

3D-EFFEKTER I TEM-DATA

HVORDAN IDENTIFICERES DE, OG
HVORDAN TACKLER VI DEM?



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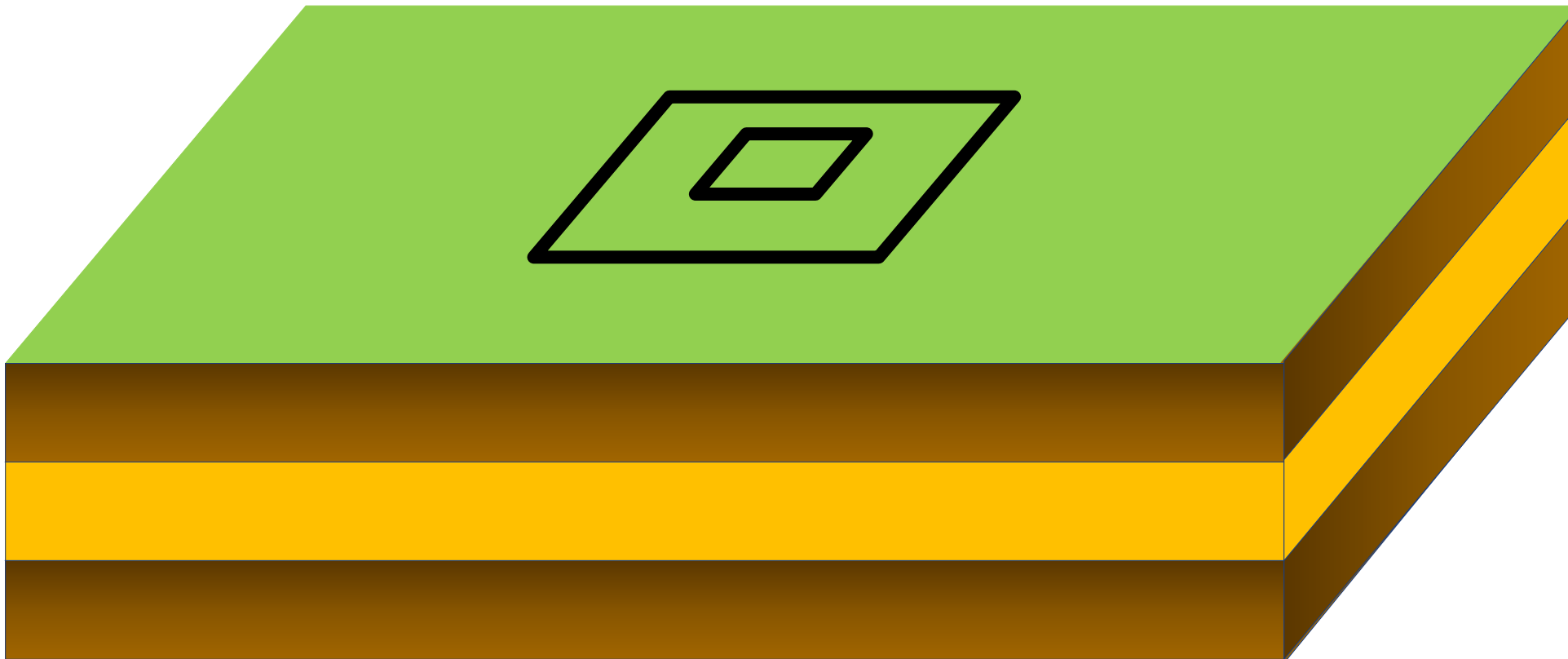
AARHUS UNIVERSITET

