

POST-VARISCAN EVOLUTION OF THE POŘÍČÍ-HRONOV ZONE

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Geological evolution of the north-eastern periphery of the **Bohemian Massive (BM)**, that is referred as the **Sudetes (S)**, had been recorded in sediments within areas conventionally termed as **basins**. However, sedimentary rocks in the Sudetes represent facies and palaeogeographic record of originally much more extensive depositional areas than recent **structural units**. These units are, thus, incorrectly named as basins, because they constitute only small fragments of ancient **sedimentary basin**. It seems to be reasonable to distinguish these two terms.

There are several structural units in the Sudetes in which the uppermost structural members consist mostly of sedimentary rock at present. Among others, there are **Kaczawa Unit**, **Świebodzice Depression (SB)**, **Bardo Structural Unit (BB)**, **Eastern Sudetes (ESB)**, **Intrasudetic Basin (ISB)**, **North Sudetic Trough (NSB)** and **Nysa Kłodzka Graben (NGB)**. While the first three structural units constitute only relics of the primary basins, the four latter units remain in agreement with defined criteria for a sedimentary basin. Such criteria are also fulfilled by units located south of the Karkonosze – **Karkonosze Piedmont Basin (VB & TB)**, **Nachod Basin (NB)**, **Orlica Piedmont Basin (OPB)**.

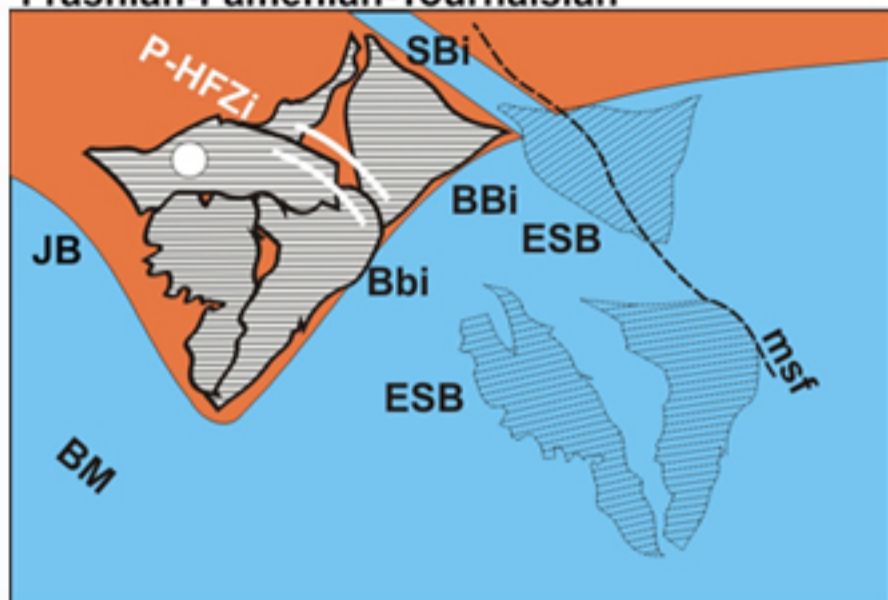
It is commonly accepted that the dominant structural scheme of the Sudetes (Sudetic Orogeny) originated in two stages of particularly intensive tectonic transformation of the area, i.e. during Bretonian Phase (~352-347) and Sudetic Phase (~328-324), and it was “stabilized” by mostly syntectonic granitoid intrusions (~347-315, viséan-westphalian). Accordingly with the above mentioned processes, the sedimentary record can be used to reconstruct two stages of possible palaeogeographic evolution – “presudetic” (preorogenic and synorogenic) and “sudetic” (postorogenic) ones. For example, a part of the preorogenic basin constitutes lower structural level of the Kaczawa Unit. Within synorogenic sedimentary basins sediments of the upper structural level of the Kaczawa Unit were formed, as well as of initial **Świebodzice Basin (SBi)**, initial **Bardo Basin (BBi)** and oldest sediments of the initial **Intrasudetic Basin (ISBi)**. The postorogenic basins are represented by **ISB**, Karkonosze Piedmont Basins (Vrchlabi Basin, Trutnov Basin – VB & TB), Nachod Basin (NB), Orlica Piedmont Basin and Nysa Kłodzka Graben Basin).

Recent position of the sudetic basin units and sedimentary basins with respect to major structural units of the pre-Variscan basement (southern and eastern parts of the Isera Unit, Orlica-Śnieżnik Dome and Góry Sowie Block) as well as facies associations and palaeogeographic reconstructions indicate permanent extensional evolution of the Sudetes beginning from Tournaisian up to Recent. This rises questions about actual significance of above mentioned tectonic phases as periods of “tangential stress” in formation of the Sudetes Orogeny.

