Borehole Seismic Imaging and Magnetic Measurements: BSIMM

Goal: Simultaneous investigations of the acoustic and magnetic properties surrounding boreholes

Results:

- Possible to obtain useful data in a specially drilled wide diameter borehole
- It is feasible to build a prototype that fits into a 76 mm wide borehole
- Tunnel measurements also give good results

Partners:

- Uppsala University
- LKAB
- GFZ-Potsdam
- TU-Braunschweig

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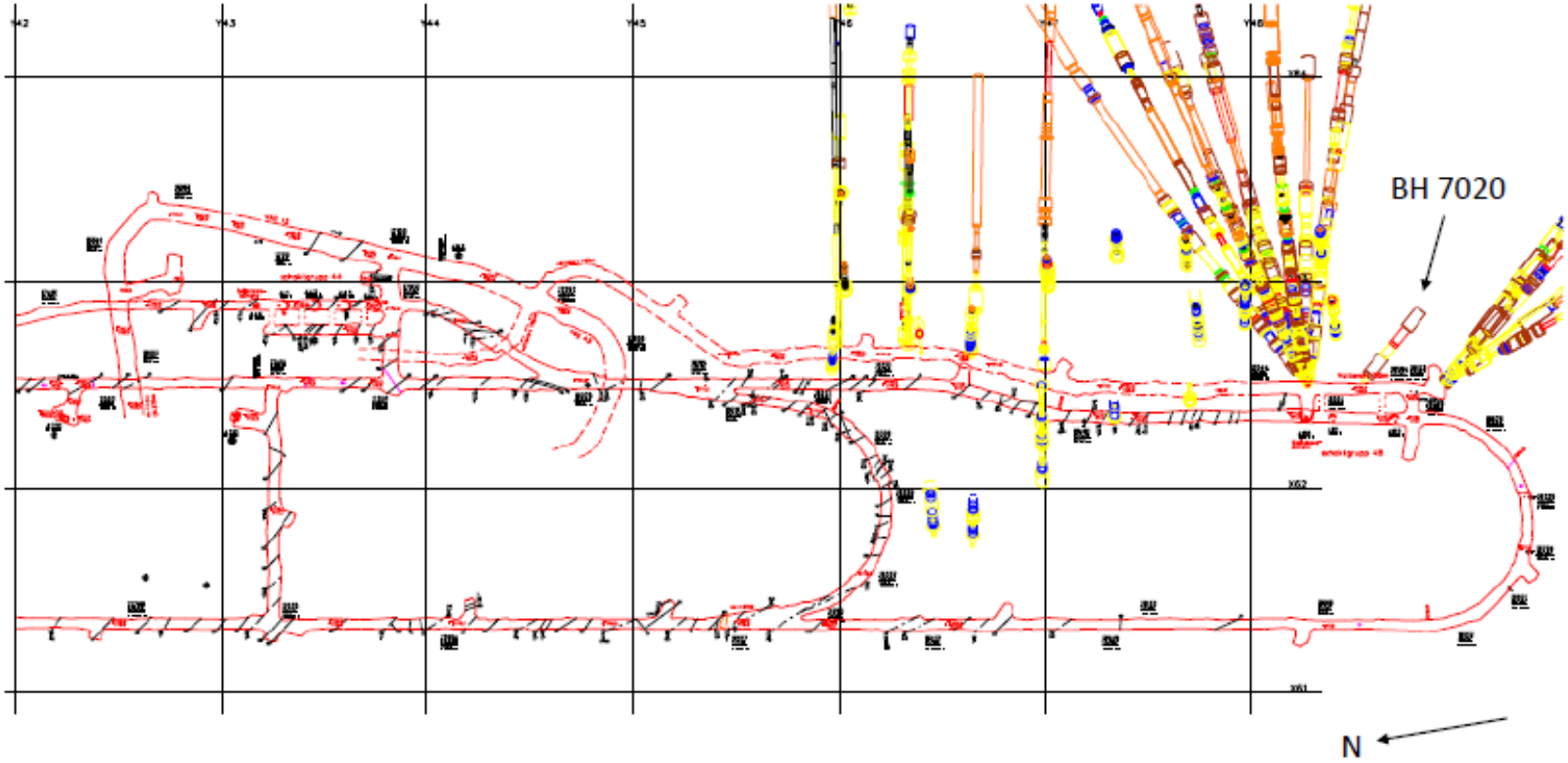
Test in the Kiruna mine at 775 m level in a specially drilled 218 mm wide 45.25 m long near-horizontal borehole



