AMT soundings

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17.6.2020

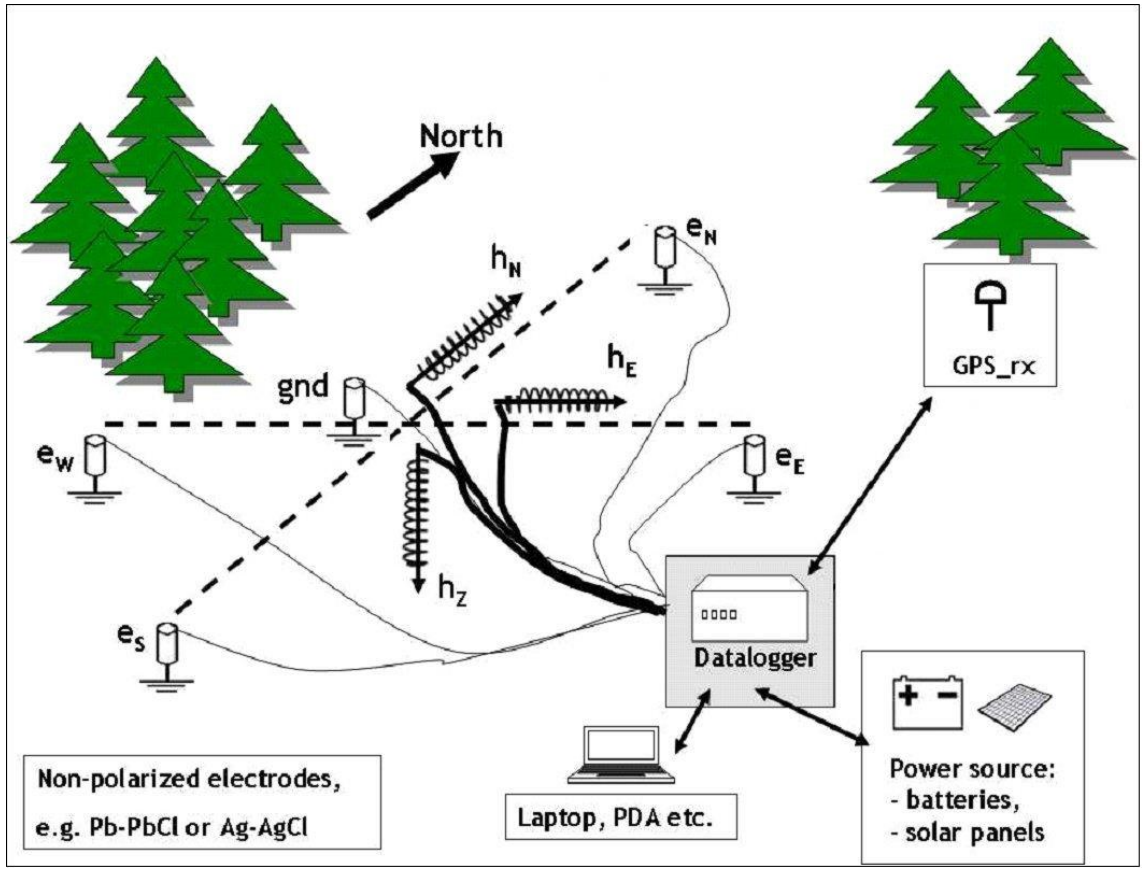
Programme for Sustainable Growth and Jobs

Leverage from the EU 2014–2020

European Union
European Regional Development Fund

AUDIOMAGNETOTELLURICS (AMT)

- Audiomagnetotelluric (AMT) method is a geophysical electromagnetic sounding technique to study the electrical conductivity structure of the earth.
- Wide survey depth range from hundreds of meters down to several kilometers.
- Method uses thunderstorm activity (lightning) as electromagnetic source field.
- In 2011, GTK purchased two AMT equipment that are suitable for deep ore exploration.
- Due to increasing demand for AMT surveys in Finland, third equipment purchased in 2020.



