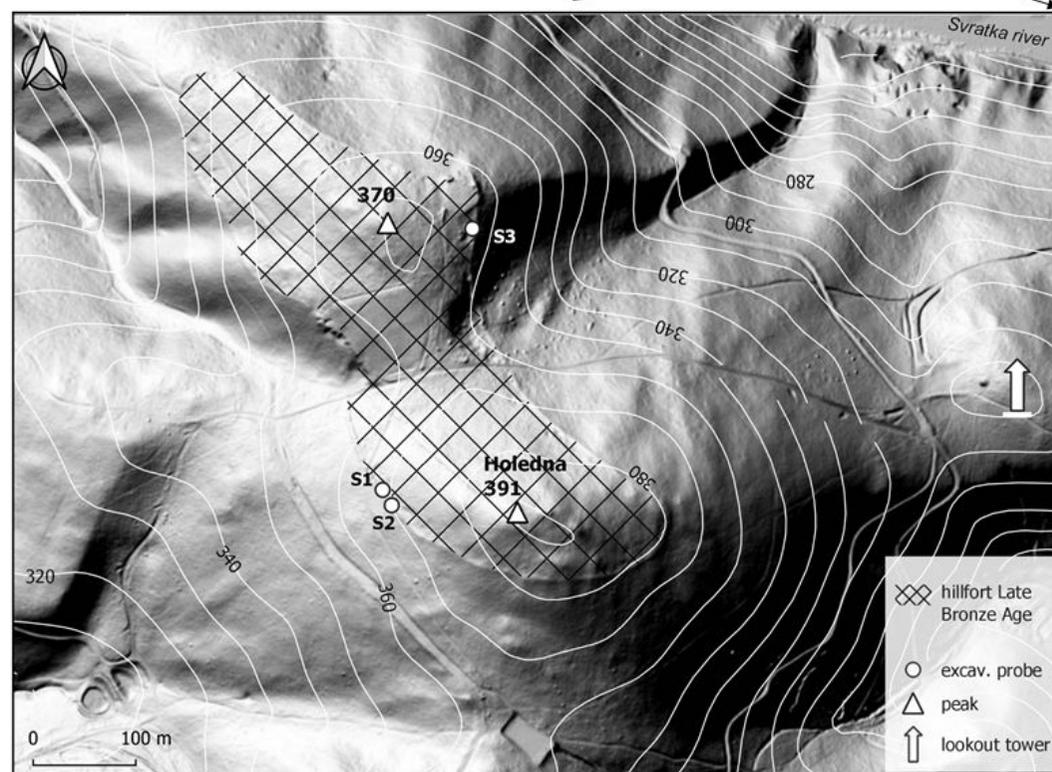
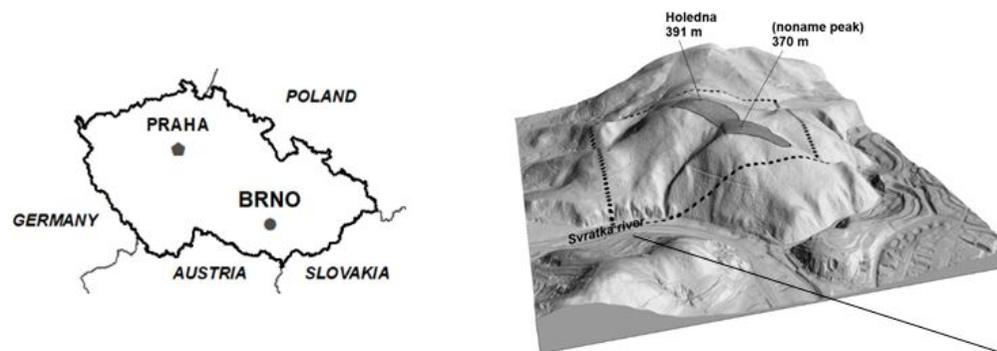