VINTERMØDET 2026 ATV
15. FEBRUAR 2026

FREDERIK ALEXANDER FALK
PH.D.-STUDERENDE



TRANSIENT ELEKTROMAGNETISK METODE



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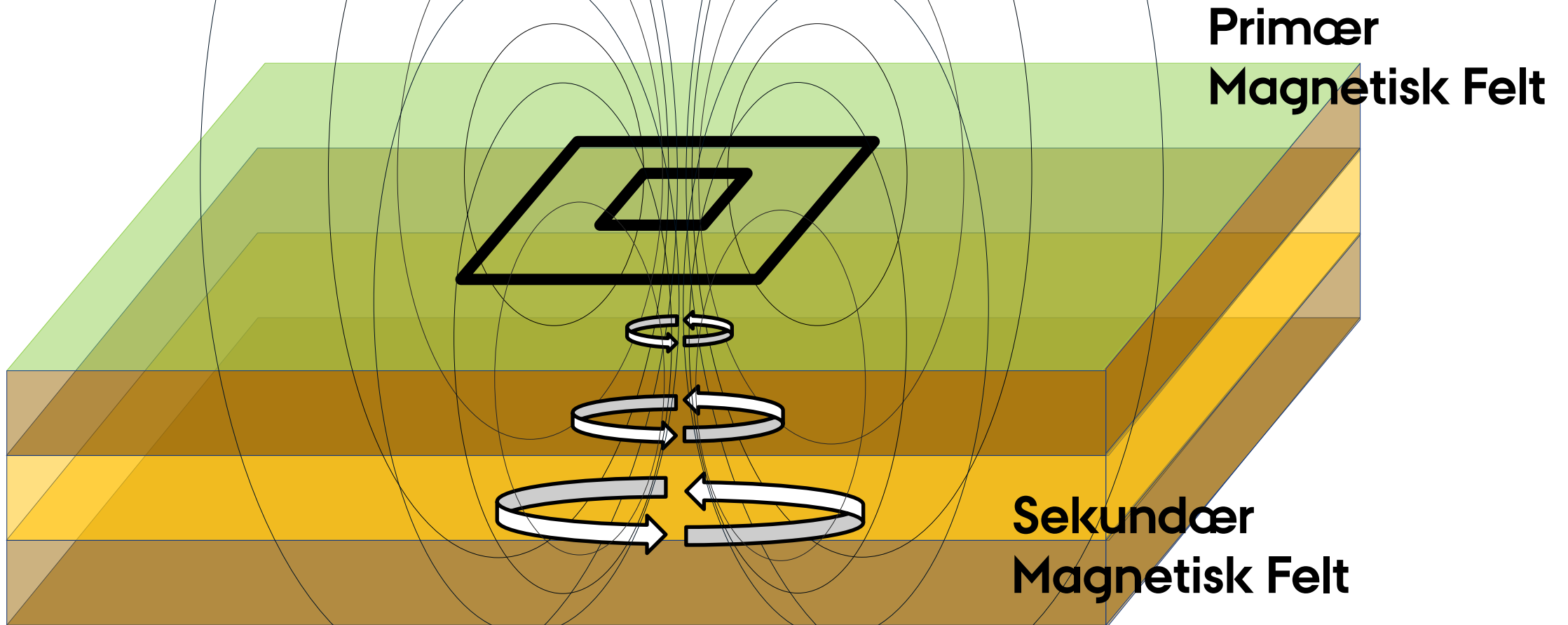
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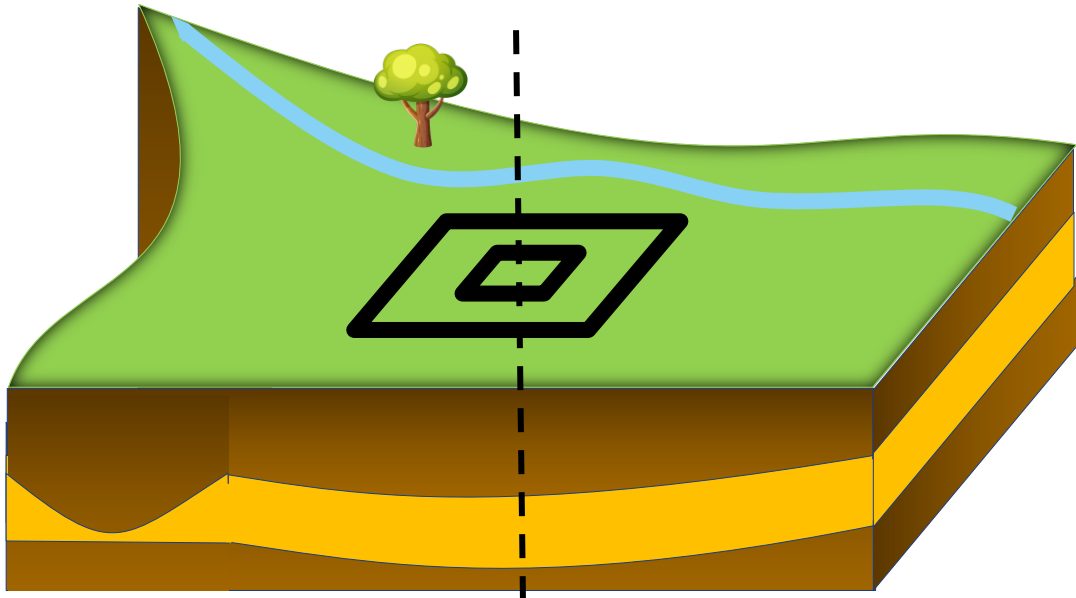
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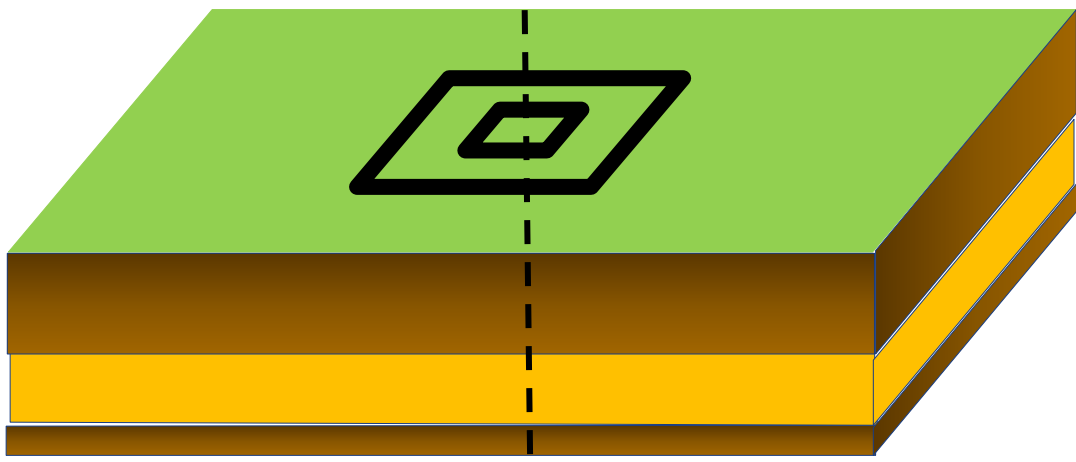
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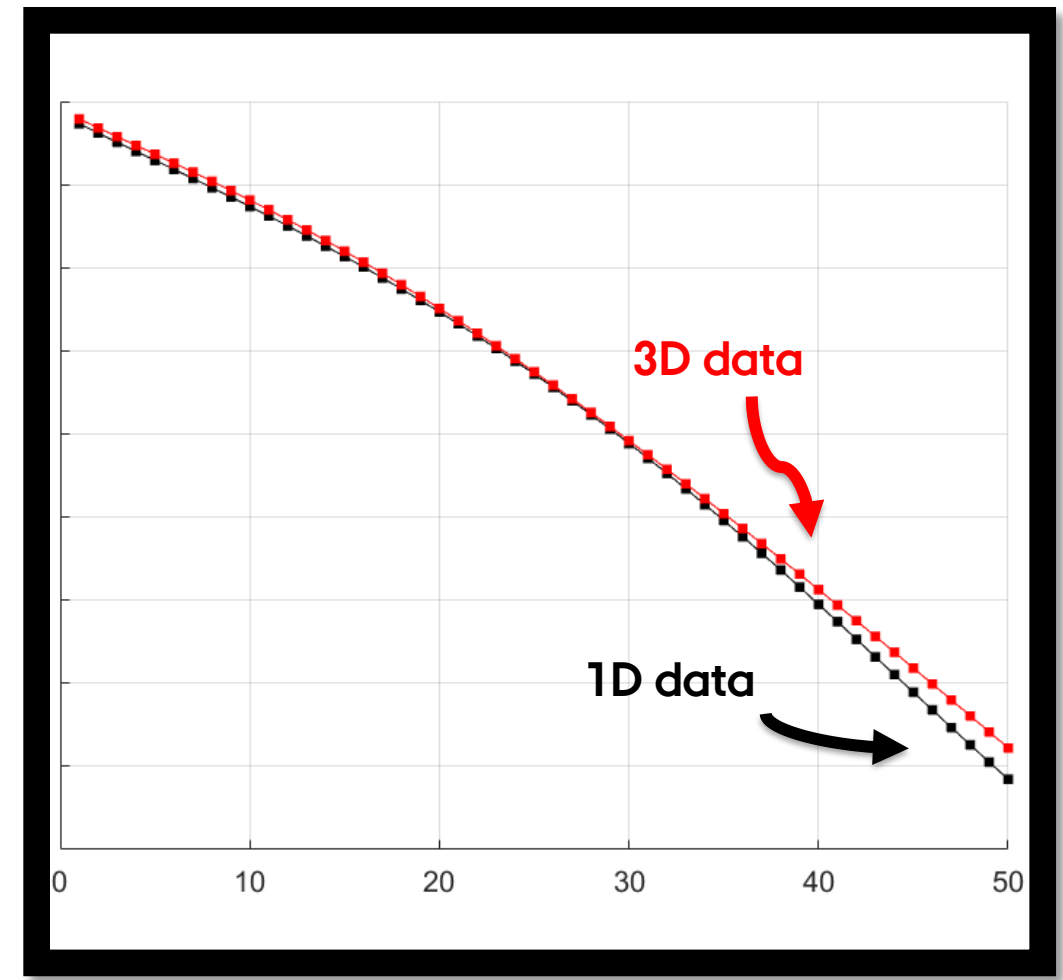