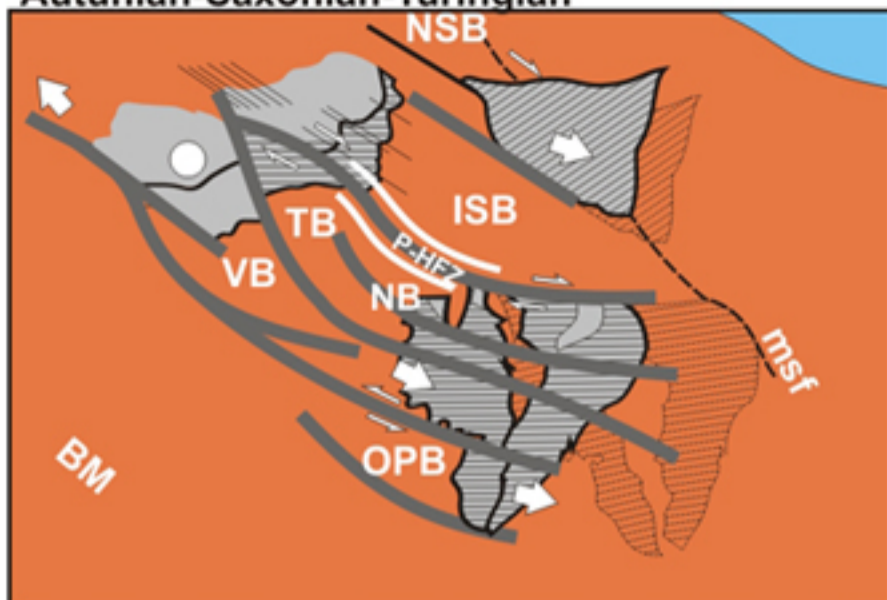
Extensional model of evolution of the area under discussion implies important role of two major tectonic zones in the Sudetes since the late Devonian up to Recent. These are **Intrasudetic Tension Zone (ISTZ)** and **Intrasudetic Shear Zone (ISZ)**. VB, TB, NB and NTB rhomboidal basins are univocally related to dextral shearing inside of the ISZ.

Intrasudetic Basin represents a polygenic and multistoried sedimentary basin initiated and developed inside of the ISTZ. Basin units of SB and BB represent relics of marginal parts of the Foresudetic and East Sudetic sedimentary basins respectively.

