



GEOLOGICAL
SURVEY OF
NORWAY
- NGU -

THE DISTRIBUTION, SEDIMENTARY PROCESSES AND DEPOSITIONAL IMPACTS OF SUBMARINE MINE TAILINGS DISPOSAL IN STJERNSUNDET AND FRÆNFJORDEN

Nicole Baeten, Reidulv Bøe, Aivo Lepland, Oddvar Longva, Roar Sandøy, Arnstein Amundsen, Shyam Chand, Valérie K. Bellec, Martin Klug, Liv Plassen, Jasmin Schønenberger

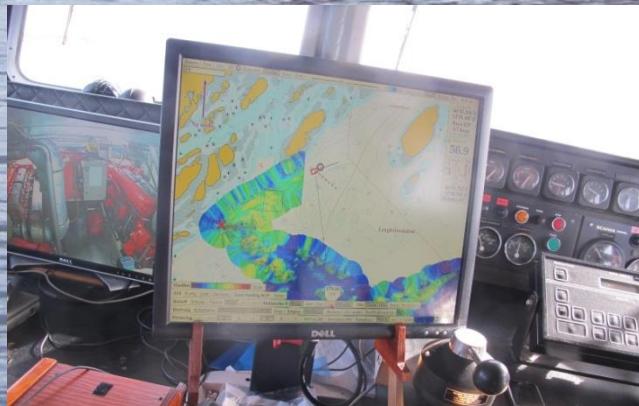


NYKOS informasjonsdag, 27 November 2018, UiT

NYKOS work packages

- NTNU: Post processing tailings improvement
- **NGU: Marine geological and sedimentological mapping of the fjords**
- NIVA: Effects of mine tailings and associated chemicals on marine benthic ecosystems
- SINTEF: Modelling, impact acceptance criteria and risk aspects
- NIVA: Best available techniques for STPs