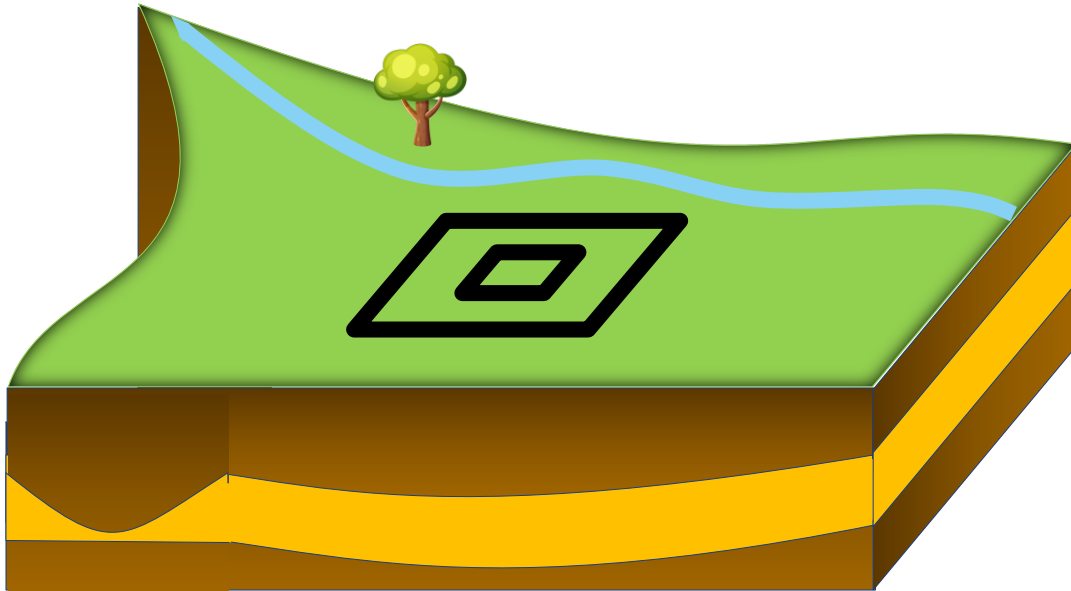
3D algoritme
→



1D algoritme
→



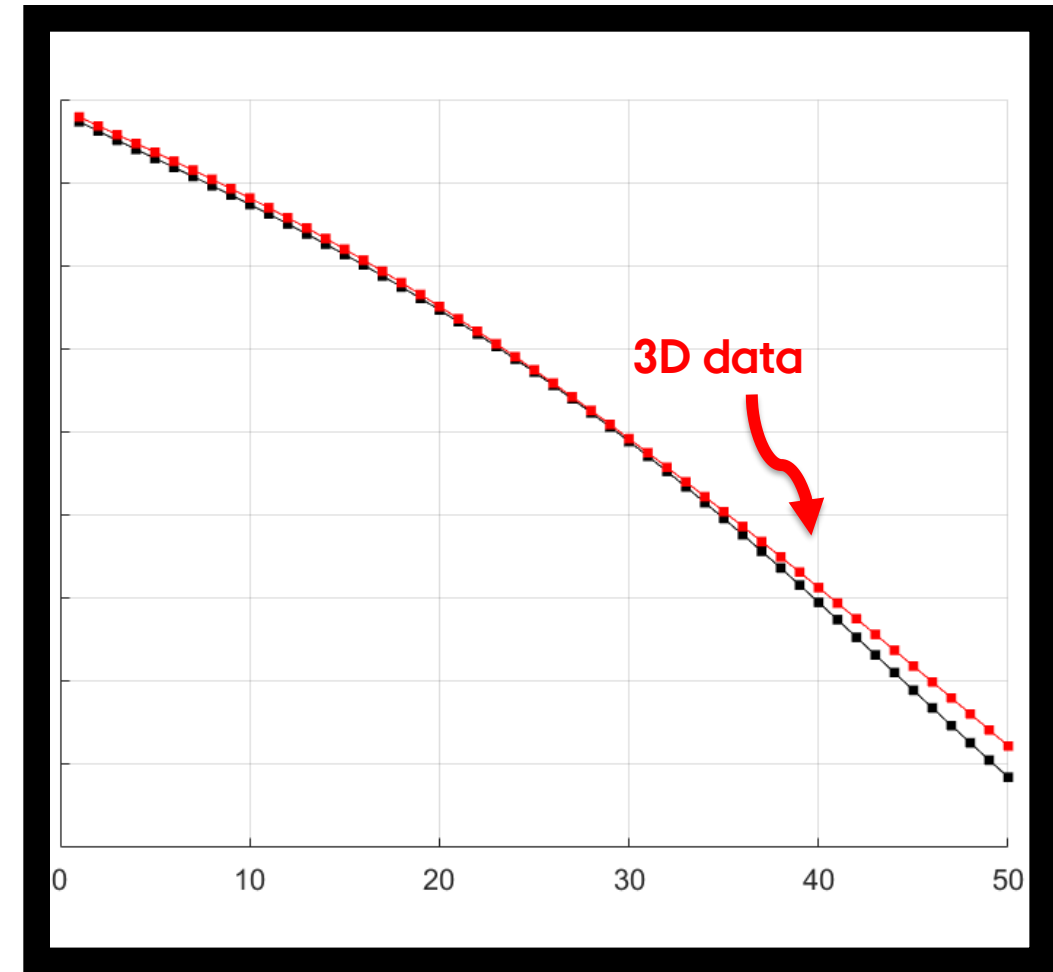
INVERSION



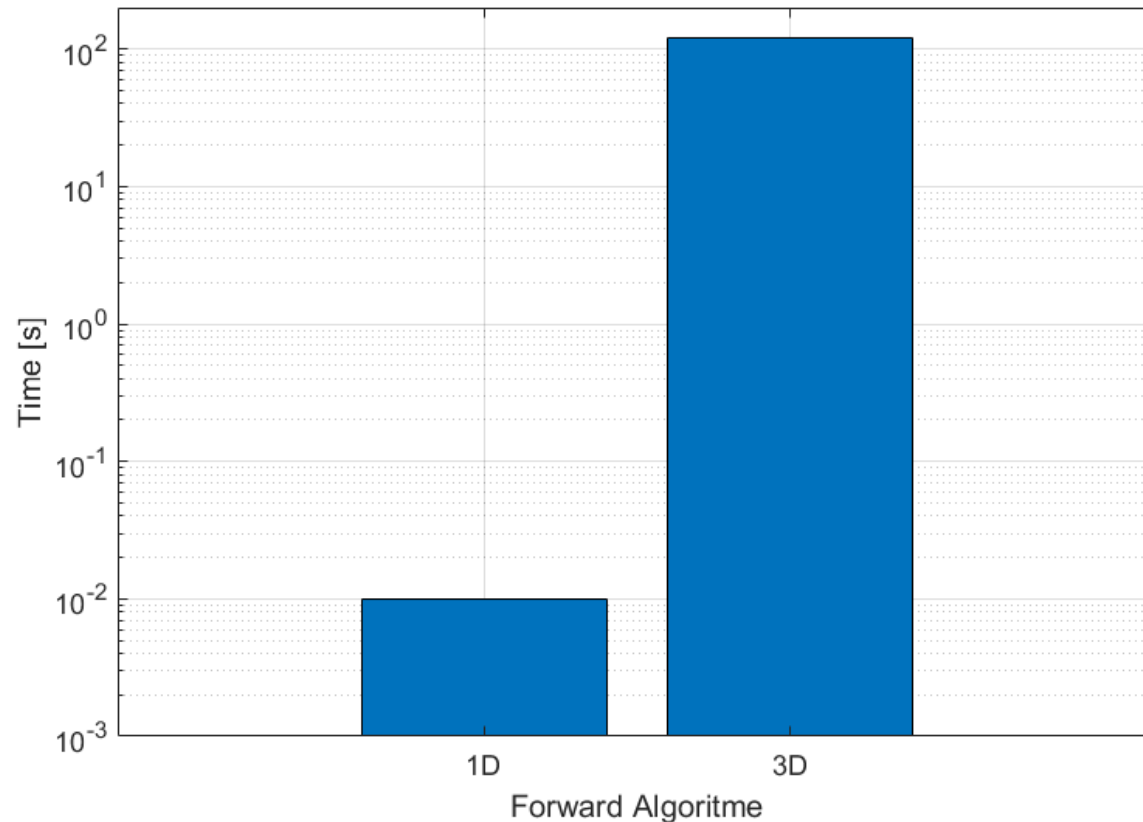
3D algoritme



3D inversions-
algoritme



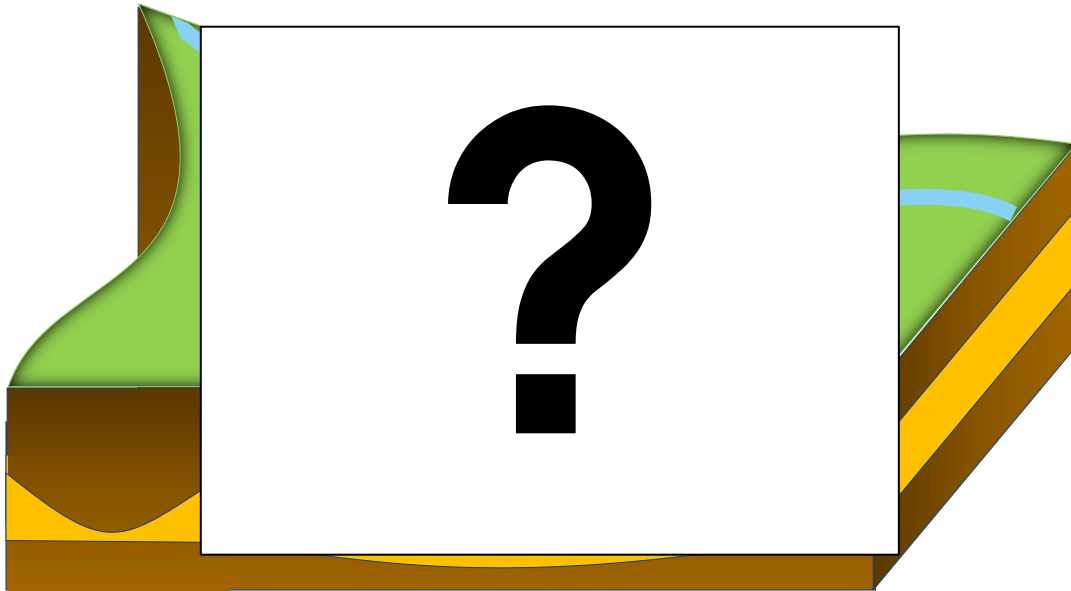
HVORFOR BRUGE 1D ALGORITMER?



Man kan på 2 minutter regne data for ca. 10.000 modeller med 1D algoritmen.

På samme tid kan 3D algoritmen regne data for 1 model.

