German Part of the Saxonian Erzgebirge

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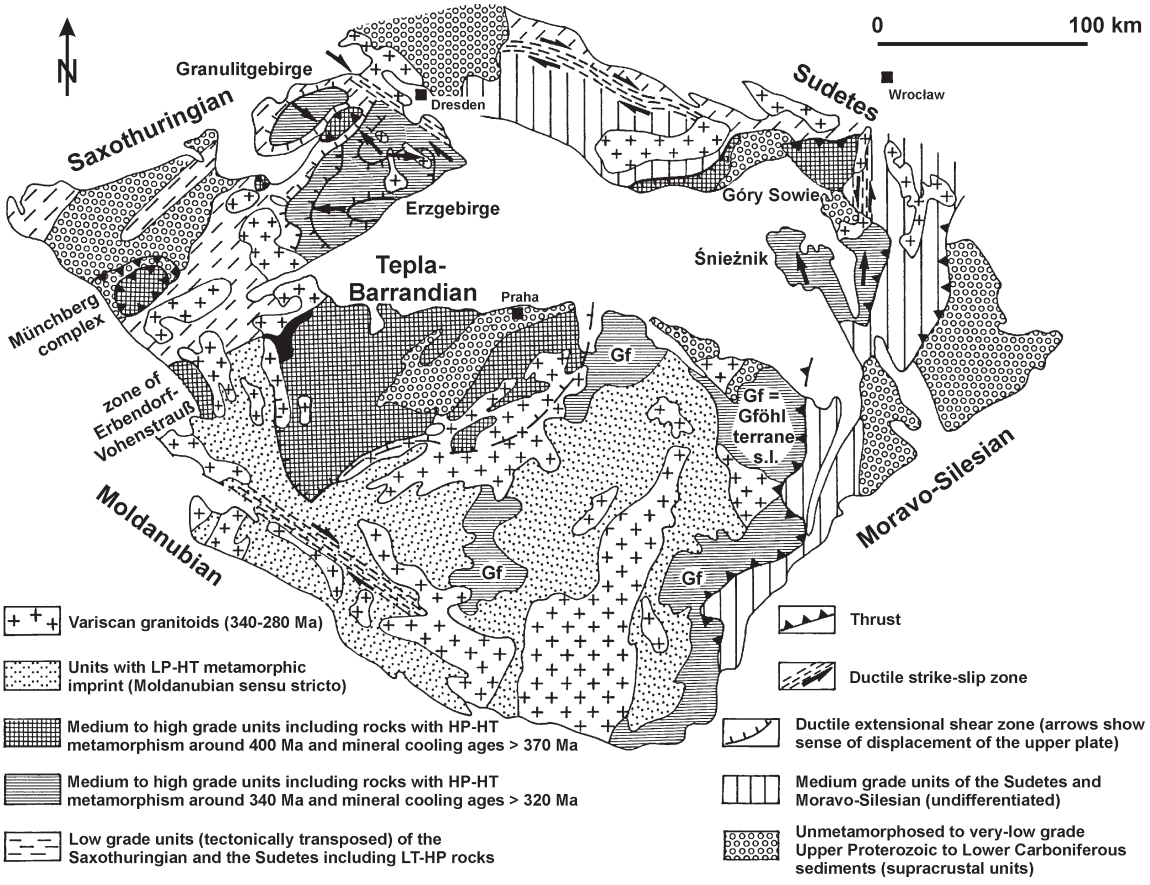
The field itinerary for the first part of the pre-conference excursion, related to the 9th International Eclogite Conference, includes 5 stops within the central and western Erzgebirge in Saxony. Stop 1-3 comprises several stops which are visited at or close to the Saidenbach reservoir by walking. High and ultrahigh pressure rocks of different genesis can be studied at the excursion stops. Eclogite south-east of the village of Eppendorf experienced peak pressure conditions of 1.8 GPa at 715 °C and is an example of eclogitization at the base of thickened continental crust due to the Variscan collision of Laurussia and Gondwana. Bodies of eclogite and diamondiferous saidenbachite at the northern and eastern shore of the Saidenbach reservoir, embedded in high-pressure (around 1.8 GPa) gneisses, represent ultrahigh pressure rocks which were heated to more than 1000 °C. During this process saidenbachite was significantly molten at $P \geq 5$ GPa, resulting in its rapid ascent through the mantle and emplacement at the base of thickened Variscan crust. Garnet peridotite at the town of Zöblitz represents another rock type also inserted in this crust. Eclogites of the western Erzgebirge experienced a nearly isobaric (~2.6 GPa) temperature increase from about 500 to 700 °C and subsequent exhumation at decreasing temperatures to finally form bodies in mica-schist and gneiss, which were metamorphosed at a maximum pressure of 1.3 GPa. The metamorphic P-T path of these eclogites is related to mass flow in a subduction channel.