Data collection NGU



Multibeam bathymetry



Video



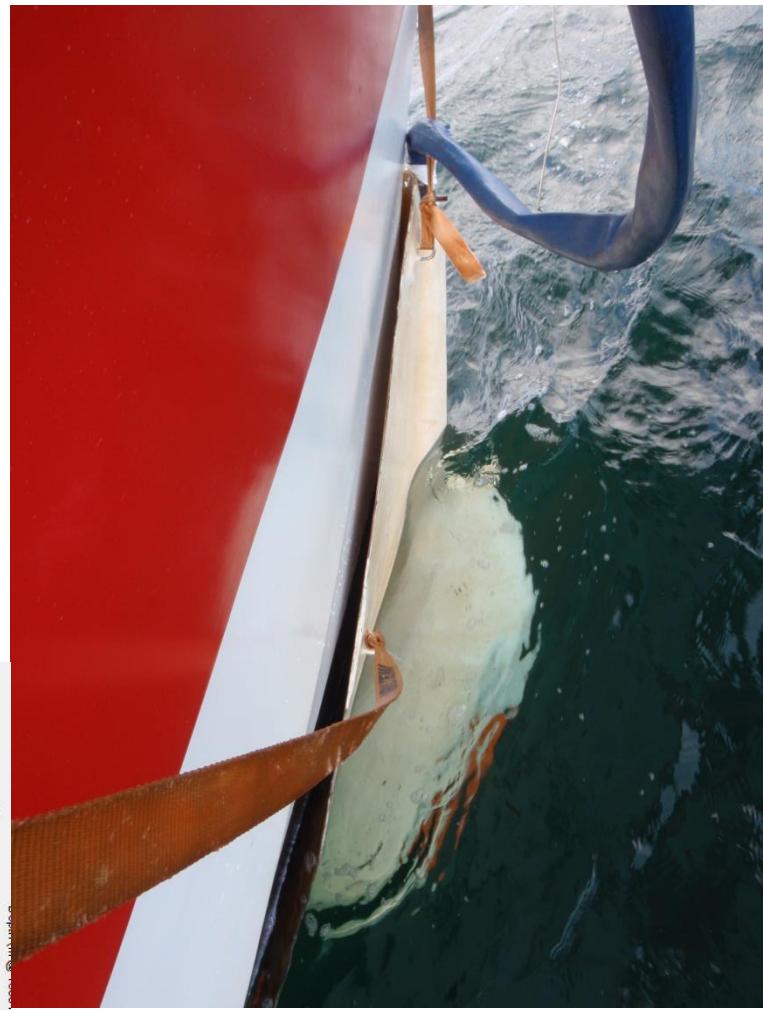
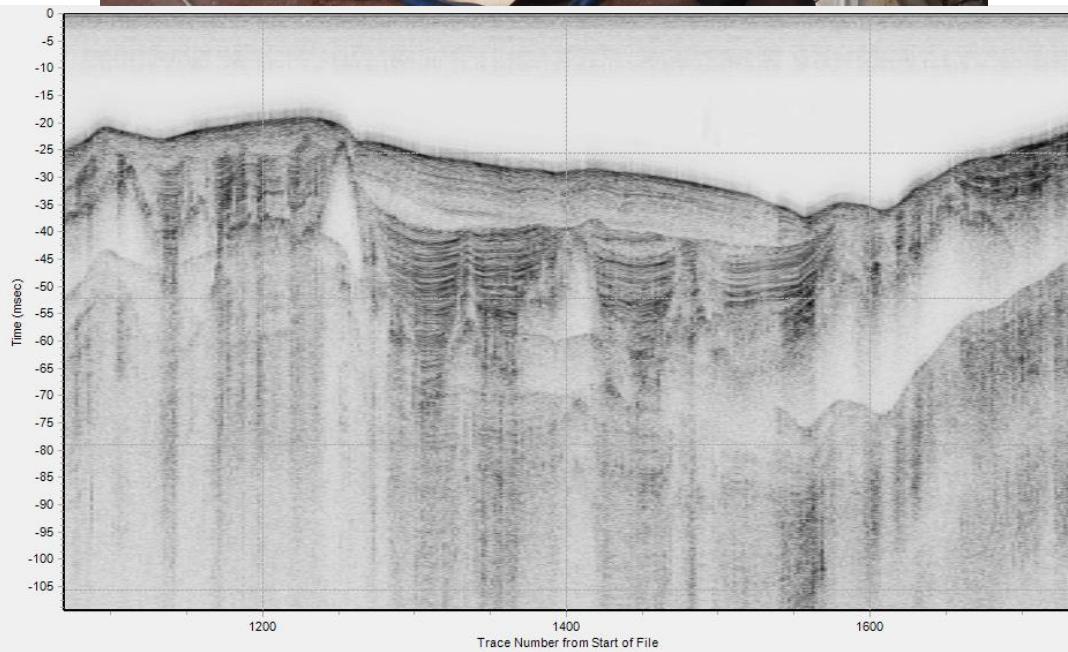
Grabb

