Hronov-Poříčí Fault

Structure ID: HPF
Fault Section IDs:
Related terms: (cze:)

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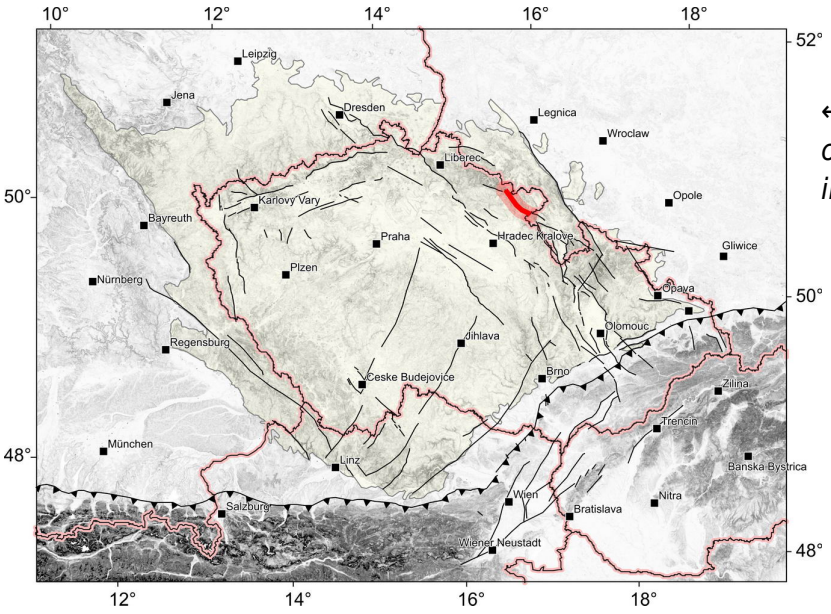
Last update: 25. 6. 2020



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General description

The Hronov-Poříčí Fault has an orientation of NW-SE between Žacléř and Hronov (Malkovský 1977, Tásler ed. 1979) (Fig. 1). It changes it´s orientation to WNW-ESE near Hronov and continues to Poland, where are the fault structures called as Žďarky-Pstrążna structure (Wojewoda, J., 2009a). The continuation of the fault towards NW from Žacléř is not clear and provable in the rocks of Krkonoše - Jizera crystalline complex. The fault itself forms a boundary between Intra-Sudetic and Krkonoše-Piedmont basins of Permo-Carboniferous origin (Tásler et al. 1979). Also, it bounds upper Cretaceous Police basin from SW (Malkovský 1979).

