Geosciences Academy

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Einstein-Gymnasium Kehl

Geoelectrical Survey of Historic Silver Mine Area, Suggental 2025-27

Survey_01 (7th-8th Nov 2025)

Project Lead: Philipp Moll

Field Team: Helen Trippel, Luka Nostadt, Siméon Andlauer, Linus Jung, Lukas Arnold, Erda Rotkoceri, Elina Fejzullahu, Nicolas Hahn Siméo, Tom Hönicke

7th Nov 2025

Conference on Geology and History

The mining geologist Peter Geerdts (table) explains the **geological framework** that led to the formation of the local ore deposit. A pronounced major fault zone, generated during a northeast-oriented shear within the local gneiss, together with several subsidiary faults, gave rise to the local barite and quartz veins. These vein-type structures have the potential to host silver and copper mineralization.

Dr. Wolf-Dietrich Bock, director of the mine (Lienwand), presents a lecture in which he analyzes and contextualizes the **historical developments** of the mine across different periods.

An inspection of the **Josefi Stollen** was carried out to provide a detailed explanation of the local geological conditions. The adit contains abundant, potentially mineable barite; however, extraction has not been authorized due to its historical significance. The exposed rock units exhibit pronounced discolorations indicative of metallic mineralization, including iron, copper, lead, and silver. The walls of the adit follow the dip of the ore-bearing veins as they occur in this part of the deposit.