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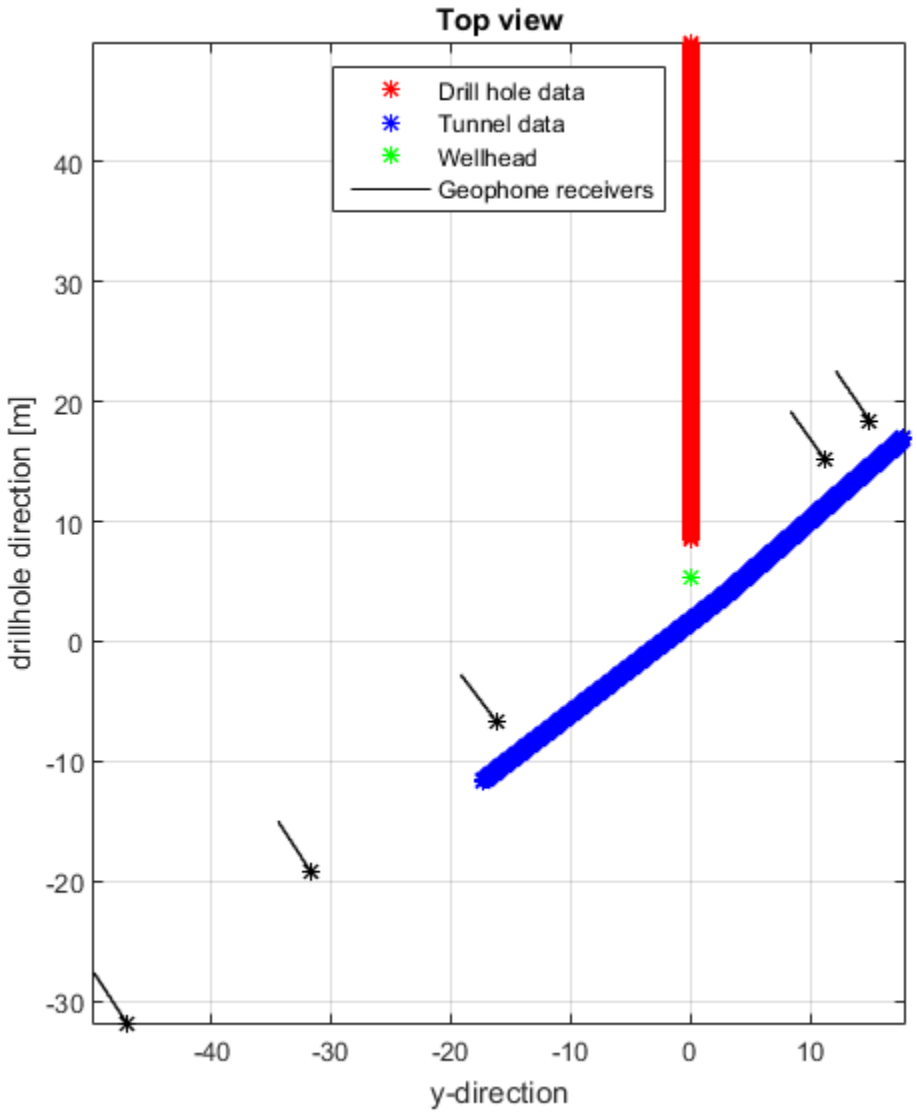
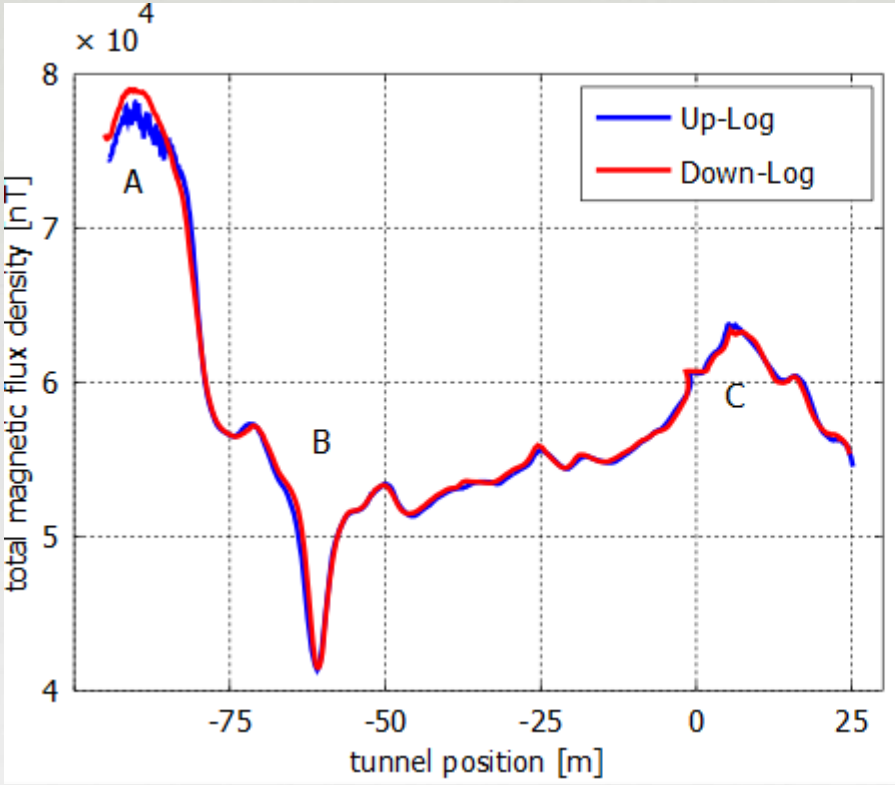
Data acquisition: magnetic component first then seismic component

