Geochemical Atlas – Erzgebirge and Vogtland

Bismuth in stream sediments

Bismuth (Bi) shows a right skewed log distribution with a strong contrast between the arithmetic average of 2.4 mg/kg and the median value of 0.4 mg/kg. The lowest concentration is 0.04 mg/kg, the highest 494 mg/kg, which are influenced by mining activities. Granitoid intrusions coincide with elevated Bi, showing an arithmetic average close to six times higher than that of the gneisses. Areas with Bi > 10 mg/kg are bound to former U and Sn mining sites in and around the Eibenstock granite (Gottesberg, Johanngeorgenstadt, Schneeberg) and to the eastern Altenberg-Teplice caldera. Larger areas with Bi > 1 mg/kg coincide with the Sn and base metal mining sites of the eastern Erzgebirge and with the Freiberg district forming a 40 km WNW-SE trending arc. In the central Erzgebirge, they occur in the districts of Annaberg-Buchholz, Ehrenfriedersdorf, Marienberg-Wolkenstein and Pobershau, which are related to granite cupolas of the underlying Central Erzgebirge Pluton. In the western Erzgebirge they coincide with the granites of Kirchberg, Bergen, Eibenstock including east-adjacent metasediments, and with the concealed Eichigt granite. Bi shows a clear relationship to Sn-, U- and Pb-Ag deposits on the one hand and to concealed granite cupolas on the other hand. Thus, low grade Bi anomalies (Bi > 0.6 mg/kg) without known mining activities may indicate concealed granites or undiscovered mineralisation of the above metals. Examples are the NNE-striking corridor of the northern Erzgebirge rim around Zschopau and the Czech border region WSW of Altenberg.

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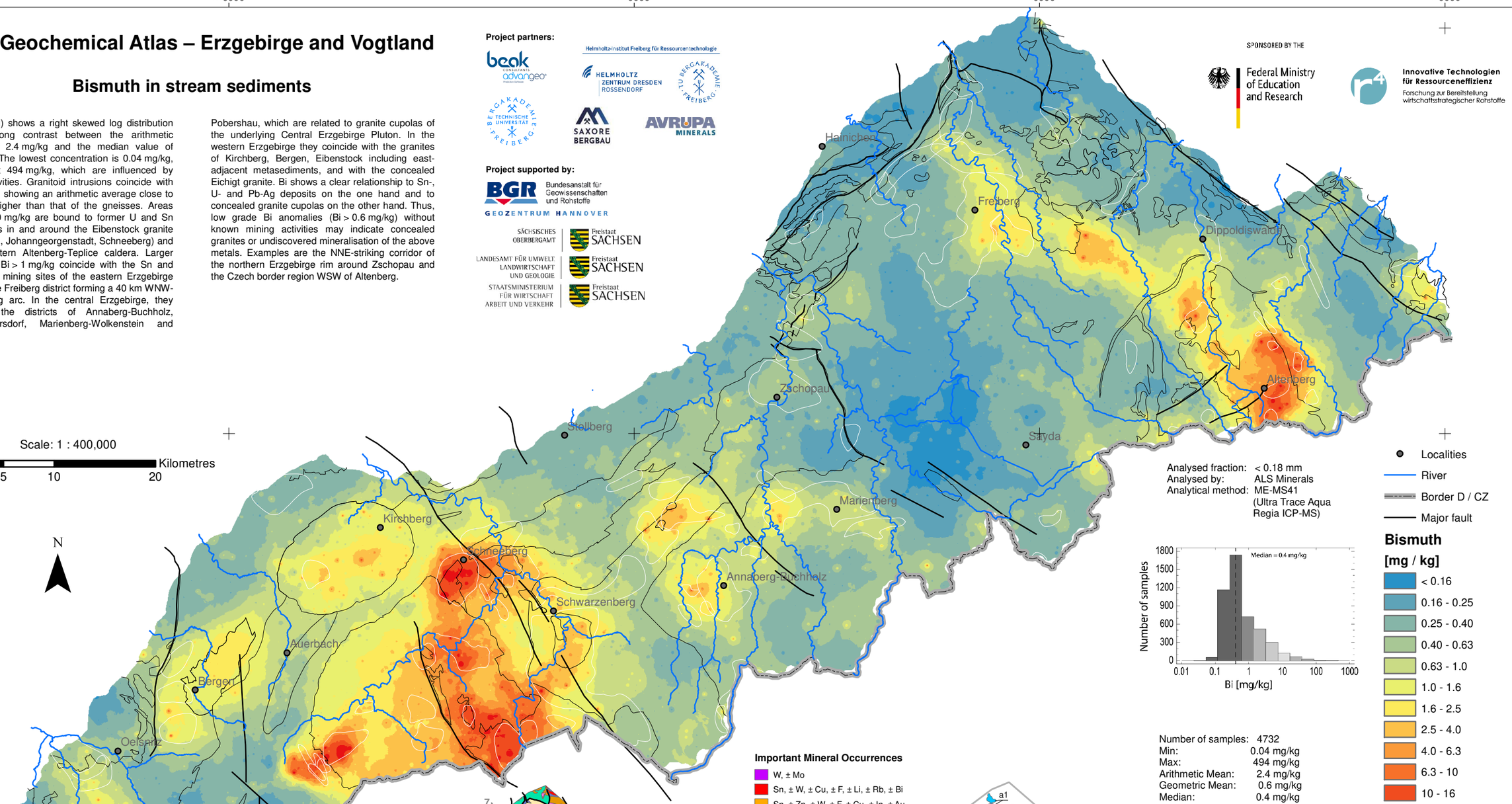

