

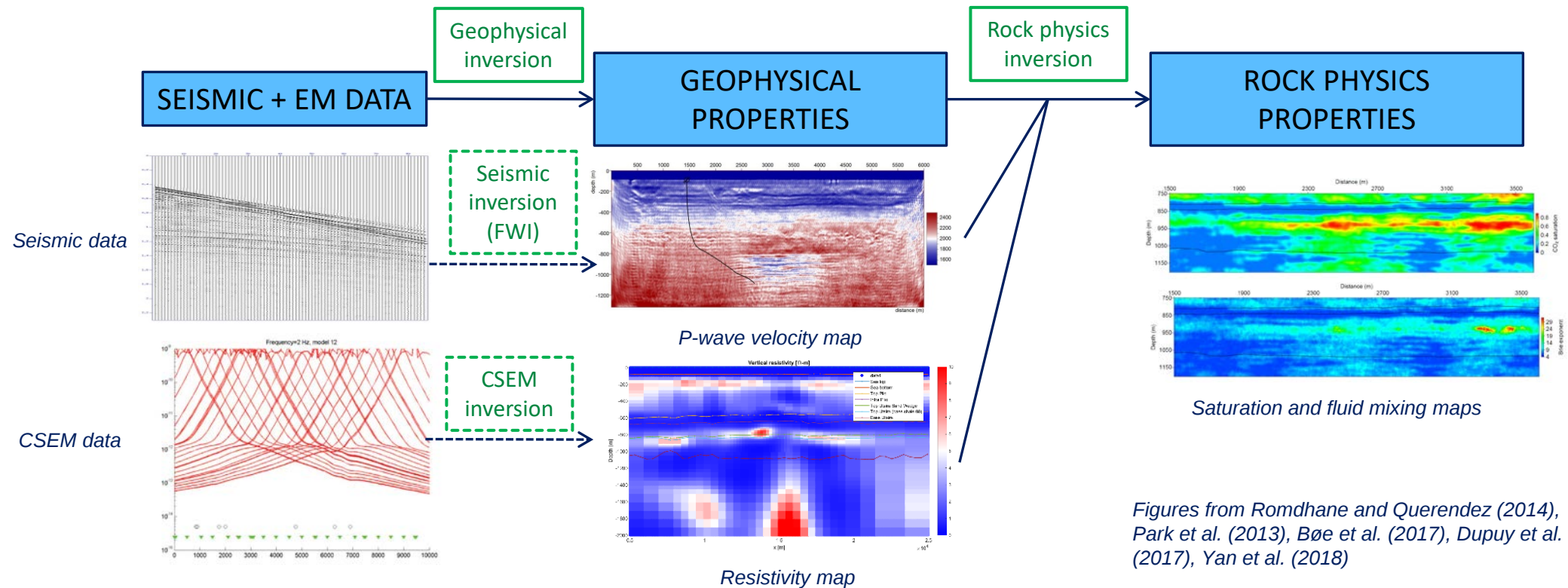


QUANTITATIVE CO₂ MONITORING WORKFLOW

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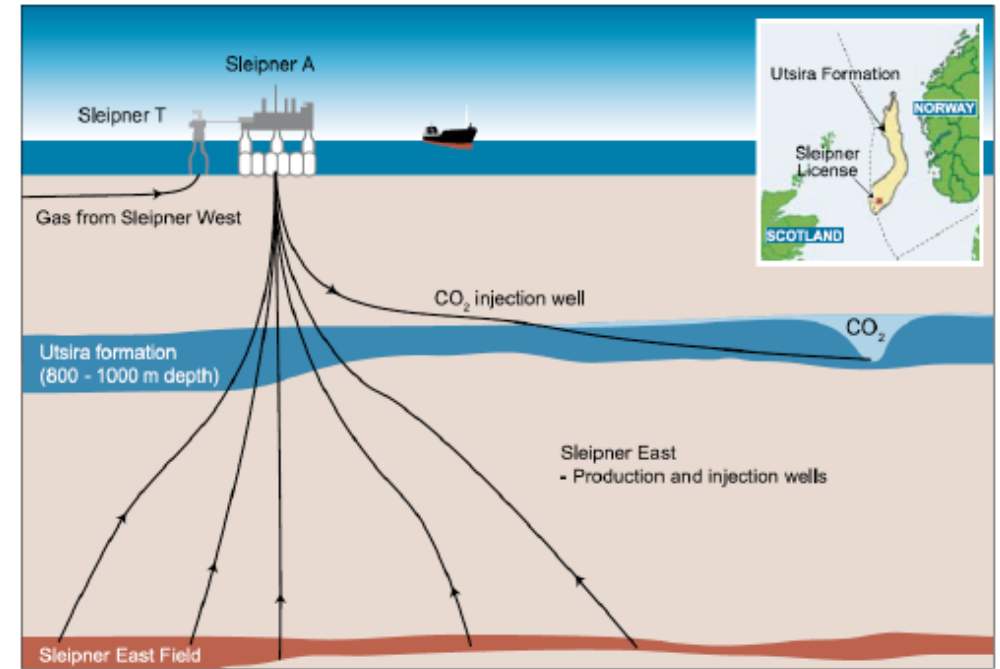
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Two-step geophysical inversion