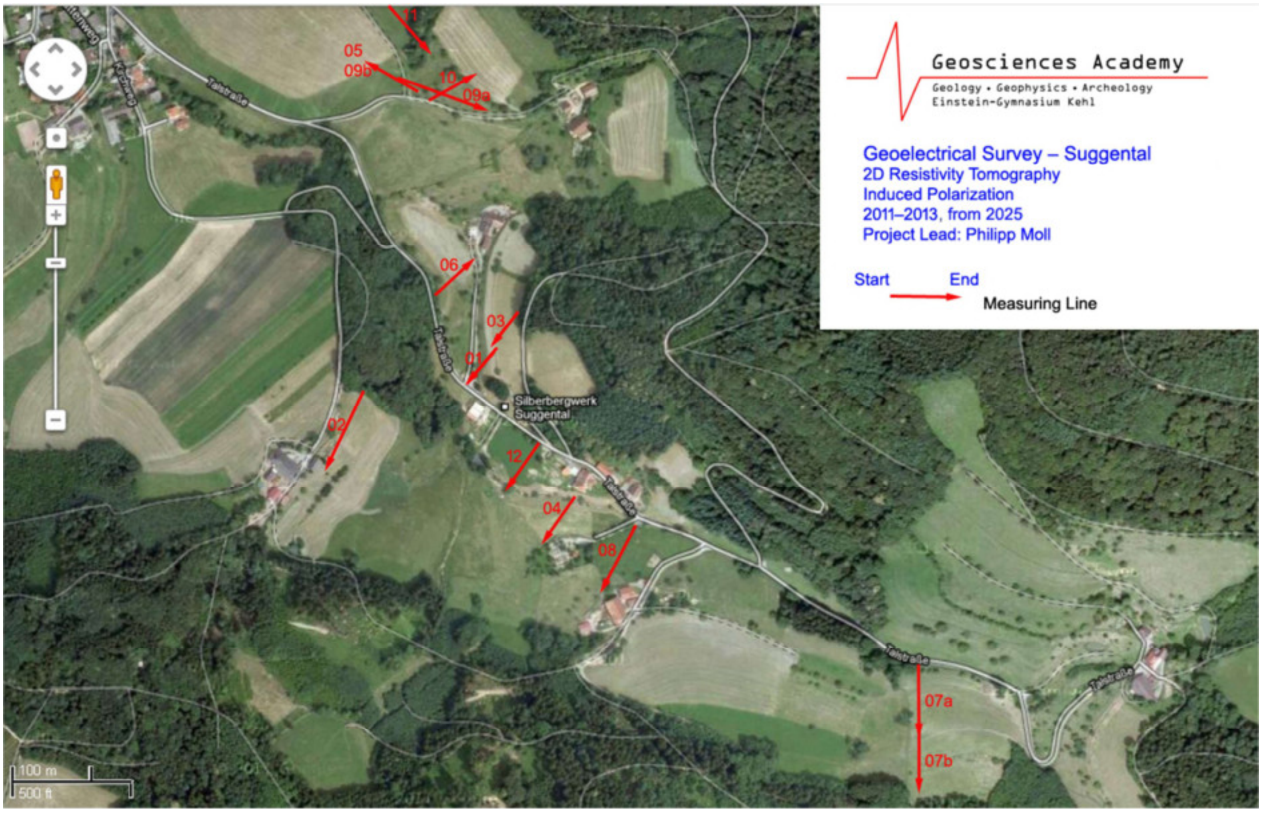
8th Nov 2025

2D Resistivity Survey – Line_12

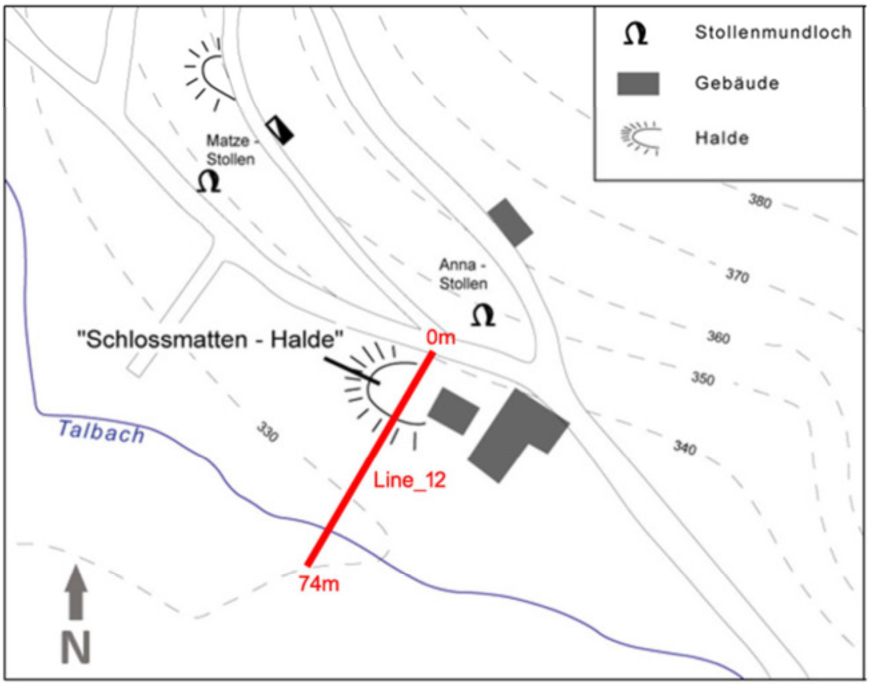
The geoelectrical measurement begins approximately 10 meters southwest of the entrance to the Annastollen, directly along the roadside. At a distance of roughly 10 meters from the zero point, a topographic rise extends for about 15 meters. This feature is assumed to represent an anthropogenic accumulation, likely consisting of waste rock—i.e., spoil material originating from historical mining activities. According to written sources, a historical smithy is believed to have been located beneath this deposit. The geoelectrical data are intended to provide indications that may support this scenario.

In addition, subsurface information is to be obtained from the slope located further downslope, for which no prior knowledge is available.

As with all other geoelectrical surveys, this investigation aims to acquire information on the geological conditions, including fault-zone structures, lithological changes, cavities resulting from historical mining, or previously unknown ore-bearing veins of barite and quartz.



