

GEOFYSISK KORTLÆGNING AF TERRÆNNÆRE STRUKTURER OG DERES BETYDNING FOR GRUNDVANDET

Troels N. Vilhelmsen, Anders V. Christensen,
Rasmus R. Frederiksen, Steen Christensen
Jesper Pedersen, Esben Auken



OUTLINE

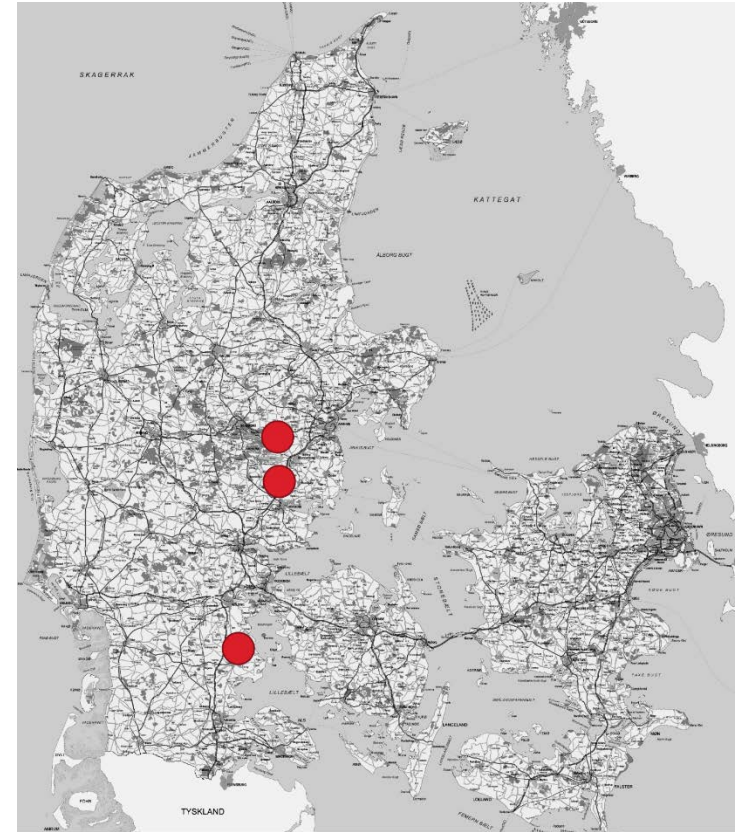
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20 år senere...

tTEM – Hvordan virker det?

Kortlægning af kvælstoftilbageholdelse – Javngyde (rOpen)

Kortlægning af kvælstoftilbageholdelse – Sillerup (rOpen)

Undergrundens strukturer og hydrogeologien – Gedved (TopSoil)



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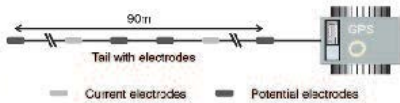
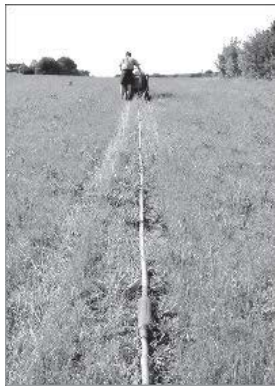
UDVIKLING I ELEKTRONIK 2000 -> 2018

Mobiltelefon 2000 Laptop 2000



Cpu: 650 MHz
Hukommelse: 64 MB

Mobiltelefon 2018 Laptop 2018



PACES



tTEM



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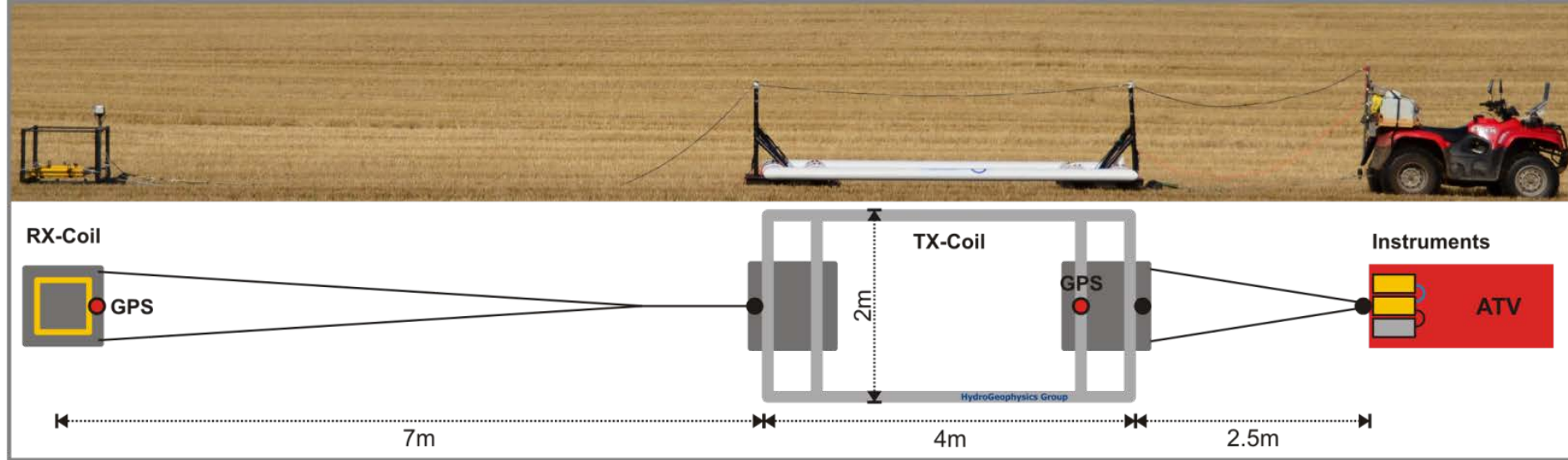
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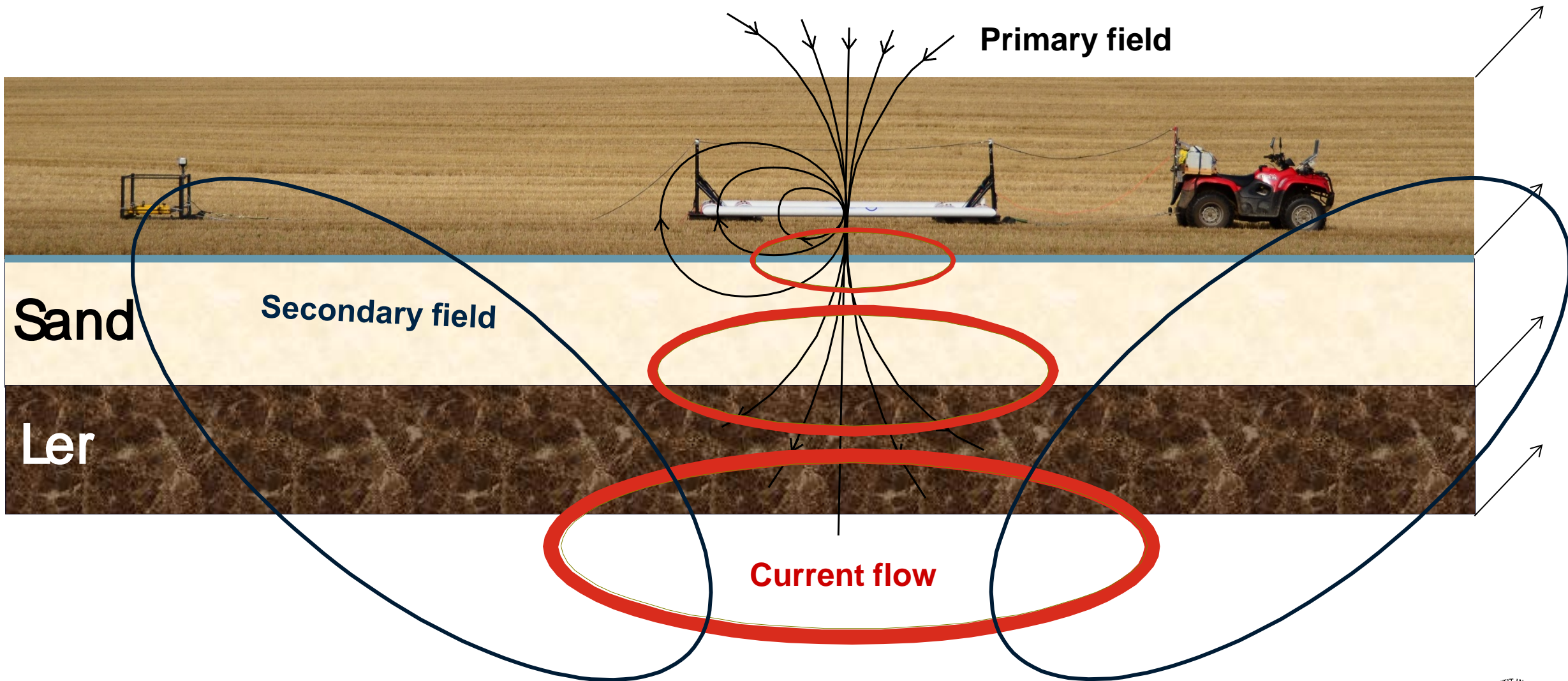
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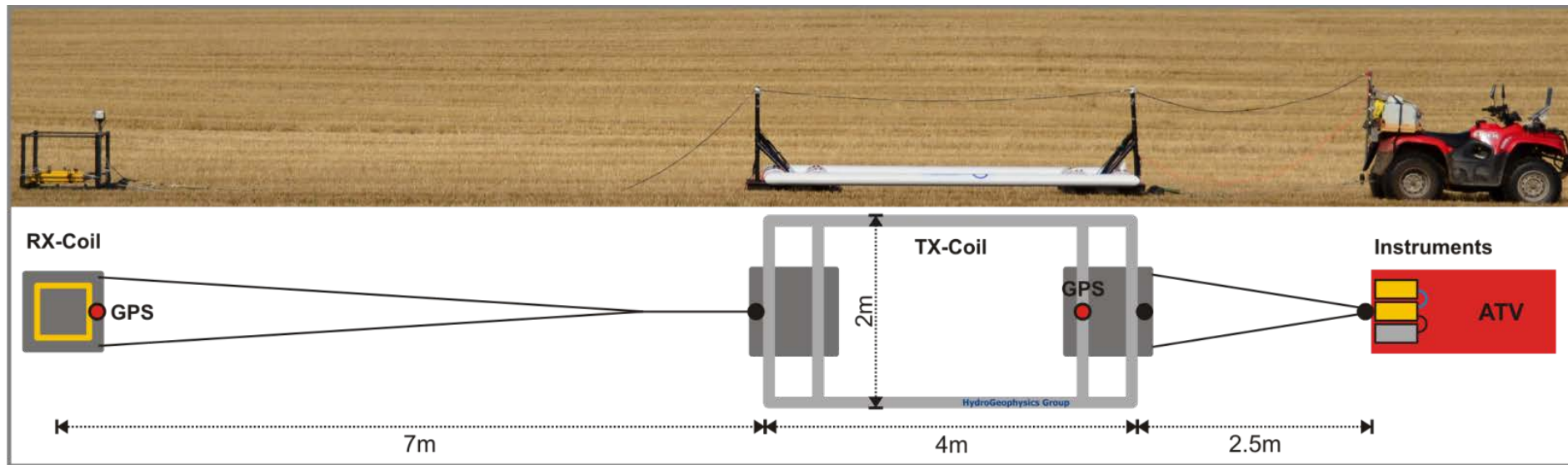
HVORDAN VIRKER TTEM?



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Fakta

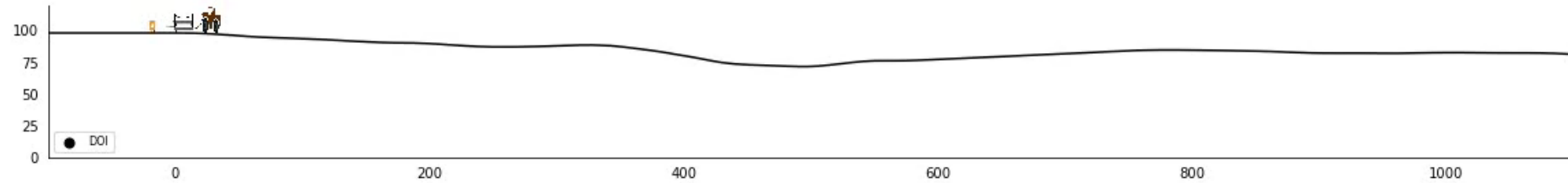
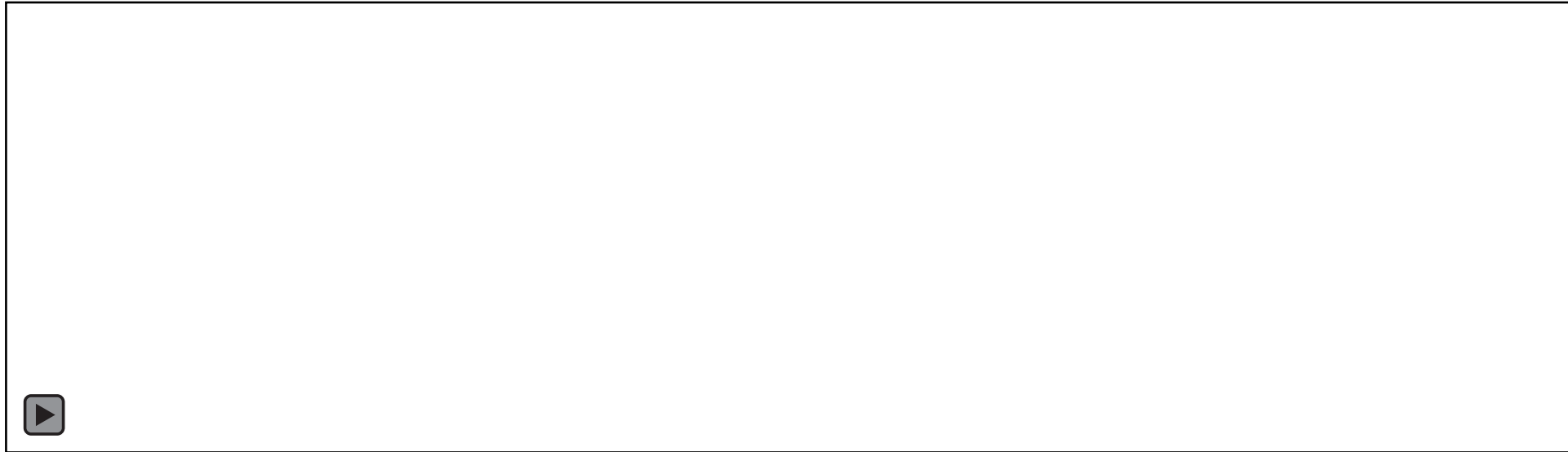
- Vandkølet transmitter
- Konstant temperatur og input spænding
- 30 Amp højt moment, 800 Hz repetition
- 2.5 Amp lavt moment, 2100 Hz repetition

Fakta

- 10-20 km/t ~ 3-5 m/s
- Målinger tager få ms (3-10 m lateral opløselighed)
- Indtrængningsdybde på 0-70 m
- Har bedst opløsning i de øvre 30 m



HVORDAN VIRKER TTEM?