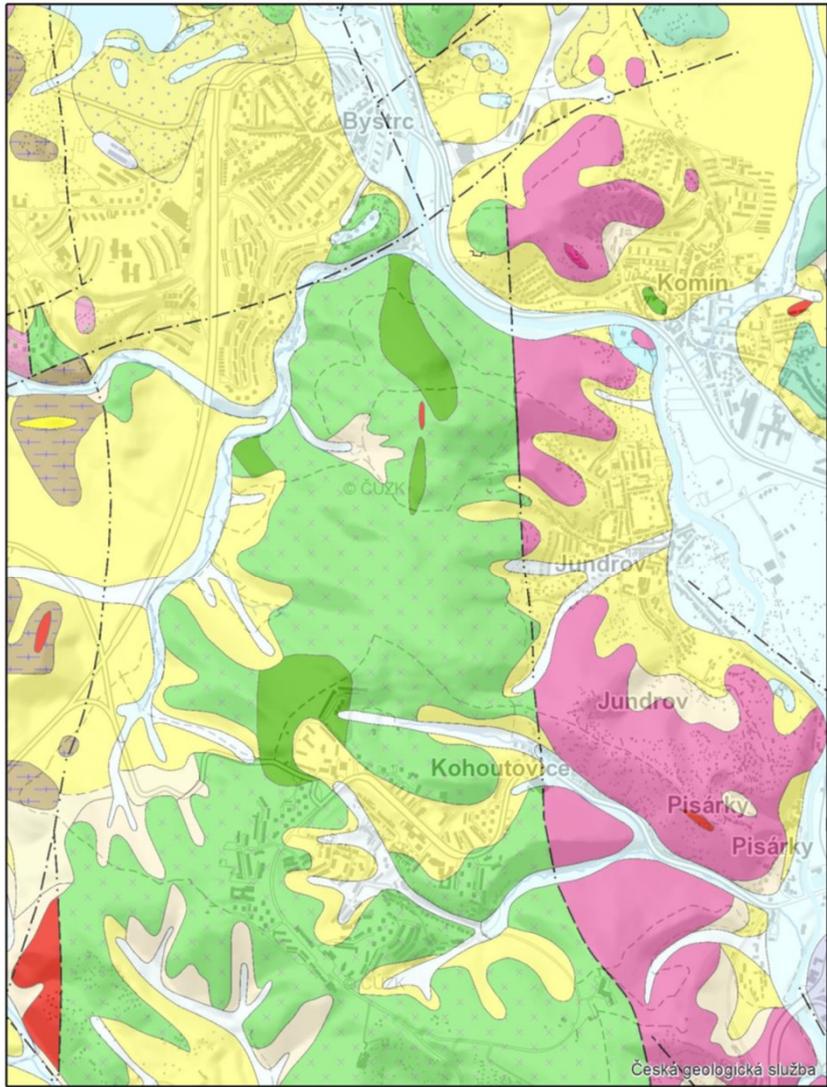
Methods and procedures

- Knowing the site, its particular features
 - geomorphological reconnaissance trip – identification of specific anthropogenic and archaeological features
 - detailed fieldwork and literature and other resources review (e.g. LIDAR scans)
 - geoarcheological methods (radiocarbon dating of charcoal wood)
- Assessment of geotourist potential
 - set of criteria – based on the methods already used for the geomorphosite assessment (scientific, cultural, tourist and conservation values)
 - SWOT analysis

Study area

- Significant ridge on the north-western part of Brno City
- Diorites, metadiorities, tonalities (metadiorite zone of the Brno Massif)
- Valleys of Svratka River and Vrbovec Brook
- Gullies and small valleys, springs, small ponds
- Cultural issues (boundary stones)