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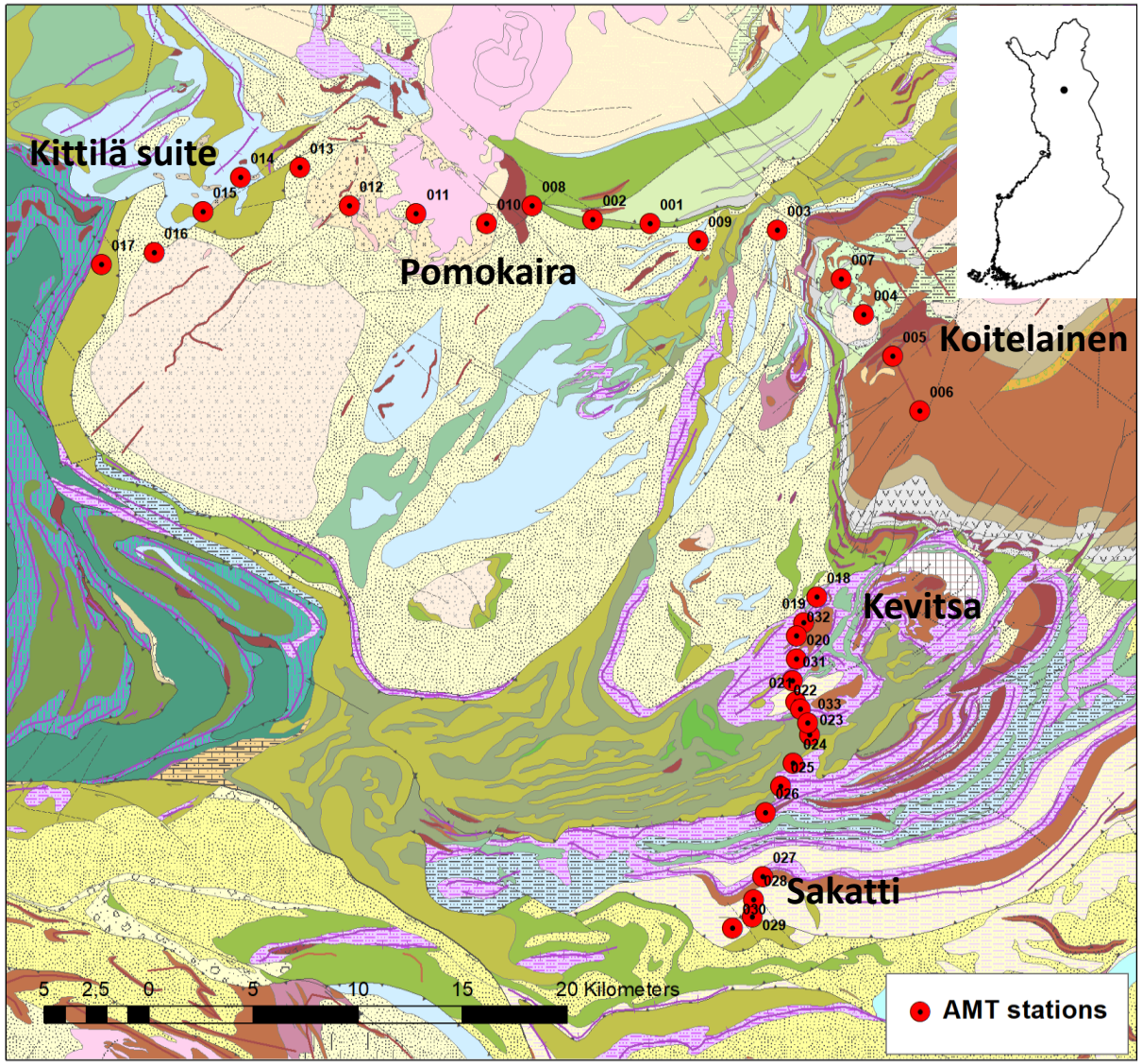
AMT SOUNDINGS

- AMT sounding were carried out in 2017 - 2018.
- Remote reference technique utilized.
- Profile 1: Pomokaira-Koitelainen 17 AMT stations
- Profile 2: Kevitsa-Sakatti 16 AMT stations