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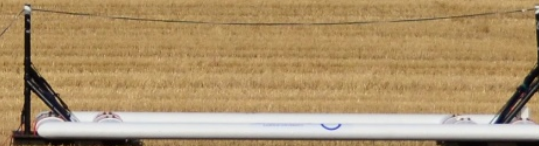
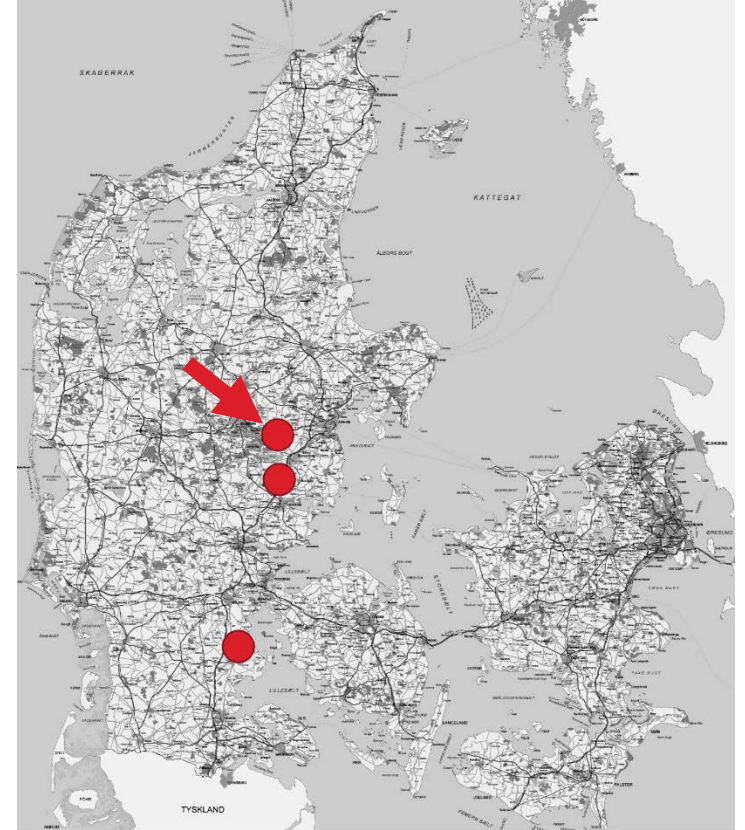
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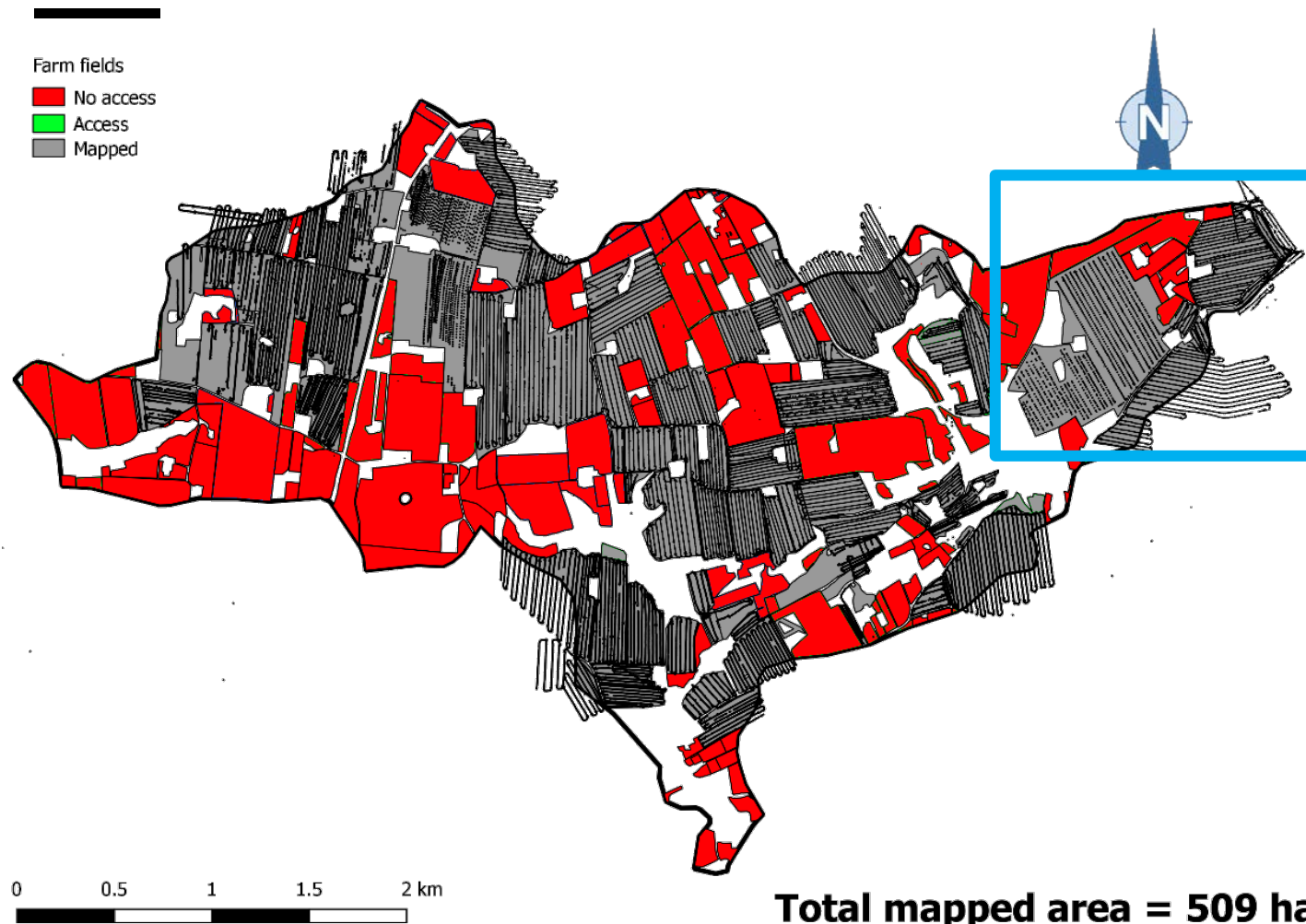
Sårbarhedskortlægning – Javngyde (rOpen)

Sårbarhedskortlægning – Sillerup (rOpen)

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SÅRBARHEDSKORTLÆGNING – JAVNGYDE

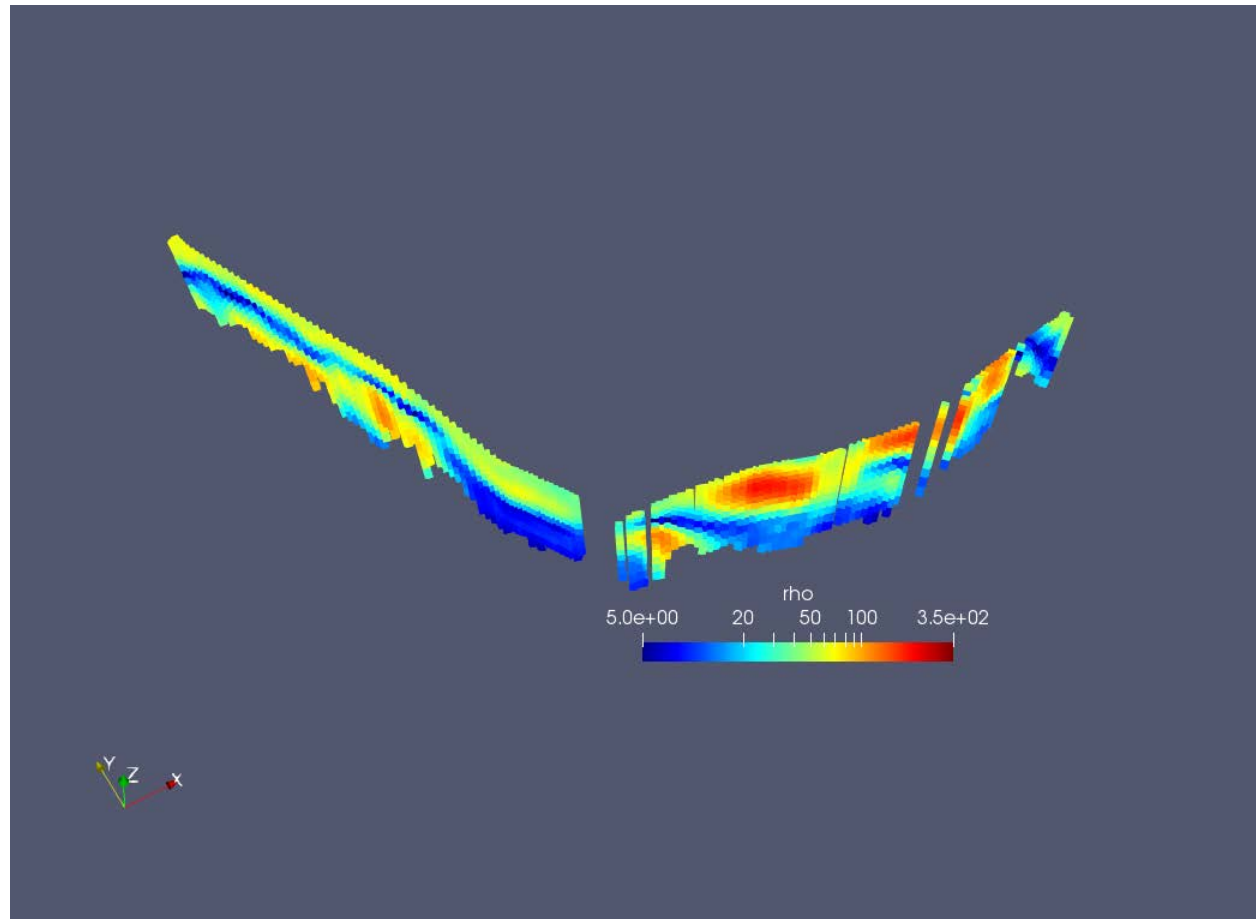


Javngyde

- Undersøge sandlommer
- 1000 hektar ID15-område
- 400 km data -> 40.000 modeller
- 20 m linjeafstand
- 11 dages kortlægning



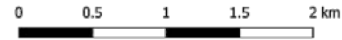
SÅRBARHEDSKORTLÆGNING – JAVNGYDE



Farm fields
No access
Access
Mapped



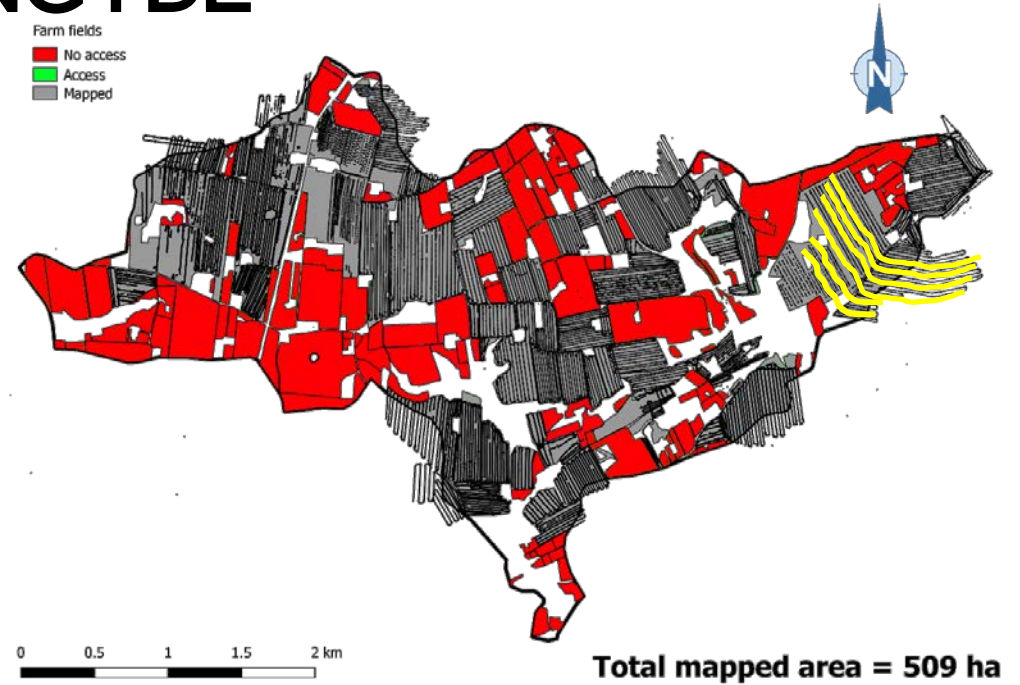
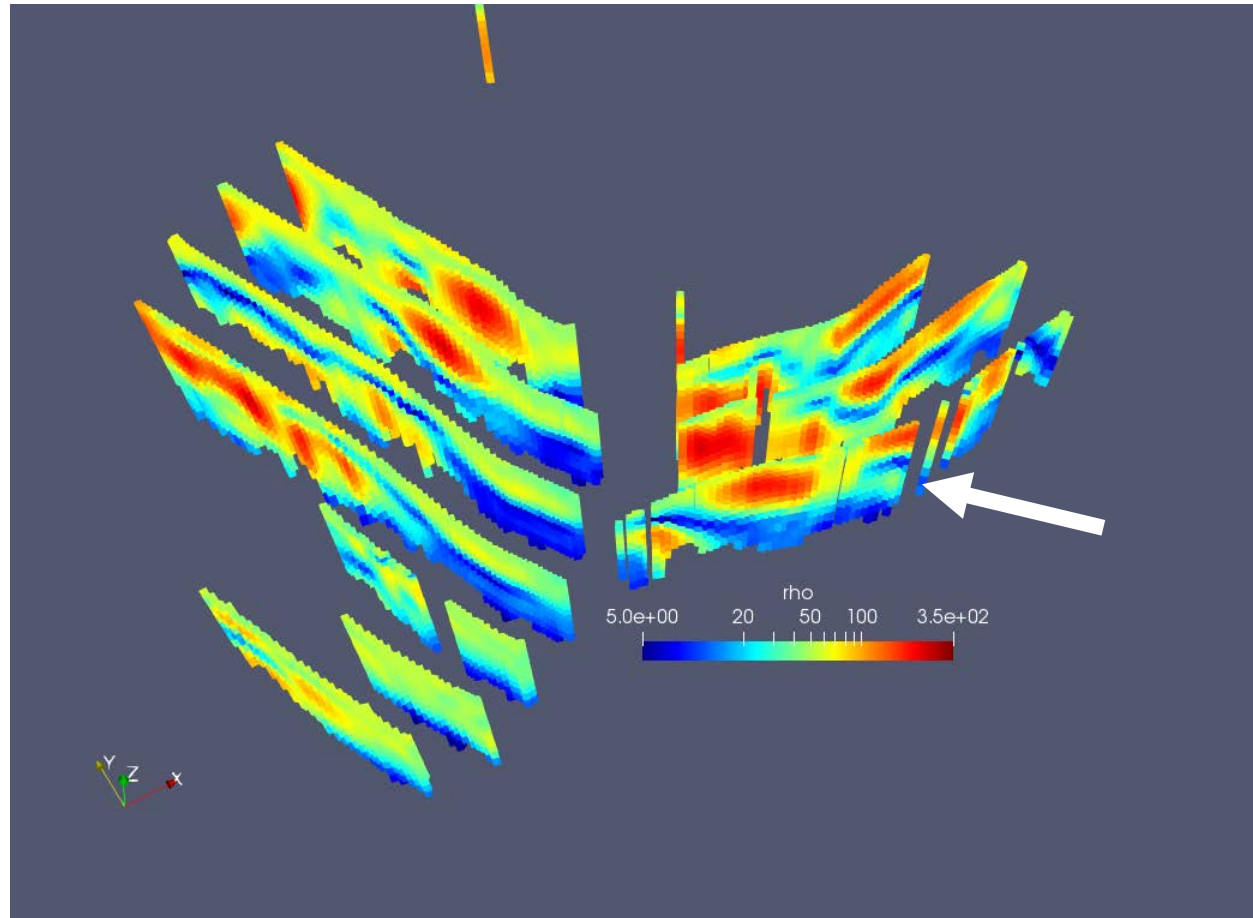
Profile