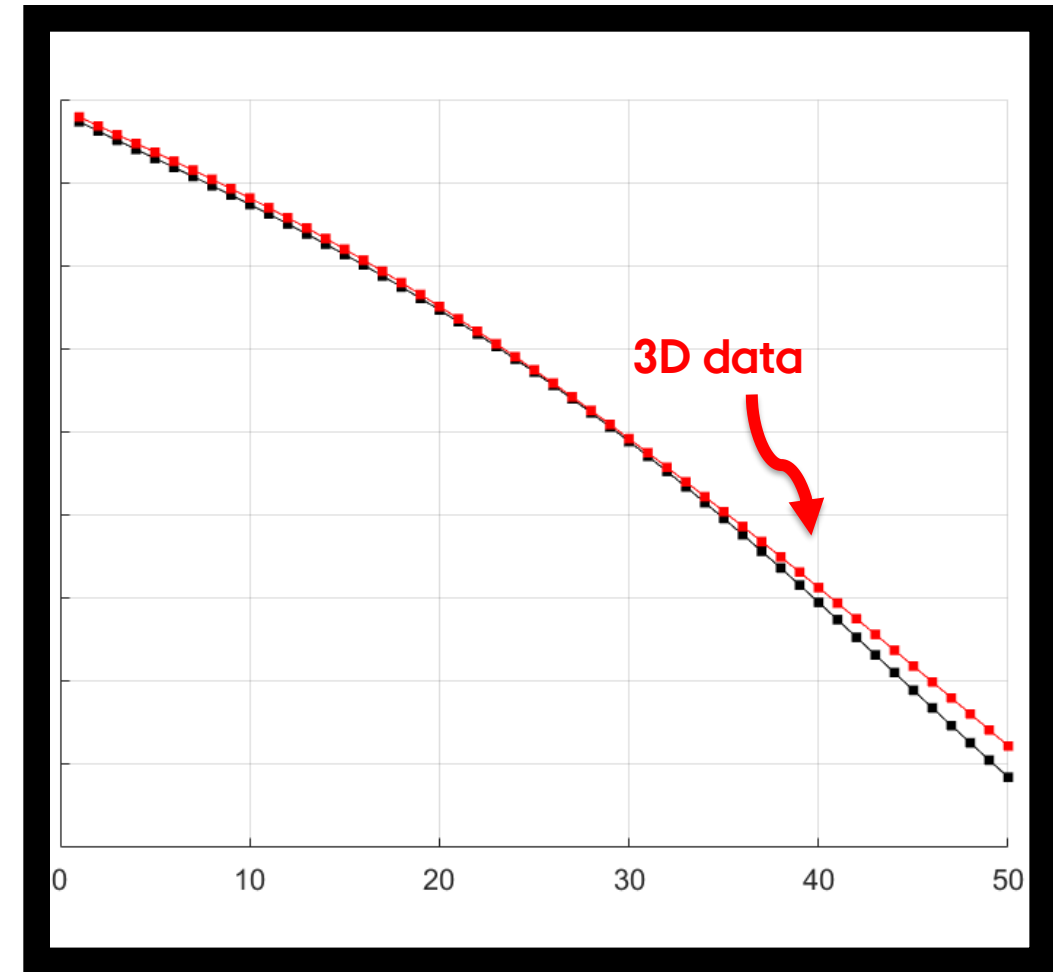
INVERSION



3D algoritme



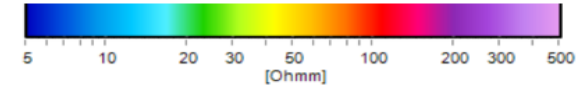
1D inversions-
algoritme



EKSEMPEL (RIBE)



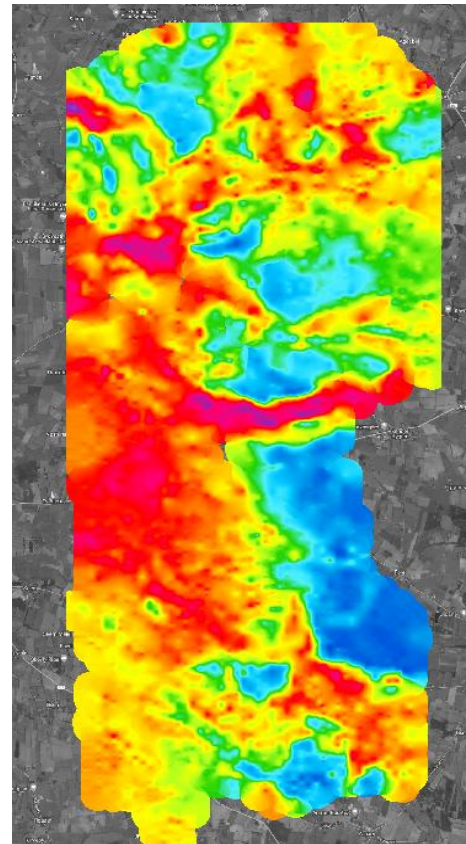
INVERSIONSMODEL



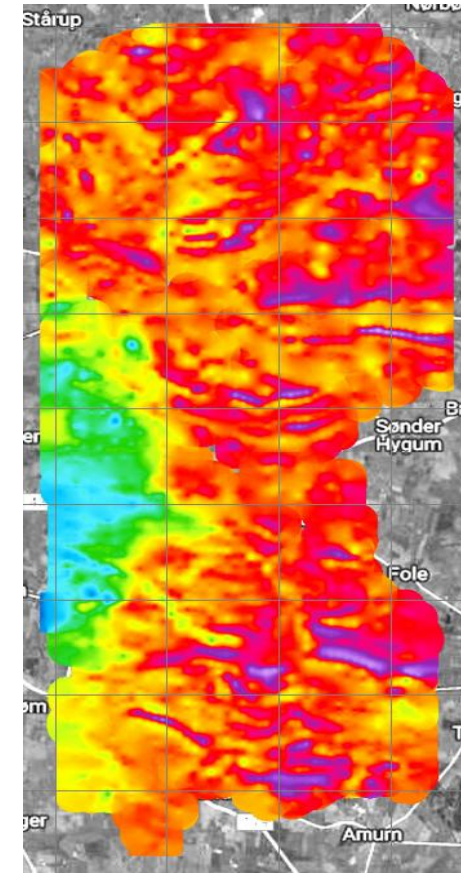
Normaliserede data-residualer



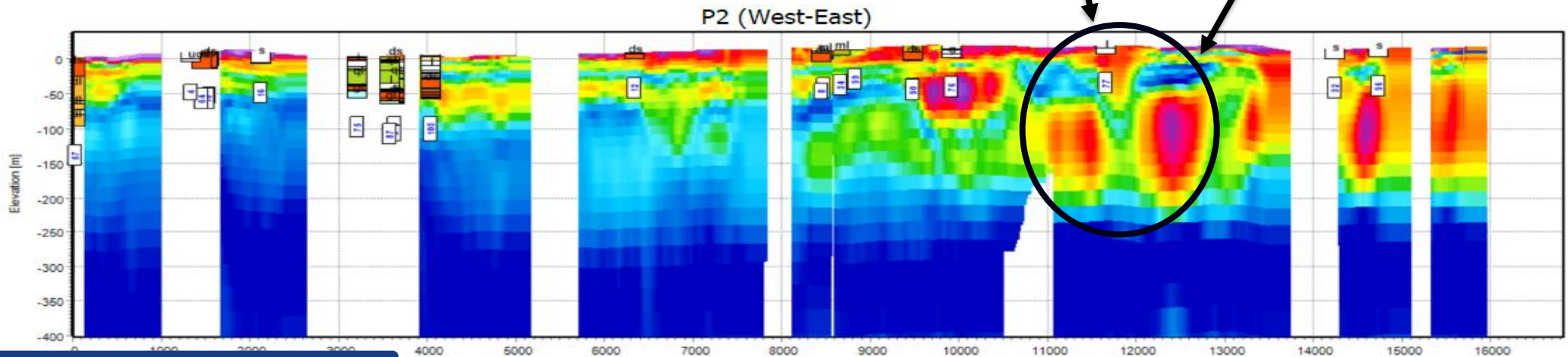
Middelmodstand, kote 0m til -20m



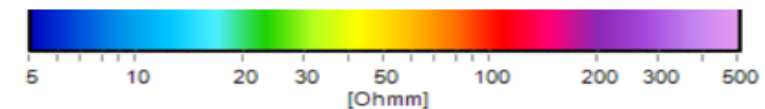
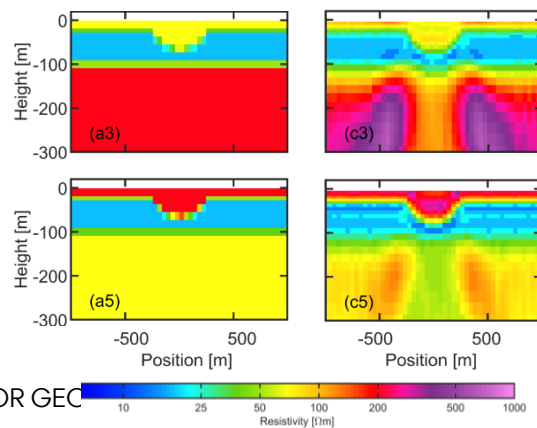
Middelmodstand, kote -80m til -100m