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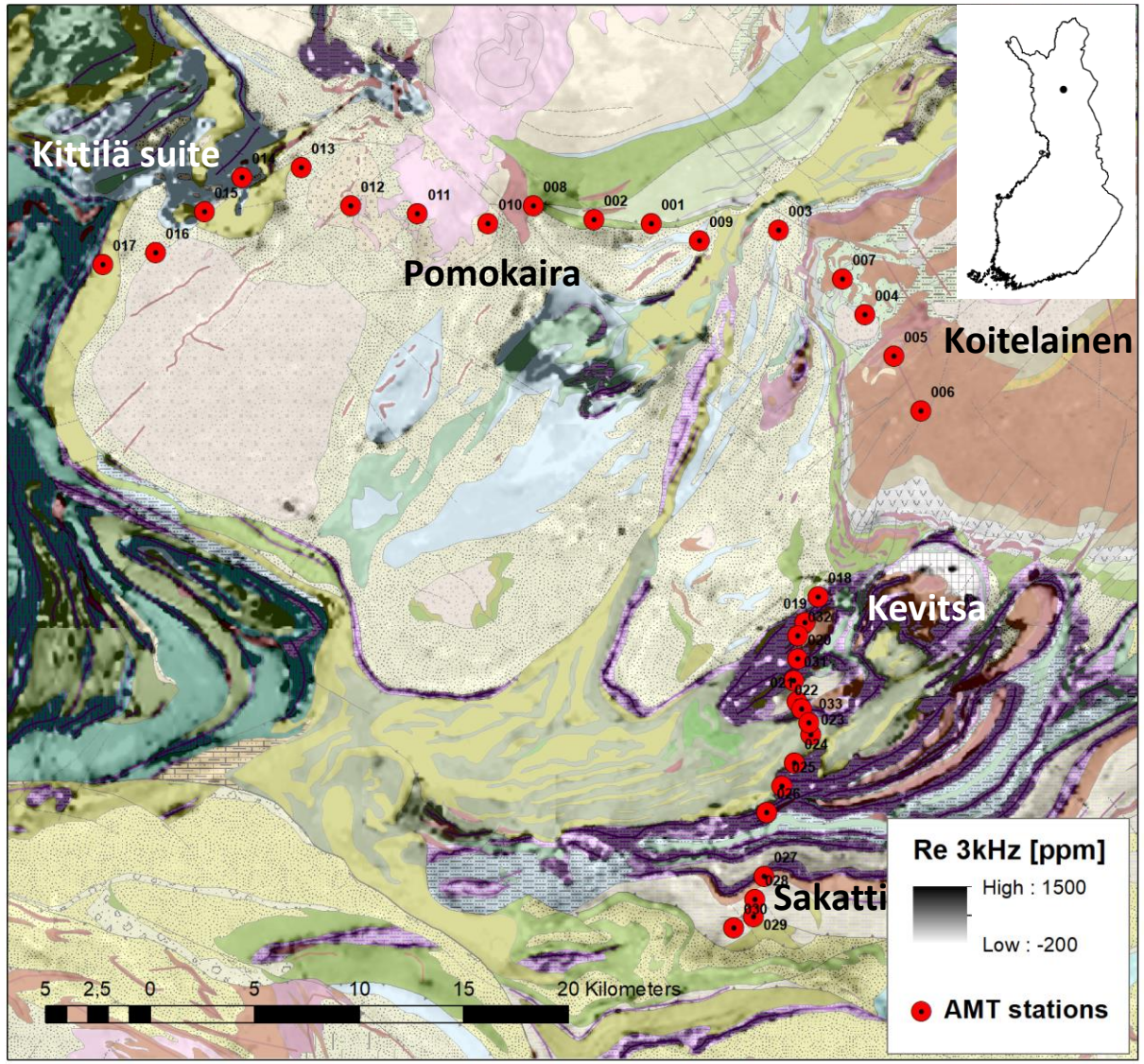
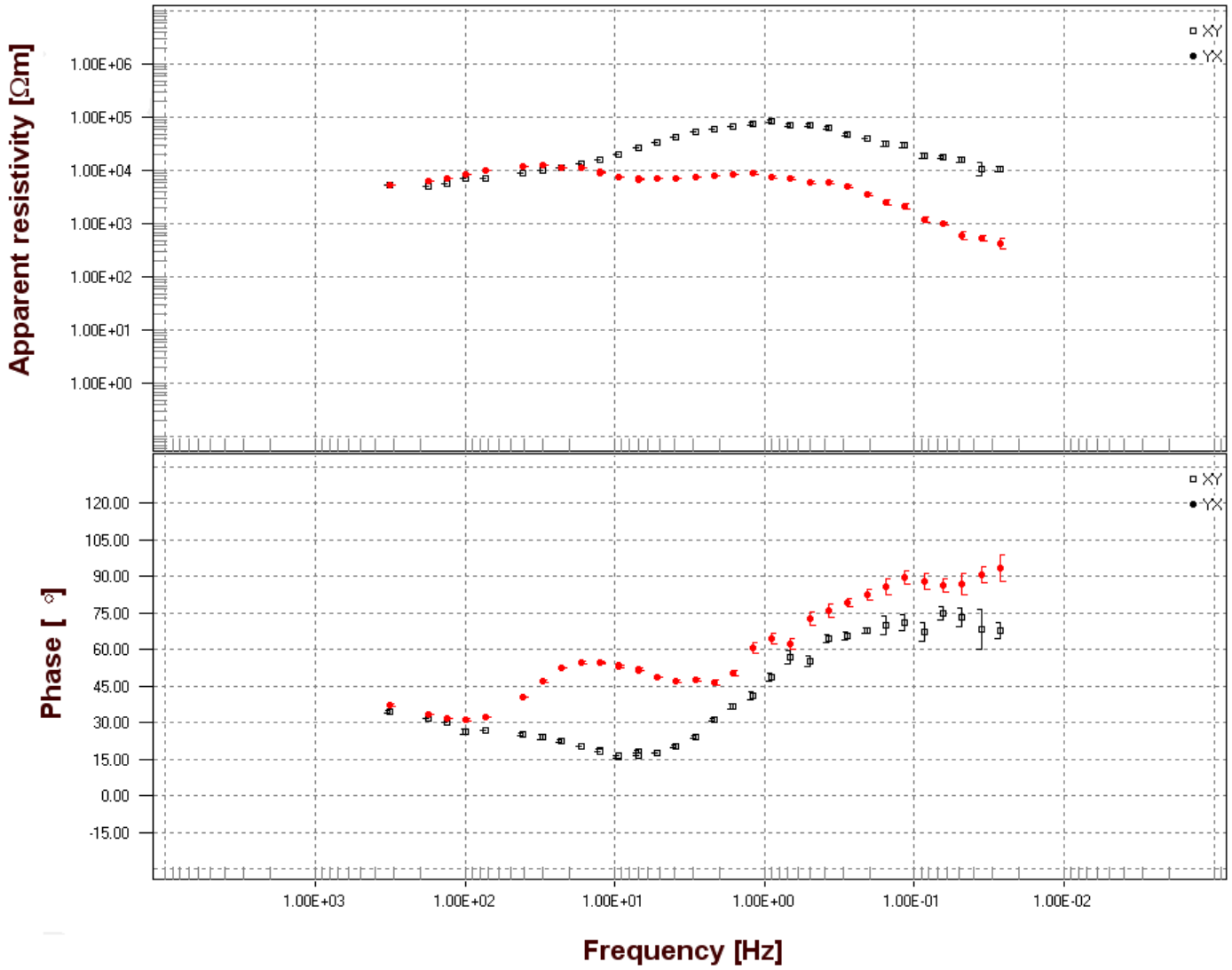