22. srpna 2019

0 0.3 0.6 0.9 1.2 km

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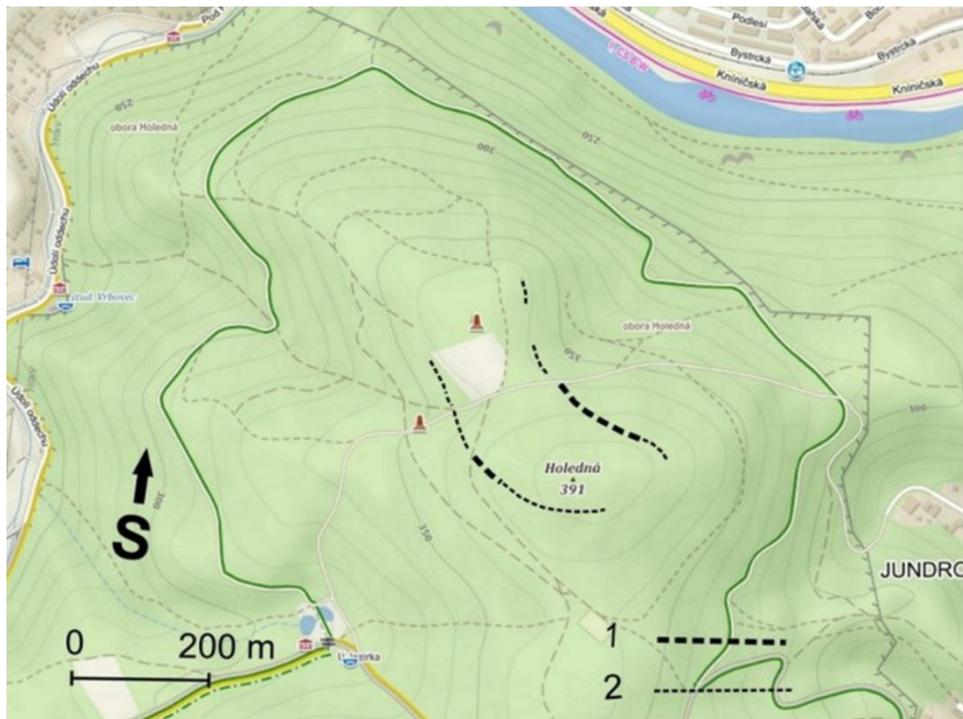


Anthropogenic structures, archeological aspects

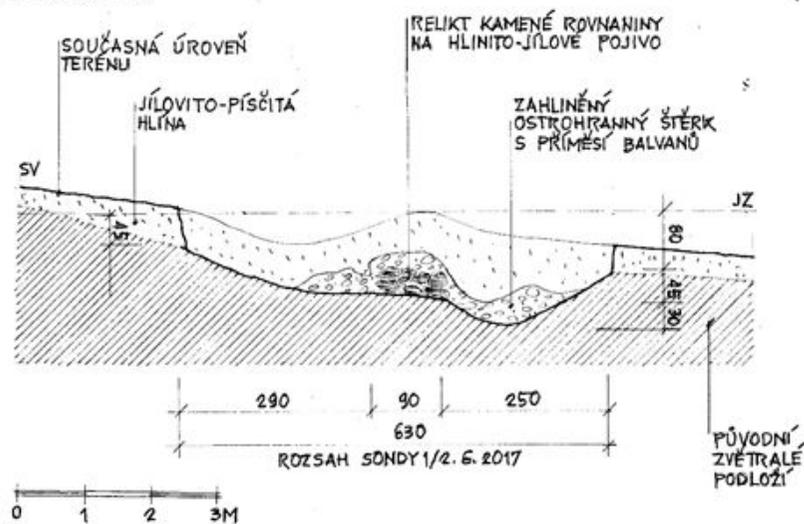
- accumulation walls composed of stones and boulders, surrounded by a shallow ditch – anthropogenic origin
- exact position of accumulation was specified using a digital relief model (LIDAR)
- burnt layer of soil with remnants of charcoal → radiocarbon dating - Late Bronze Age
- multidisciplinary research has confirmed that accumulation wall with an original base with a length 2 m and a height of 1 m was constructed in the Late Bronze Age, and oak poles were part of wall
- The purpose of the construction is not yet fully explained; the most acceptable explanation is that it was a planned fortified settlement (hillfort).