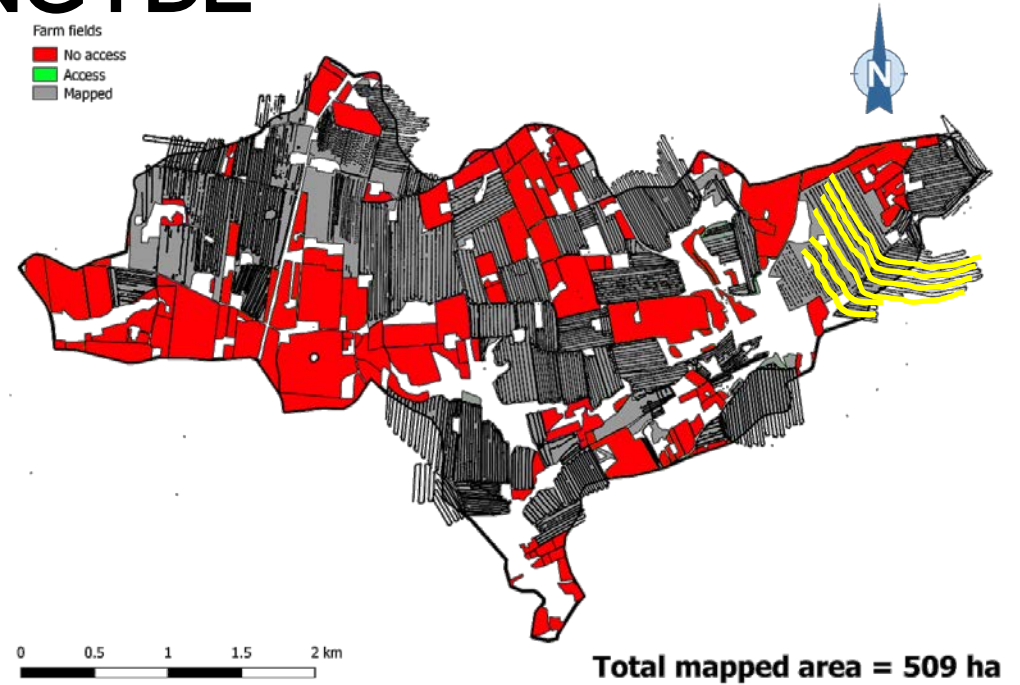
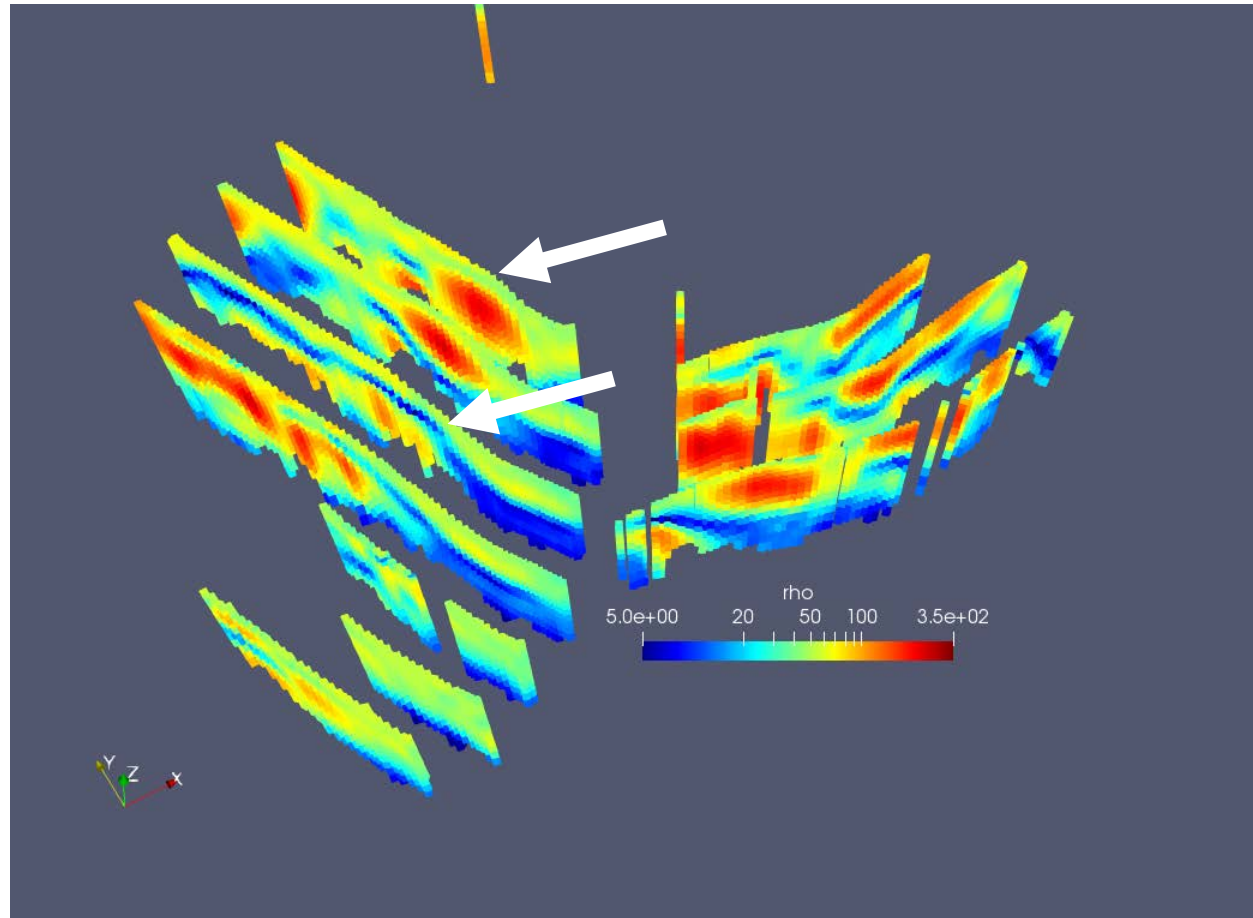
Total mapped area = 509 ha