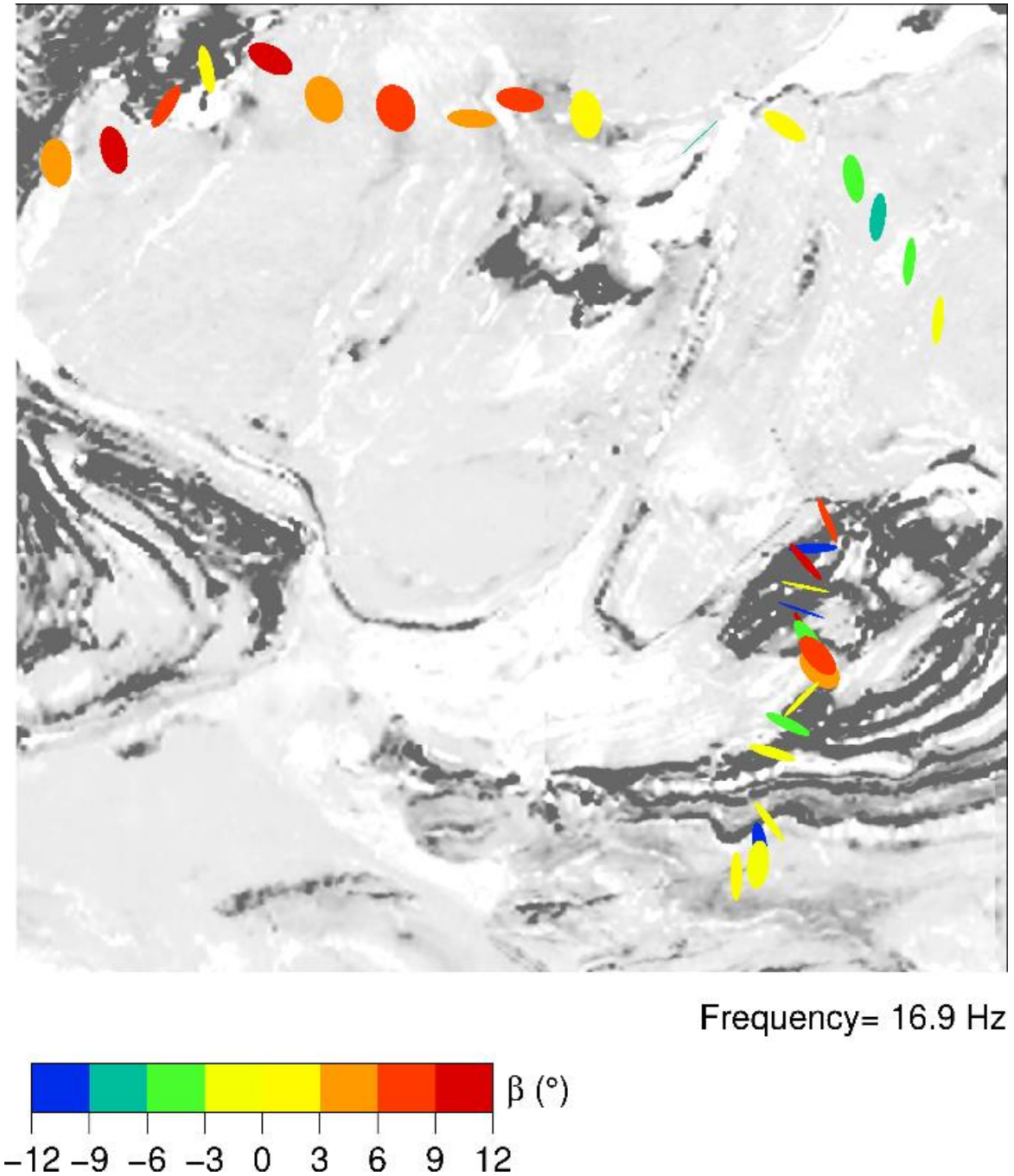
DATA

- Mostly good quality data.
- Remote reference technique successfully decreased uncorrelated EM noise.
- Instruments recordings during night → MT data.



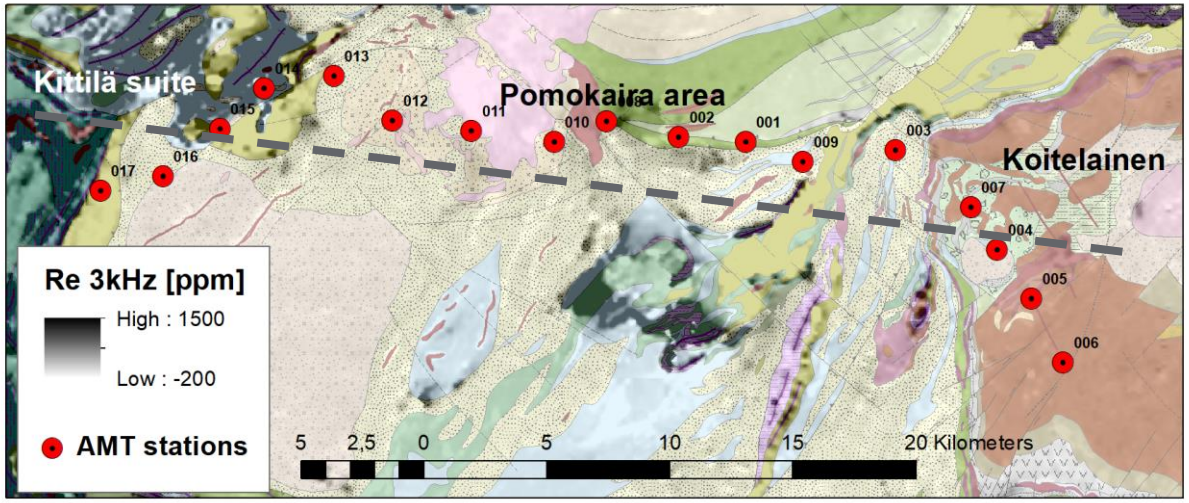