Line Map: Line_12



GPS-Data

Line at 0m:

N 48°03.9647'

O 007°56.1365'

Accuracy 1,8m

Line at 74m:

N 48°03.9360'

O 007°56.1123

Accuracy 1,8m'

Map of Anthropogenic Features

Fieldwork Team: Siméon, Luka, Helen, Alina, Moll, Erda, Linus, Nicolas, Lukas, Tom

Installation of 75 stainless-steel electrodes at 1 m spacing (Tom, Helen, Siméon)

Leveling the topography (Nicolas, Erda, Helen)

Connecting the stainless-steel electrodes with the serial cable

Data Acquisition (Siméon, Luca)

Measuring Line

Line_12
2D Resistivity Wenner-Array, 75 Electrodes, Spacing 1m
Geosciences Academy, 08.11.2025
Field Team: Helen, Erda, Elina, Luca, Siméon, Linus, Lukas, Nicolas, Tom; Survey Leader: Philipp Moll

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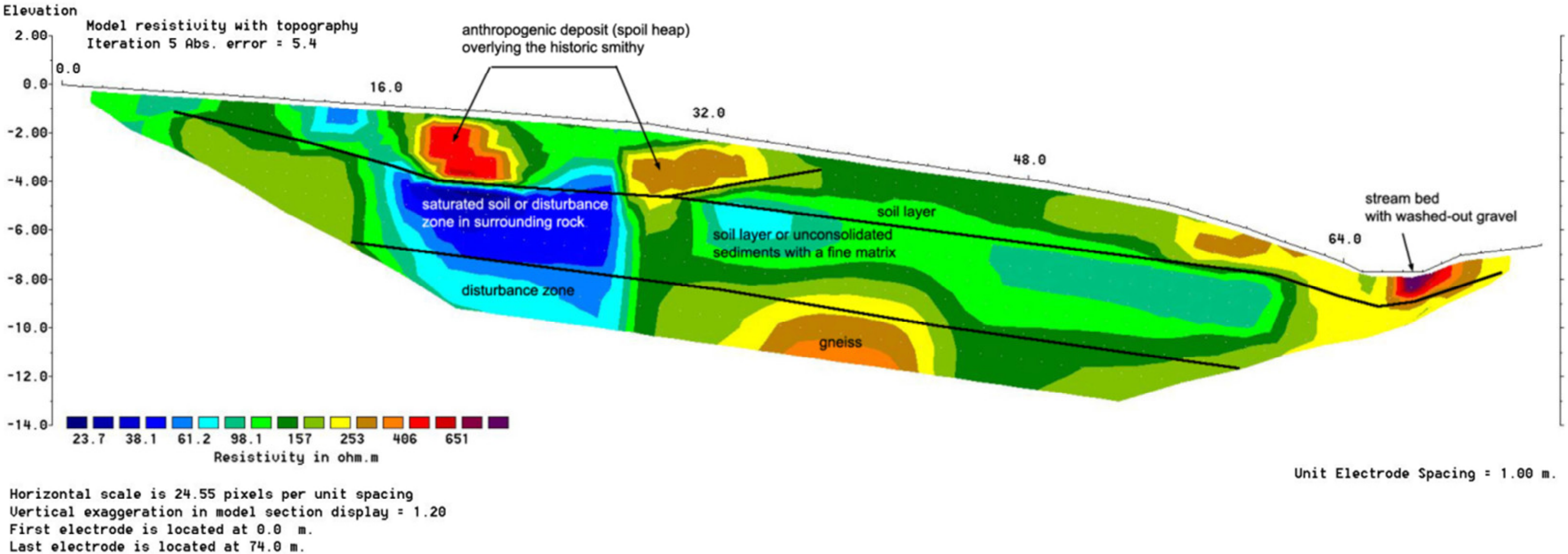

Interpretation:

As expected, a data anomaly was measured in the area between 20 and 30 meters, where a subtle topographic rise is visible.

The high-resistivity zones occurring near the surface (red/brown) can plausibly be associated with spoil or dump material, as this material exhibits reduced electrical conductivity due to enclosed voids and/or an overall low-density matrix of fine-grained sediments.

Beneath this, in the range of approximately 16 to 30 meters, a low-resistivity zone (blue) most likely indicates a strongly altered rock zone. As a result of earlier shear processes, the rock may have been so intensely fragmented that enhanced weathering and erosion occurred, allowing predominantly stagnant water—rich in dissolved minerals—to accumulate in pores and cavities, which significantly increases electrical conductivity.

At greater depth (around 6–7 m), the transition to bedrock becomes visible. The orange–brown–yellow areas likely mark the onset of compact, in-situ bedrock (gneiss). Above this zone, it remains unclear whether the material consists of weathered gneiss or an overlying layer of unconsolidated sediments.

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