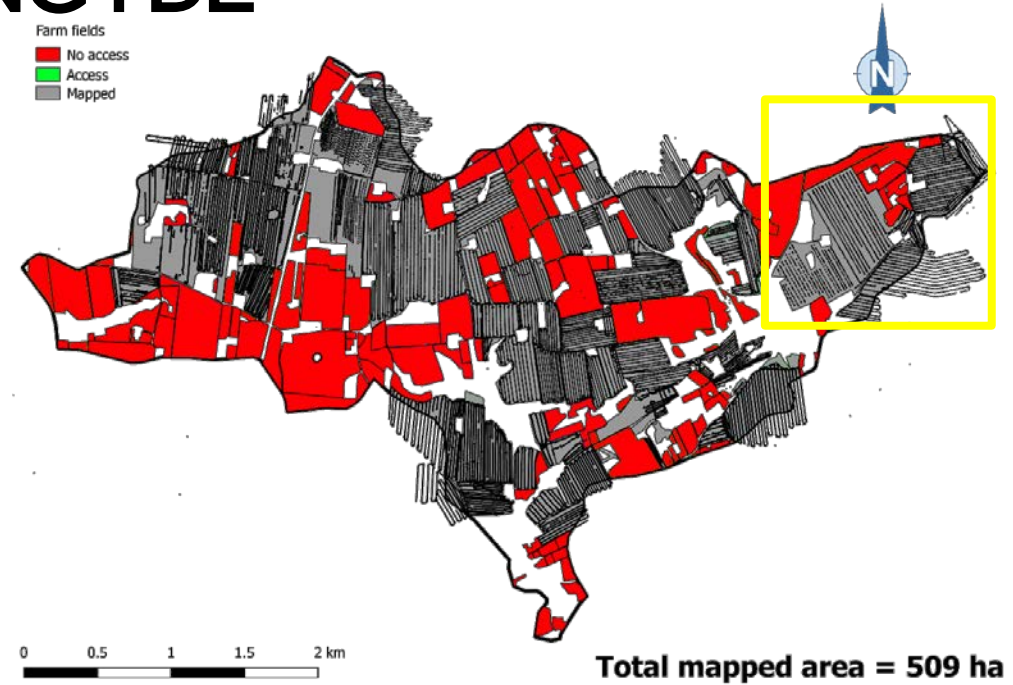
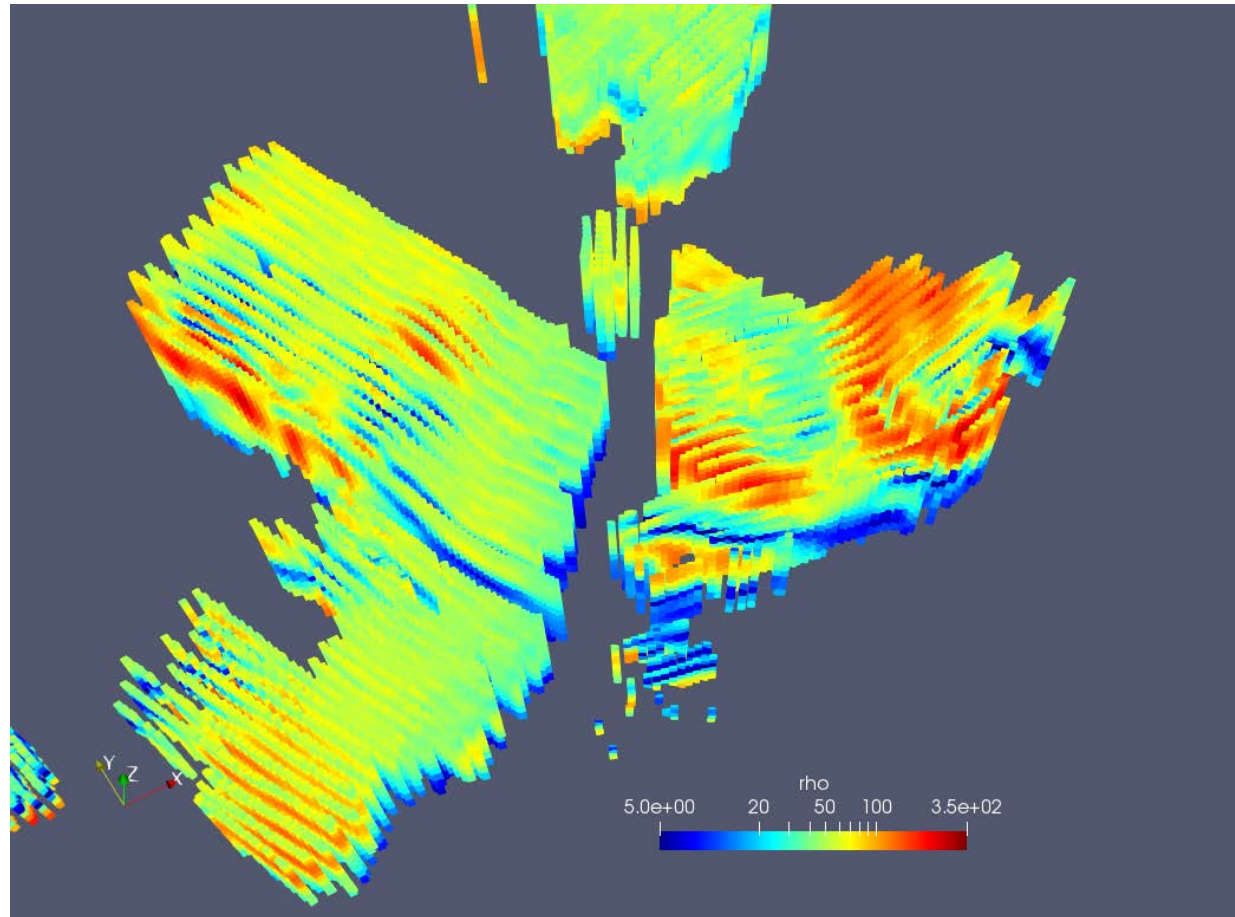
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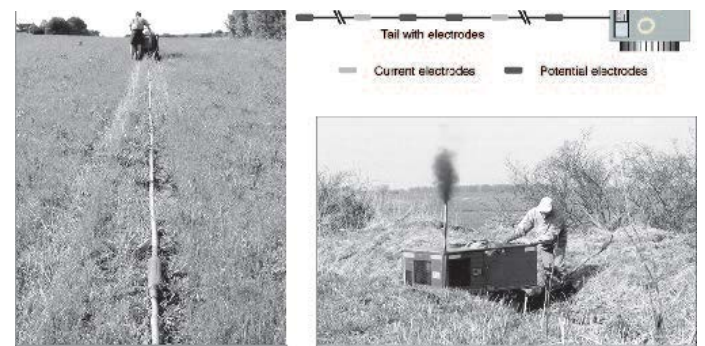
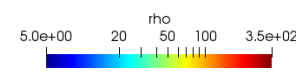
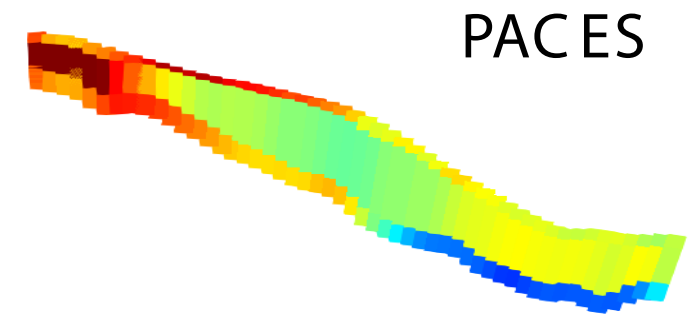
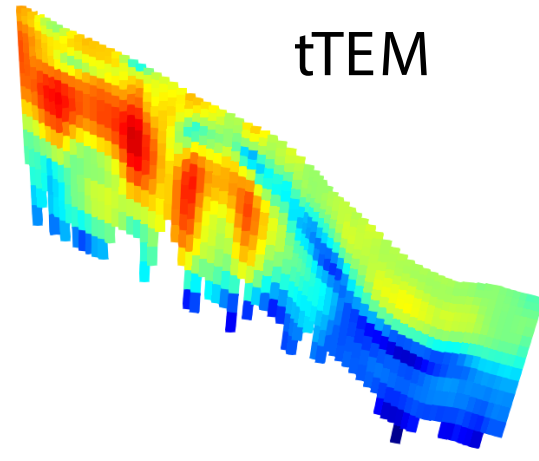
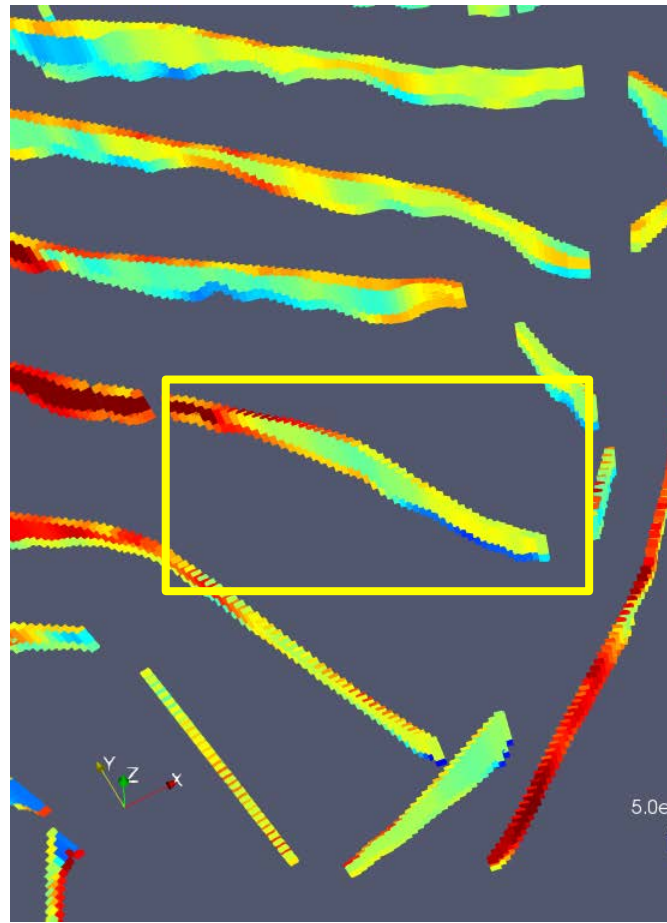
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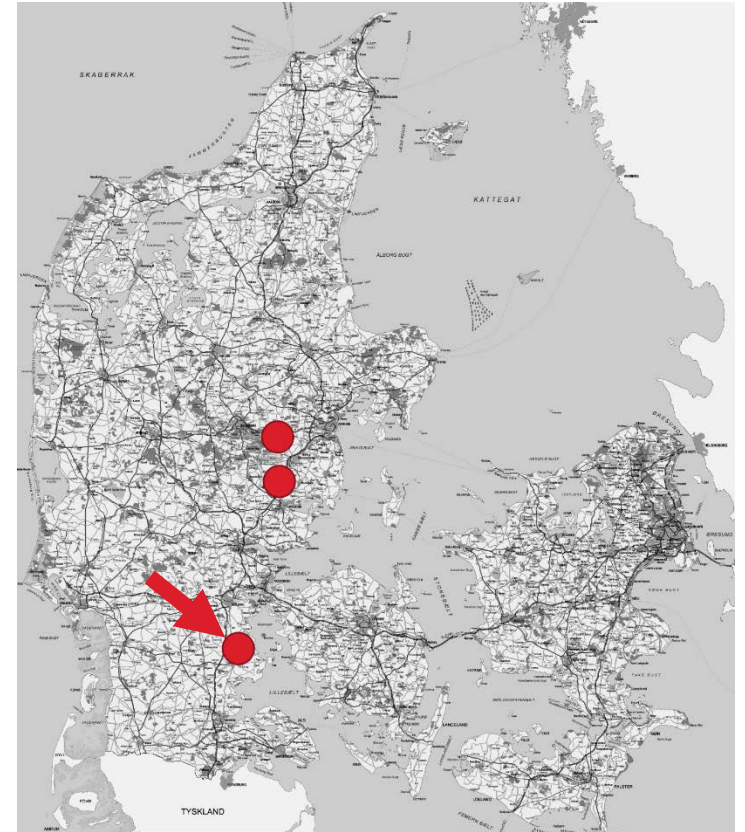
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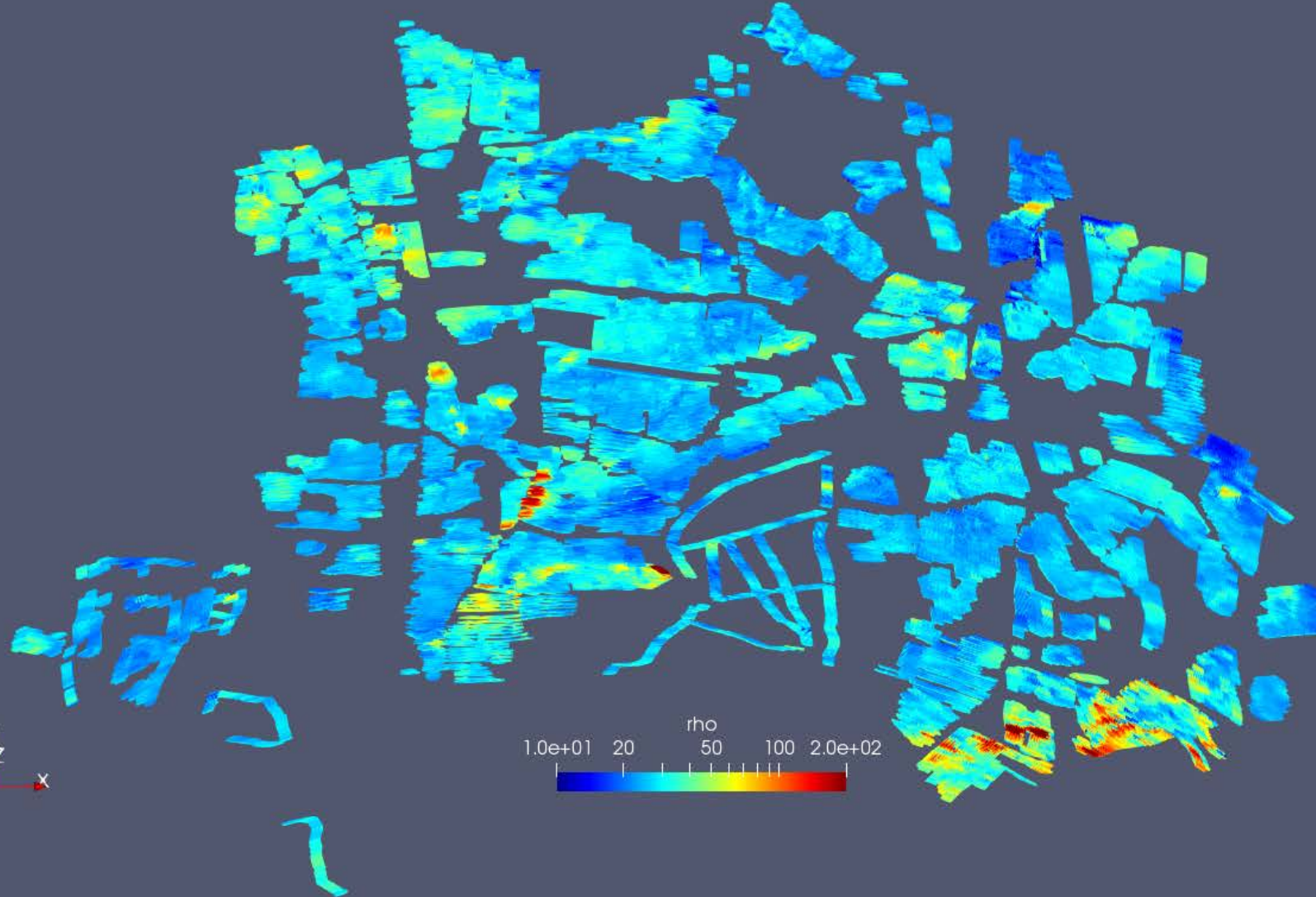
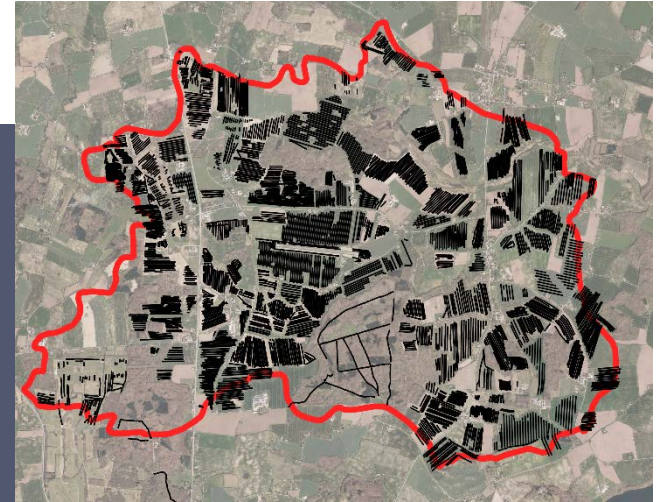
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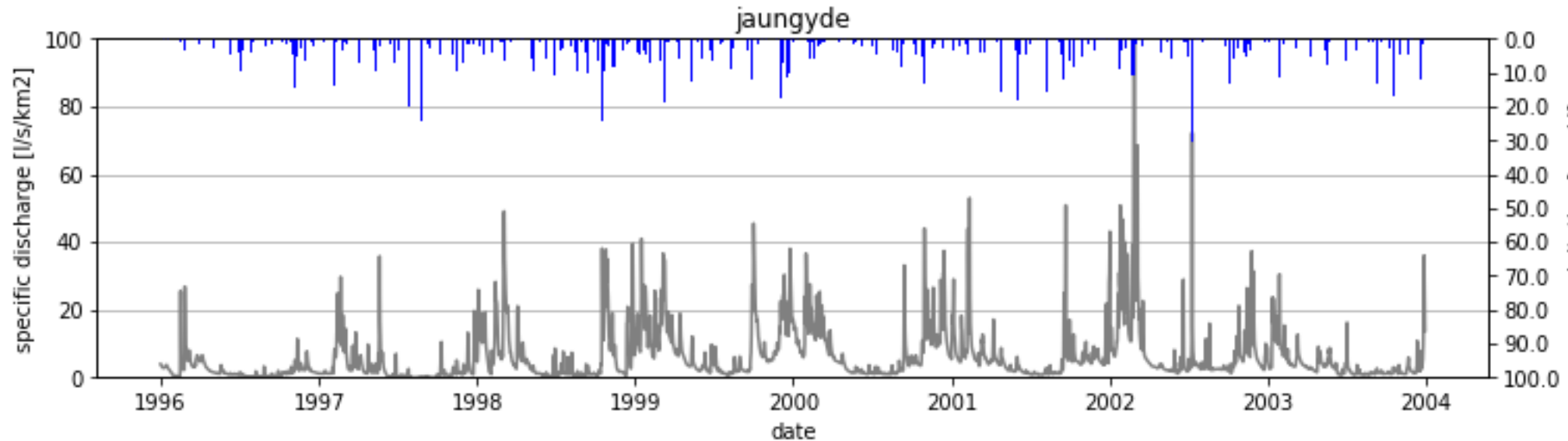
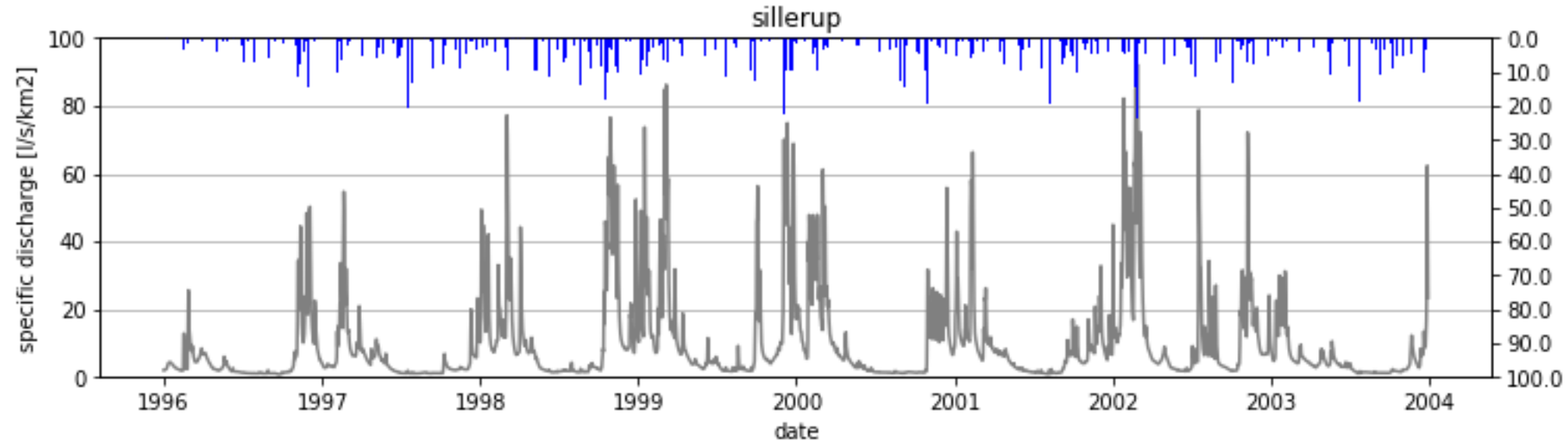
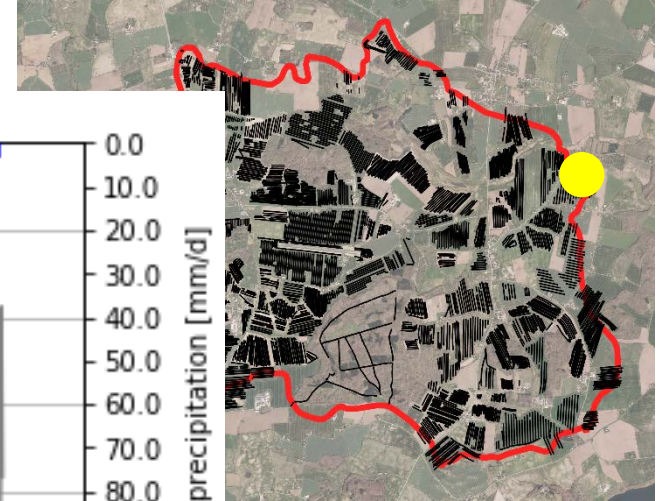
SÅRBARHEDSKORTLÆGNING – SILLERUP