Undisturbed samples - Niemisto-corer

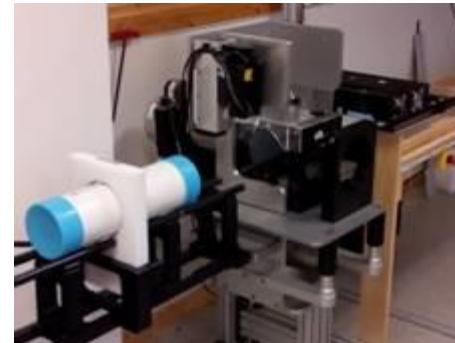
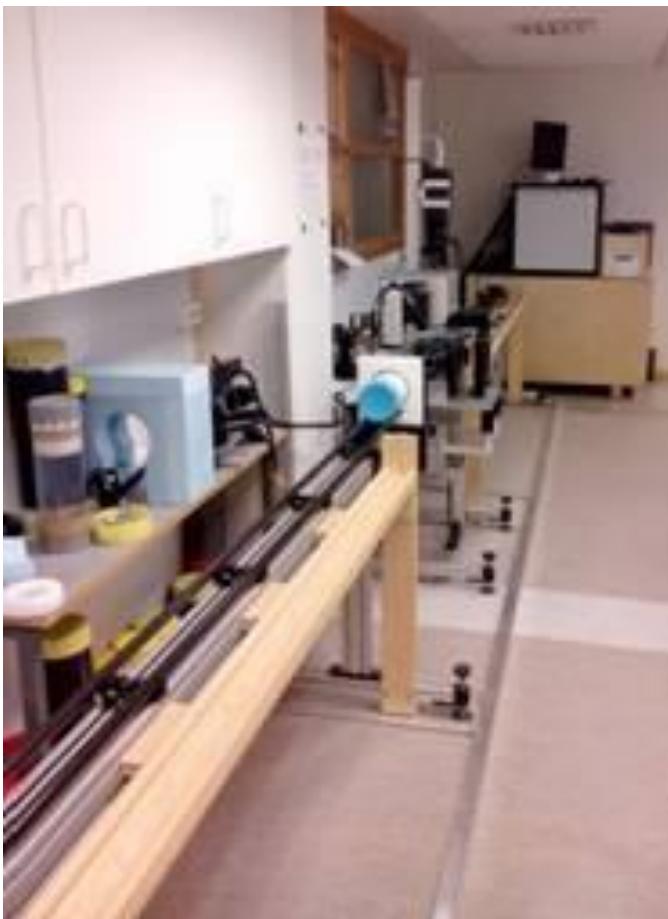


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Sub