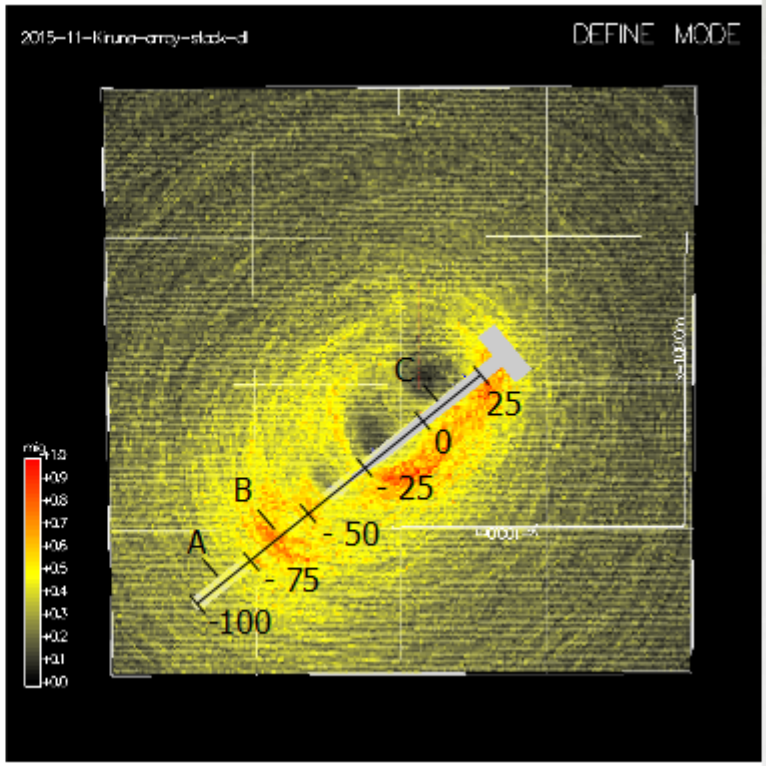


Tunnel measurements

* Good quality magnetic data (left)