CO₂ injection at Sleipner

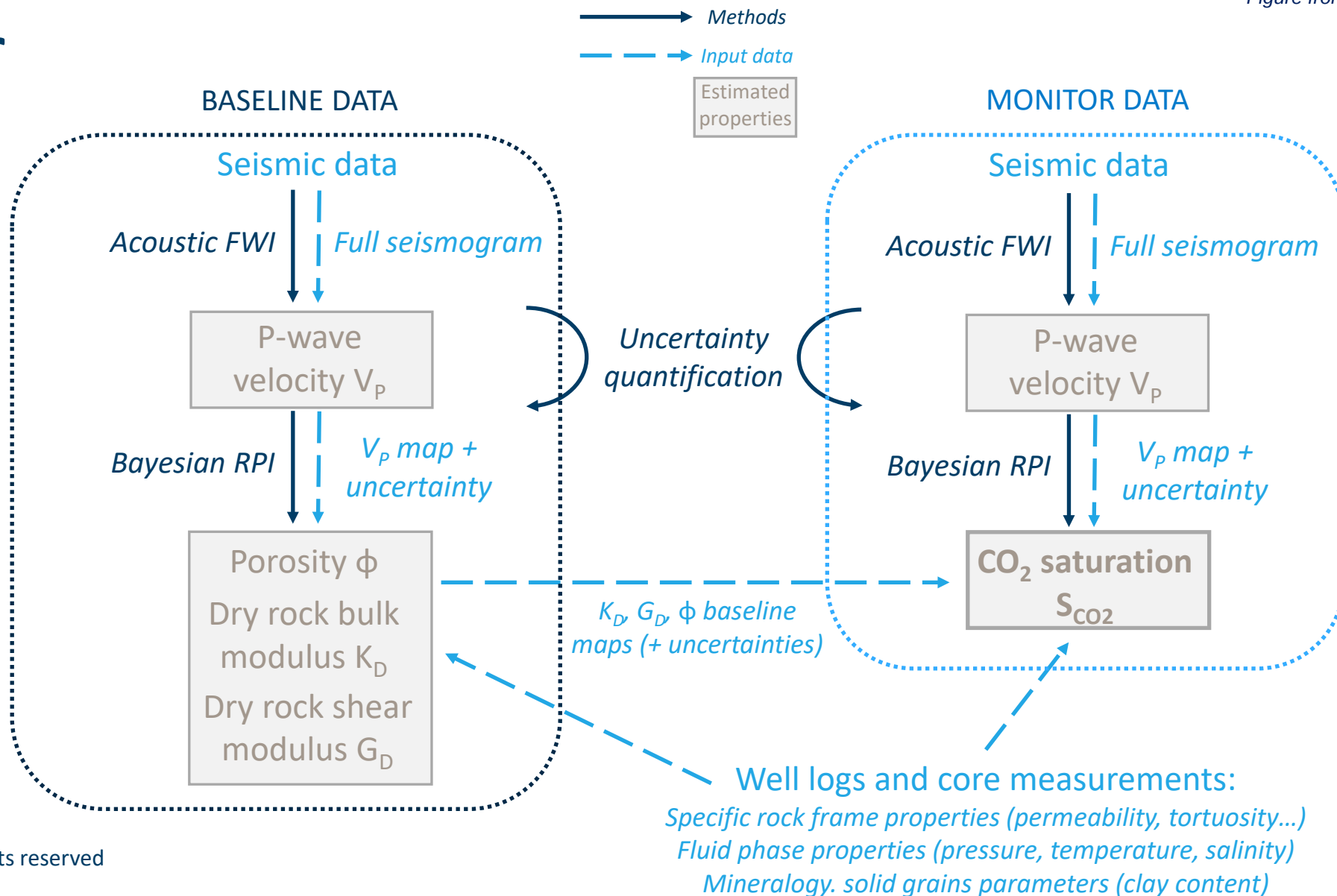
- CO₂ separated from the produced gas in the Sleipner Vest gas field.
- CO₂ injection site **since 1996**.
- Approximately 1 Million tonnes per year of injected CO₂.
- Injection into Utsira saline reservoir between 800 -1000 m depth.
- Injection point is about 1010 m below sea level.
- Near critical state at reservoir conditions.
- Storage reservoir: Utsira formation (Upper Miocene to Lower Pliocene).



