Geochemical Atlas – Erzgebirge and Vogtland

WISTAMERZ

Tin in stream sediments

Tin (Sn), one of the main target metals of the Erzgebirge from early to recent past, shows a right skewed log distribution. The maximum value is 4220 mg/kg, the minimum ranges below 5 mg/kg. With 60 mg/kg, the arithmetic average is far beyond the median of 10 mg/kg. Approximately 88 % of the measured values are below 100 mg/kg and one third are below or close to the detection limit: In contrast to the other elements analysed during the recent study, the Sn map is based on XRF analyses that may ignore very low concentrations. High Sn contents (Sn > 250 mg/kg) occur predominantly in areas of outcropping geochemically specialised Upper Carboniferous igneous rocks such as the Eibenstock granite and the Altenberg-Teplice-Caldera. Furthermore, areas with Sn > 100 mg/kg coincide with known deposits like the greisen of Ehrenfriedersdorf and Seiffen as well as the polymetallic mining districts of Annaberg-Buchholz, Marienberg-Wolkenstein and Freiberg. Medium contents of Sn > 40 mg/kg form a north-convex arc in the Tharandt Volcanic Vomplex, possibly related to palaeo-placers in Cretaceous sedimentary rocks. Above-median concentrations of Sn > 16 mg/kg coincide with the concealed granite of Eichigt and related skarn mineralisation of Oelsnitz. They also imply a NNE-striking zone between the deposits of Ehrenfriedersdorf and Augustusburg, partly centred on outcrops of slightly stanniferous metapelites. The lowest concentrations are found in the Vogtland area SW of the Eibenstock granite and in the central eastern Erzgebirge. Sn often relates to increased Cu, Li, Rb and W. A co-elevation of Pb, Zn and As may reveal industrial contamination.

Project partners:

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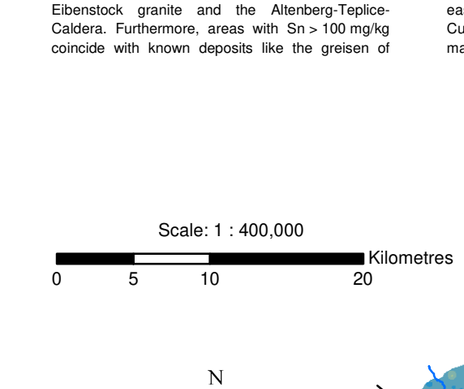
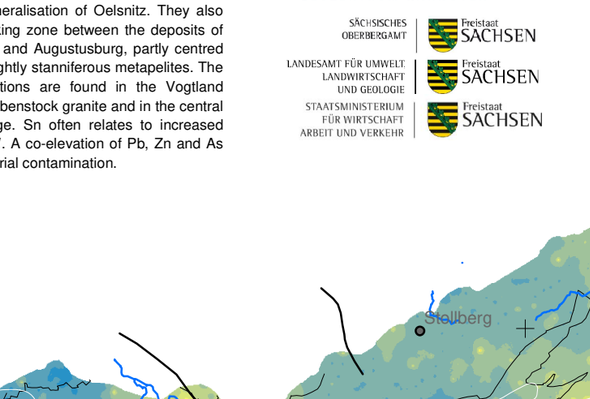




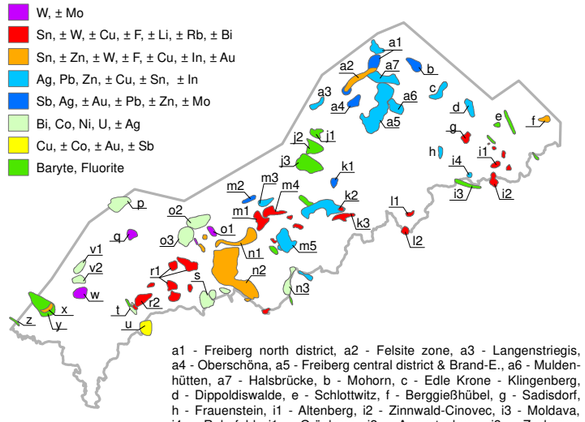
Main Geological Units

- 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

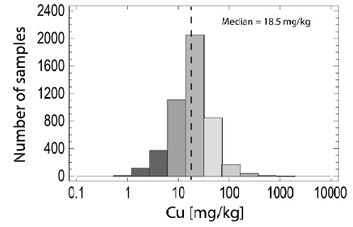
1 – Altenberg-Teplice-Caldera (incl. 1a - Schellerhau granite), 2 – Bergen Pluton 3 – Eibenstock Pluton, 4 – Eichigt Pluton (concealed), 5 – Fichtelgebirge Pluton, 6 – Flöha Fault Zone, 7 – Frankenberg Crystalline Complex, 8 – Markersbach Pluton, 9 – Gera-Jachymov Fault Zone, 10 – Kirchberg Pluton, 11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



Analysed fraction: < 0.18 mm
Analysed by: ALS Minerals
Analytical method: ME-XRF05 (Trace Level XRF Analysis)

Number of samples: 4732
Min: < 5 mg/kg
Max: 4220 mg/kg
Arithmetic Mean: 60 mg/kg
Geometric Mean: 15 mg/kg
Median: 10 mg/kg

Localities
River
Border D / CZ
Major fault

Tin (XRF)
[mg / kg]

- 2.5 - 4.0
- 4.0 - 6.3
- 6.3 - 10
- 10 - 16
- 16 - 25
- 25 - 40
- 40 - 63
- 63 - 100
- 100 - 160
- 160 - 250
- 250 - 400
- 400 - 630
- > 630

Scale: 1 : 400,000
0 5 10 20 Kilometres

N

Hainichen · Freiberg · Dippoldiswalde · Altenberg · Zschopau · Stollberg · Sayda · Marienberg · Kirchberg · Schneeberg · Annaberg-Buchholz · Schwarzenberg · Auerbach · Bergen · Oelsnitz · Adorf

310000 350000 390000 430000
5660000 5620000 5580000

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

- Tin in stream sediments -

FKZ: 033R133A

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