DIMENSIONALITY

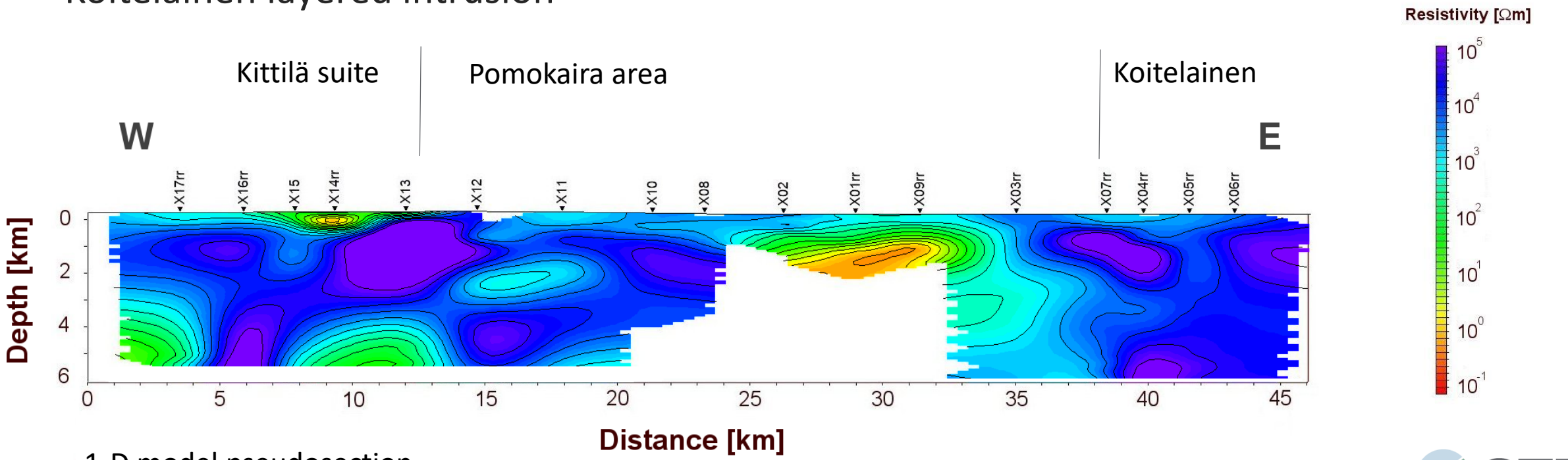
- Phase tensors derived from the AMT data (frequency=16.9 Hz)
- High skew (β) values (| β |>3, colors other than yellow) reveal that the geoelectric structure is 3-D