1 – Altenberg-Teplice-Caldera (incl. 1a - Schellerhau granite), 2 – Bergen Pluton 3 – Eibenstock Pluton, 4 – Eichigt Pluton (concealed), 5 – Fichtelgebirge Pluton, 6 – Flöha Fault Zone, 7 – Frankenberg Crystalline Complex, 8 – Markersbach Pluton, 9 – Gera-Jachymov Fault Zone, 10 – Kirchberg Pluton, 11 – Niederbobritzsch Pluton, 12 – Tharandt Volcanic Complex, 13 – Lößnitz-Zwönitz Syncline

a1 - Freiberg north district, a2 - Felsite zone, a3 - Langenstriegis, a4 - Oberschöna, a5 - Freiberg central district & Brand-E., a6 - Muldenhütten, a7 - Halsbrücke, b - Mohorn, c - Edle Krone - Klingenberg, d - Dippoldiswalde, e - Schlottwitz, f - Berggießhübel, g - Sadisdorf, h - Frauenstein, i1 - Altenberg, i2 - Zinnwald-Cinovec, i3 - Moldava, i4 - Rehefeld, j1 - Grünberg, j2 - Augustusburg, j3 - Zschopau k1 - Lengefeld, k2 - Marienberg - Wolkenstein, k3 - Pobershau, l1 - Seiffen, l2 - St. Katharinaberg, m1 - Geyer, m2 - Hormersdorf, m3 - Thum, m4 - Ehrenfriedersdorf, m5 - Annaberg-B., n1 - Lauter-Elterlein, n2 - Westerzgebirge complex deposit, n3 - Niederschlag-Bärenstein, o1 - Aue-Bärengrund, o2 - Bad Schlema-Alberoda, o3 - Schneeberg, p - Neumark (U), q - Pechtelsgrün, r1 - Sn Deposits of the Eibenstock Granite, r2 - Gottesberg-Mühlleiten, s - Johanngeorgenstadt, t - Brunndöbra & Schneckenstein, u - Klingenthal-Kraslice, v1 - Zobes, v2 - Bergen, w - Tirpersdorf, x - Oelsnitz, y - Schönbrunn, z - Wiedersberg

Project: Prediction of Strategic High Technology Metals in the Erzgebirge (WISTAMERZ)

- Bismuth in stream sediments -

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