Location of the Sleipner East field and sketch of injection in Utsira formation (IPCC, 2005).

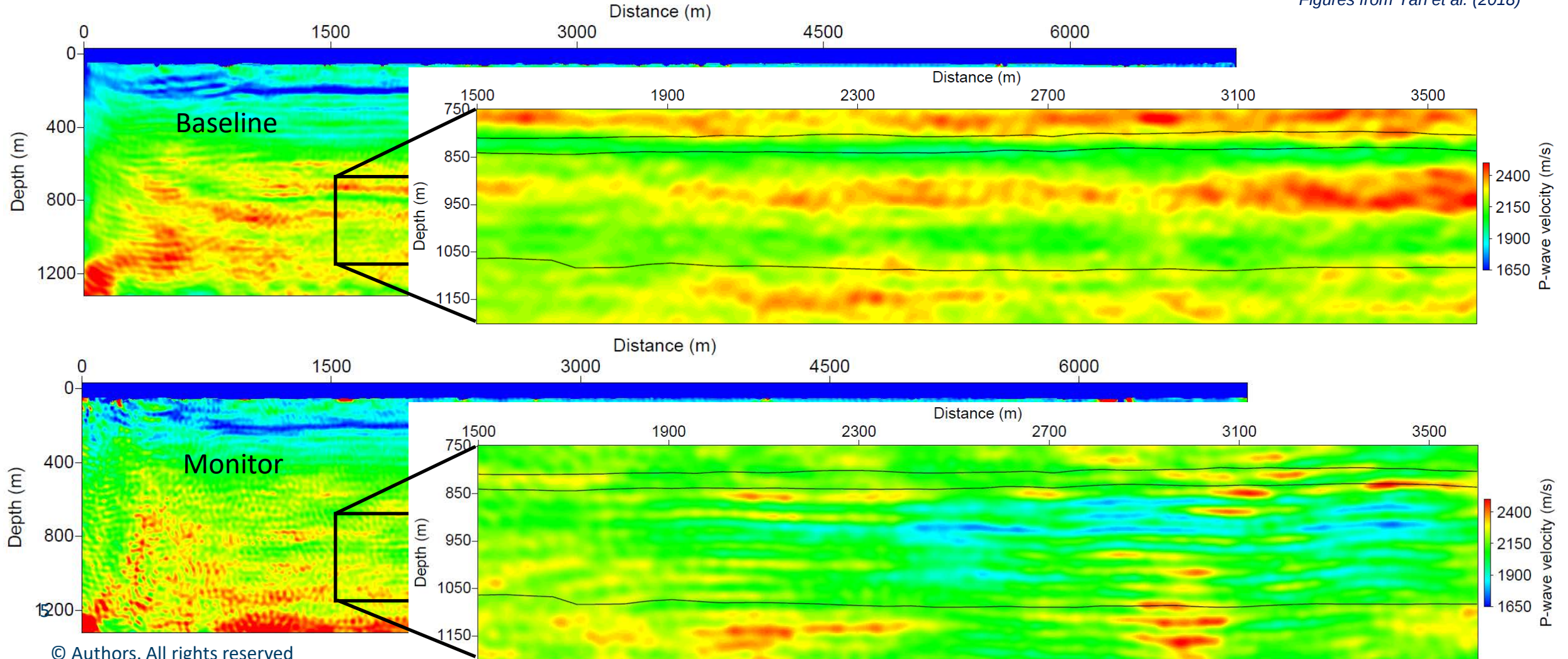
Time-lapse strategy at Sleipner

Figure from Dupuy et al. (2020)