bottom profiler – TOPAS (high resolution seismic)



Lab analyses NGU/UiT



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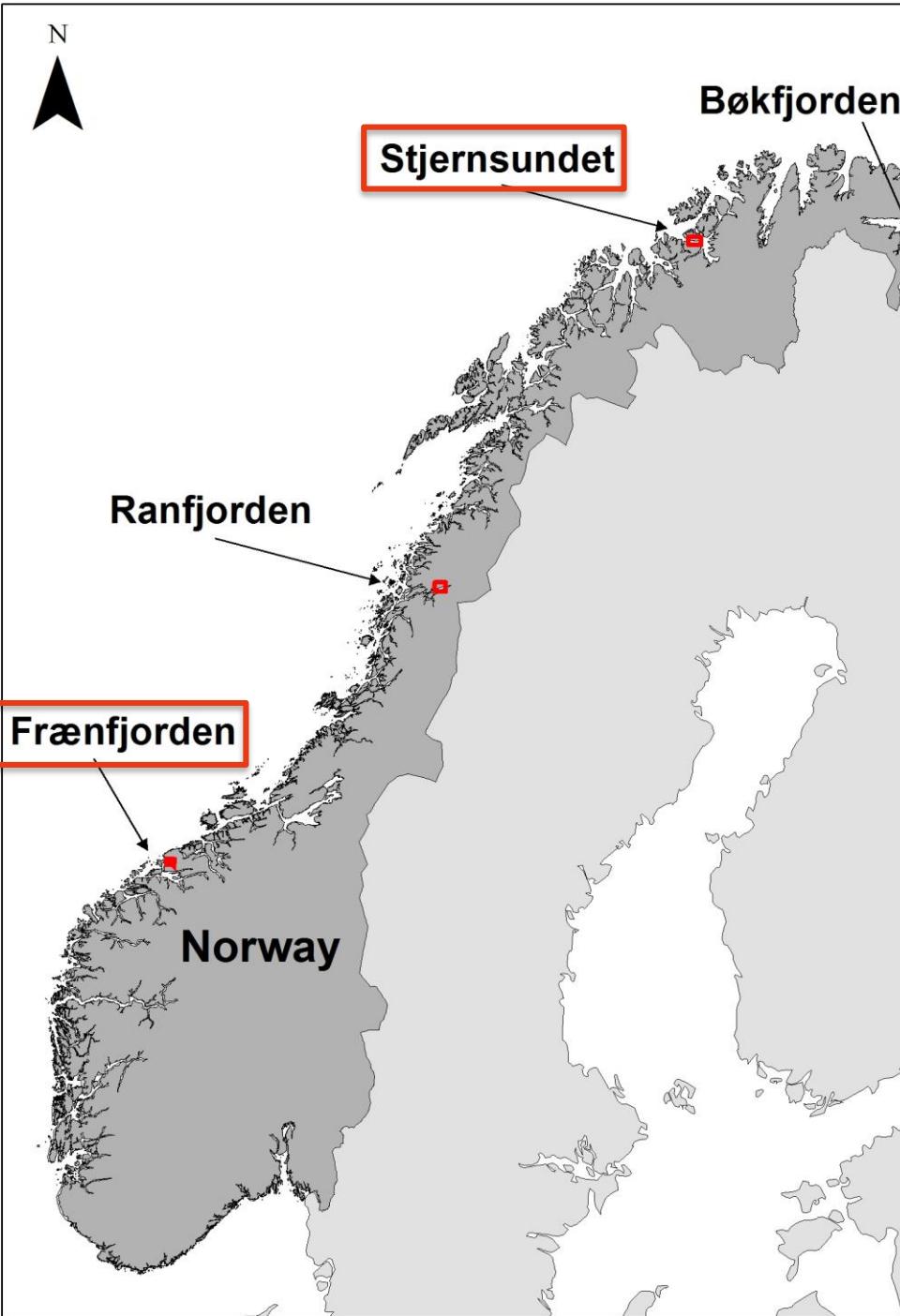
Bøkfjorden