PROFILE 1

- Conductors were detected in the Kittilä suite and the eastern Pomokaira area.
- No conductors were detected in the Koitelainen layered intrusion

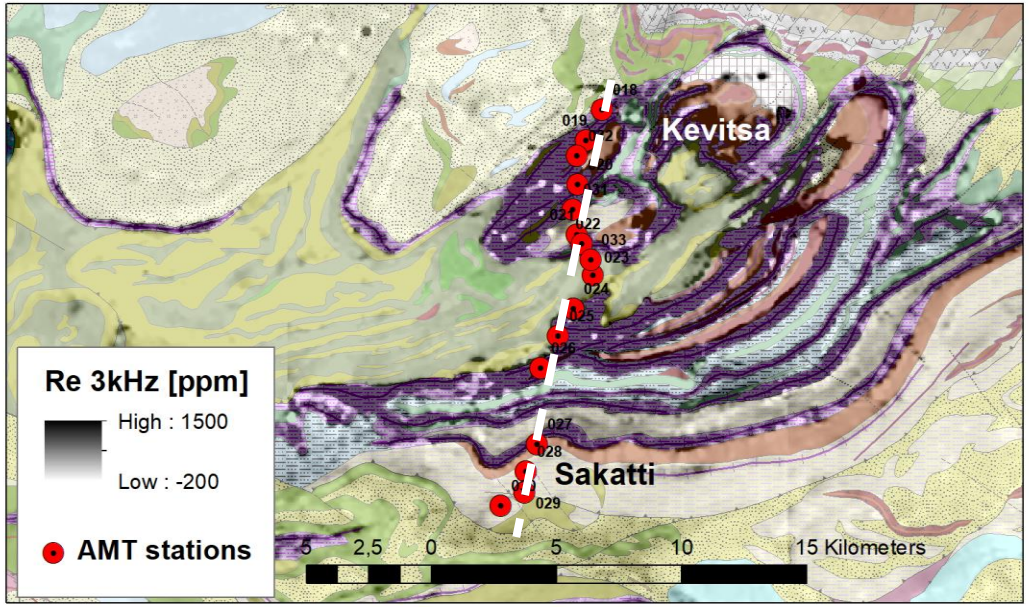




1-D model pseudosection

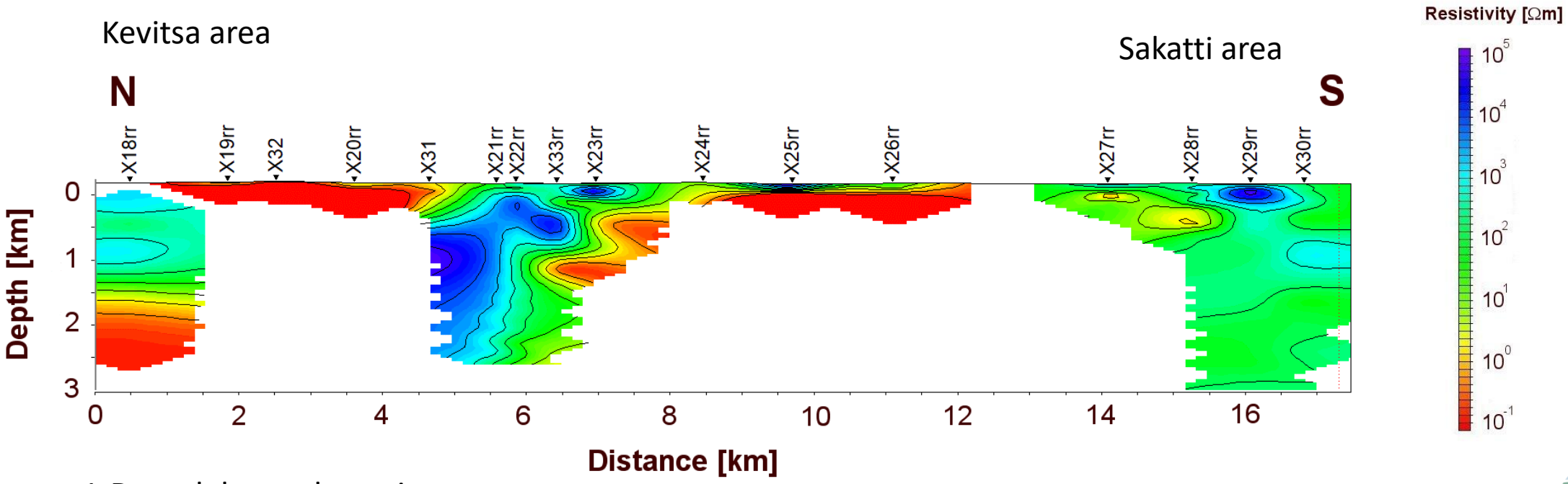
PROFILE 2

- Highly conductive Profile area → The loss of EM field penetration
- Resistive blocks between conductive units.