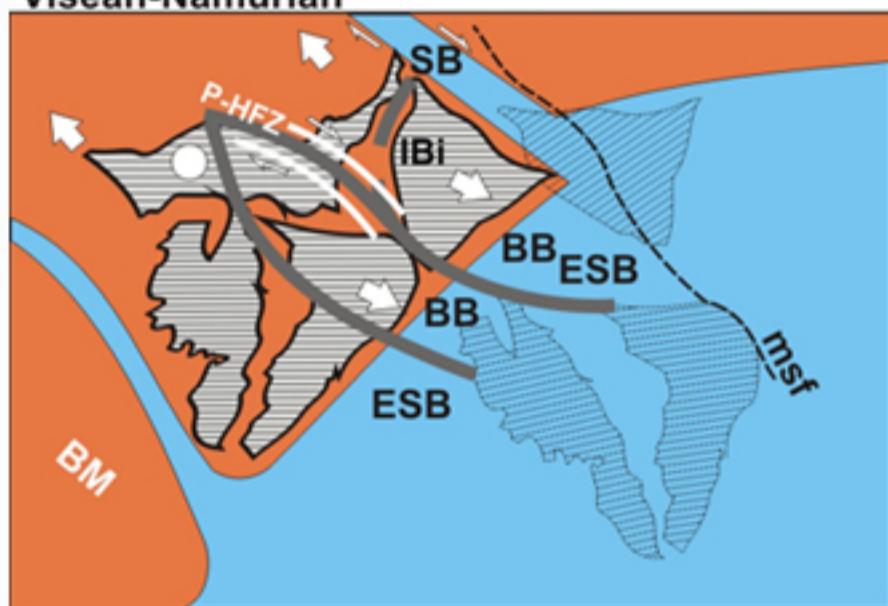
Frasnian-Famenian-Tournaisian



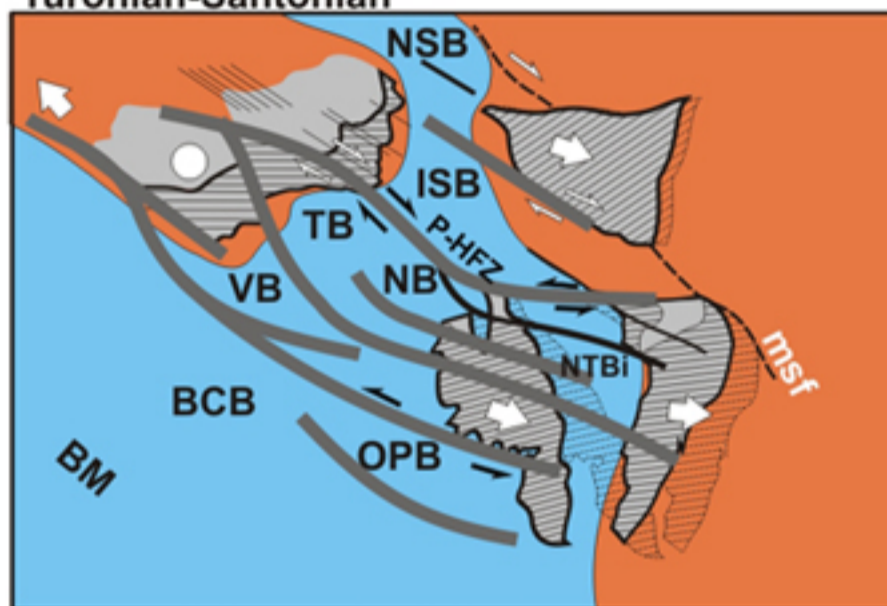
Autunian-Saxonian-Turingian



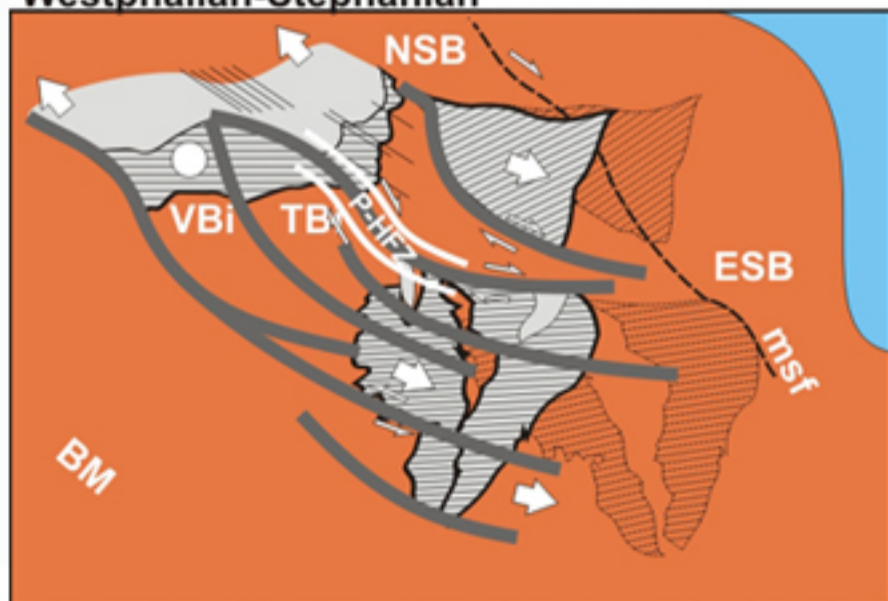
Visean-Namurian



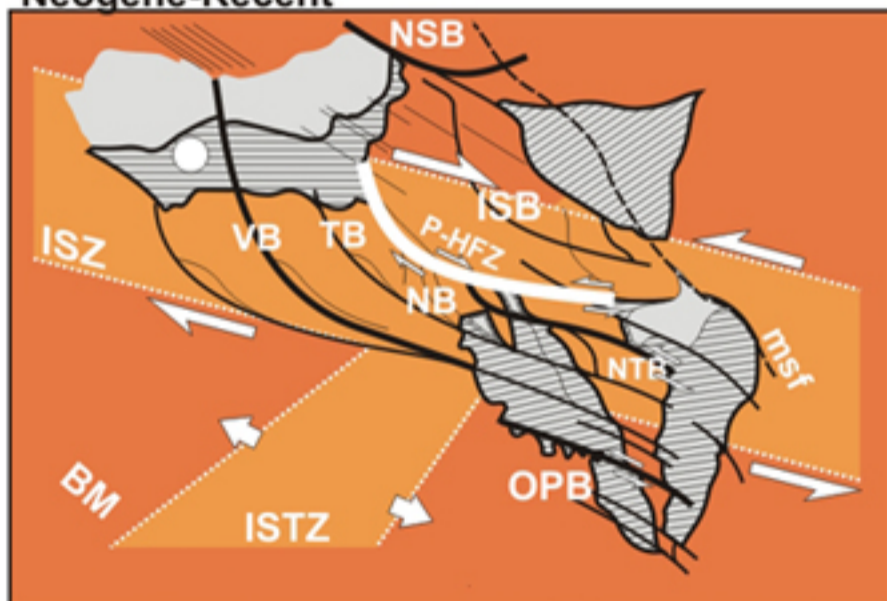
Turonian-Santonian



Westphalian-Stephanian



Neogene-Recent



Porici-Hronov Fault Zone (P-HFZ) represents one of the fault systems inside the ISZ and it is closely related to extensional evolution of the ISB since the late Devonian to early Permian and, then, of the Intrasudetic Trough since Neogene till now. P-HFZ constitutes northern marginal fault system for rhomboidal pull-apart basins of the ISZ which form a basins suite – **South Sudetic Basin Suit (SSBS)**. Local reverse faults that occur on boundaries between TB, NB and ISB can be explained by local transpression induced by irregularities of the P-HFZ line in relation to the main direction of regional dextral sense of shearing.