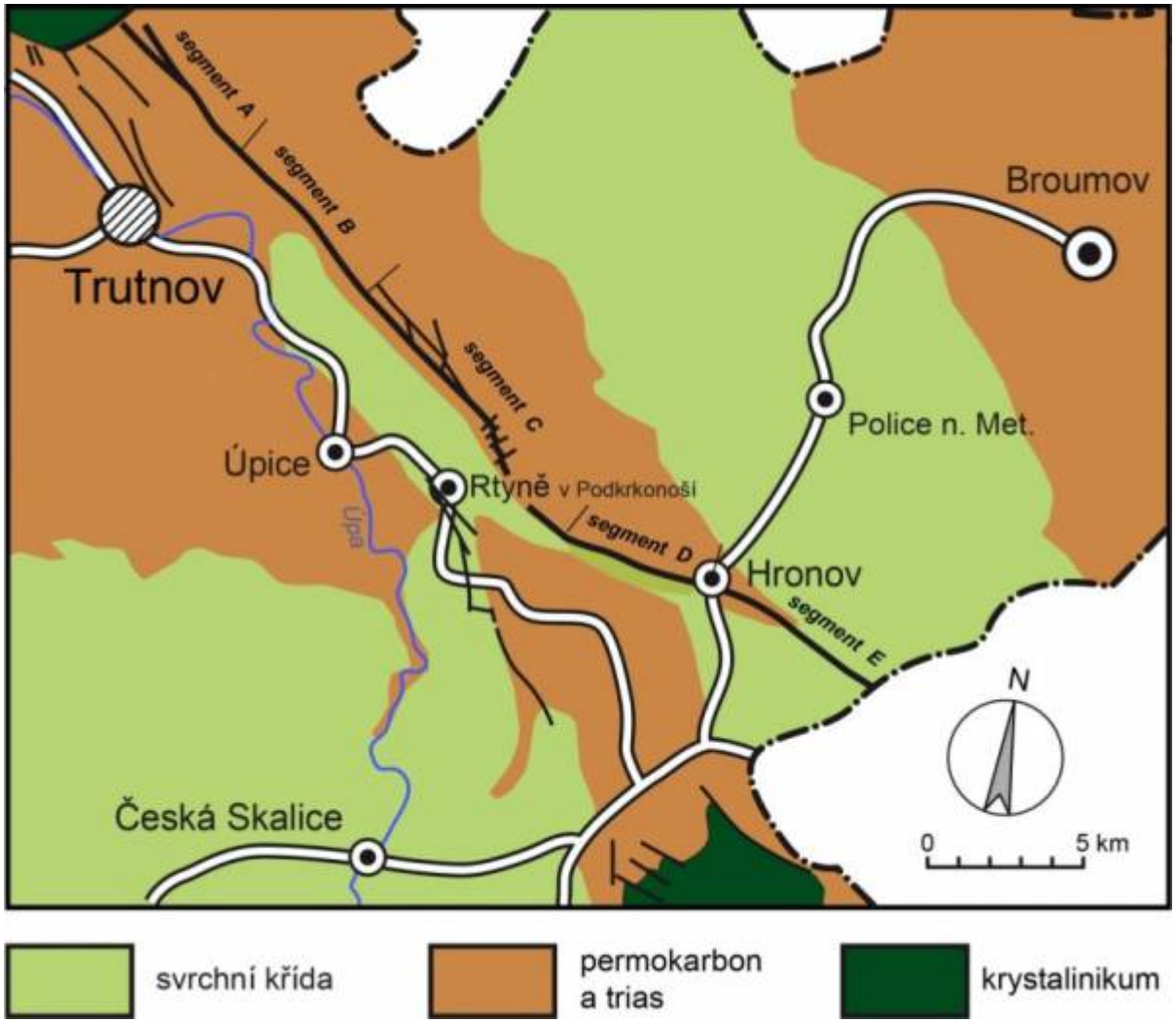

Fig. 1. Geological sketchof the Hronov-Poříčí fault with the main segments.

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The fault s.s. has an orientation of NW-SE, its main plane is dipping steeply to the NE and works as a reverse fault. There are outcrops of Carboniferous rocks of Žacléř and Odolov formations in the tectonic elevation to the NW side from the fault. In some places, there are also the outcrops of underlying Krkonoše-Jizera crystalline rocks. There are mostly Permian or partially Carboniferous rocks in the tectonic depression on the other side of the fault. There are thrusting of Carboniferous rocks over Cretaceous in the surroundings of Hronov.

Most of its course, the fault s.s. has the characteristics of a fault zone. The main fault is following by several parallel ones in the distance up to 250 m. Towards the SE, the accompanying faults are going closer to the main one and we can describe the structure as a simple fault in the part to the SE from Strážkovice. The fault plain is dipping to the NE – there is a dip 60-70° in the surroundings of Svatoňovice, 70-80° near Žacléř and Hronov.

