Blanice furrow faults

Structure ID: BF
Fault Section IDs: BF_01E (East) to BF_06E and BF_01W (West) to BF_04W
Related terms: zlomy blanické brázdy (in Czech); Blanice furrow fault system (En)
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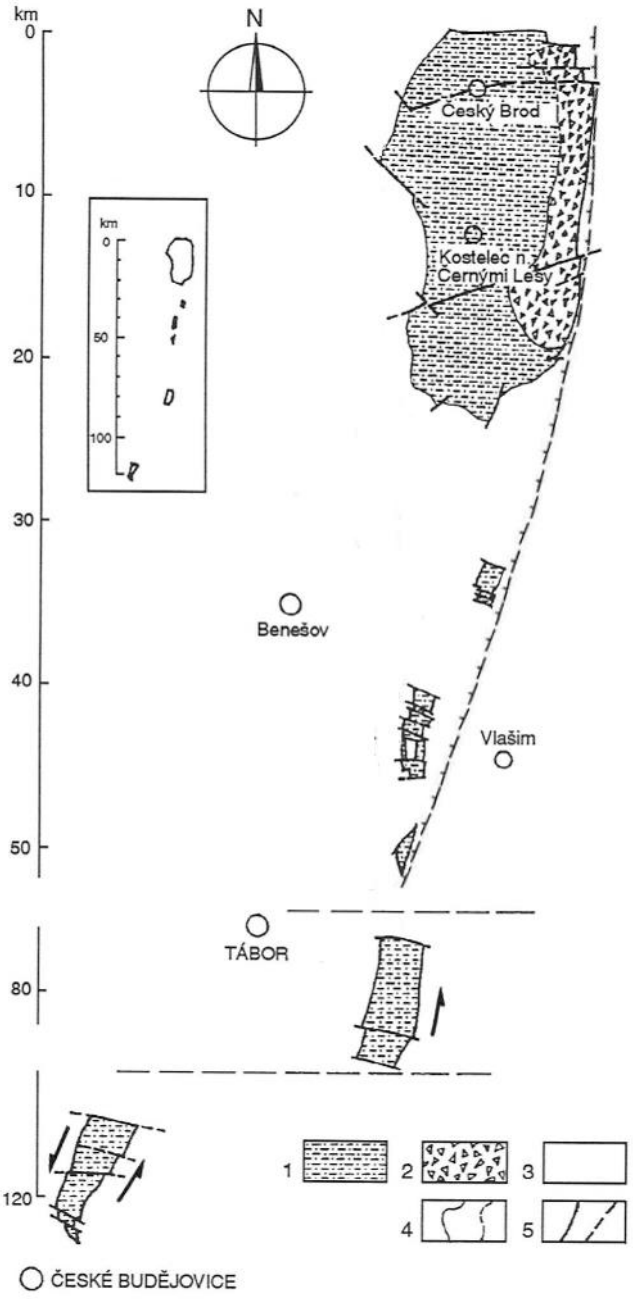
General description

Blanice furrow faults are very significant "N-S" faults, which belongs to the fault system of Kourim-Blanice-Rodl-Kaplice Large-scale Fault System.



This ca. 250 km long, approximately NNE-SSW trending large-scale fault system extends from the Kouřim Furrow in the North, following the Blanice Furrow, crossing the basins of Třeboň and České Budějovice via Kaplice (CZ) and the valley of the Große Rodl to Gramastetten (A) and the basin of Eferding, where it is partly covered by Miocene sediments, but continues into the basin subsurface (see http://resource.geolba.ac.at/structure/182).

The Permo-Carboniferous of the Blanice furrow forms a discontinuous, up to 12 km wide strip of deposits, running in the direction of NNE-SSW from Český Brod to České Budějovice. In the north, around Český Brod, Kouřim and Kostelec nad Černými Lesy (northern part of the furrow), and in the south, between České Budějovice and Lhotice (southern part), these occurrences have the largest area. The middle part includes several smaller occurrences around Vlašim and Tábor (see Fig. 1 on the left). According to the fossil flora, the lower series present in the furrow is considered the Stephanian C in terms of age, while the deposits that follow above are assigned to the Autunian. The transition of the Upper Carboniferous sediments to the Lower Permian is continuous (see PEŠEK ET AL. (2001).

See also Raster geological maps 1 : 50 000, Czech Geological Survey - sheet 22-44 Hluboká, 23-31 Soběslav, 23-13 Tábor, 23-11 Vlašim, 13-33 Benešov, 13-31 Říčany.

The Drahotěšice and Lhotice faults, as well as the eastern marginal faults of the Lhotice Basin, also belong to the faults of the Blanice furrow. These faults have been described separately.