Introduction

The first part of the pre-conference excursion, related to the 9th International Eclogite Conference, is aimed at presenting key occurrences of rocks, formed at ultrahigh pressure (UHP) and near-UHP conditions, in the German part of the crystalline complex of the Erzgebirge (Ore Mountains) in the Saxothuringian zone, which is located at the northwestern margin of the Bohemian Massif (Fig. 1). Krušné Hory is the name which is synonymously used in Czech for this complex. The Saxonian Erzge-



■ **Fig. 1.** Overview map showing the location of basement complexes within the Bohemian Massif (modified after Willner et al., 2000).

birge is an anticlinal structure with an ellipsoidal shape, extending in a WSW-ENE direction (Fig. 2). It is surrounded by anchimetamorphic to low-grade metamorphic rocks. Towards the south the crystalline complex of the Erzgebirge is limited by the Eger graben (the river Eger is named Ohře in Czech), which is a Late Cretaceous to Tertiary structure. The outcropping rocks in the Erzgebirge are variable in terms of metamorphic degree. Various subdivisions have been proposed for the metamorphic rocks. Here, the proposal by Willner et al. (2000) is preferred, who recognized three major medium to high-grade metamorphic units, which are surrounded by the low-grade Phyllite Unit (Fig. 2). Two of these three units, Mica-schist – Eclogite Unit (MEU) and Gneiss – Eclogite Unit (GEU), contain abundant eclogite lenses, whereas high-pressure (HP) rocks are absent from the Red and Grey Gneiss Unit.

For detailed information on the regional geology, the map series, "Geologische Meßtischblätter", is recommended. These maps, at a scale of 1:25000, are distributed by "Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie" at Dresden. In addition, an explanatory text is available for each map. The following sheets cover the areas visited during the first part of the pre-conference excursion: GK25 5245 Lengefeld, GK25 5344 Marienberg-Wolkenstein, GK25 5345 Zöblitz, and GK25 5543 Oberwiesenthal. An overview map, Geologische Karte Erzgebirge/Vogtland at a scale of 1:100000, is also available.

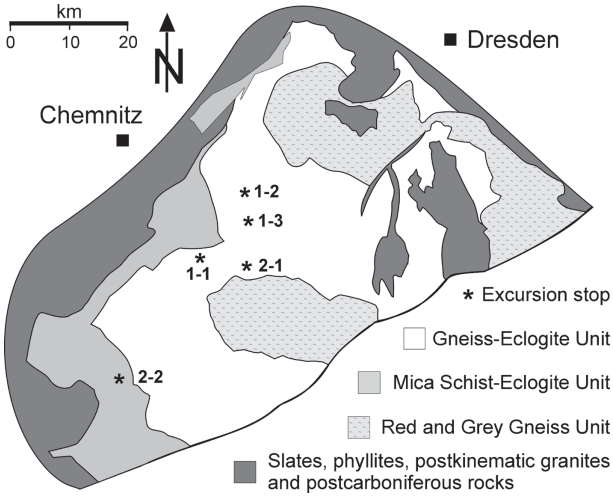


Fig. 2. Simplified geological map of the Saxonian Erzgebirge according to Willner et al. (2000). Excursion stops are shown by stars.

Stop 1-1 (Day 1). Eclogite, NW of Lauta

Coordinates: N50°40′26.6″ E13°08′08.9″

The excursion starts in the town of Marienberg. From the centre of this town go to the north-west. 2.2 km after passing the Zschopauer Tor, the old gate built in the middle of the 16th century, turn to the right, 300 m in front of the entrance of the Lautaer Hauptstrasse into the national route 174 (Fig. 3). After some hundred metres, just after passing B174 via a bridge, turn to the left and stop the vehicle after 250 m. From here walk some hundred metres first to the west and then to the north-west following a farm track to the margin of a forest (Fig. 3).

Fig. 3. Location map for stop 1-1 north-west of the town of Marienberg. The sites of eclogite boulders refer to eclogite and amphibolite lenses as mapped by Schalch (1879).

This stop is located at the northern border of the GEU with the MEU in the basement of the Saxonian Erzgebirge. In the target area boulders of fresh eclogite occur. In general, the concentration of such boulders at a specific site (see, e.g., Fig. 3) is interpreted as evidence for the existence of an eclogite body in the underground. Normally, such a body is enveloped by gneisses, which is probably the case at stop 1-1, in view of the abundant field stones of mica-schist and gneiss in the vicinity of this stop. In addition, we will find eclogite boulders by walking along the field margin, suggesting that they were sampled from the field.

A typical feature of eclogite at stop 1-1 is the homogeneous distribution of black, up to cm-sized amphibole porphyroblasts within a single boulder. These porphyroblasts have overgrown a fine-grained, equigranular matrix of garnet, omphacite, phengite, and quartz, mainly at the expense of omphacite. Massonne (1992) has studied an eclogite sample with mm-sized amphibole