0-5 meter under terræ n



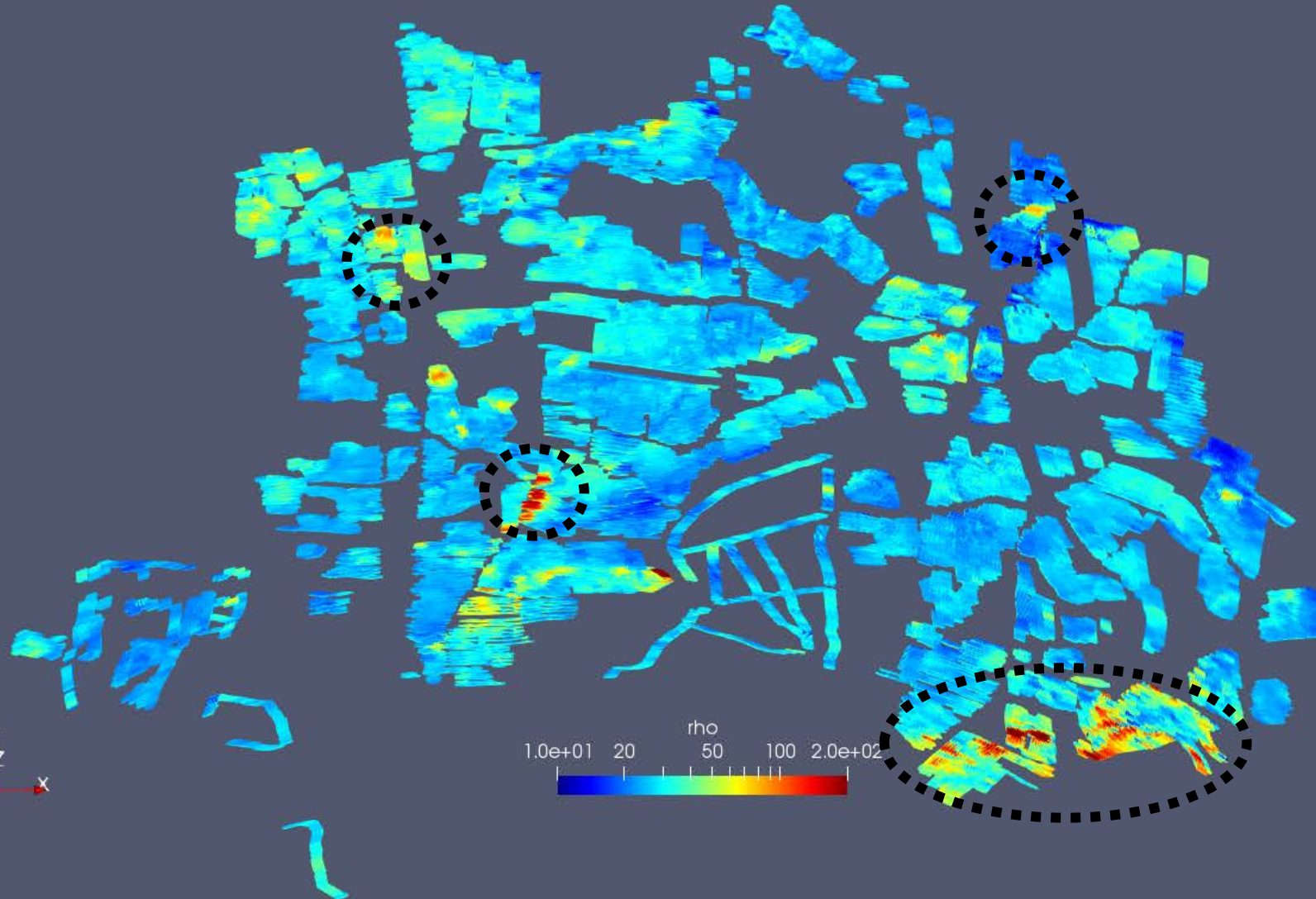
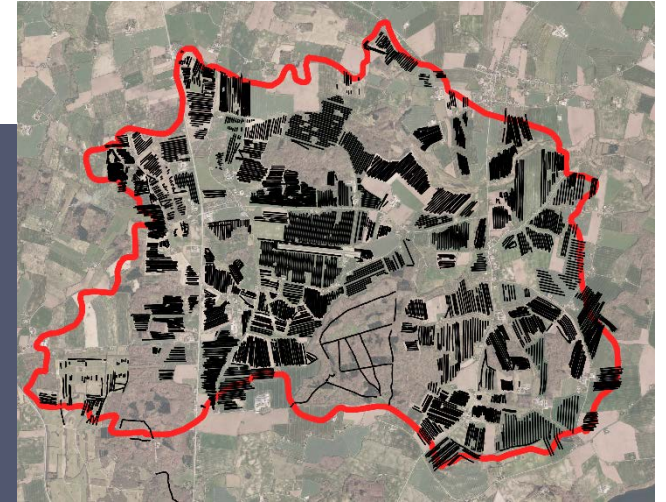
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0-5 meter under terræn



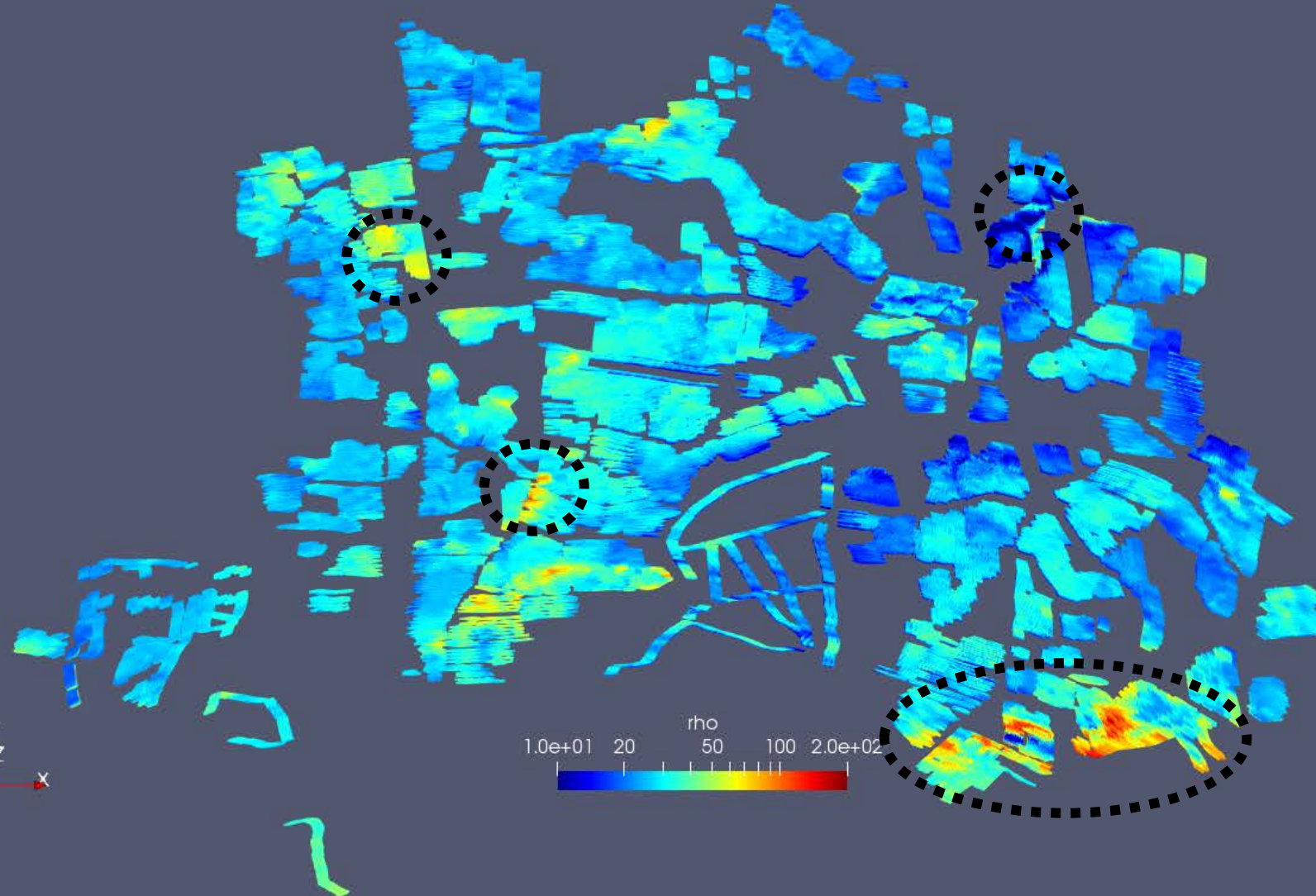
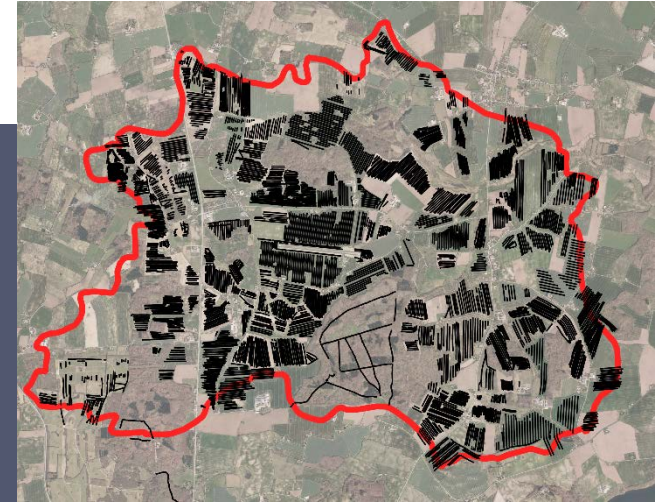
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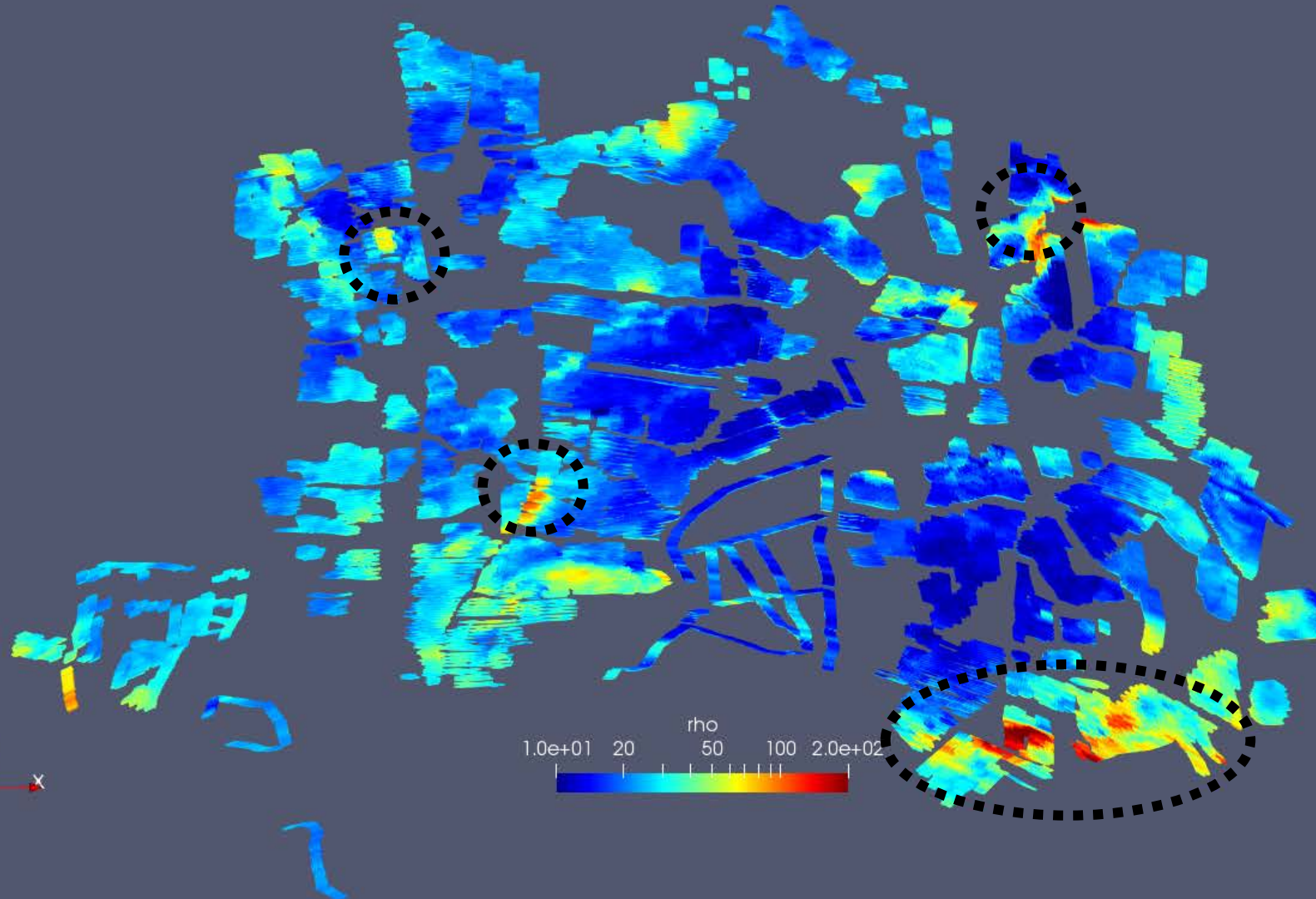
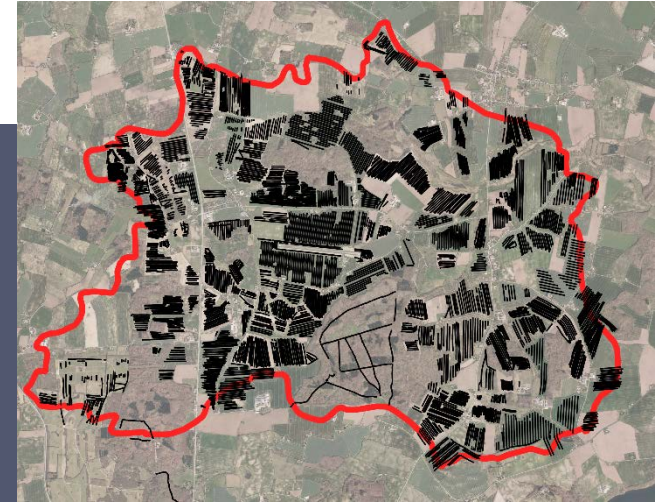
SÅRBARHEDSKORTLÆGNING – SILLERUP

5-10 meter under terræ n



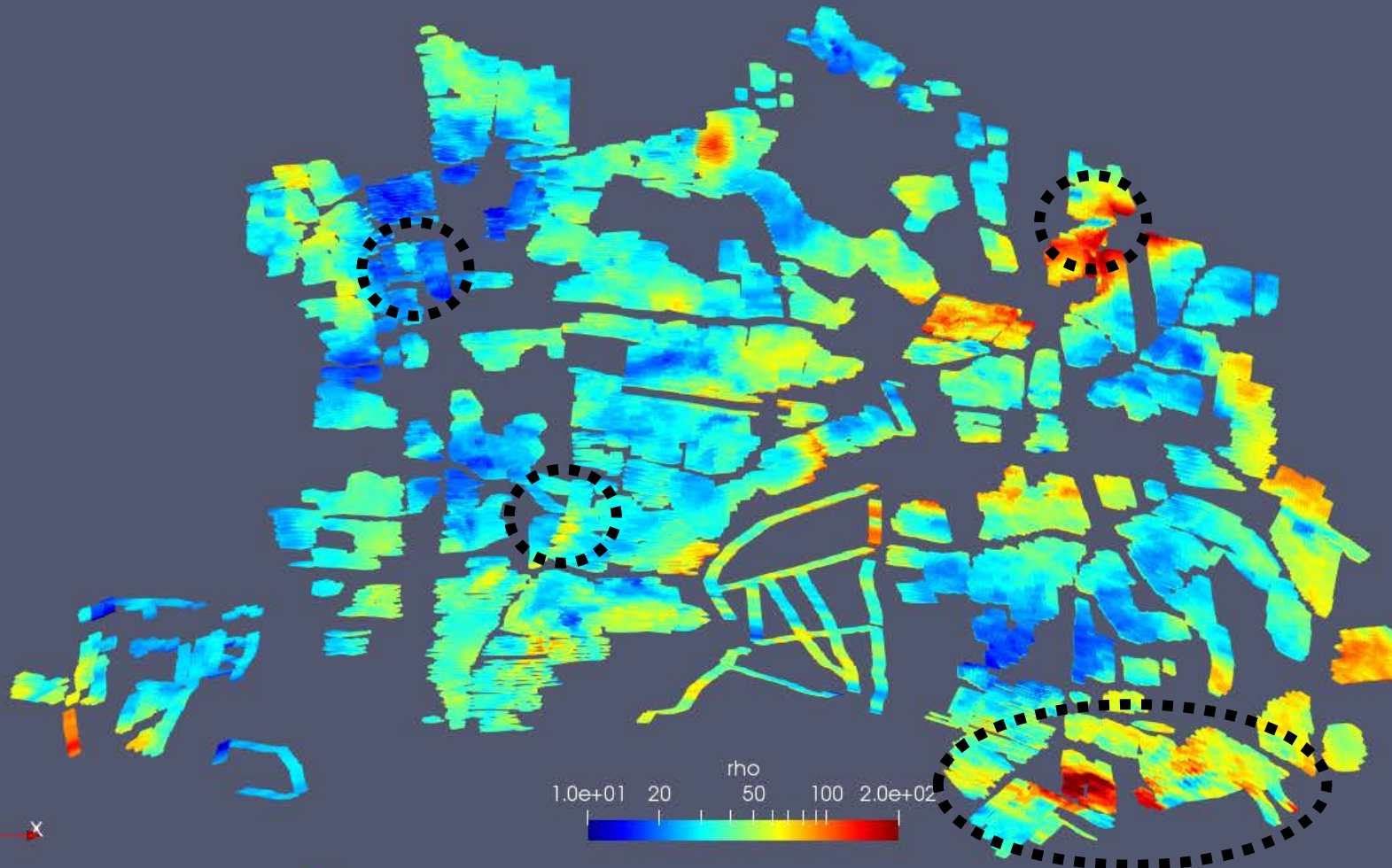
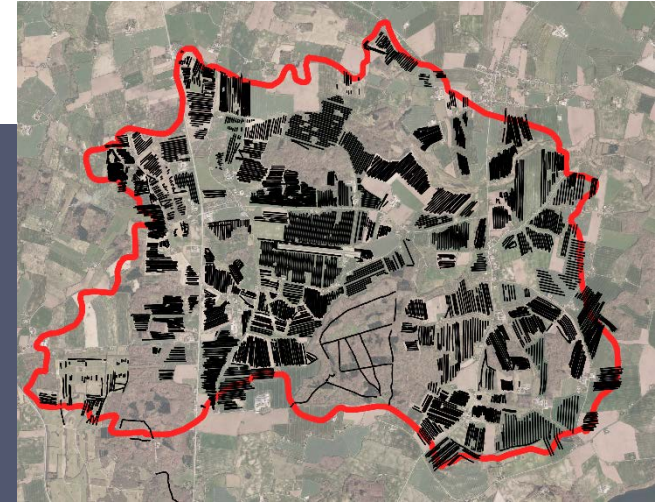
SÅRBARHEDSKORTLÆGNING – SILLERUP