* Clear seismic reflections in the near tunnel area (orange colors) that correlate with magnetic anomalies (right)





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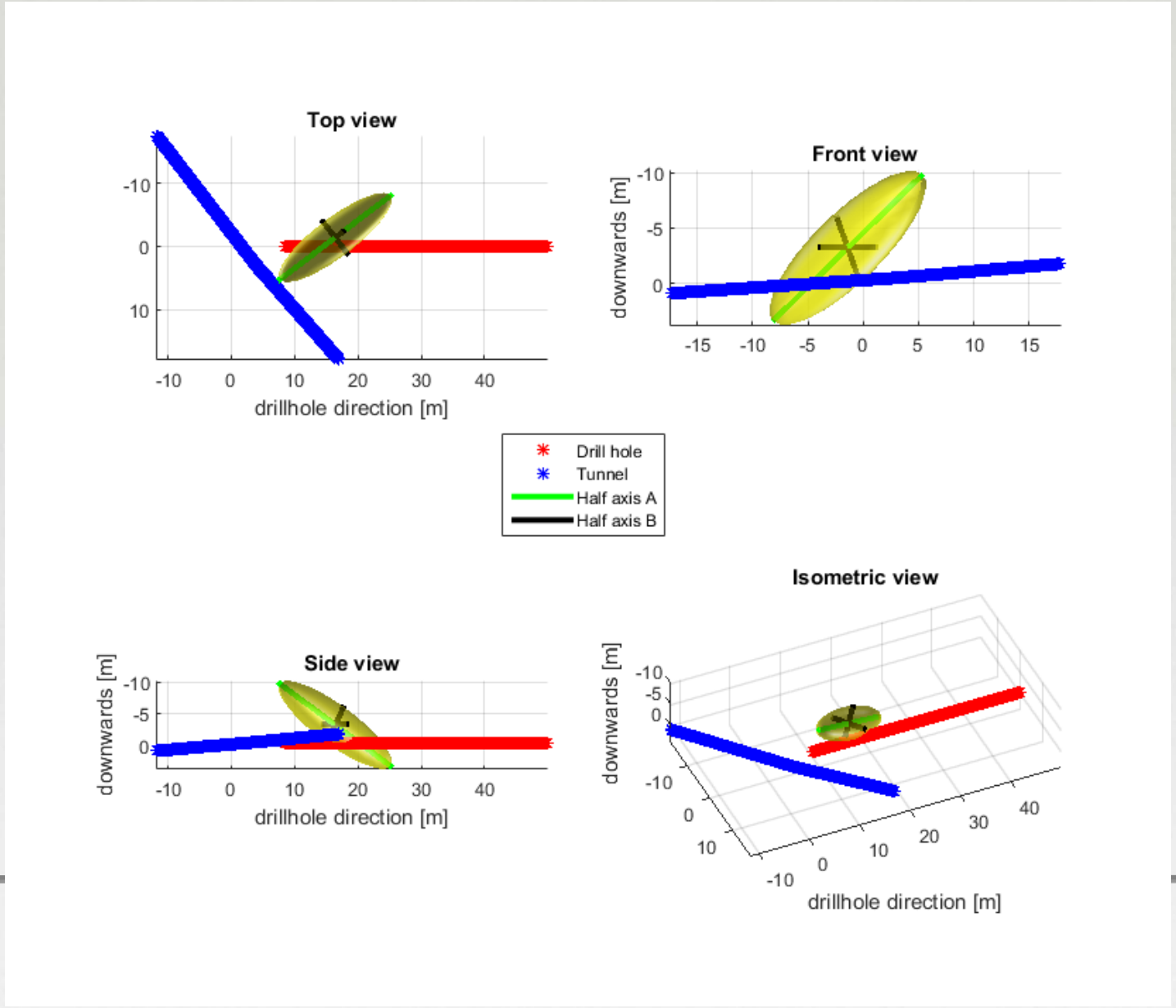
Long wavelength magnetic anomaly in the borehole can be modeled with an elliptical disk



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