Position of accumulation walls on Holedná Hill and profile of one of them (probe 1)



SONDA 1
KATZ ÚZ. KOMÍN
TRÁŤ HOLEDNÁ - 2. 6. 2017
PŘÍČNÝ ŘEZ - MĚŘITKO 1:50



Tourism and conservation issues

- Tourist aspects
 - Marked paths, shelters
 - Educational path
 - Lookout tower
- Conservation measures applied to the study area
 - No protection according to Nature Conservation Act (n. 114/1992 Coll.)
 - southern part of the ridge (neighboring with study area) declared as Special Conservation Area according to the European Directive on Habitats
 - diorite outcrop on the northern part of the ridge is included in the Database of Geological Localities kept by Czech Geological Survey
 - no cultural protection – it is supposed that the site will be included in the database of archaeological sites – this will allow future investigations



Site assessment

scientific value	integrity	Generally well-conserved, occasional damage by visitors (erosion on pathways), outcrops suffer from weathering and occasional rockfall, slopes endangered by game (erosion, no herb layer)
	representativeness	Representative geomorphology (remarkable ridge, deep river valley), occurrence of typical rocks of Brno massive and remnants of the iron ore crusts
	rareness	Several similar ridges built of pre-cambrian rocks in the area of Brno city, but iron ore crusts are unique within the wider area
	paleogeographical interest	Deeply incised valley of Svratka River is important for paleogeographical studies – terraces and phases of deepening
added value	ecological	Presence of protected species, existence of natural oak-beech forests, water components with specific ecosystems (small ponds)
	aesthetical	Harmonic forest landscape, viewpoints
	cultural	Archaeological importance (Bronze age fortification), Neolithic settlement, historical boundary stones
	anthropogenic landforms	Ramparts and ditches recognisable in terrain with a help of interpretive materials; road cuts allow to study typical rocks
use characteristics	protection status	No protection according to Nature Conservation Act (n. 114/1992 Coll.), southern part of the ridge (neighboring with study area) declared as Special Conservation Area according to the European Directive on Habitats; diorite outcrop on the northern part of the ridge is included in the Database of Geological Localities kept by Czech Geological Survey. There is no cultural protection.
	damage, threats	Uncontrolled visitors (vandalism, littering), soil erosion by tourists and game, intensive rock weathering in the road cuts
	accessibility	Accessible by urban transport, dense network of maintained paths
	security	Paths in relatively good conditions, the only danger can be occasional rockfall on outcrops (it can damage road)
	site context	Harmonic forest landscape, from several places there are views on Brno and deep valley of Svratka River
	tourist infrastructure	Marked paths, shelters, catering within walking distance, lookout tower, activities for children
	interpretive facilities	Educational path with information about living nature
educational interest	Possible interpretation of geology and geomorphology of the area, necessary to add the information about anthropogenic landforms and archaeological findings – setting the links between geodiversity and cultural aspects	

SWOT analysis of Holedná Hill

Strengths

Important geological and geomorphological site
Archaeological and historical aspects
Importance of the site for research
Existing tourist infrastructure
Good accessibility (both municipal and individual transport)
Well known and favourite place, traditional recreational background for citizens

Weaknesses

Overcrowding during weekends, holidays
Problems related to new lookout tower (lack of parking places and overcrowded access way)
Problems with parking
Focus on the living nature in educational path and generally in the site promotion
Lack of information about geodiversity and archaeological aspects
Slope erosion caused by game
No legal protection of natural and cultural heritage

Opportunities

Complex promotion of natural and cultural heritage
Sustainable use of heritage for educational purposes
Promoting public transport as a more comfortable possibility to get to the site
Creating the conduct rules both by authorities (municipal office, municipal forests), stakeholders (landowners) and visitors
Redistribution of visits (all the year)
Cooperation with different institutions (academic, municipal, non-governmental)

Threats

Continuing overcrowding and consequent damage of the area
Lack of interest on geoheritage and cultural heritage by local stakeholders and authorities
Lack of finances for suitable promotion of the site values
Irresponsible amateur research (inappropriate digging in order to find some artefacts from Bronze Age based on metal detector users)
Threats to anthropogenic landforms
Continuing problems with parking that may result in the damage of surroundings and reductions of life quality of local inhabitants

Conclusions

- It is necessary to include wide spectrum of stakeholders and other institutions (authorities, non-governmental organisations, public, landowners, local schools) into the future research and discussions
- Proposals for sustainable use:
 - Educational activities
 - Reconsidering legal protection of geodiversity and archaeological phenomena
- Integrated promotion, legal protection and further research allow to
 - interconnect natural and cultural heritage of the area
 - can help to avoid overexploitation of the area
 - assure sustainable use of this important geoarchaeological site

Thank you for your attention!

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