10-15 meter under terræ n



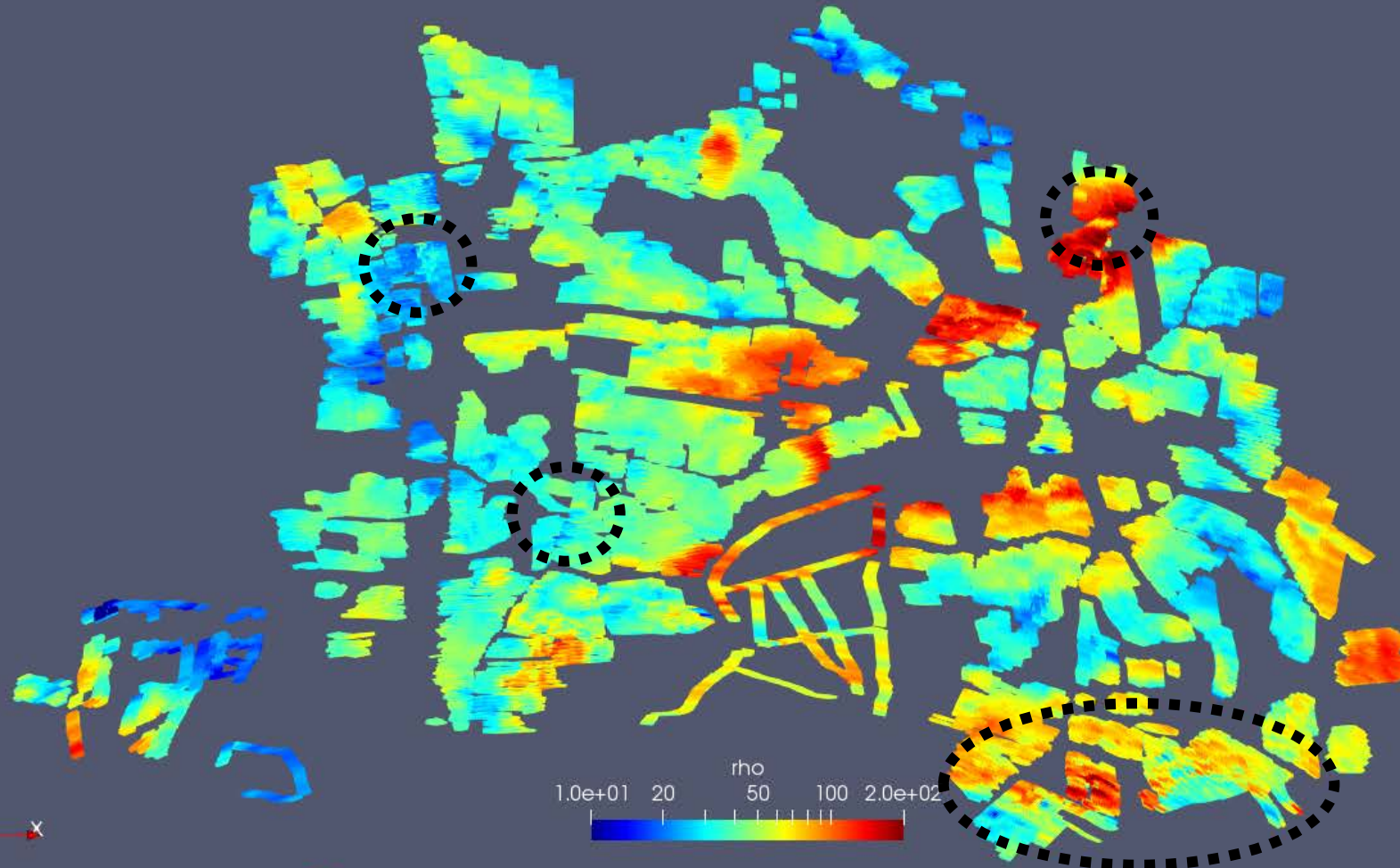
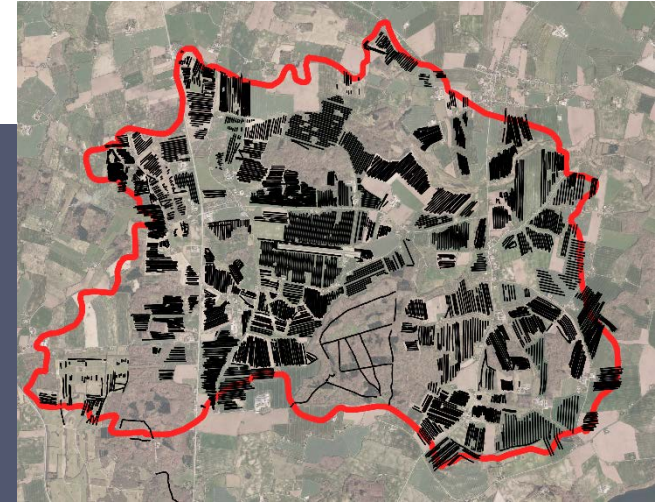
SÅRBARHEDSKORTLÆGNING – SILLERUP

15-20 meter under terræ n



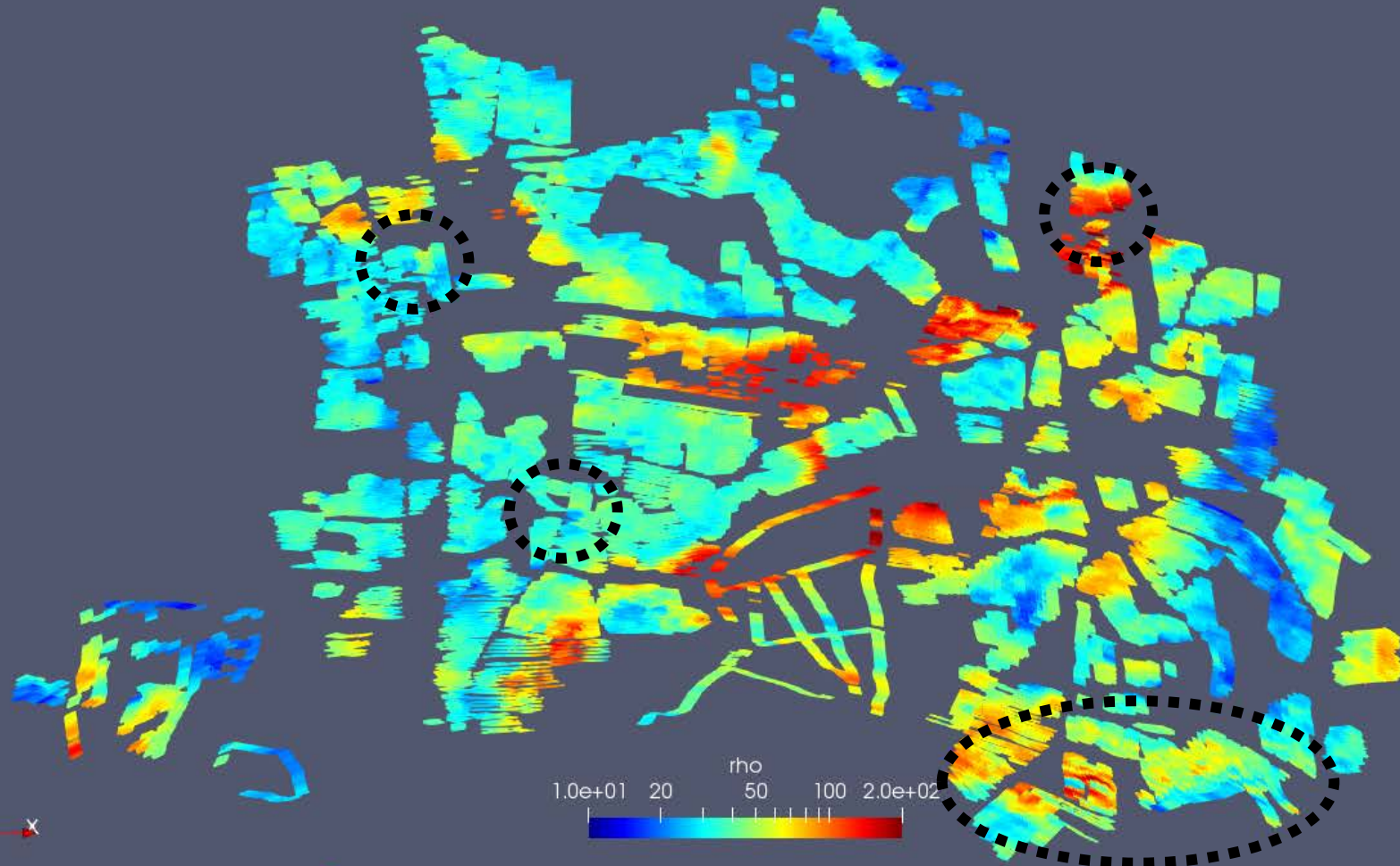
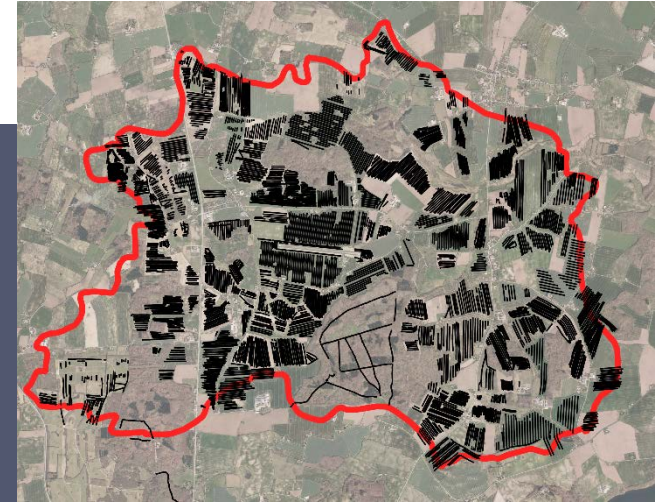
SÅRBARHEDSKORTLÆGNING – SILLERUP

20-25 meter under terræ n



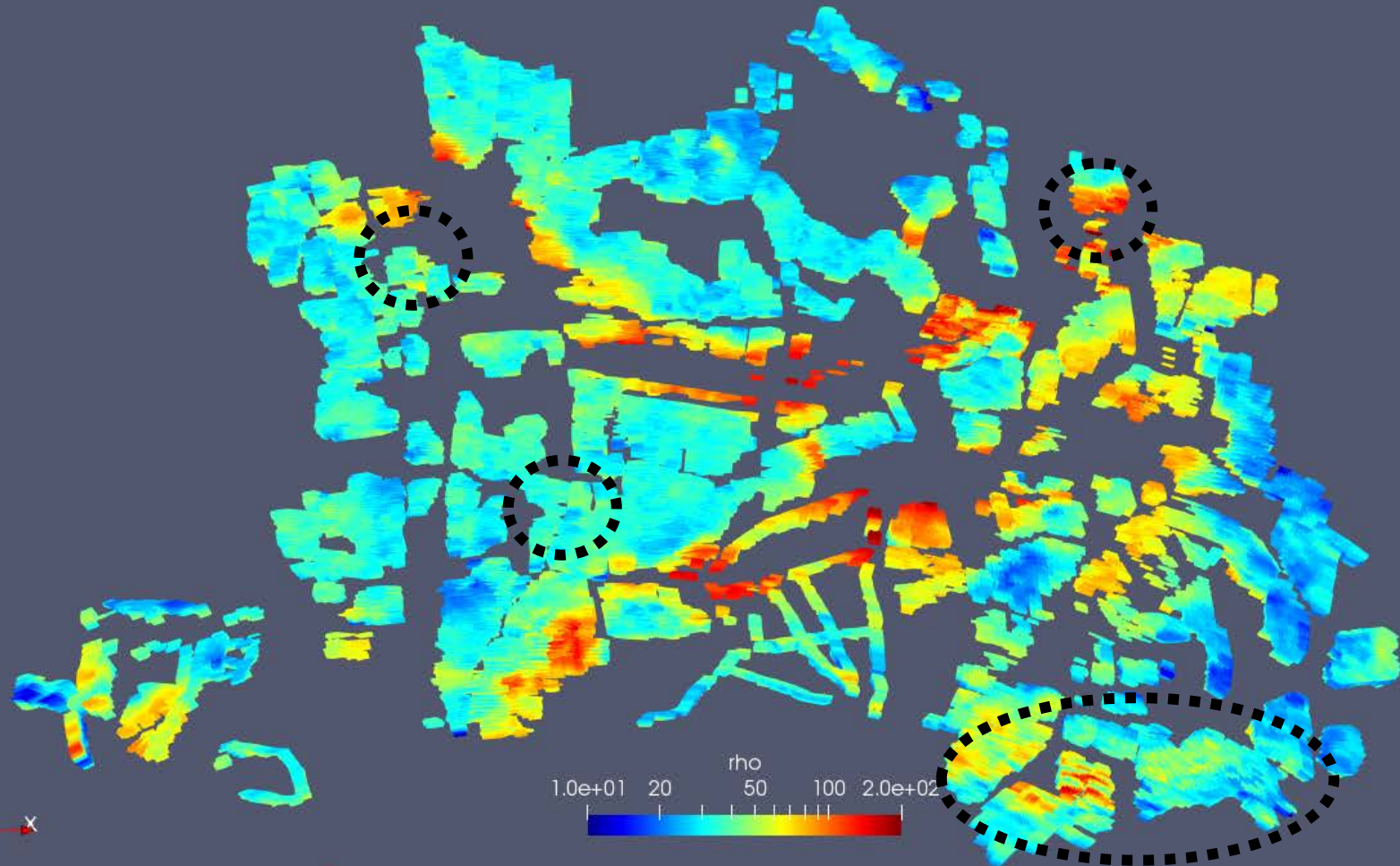
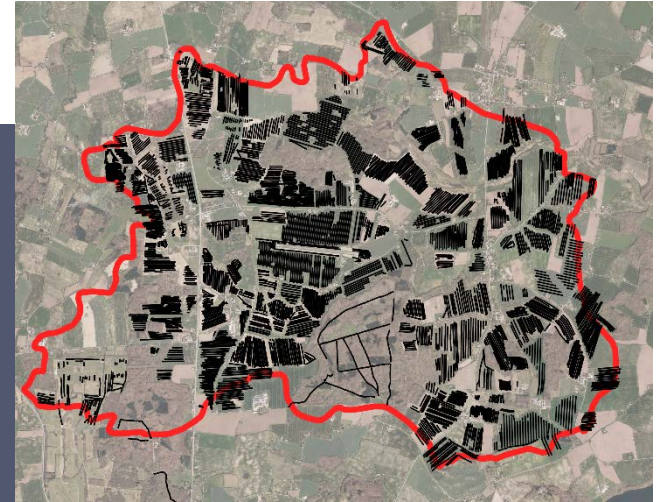
SÅRBARHEDSKORTLÆGNING – SILLERUP

