Geochemical Atlas – Erzgebirge and Vogtland

Copper in stream sediments

Copper (Cu) shows a log-normal distribution. The range between absolute maximum (1910 mg/kg) and minimum (0.2 mg/kg) is vast. Arithmetic average and median are 28 mg/kg and 19 mg/kg, respectively. The average concentration in metamorphic and sedimentary rocks is higher than in acid magmatites and in the Tharandt Volcanic Complex. Three main areas, each more than 2 km in diametre, show Cu > 100 mg/kg: the central Freiberg mining district; the western tip of the Marienberg-Wolkenstein Ag/Pb/Zn deposit and the area between the Sn greisen of Gottesberg and the uranium deposit of Schneckenstein. Levels of Cu > 40 mg/kg characterize areas of Devonian sediments and volcanics along the western rim of the study area, the BiCoNi districts of Schneeberg and Johanngeorgenstadt, and parts of the Westerzgebirge complex deposit. Spots of elevated Cu south of the Brunndöbra and Schneckenstein deposits probably relate to the concealed Klingenthal-Kraslice Cu mineralisation. In the central Erzgebirge, areas with Cu > 40 mg/kg accompany the deposits of Annaberg-Buchholz and Ehrenfriedersdorf. In the eastern Erzgebirge, zones of elevated Cu follow an alignment between Freiberg and the Sn-deposits north of Altenberg, including the Sadisdorf greisen and vein deposit where mining of Sn, Pb, Cu and Ag is reported, as well as periods of Cu processing. NW of Sadisdorf, elevated Cu comes along with high Cd contents. The lowest Cu concentrations (Cu < 4 mg/kg) occur in the western and northern parts of the Eibenstock Granite, in the Fichtelgebirge Granite area, and in areas of rhyolites and Neoproterozoic gneisses of the eastern Erzgebirge.

Project partners:

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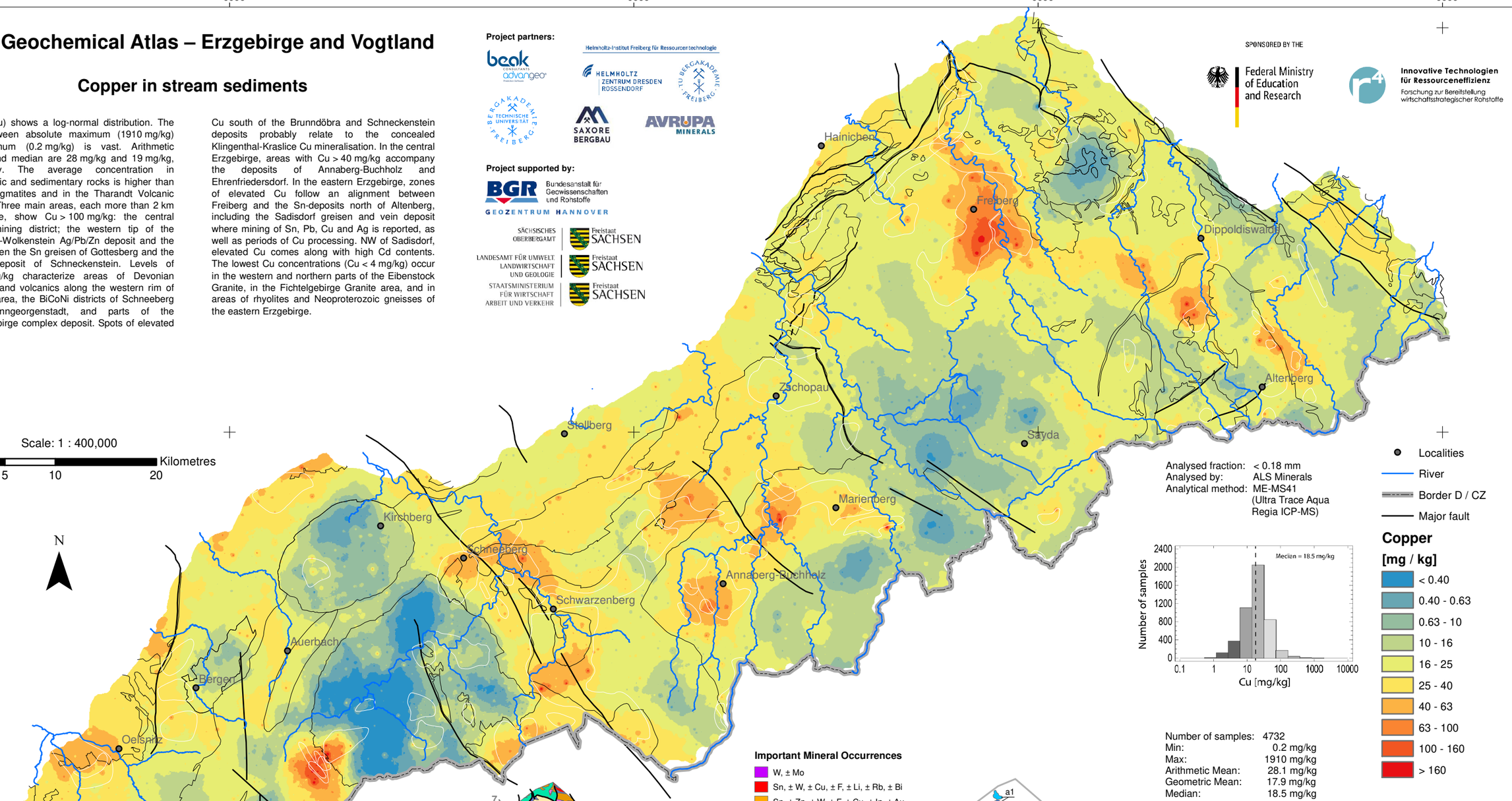