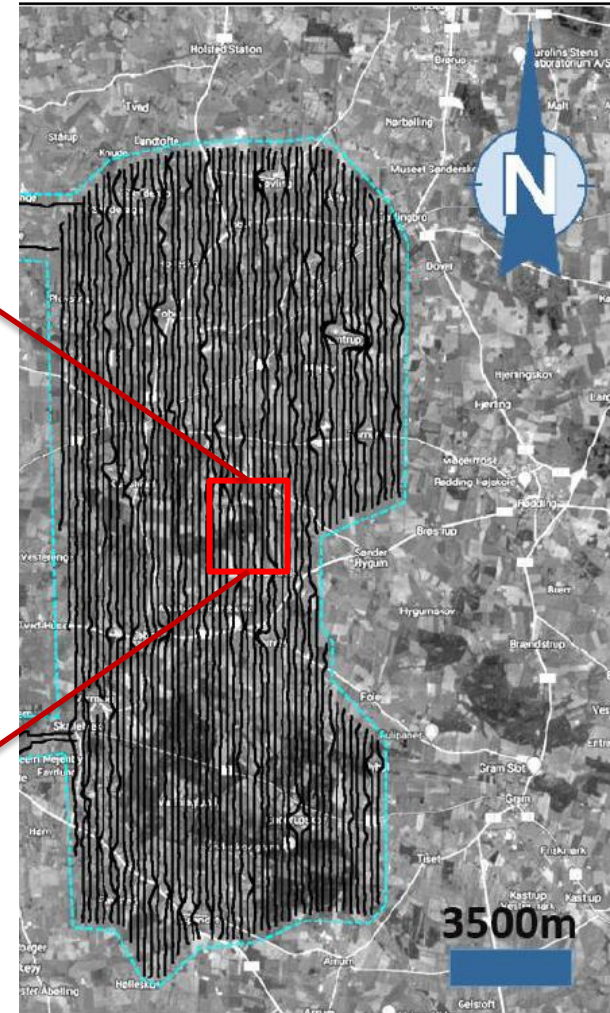
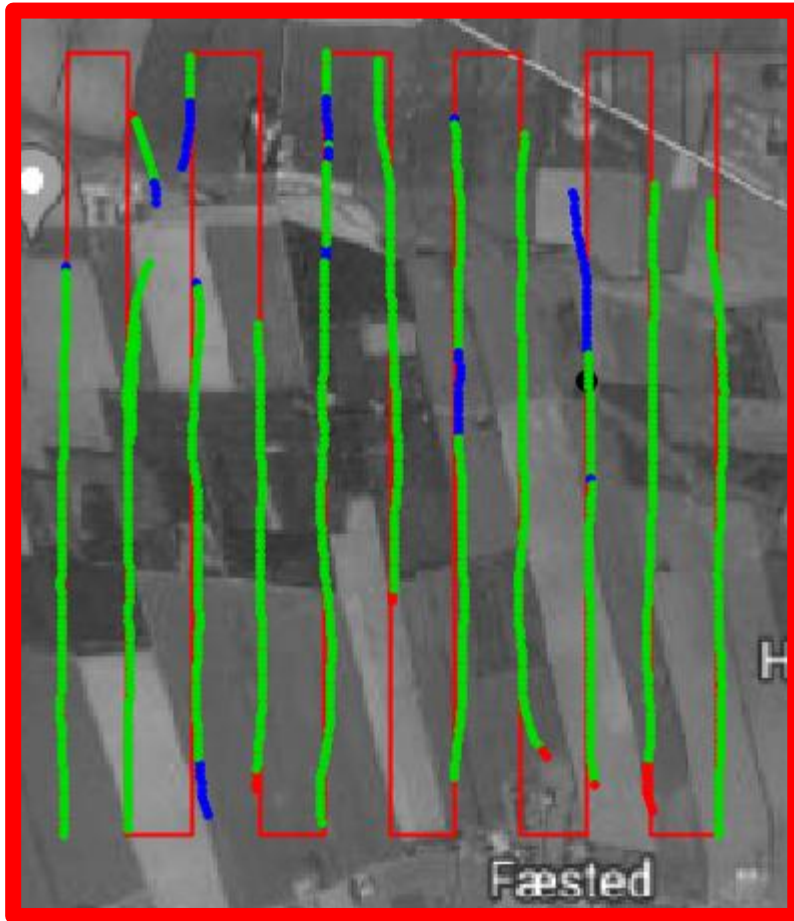
IP ELLER 3D FEJL?