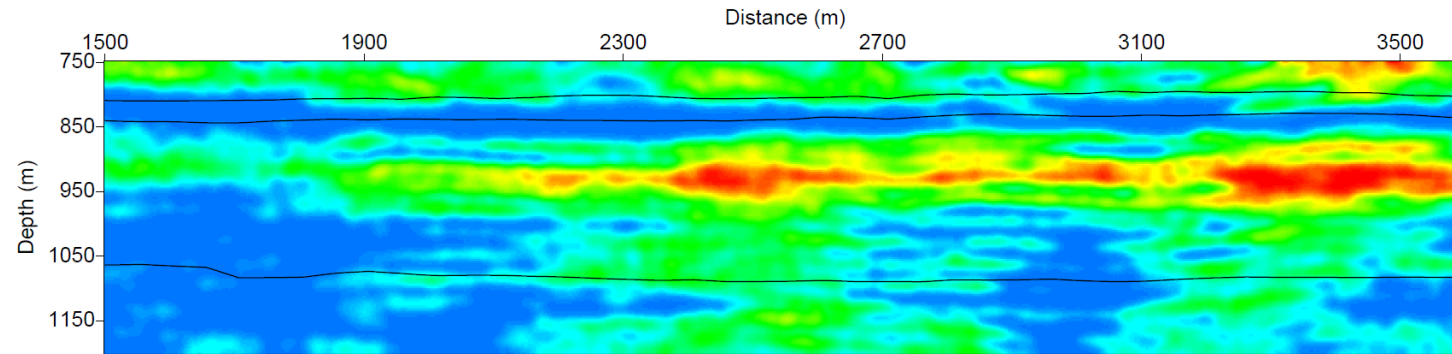


Sleipner Inline 1836: seismic inversion (FWI) results, reservoir close-up

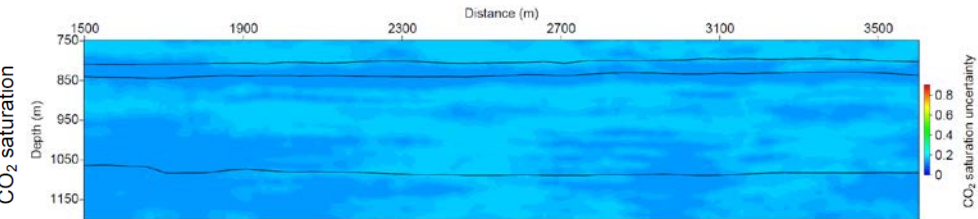
Figures from Yan et al. (2018)



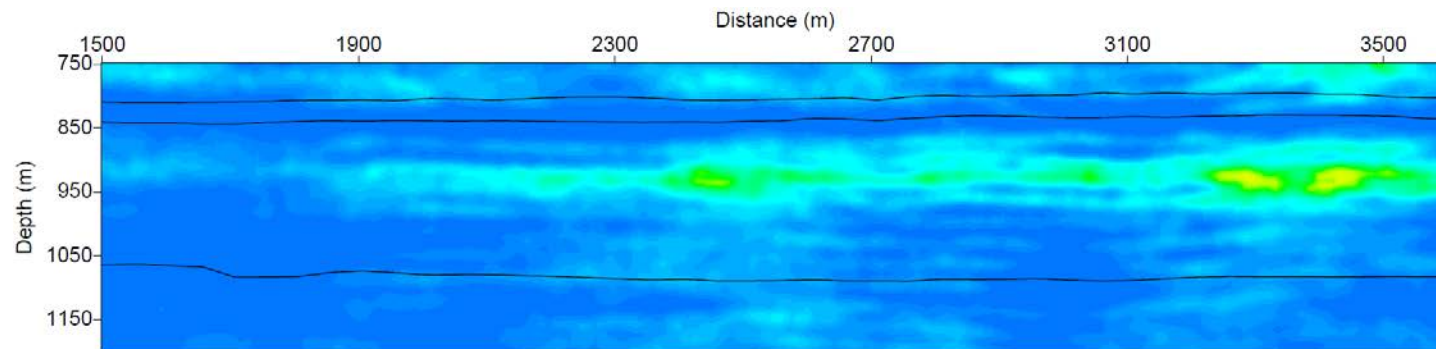
Saturation maps (2008) by rock physics inversion



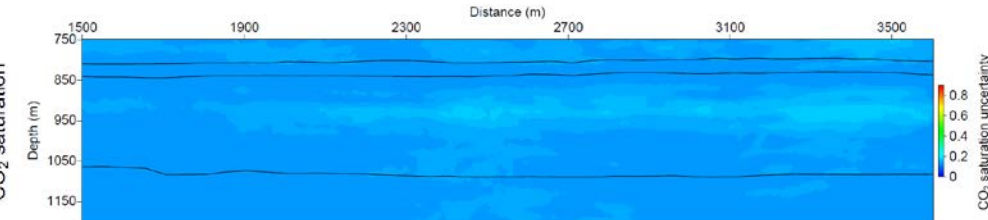
Patchiness exponent $e=1$



CO₂ saturation uncertainty



Patchiness exponent $e=5$



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<https://www.sintef.no/nccs>



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