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## **Micro Earthquakes localization using a Seismic Inversion Method**

### **Abstract**

The Schlema\_Alberoda uranium mine is located in Saxony-Germany and was the 4th largest uranium mine in the world. The mining operations has been stopped in 1990 and since then, due to the environmental concerns, the mine is under monitoring for crustal activities. The region where the mine is located is seismically active and several earthquakes had been registered in the seismic catalogs also before the start of mining operations in Schlema-Alberoda in 1950s. We have relocated some of the microseismic events in this area which occurred several years after the end of mining operation to investigate the nature of the seismicity and the long-term role of mining induced seismicity. In this study, we used pseudo-synthetic data obtained from the vertical component records of a local seismic network, to accurately relocate the hypocenters. The relocation procedure is based on Seismic Inversion approach and tests both a homogenous and a 3-D velocity model. The results are compared to a 3-D reflection seismic image of the area to determine the possible correlations between seismicity and reflectivity. The results show that the main cause of the post-mining seismicity are changes in the mine flooding level while the hypocenters are often located to preexisting subsurface structures.