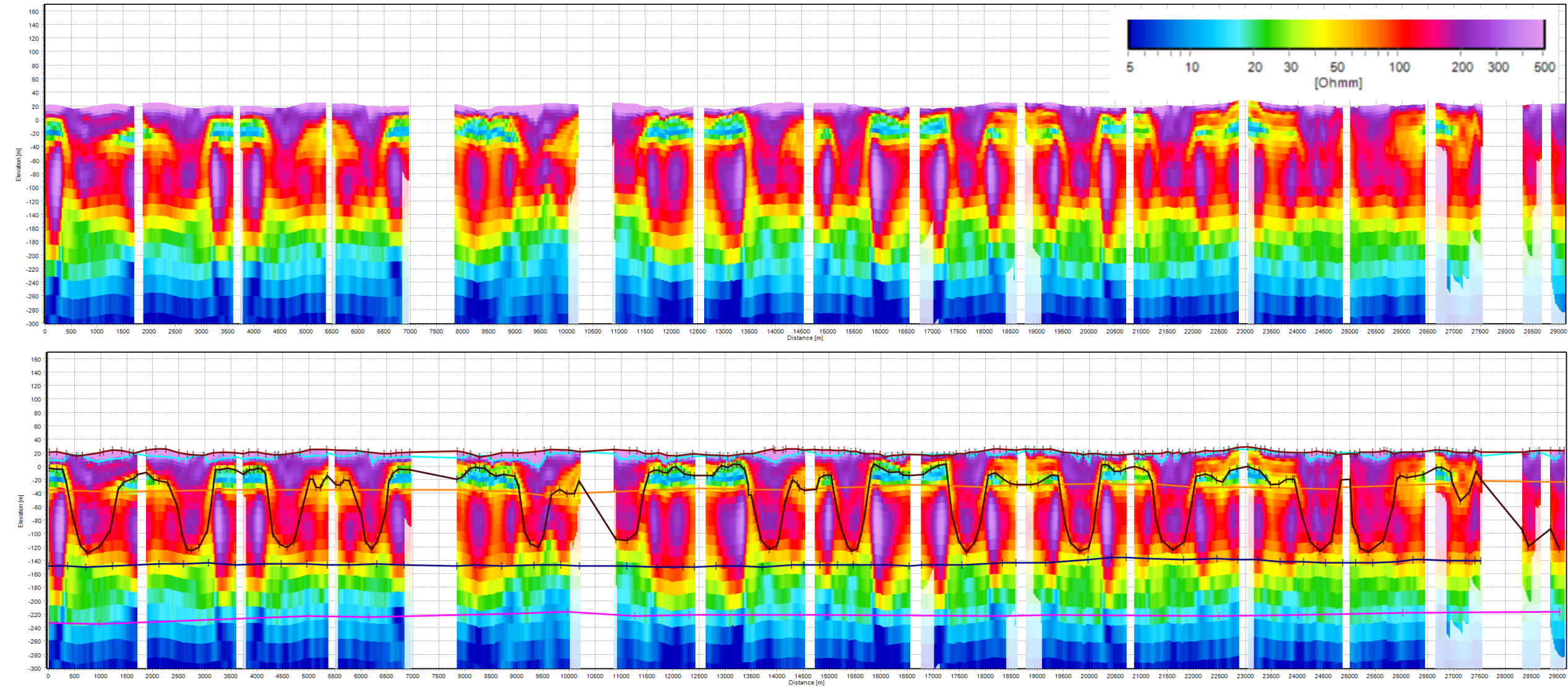
Syntetiske Modeller



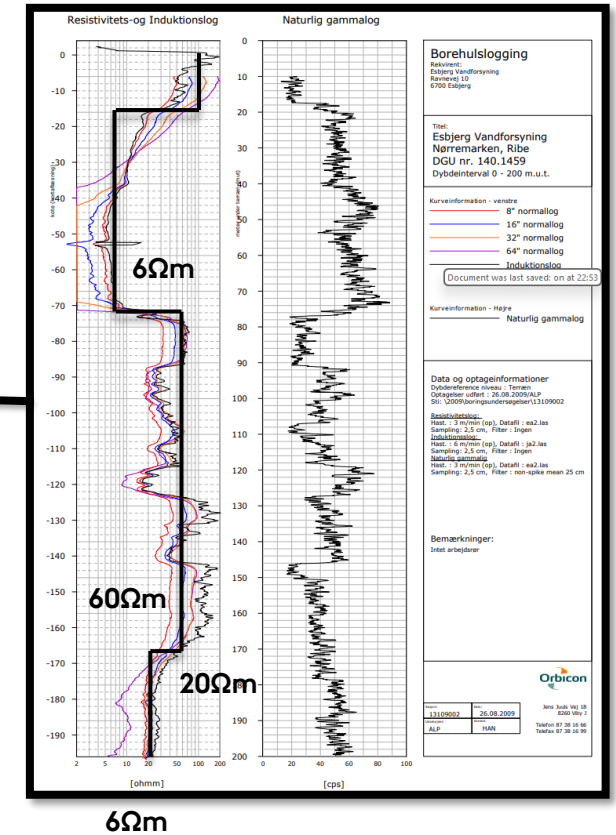
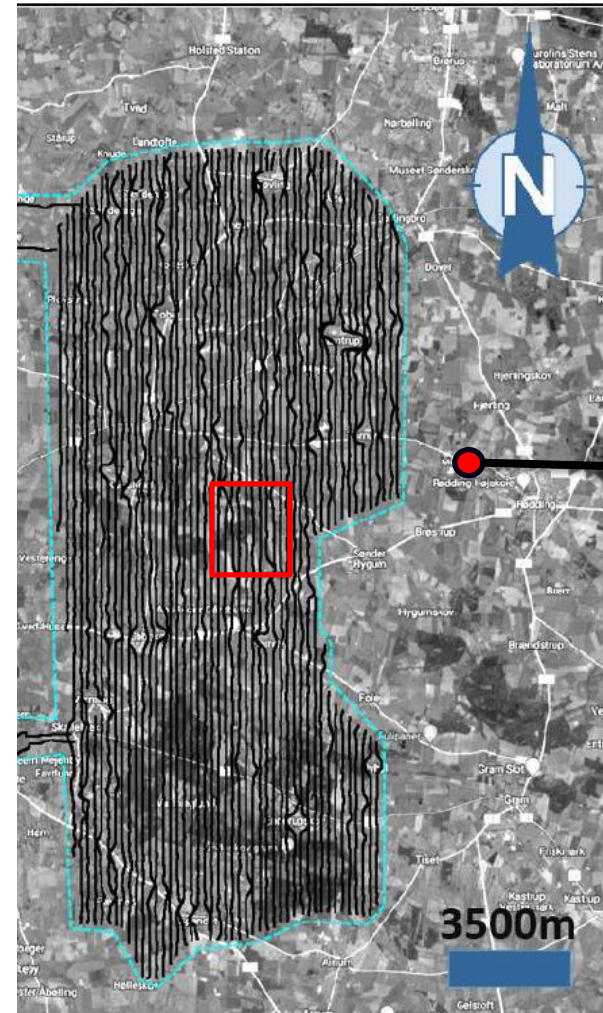
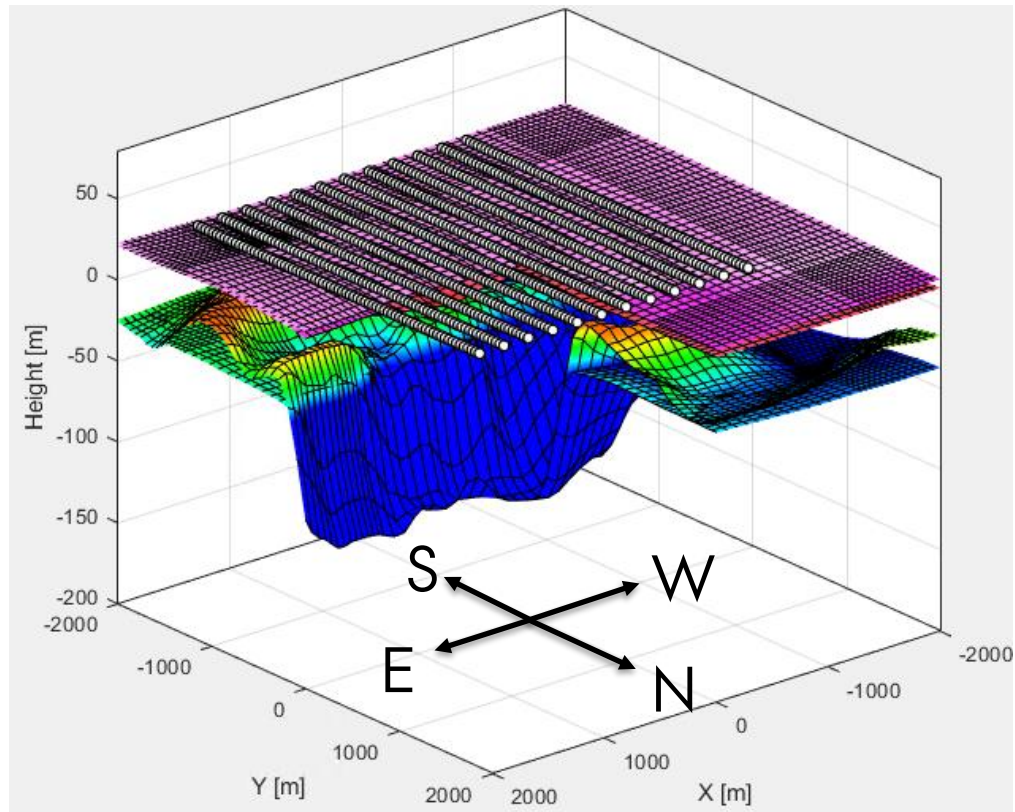
FOKUSOMRÅDE