25-30 meter under terræ n



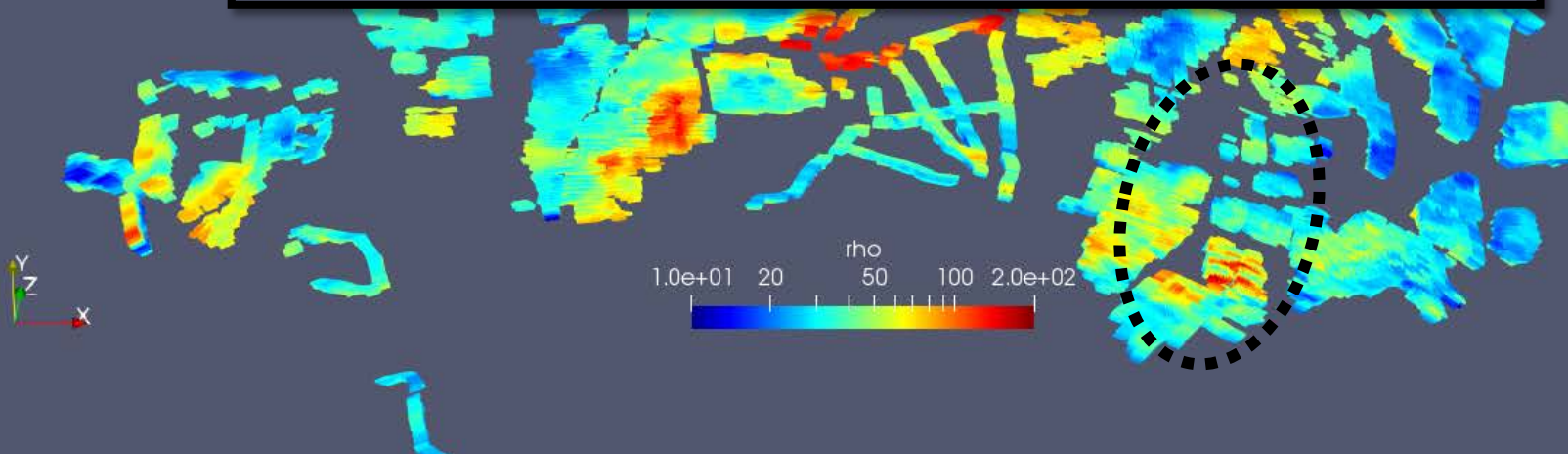
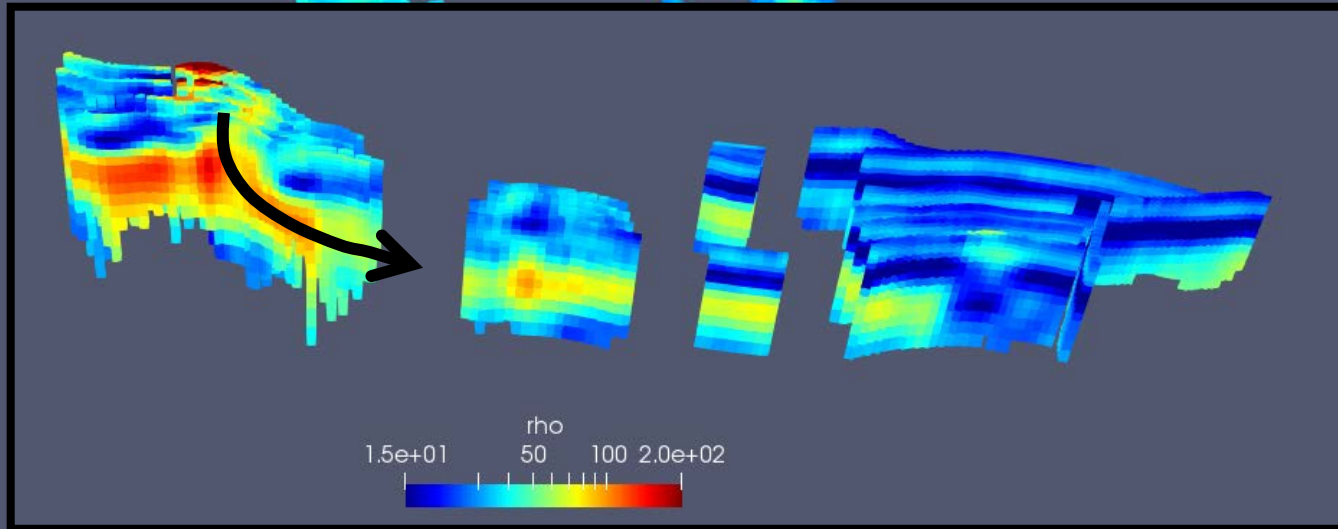
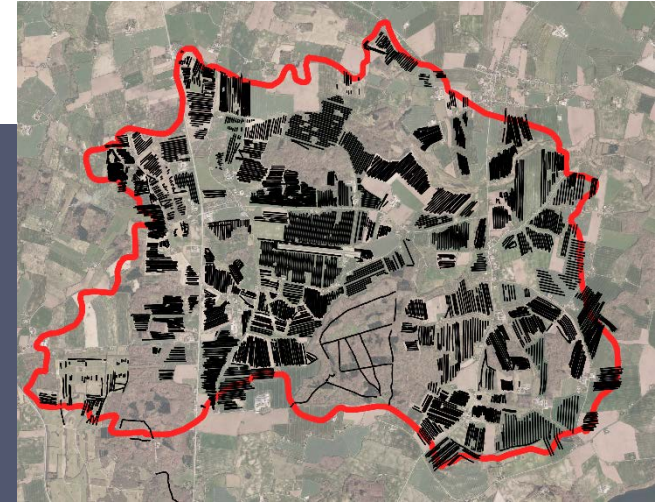
SÅRBARHEDSKORTLÆGNING – SILLERUP

>30 meter under terræ n



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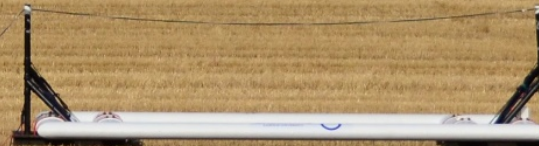
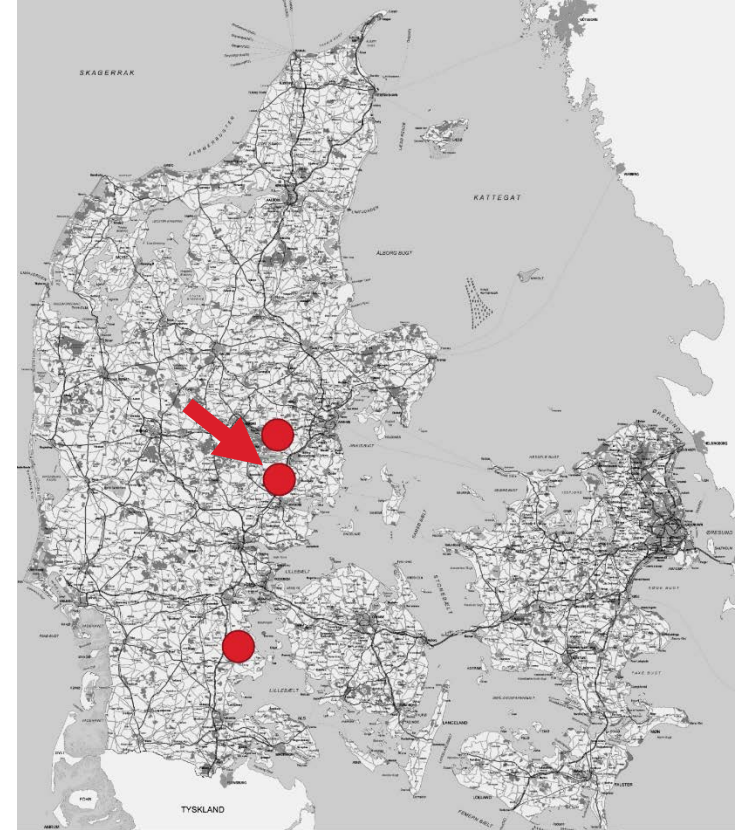
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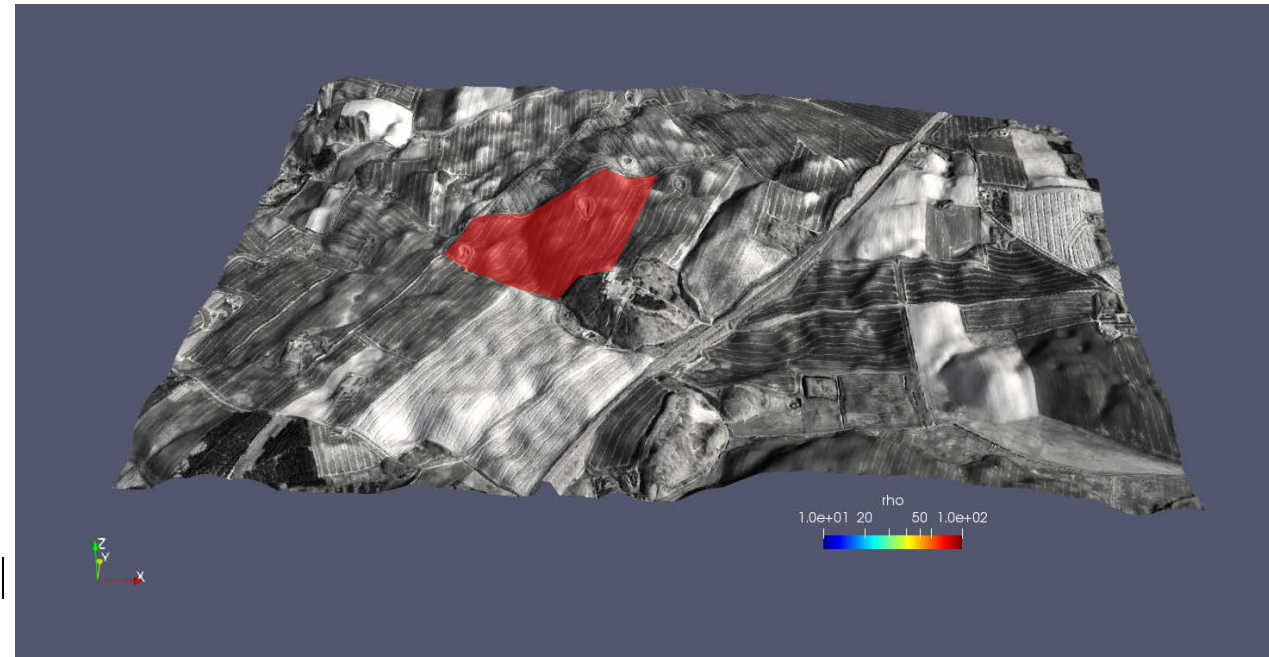
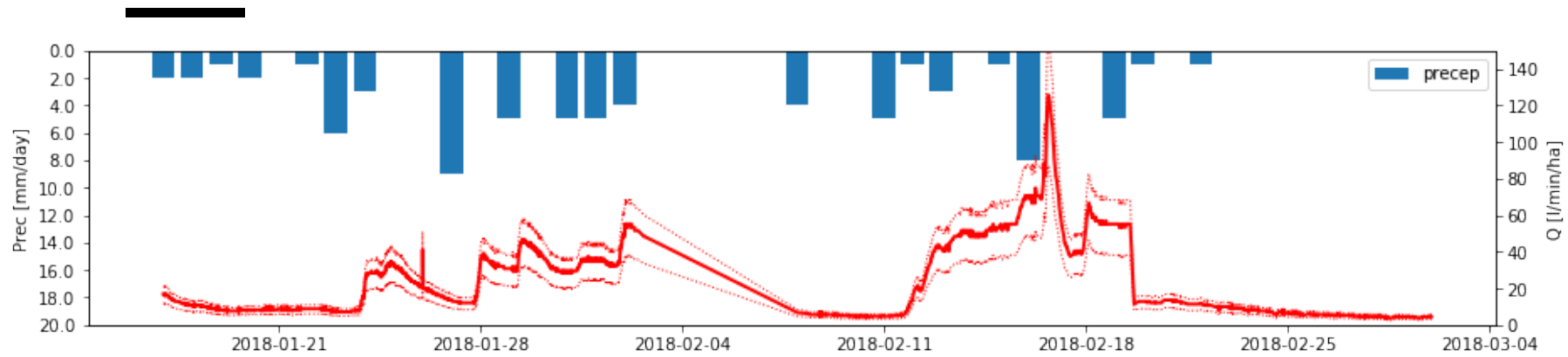
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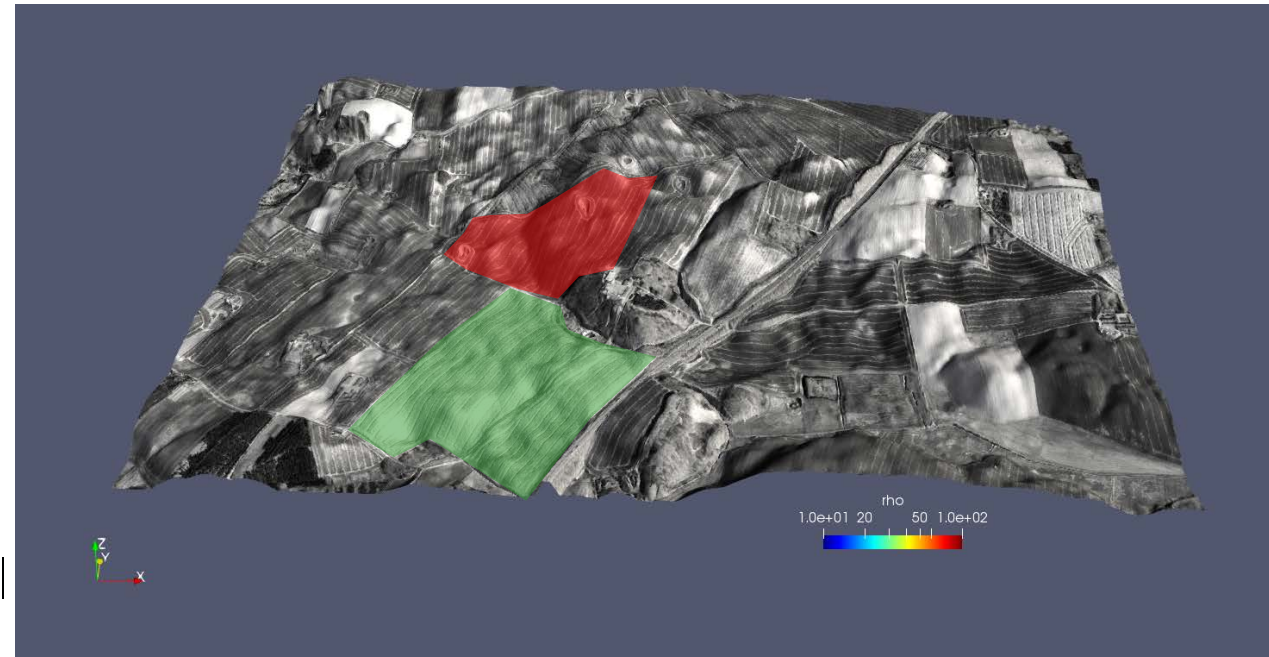
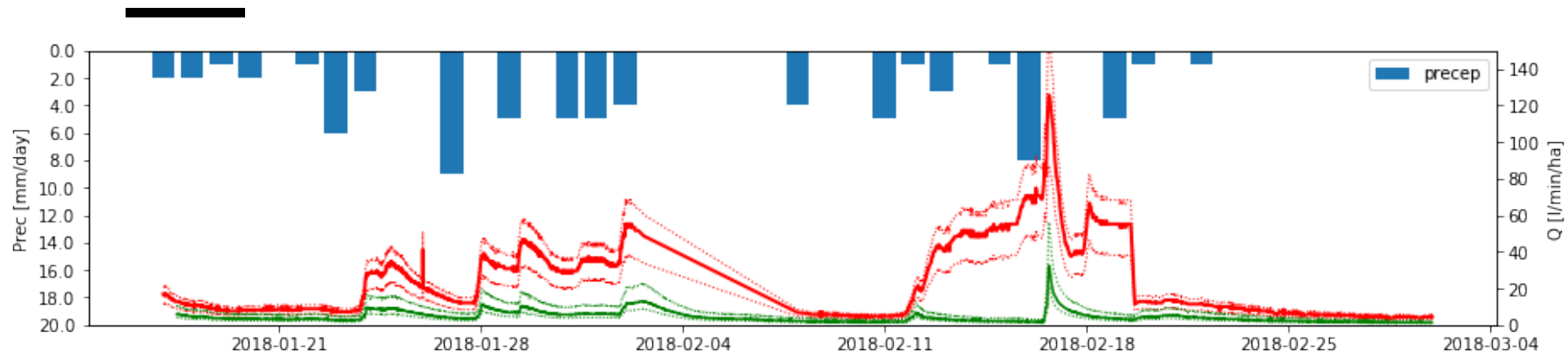
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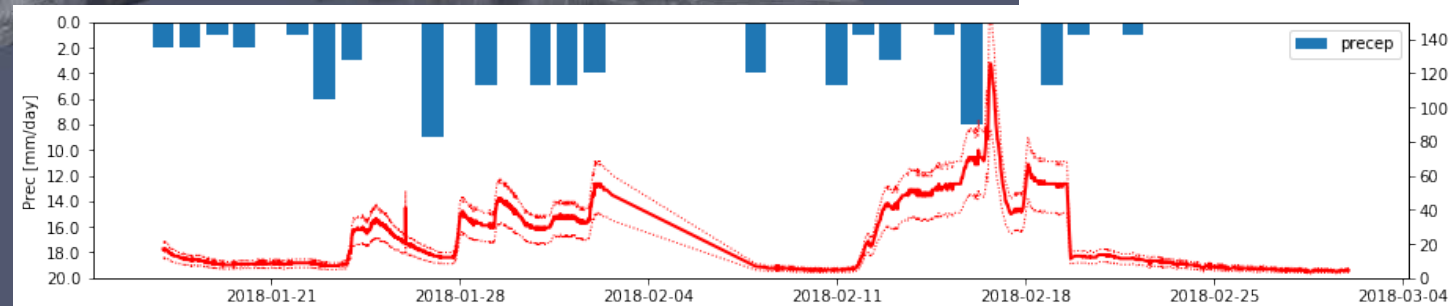
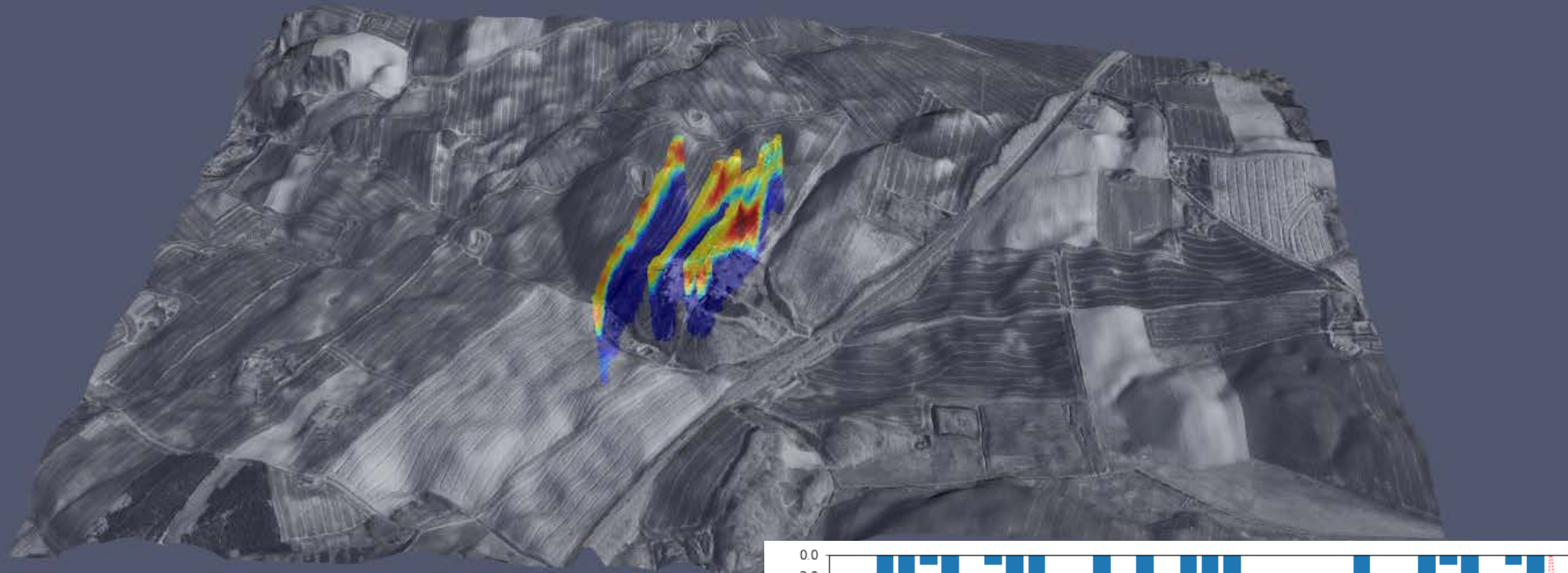
UNDERGRUNDENS STRUKTURER OG HYDROGEOLOGIEN – GEDVED