Stjernsundet

Ranfjorden

Frænfjorden

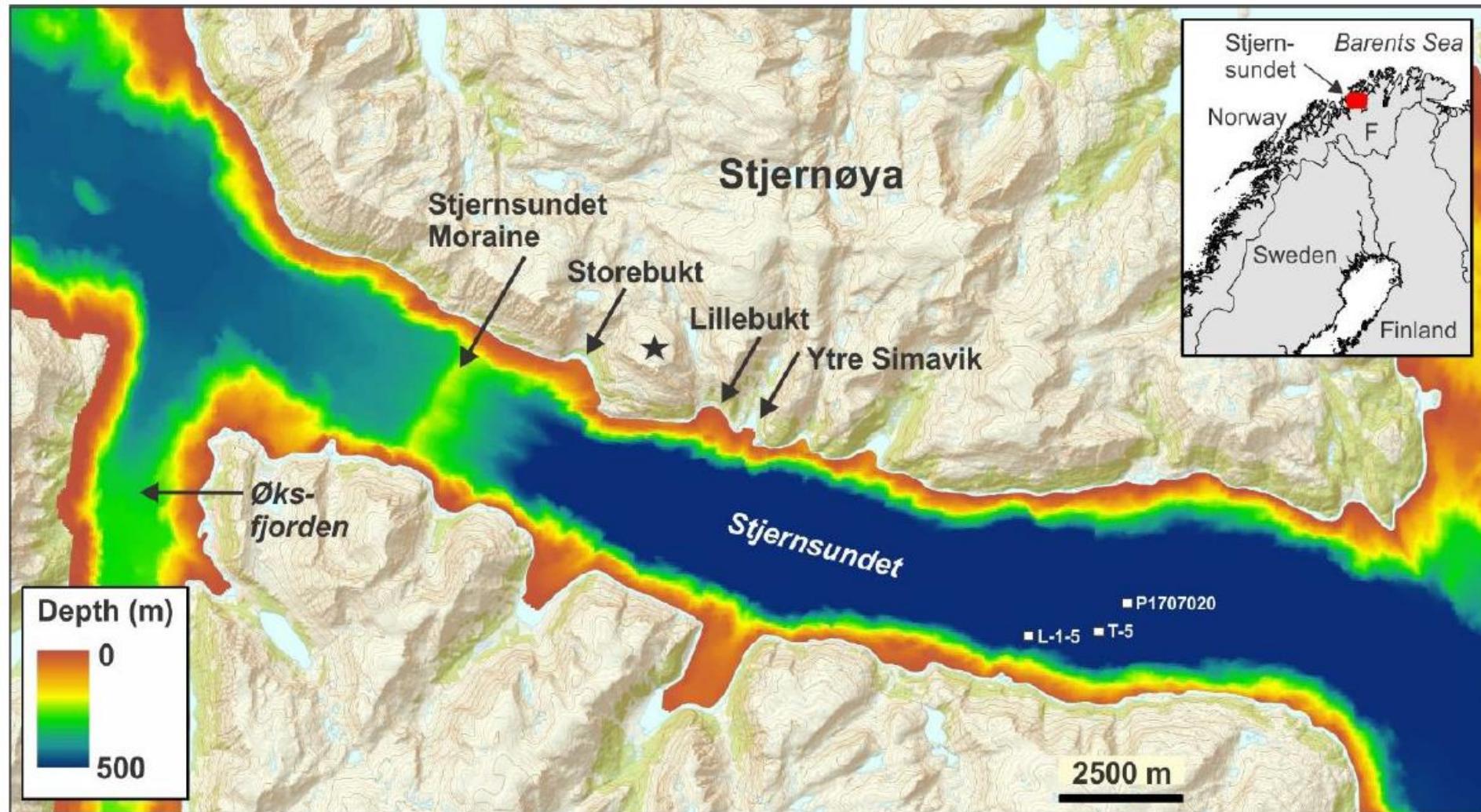
Norway



Marine mine tailings disposal at Lillebukt, Stjernsundet, North Norway: distribution, sedimentary processes and depositional impacts.

Accepted at NJG

Reidulv Bøe, Roar Sandøy, Nicole J. Baeten, Aivo Lepland, Valérie K. Bellec, Shyam Chand, Oddvar Longva, Martin Klug, Liv Plassen & Jasmin Schønenberger