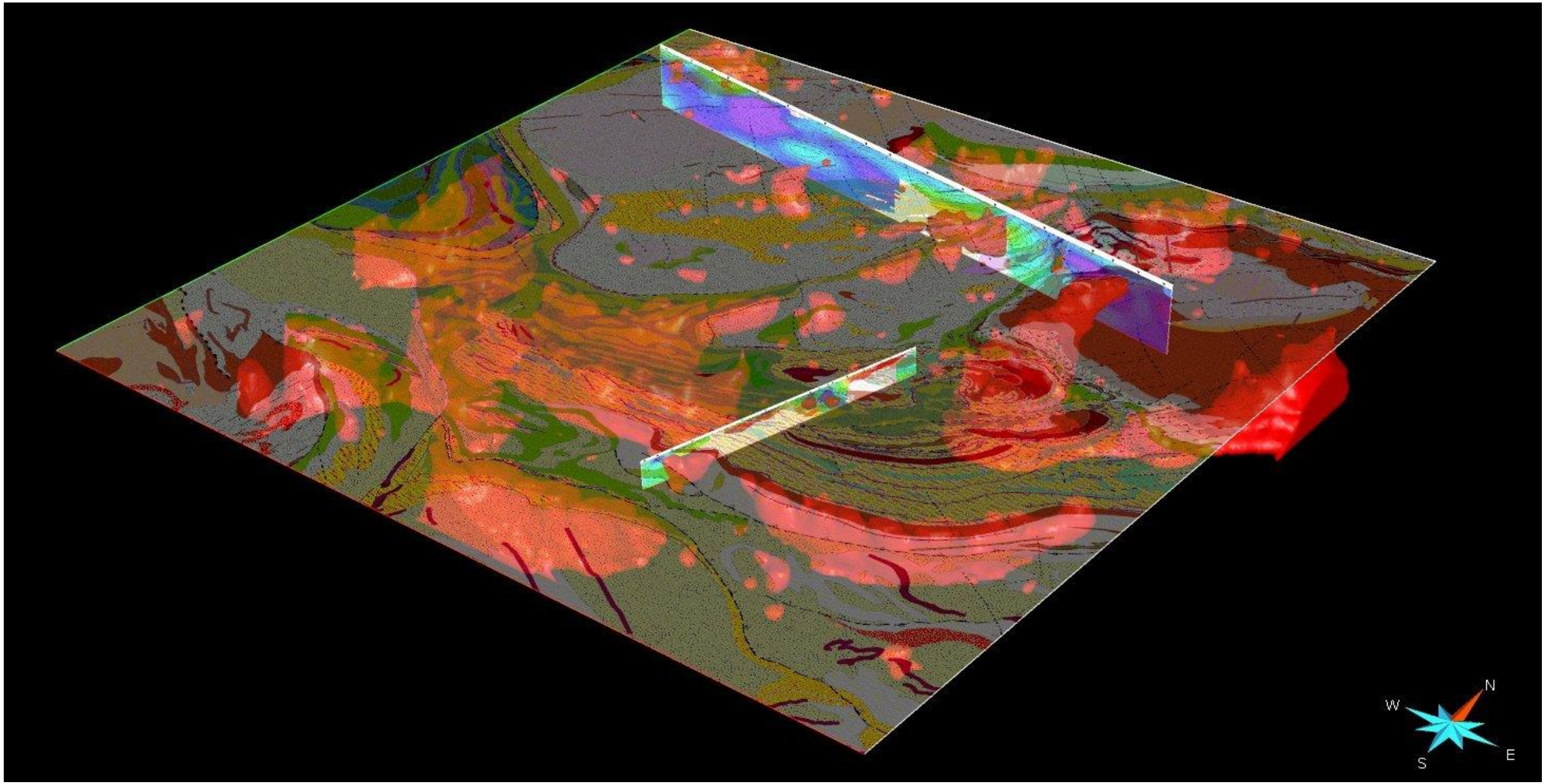
Kevitsa area

Sakatti area

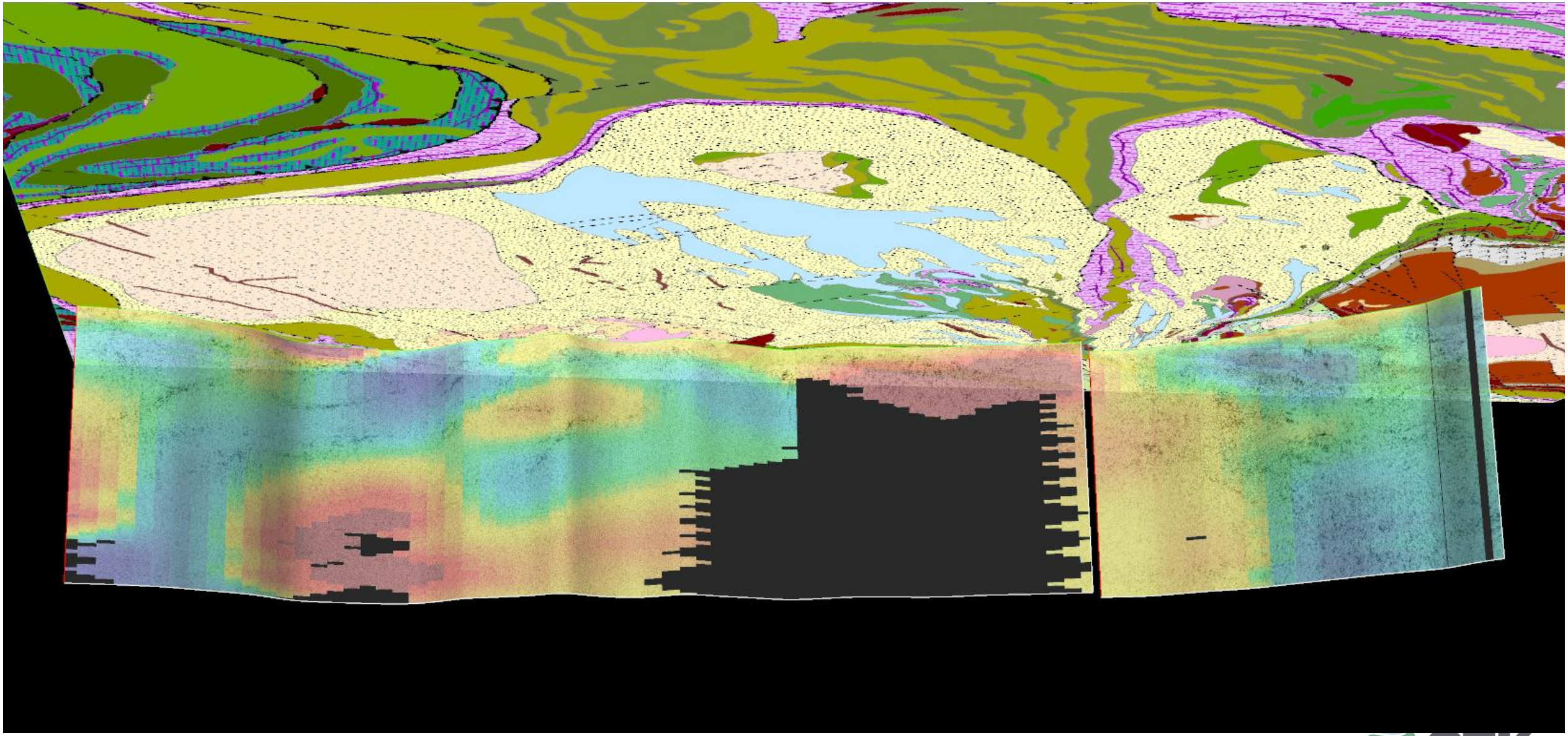


1-D model pseudosection

AMT AND 3D GRAVITY



AMT AND REFLECTION SEISMICS



GTK

THANK YOU

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