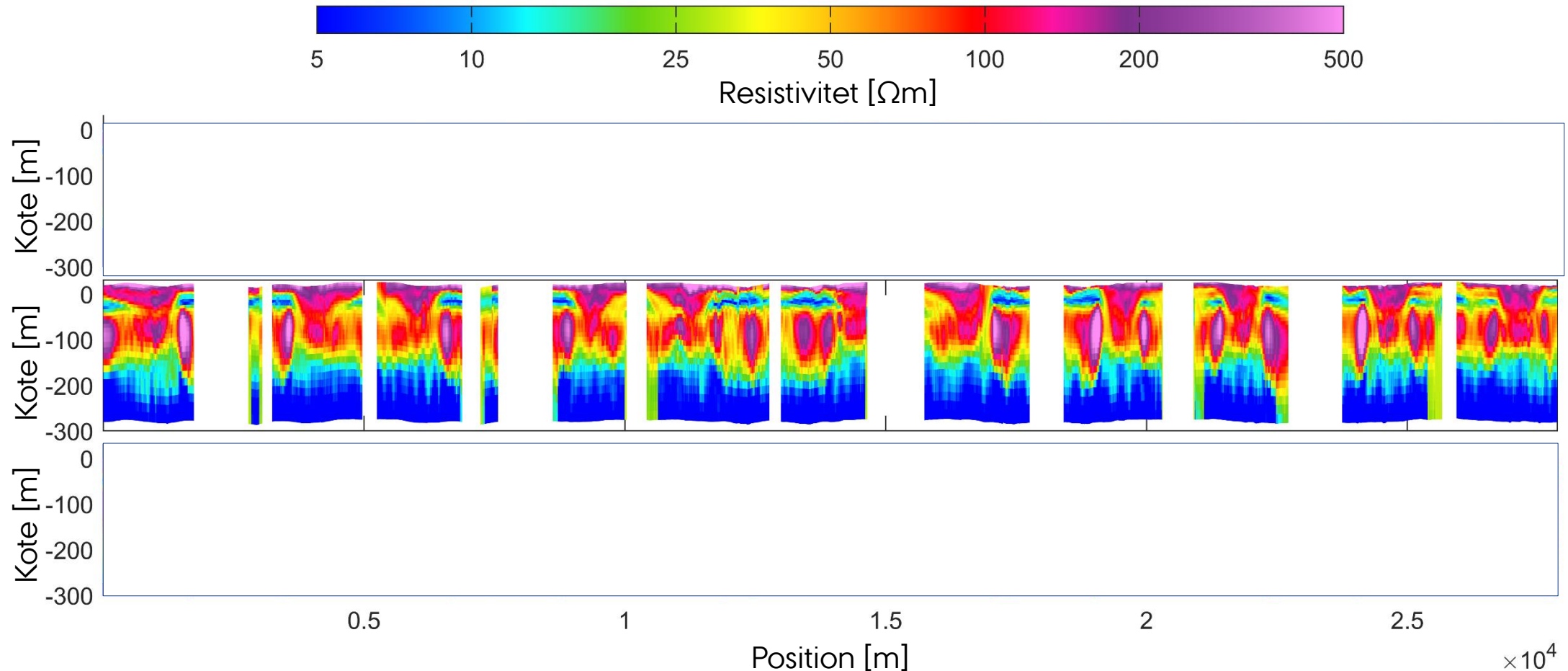
TOLKNING AF LAG-MODEL



TOLKNING AF LAG-MODEL

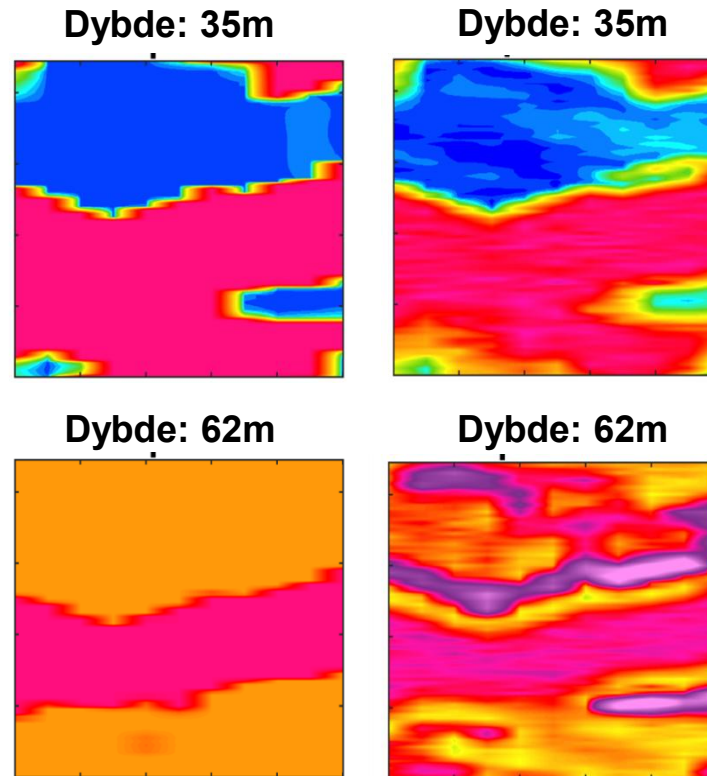


VERTIKAL SEKTION/PROFIL

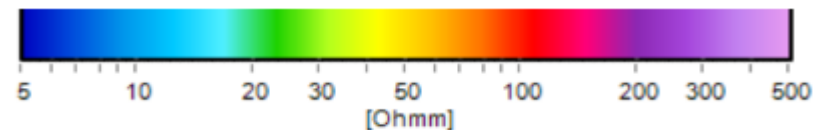
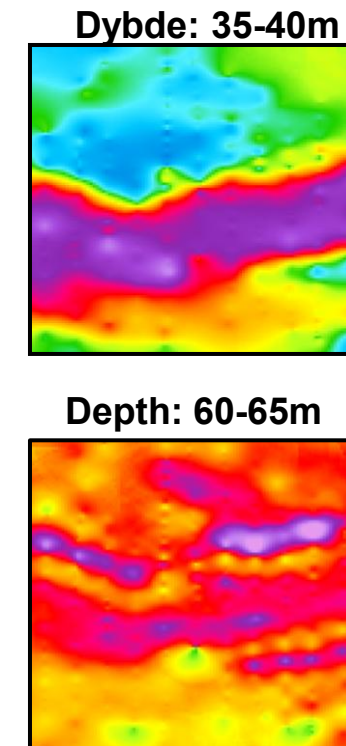


MIDDELMODSTANDSKORT

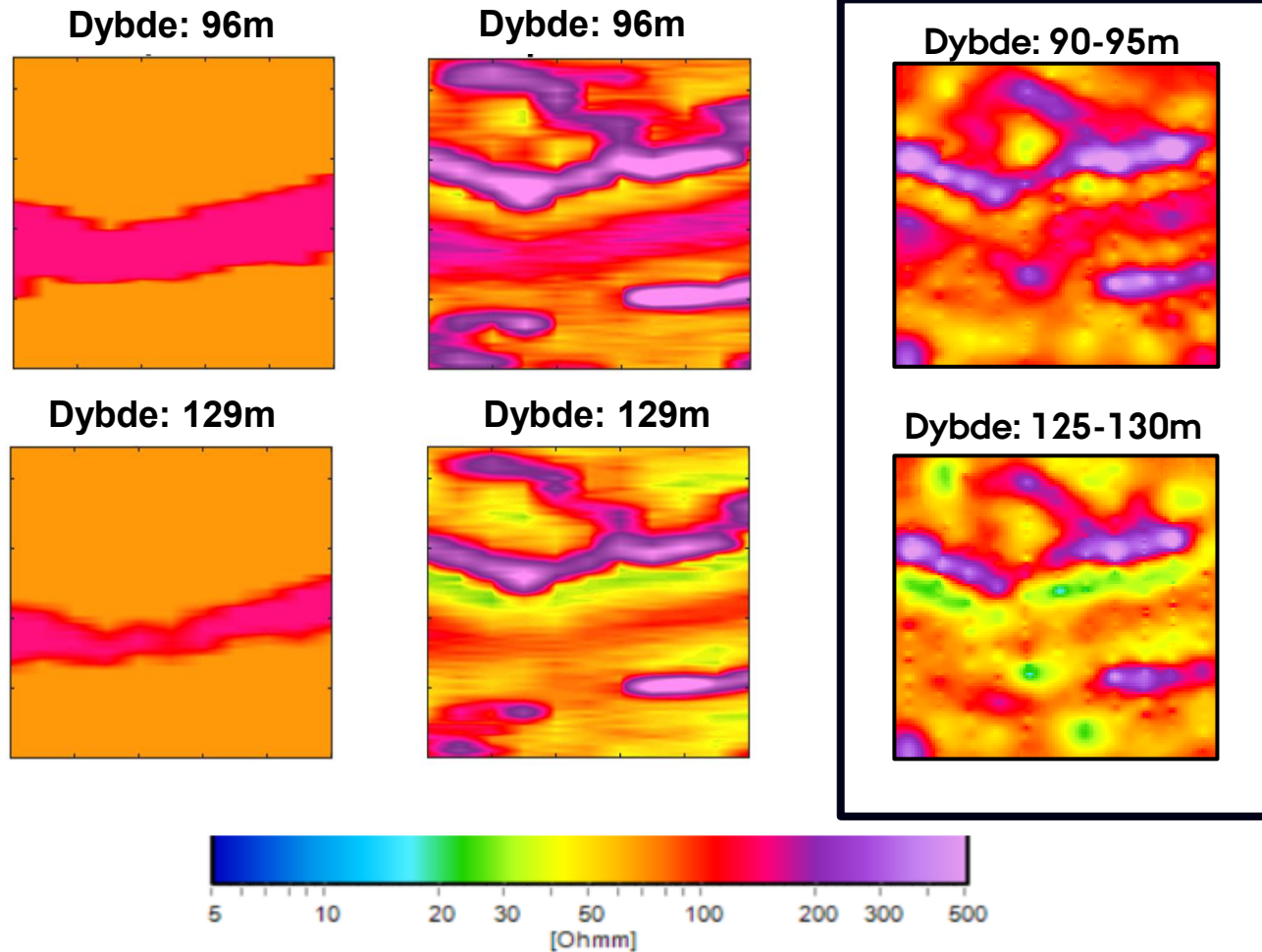
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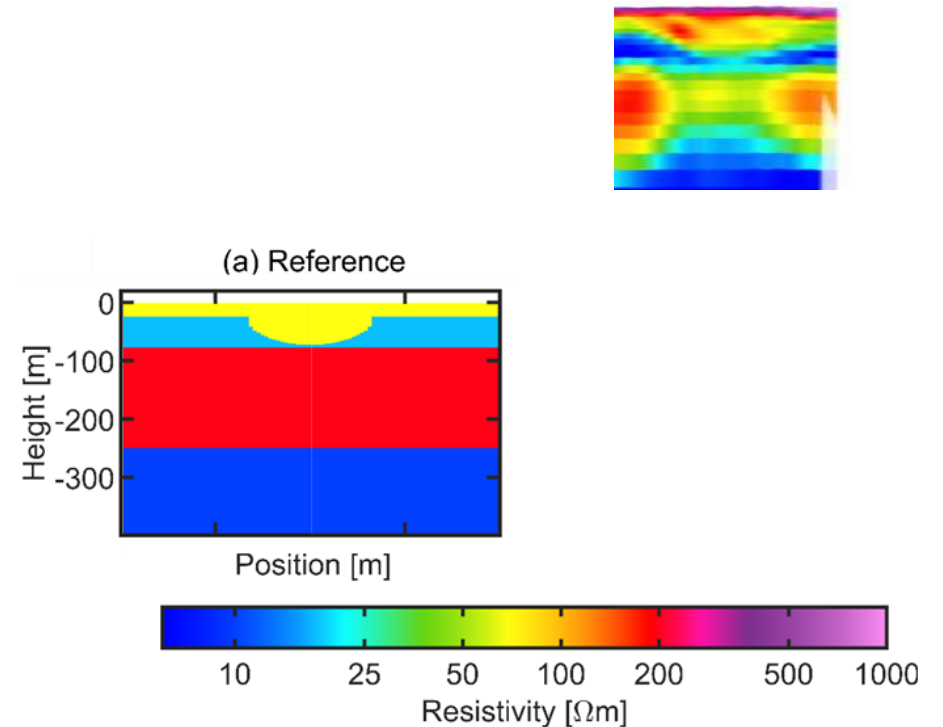
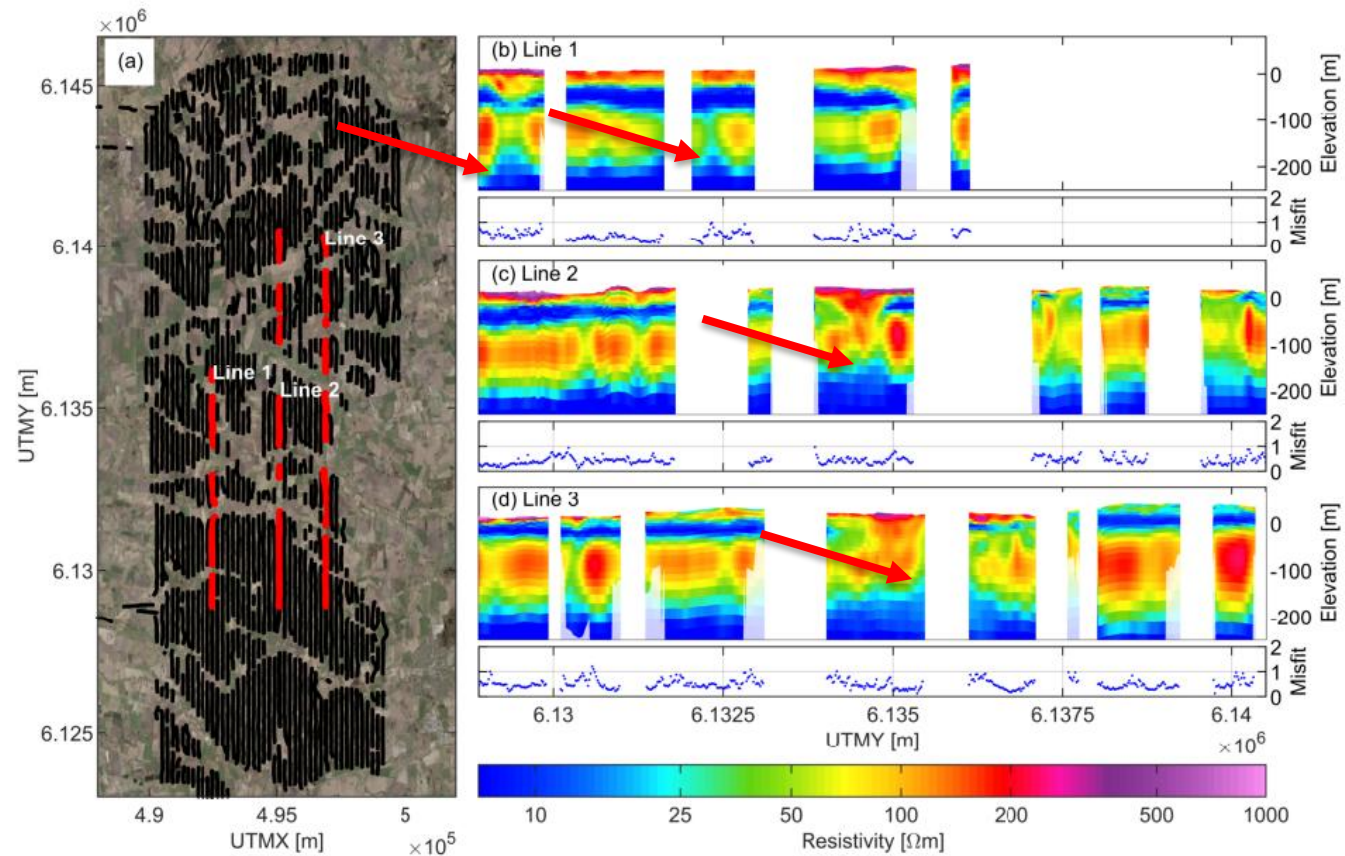
Middelmodstand
fra Workbench:



MIDDELMODSTANDSKORT



DYBDEN TIL DEN GODE LEDER



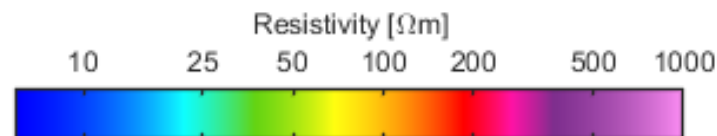
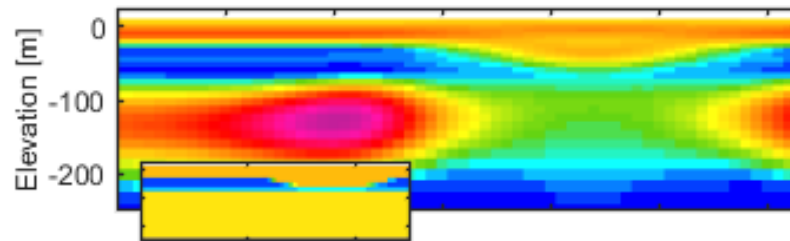
████████████████████

1. Husk at 3D effekter eksisterer
2. Vær opmærksom på laterale variationer i lavmodstandslag

1. Mere effektiv og tilgængelig 3D inversion
2. Udvikling af metoder til korrektion af 3D fejl **efter** 1D inversion
3. Udvikling af metoder til at detektere 3D artefakter i 1D modeller

IDENTIFIKATION: DATA RESIDUALET

$$R_{norm} = \sqrt{\frac{1}{N} \sum_{i=1}^N \left(\frac{d_i^{obs} - F(\mathbf{m})_i}{\sigma_i} \right)^2}$$



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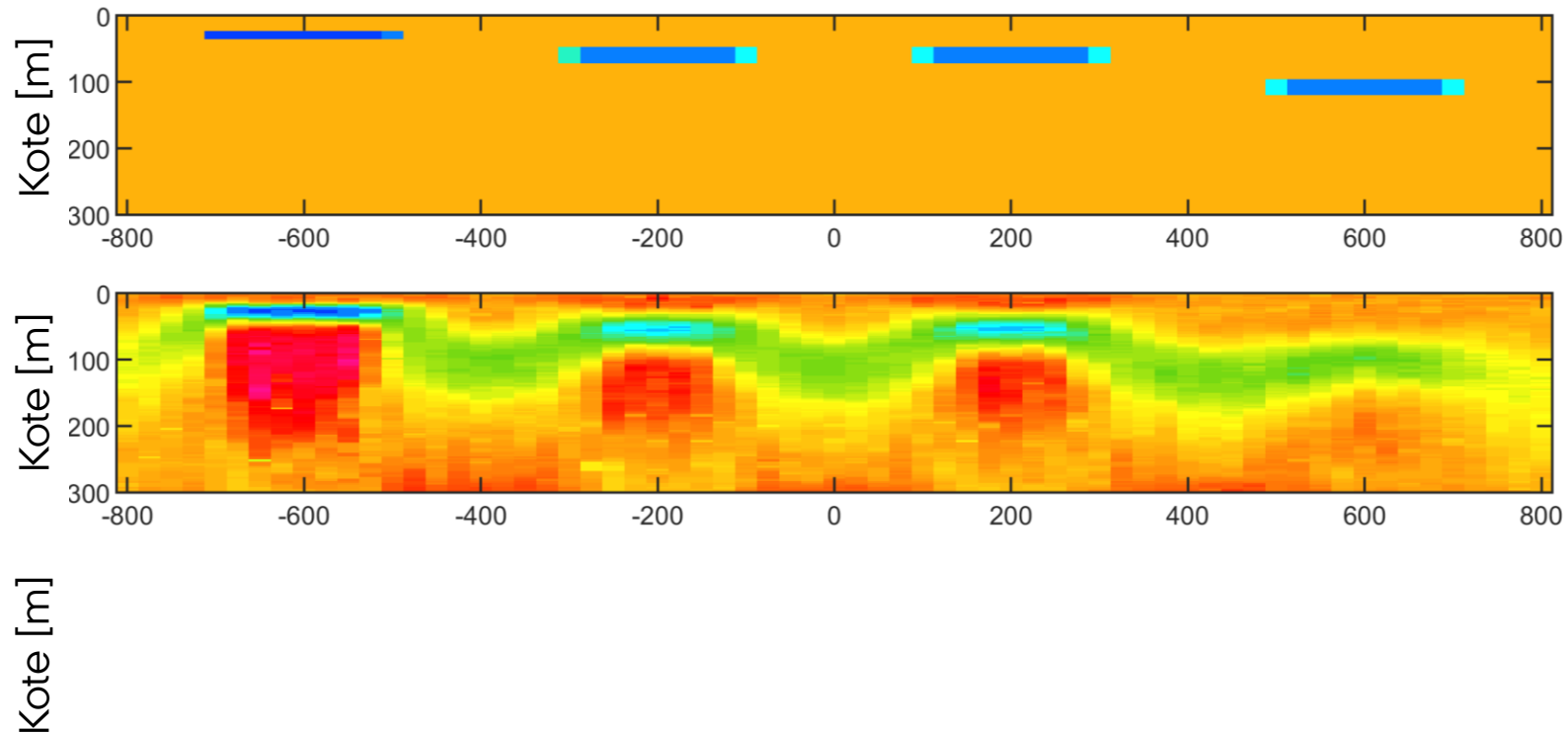
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KORREKTION: "WORK IN PROGRESS"

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