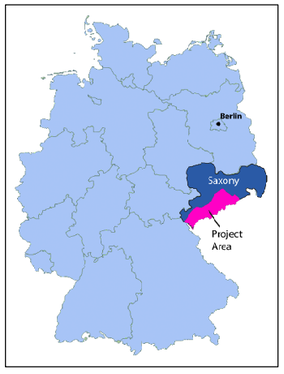
Analysed fraction: < 0.18 mm
Analysed by: ALS Minerals
Analytical method: ME-MS41 (Ultra Trace Aqua Regia ICP-MS)

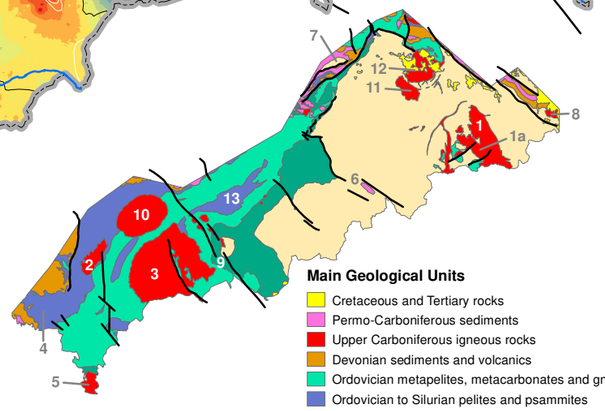
Number of samples: 4732
Min: 0.2 mg/kg
Max: 1910 mg/kg
Arithmetic Mean: 28.1 mg/kg
Geometric Mean: 17.9 mg/kg
Median: 18.5 mg/kg

Localities
River
Border D / CZ
Major fault

Copper [mg / kg]

- < 0.40
- 0.40 - 0.63
- 0.63 - 10
- 10 - 16
- 16 - 25
- 25 - 40
- 40 - 63
- 63 - 100
- 100 - 160
- > 160





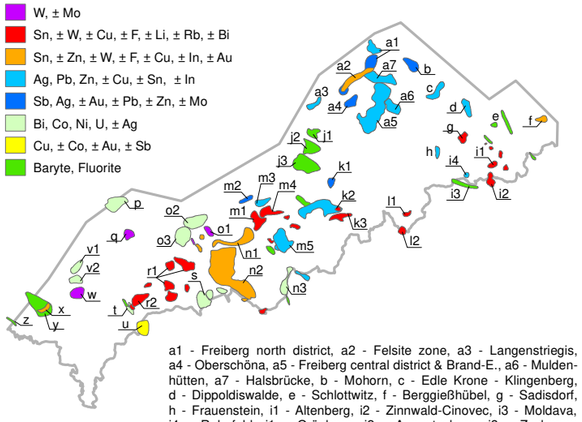
Main Geological Units

- Cretaceous and Tertiary rocks
- Permo-Carboniferous sediments
- Upper Carboniferous igneous rocks
- Devonian sediments and volcanics
- Ordovician metapelites, metacarbonates and gneisses
- Ordovician to Silurian pelites and psammites
- Cambrian to Ordovician metasediments
- Neoproterozoic and Lower Paleozoic gneisses

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

Important Mineral Occurrences

- W, ± Mo
- Sn, ± W, ± Cu, ± F, ± Li, ± Rb, ± Bi
- Sn, ± Zn, ± W, ± F, ± Cu, ± In, ± Au
- Ag, Pb, Zn, ± Cu, ± Sn, ± In
- Sb, Ag, ± Au, ± Pb, ± Zn, ± Mo
- Bi, Co, Ni, U, ± Ag
- Cu, ± Co, ± Au, ± Sb
- Baryte, Fluorite



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)

- Copper in stream sediments -

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