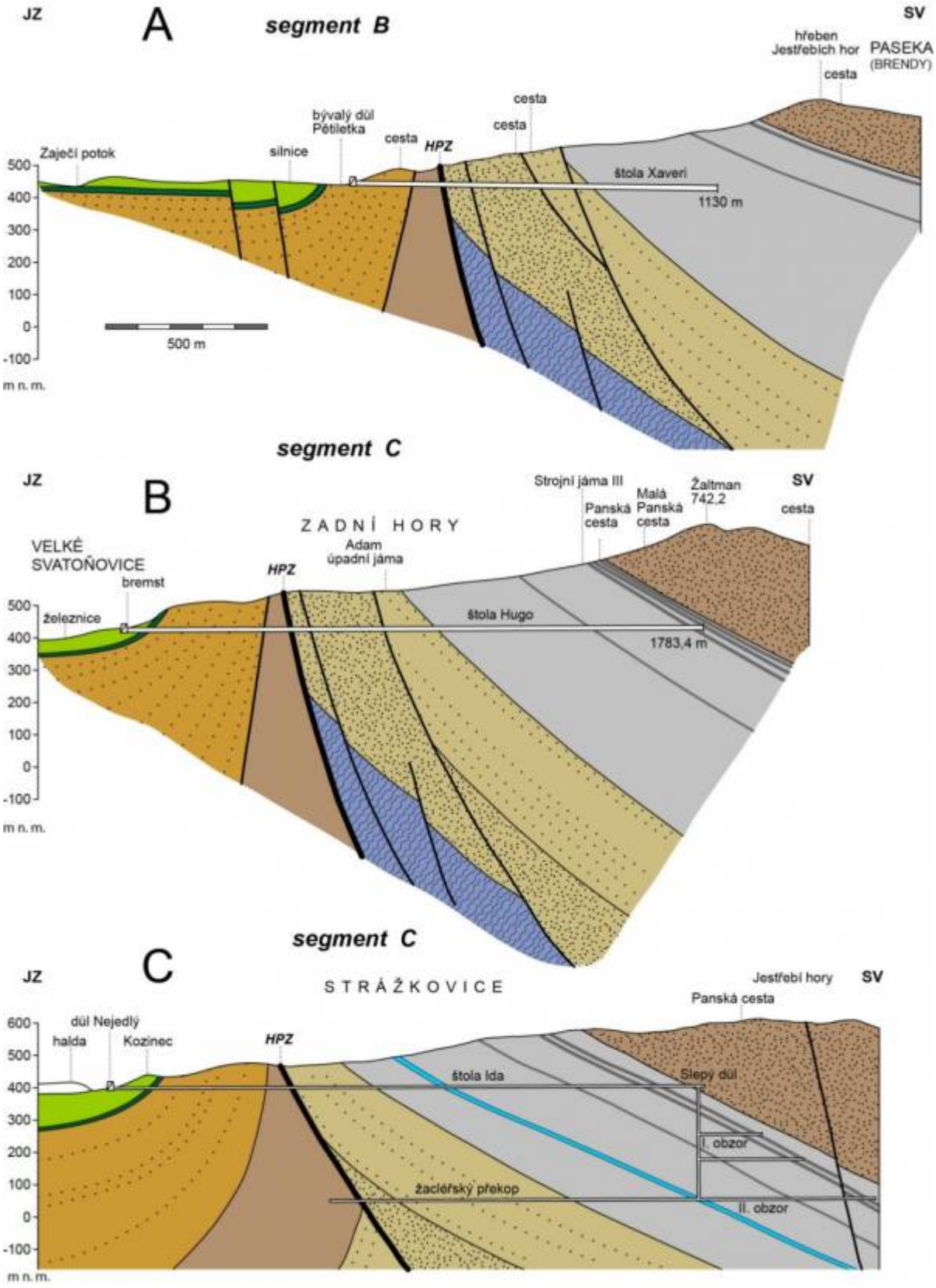

Fig. 2. Representative geological profiles across Hronov-Poříčí fault following the galleries Xaveri (A), Hugo (B) a Ida (C), nonexaggerated

The core of the main fault is separating the Carboniferous sedimentary rocks in the NE block from younger Permian and Cretaceous sediments in the SW block (Fig. 2). It is several meters wide at maximum and it is formed by breccia, blocks of different sizes or partially grey clay with crushed rocks.

The zone of the deformation along the fault can be separated into inner and outer part. The inner part is several hundred meters wide, it becomes narrower near Odolov and it is only tens meters wide in the surroundings of Hronov. The rocks there is (with variable intensity) crushed, mylonitized, slided or transformed to tectonic breccia. Sometimes, they can be mineralised ($CaCO_3$, SiO_2). The outer part can be delineated by the presence of slickensides and joints. It is width can be up to 1 km.

The movement range along the Hronov-Poříčí fault is not clear yet. Malkovský (1977) theorizes about 1000m range.

Fault structure and dip

The architecture of a wide zone of the Hronov-Poříčí fault (s.l.) is rather untypical due to “roof-shaped” laying of sediments in the neighbourhood of the main fault. Traditionally, this structure was interpreted as the regional scale fold, subsequently breached and deformed by Hronov-Poříčí fault, which is going through the fold along the inflection axis between anticline and syncline (Tásler ed. 1964, 1979, Malkovský 1977). Therefore the origin of the structure is interpreted as a result of two different subsequent processes. The other theory suggests the origin of the structure during one process: forming the anticline and syncline by the layer dragging during thrusting on the fault (Prouza, Coubal a Adamovič 2015). The basic structures of the fault (s.l.) are rather simple and similar along the fault. There are not many signs of poly-phases evolution of the fault, e.g. distinctive crosscutting faults. Comparing to other faults in the region of northern Bohemia, the structures of the Hronov-Poříčí fault are corresponding to the structures of compression α1 of upper Cretaceous-lower Paleogene origin. There are not enough preserved Cenozoic sediments in the area for detailed dating of fault origin. However, some authors suggest poly-phase evolution of the Hronov-Poříčí fault s.l. : Nováková (2014) and Wojewoda (2009 b, c). Wojweoda suggests the deformation phases: 1) Paleogene drop of the NE block, 2) Neogene drop of the SW block, 3) forming of the Hronov-Poříčí graben during recent period. Tectonic evolution of the Polish part of the fault he explains by the dextral strike-slip fault rejuvenation during the Tertiary-recent period.

Cross structures and Segmentation

The Hronov-Poříčí fault can be divided to 5 main fault segments, according to different structure and origin: a) žacléřský, b) markoušovický, c) rtyňsko-svatoňovický, d) zbečnický, e) žďárecký.

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a) žacléřský – orientation NW-SE, dip 70-80°,dip direction: NE
b) markoušovický – orientation NW-SE, dip almost subvertical
c) rtyňsko-svatoňovický – orientation NW-SE, dip 60-70°, in the depth around 600 m dip around 40°
d) zbečnický – thrusting of Carboniferous rocks over Cretaceous, rise of the mineralised water on the crossing of Hronov-Poříčí fault and dislocations of N-S orientation.
e) žďárecký – orientation W-E, continues as Žďarky-Pstrążna structure (fault zone) in Poland
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Scarp morphology

Seismicity

To be revisited after completion of earthquake catalogue. Fix Me!

Pre-Miocene evolution

Fault activity in late Cenozoic

Tertiary

Quaternary

Related local evidence

(See layer **Local evidence** *on a map. The sites are listed in south-to-north order.)*

Main data sources for fault map

Other notes

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