Fault structure and dip

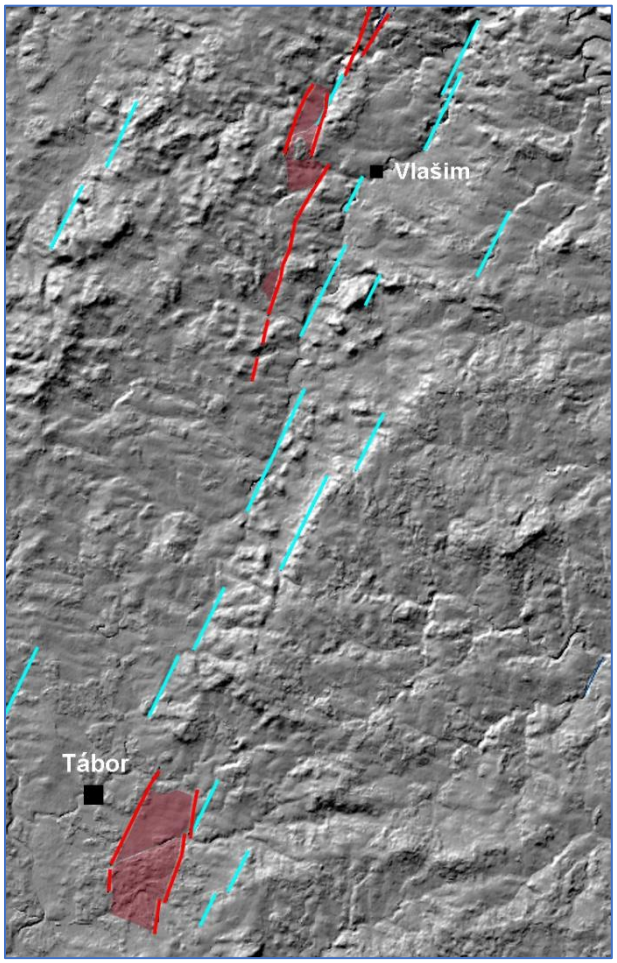
The faults of the Blanice furrow are described as western (marginal) faults (BF_xxW) and eastern (marginal) faults (BF_xxE). It is assumed that these faults are vertical or steep in dip, as the Drahotěšice fault. The dip is assumed steep to the east (western faults) or west (eastern faults). Information on the fault core, except for Drahotěšice fault, is not available, yet.

Cross structures and Segmentation

Geological maps (see e.g. Raster geological maps 1 : 50 000 of Czech Geological Survey) show a series of transverse faults that either limit the occurrence of Permo-Carboniferous in the south or north, or divide the basins into blocks of varying depth.

Scarp morphology

The morphological manifestation of the Drahotěšice fault is not very pronounced. Nevertheless, it is possible to observe a slight lowering of the relief in the eastern side of the fault, in the Lhotice Basin.



Between Tábor and Vlašim, in the Blanice furrow zone, it is possible to observe a number of topo-lineaments with an azimuth of 19° (NNE-SSW). However, these topo-lineaments do not positionally correlate with faults limiting Permo-Carboniferous occurrences (see Fig. 2 on the left).

In the north, between Sázava and Kouřim, topo-lineaments and fault drawings correlate very well. The long topo-lineament (12 km) separates the higher and more broken relief in the west from the lower, smoothed relief in the east.

Fig. 2: Digital model of relief between Tábor and Vlašim with marked topo-lineaments (light blue), faults (red) and occurrences of Permo-Carboniferous (red brown).

Seismicity

No earthquake epicenters were recorded in the Blanice Furrow fault zone. Except for one micro-earthquake near Planá nad Lužnicí (49.355°N, 14.762°E on August 21, 2005, which had ML = 0.1.

Pre-Miocene evolution

The asymmetric structure of the Blanice furrow originated on a pre-sedimentary-developed system of faults that were oriented in the NNE-SSW direction, and which was revived during the intra-Stephanian phase of Variscan orogenesis. Either primary depression or tectonically predisposed ditches were created. The subsidence axis was usually located at the eastern edge of accommodation space. Permo-Carboniferous occurrences are mostly tectonically limited on both sides, but occurrence around Český Brod, Kouřim and Kostelec nad Černými Lesy is limited only in the east. In addition to the NNE-SSW faults, which in some cases also turn to the NNW-SSE direction, E-W and NW-SE faults were also created, which allowed occurrence of transverse depressions. Faults acted as normal faults as well as oblique faults. Both the intensive syn-sedimentary and post-sedimentary subsidence occurred in the Blanice furrow (see PEŠEK ET AL., 2001).

The sediments in Blanice furrow are usually inclined to the east under an angle of 10° - 40°. The furrow filling is built by two formations – Kostelec and Český Brod. The oldest layers of the sequence are the Peklov layers, which were deposited during Stephanian C. The age of the lower Autunian was determined for the Lhotice layers. The younger Český Brod Formation consists of the Chýnov layers (the upper part of the lower Autunian) and the "Bulánské" layers (the beginning of the upper Autunian) - see PEŠEK ET AL. (2001).

Fault activity in late Cenozoic

Geological map (see e.g. Raster geological maps 1 : 50 000 of Czech Geological Survey, sheet 23-13 Tábor) indicates that tertiary (Miocene) sediments are faulted by Blanice furrow faults.

However, such post Miocene activity of these faults has not been proven.

Related local evidence

They are not yet processed.

References

PEŠEK, J. ET AL., 2001. Geologie a ložiska svrchnopaleozoických limnických pánví České republiky. Český geologický ústav, 243 p., Praha, 2001. [in Czech]

http://resource.geolba.ac.at/structure/182 (state to 2020-03-02).