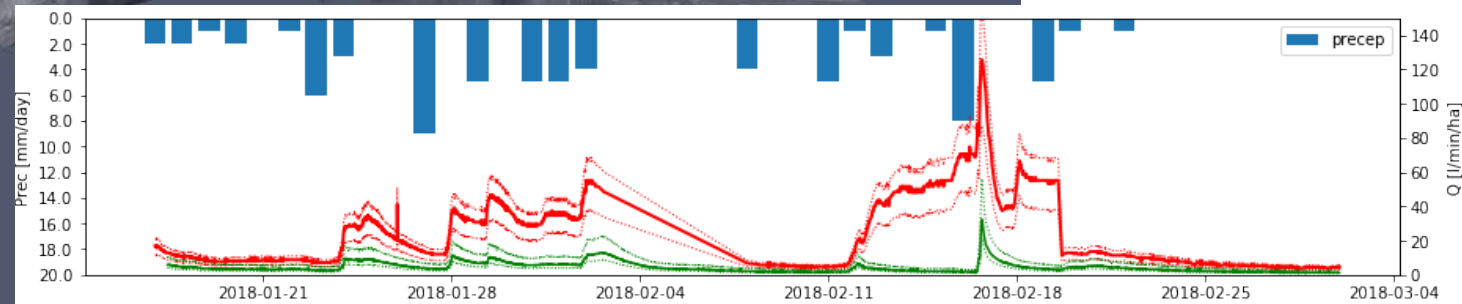
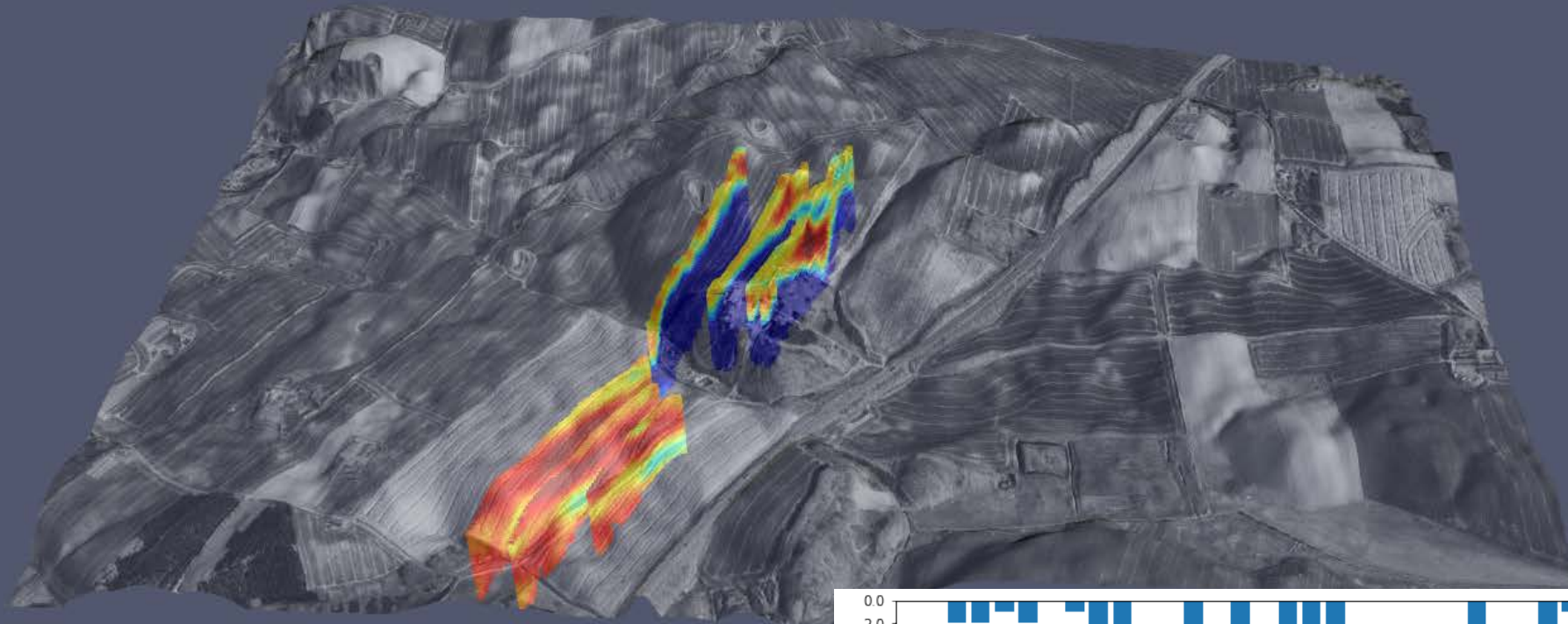
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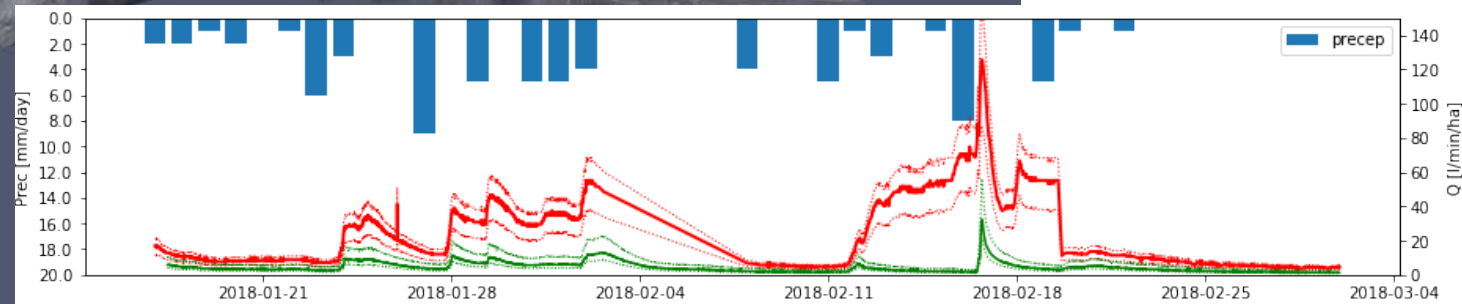
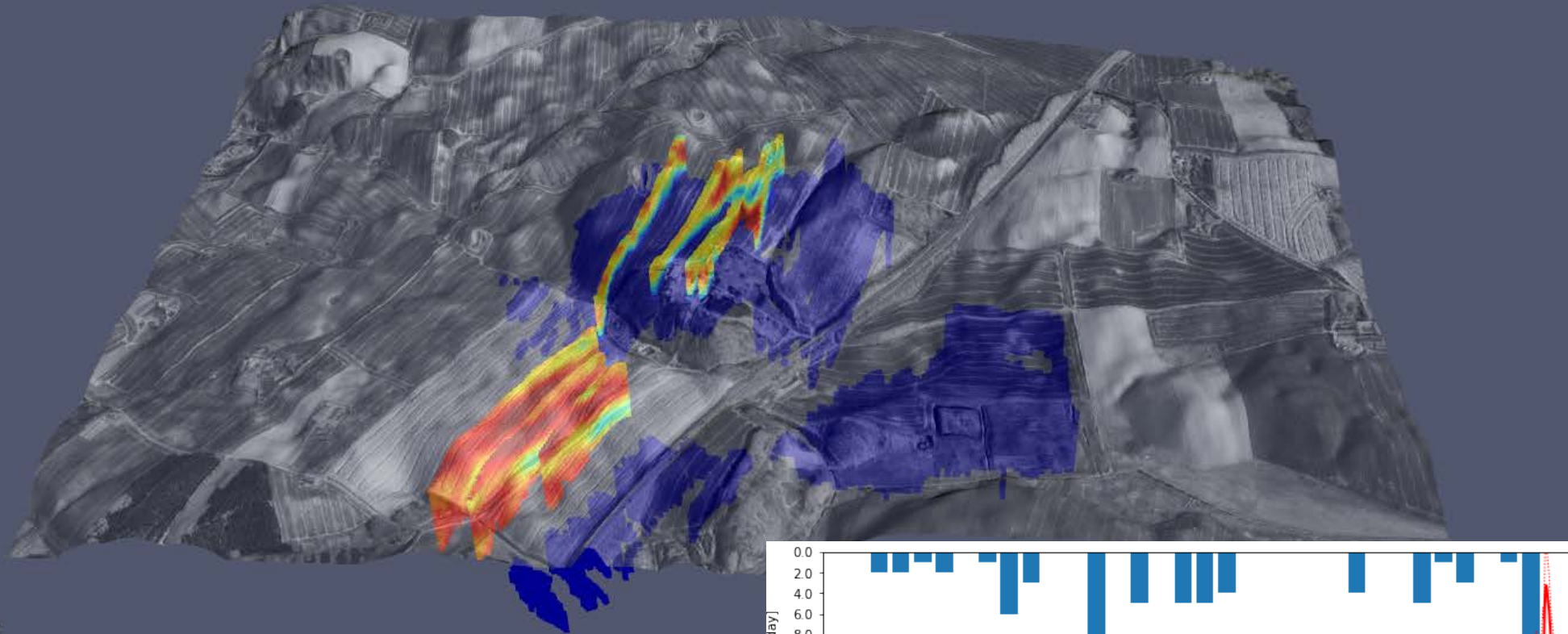
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