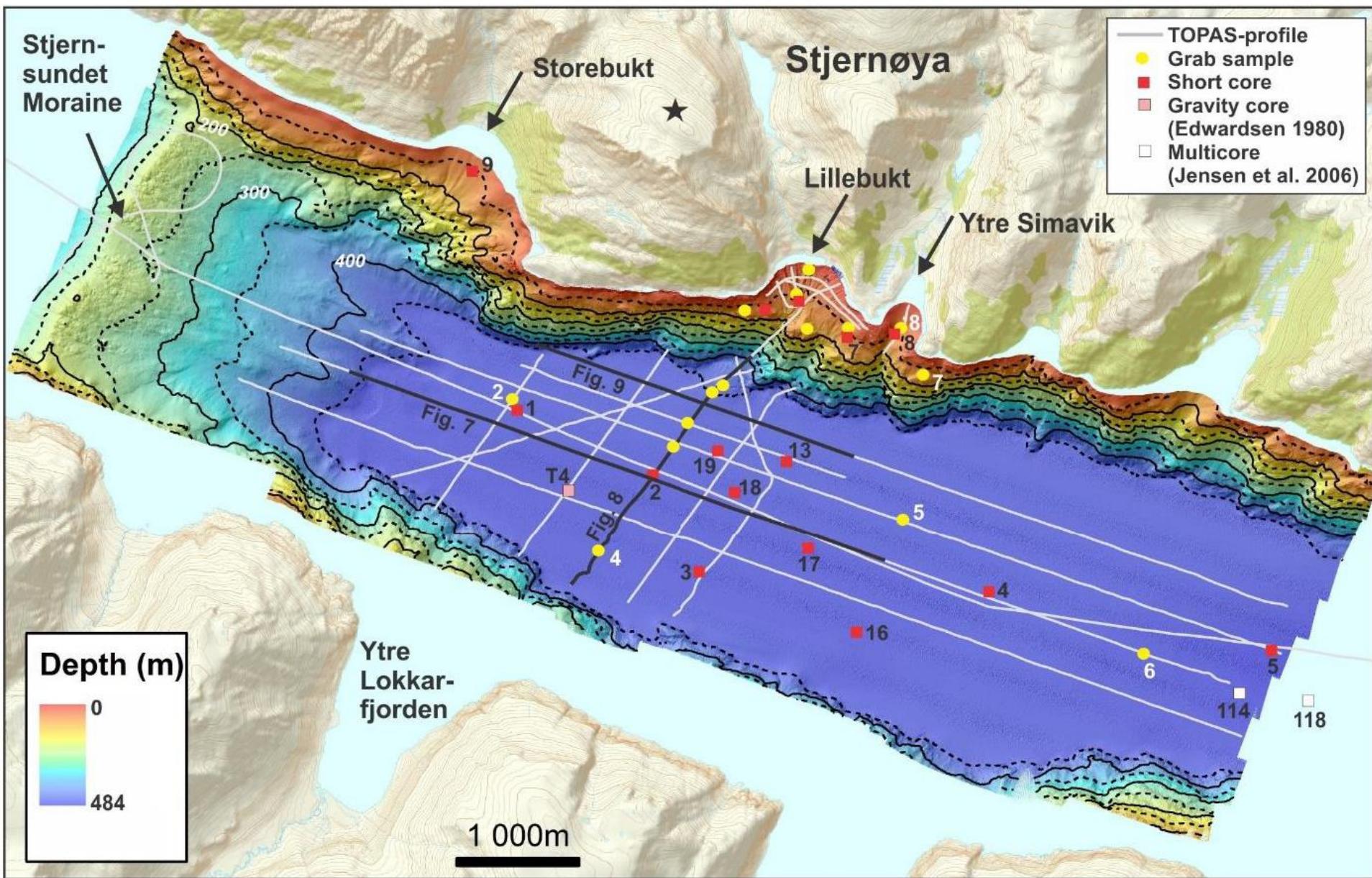


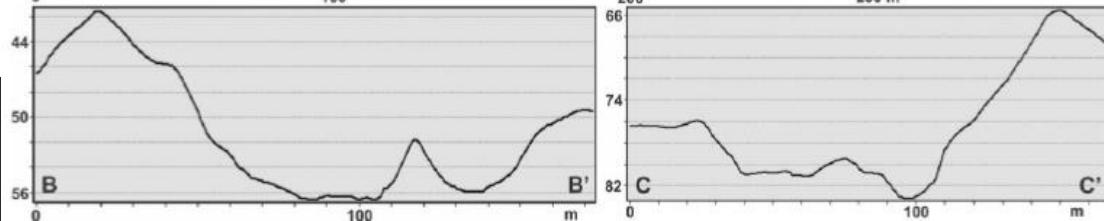
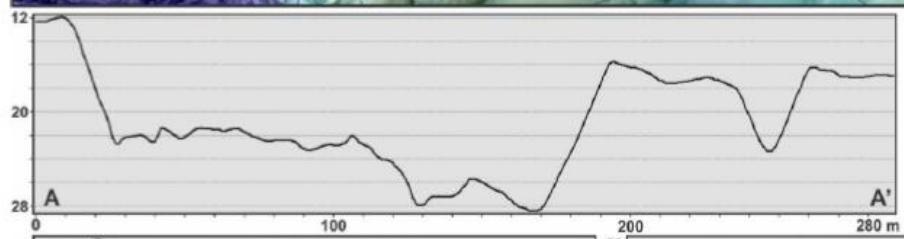
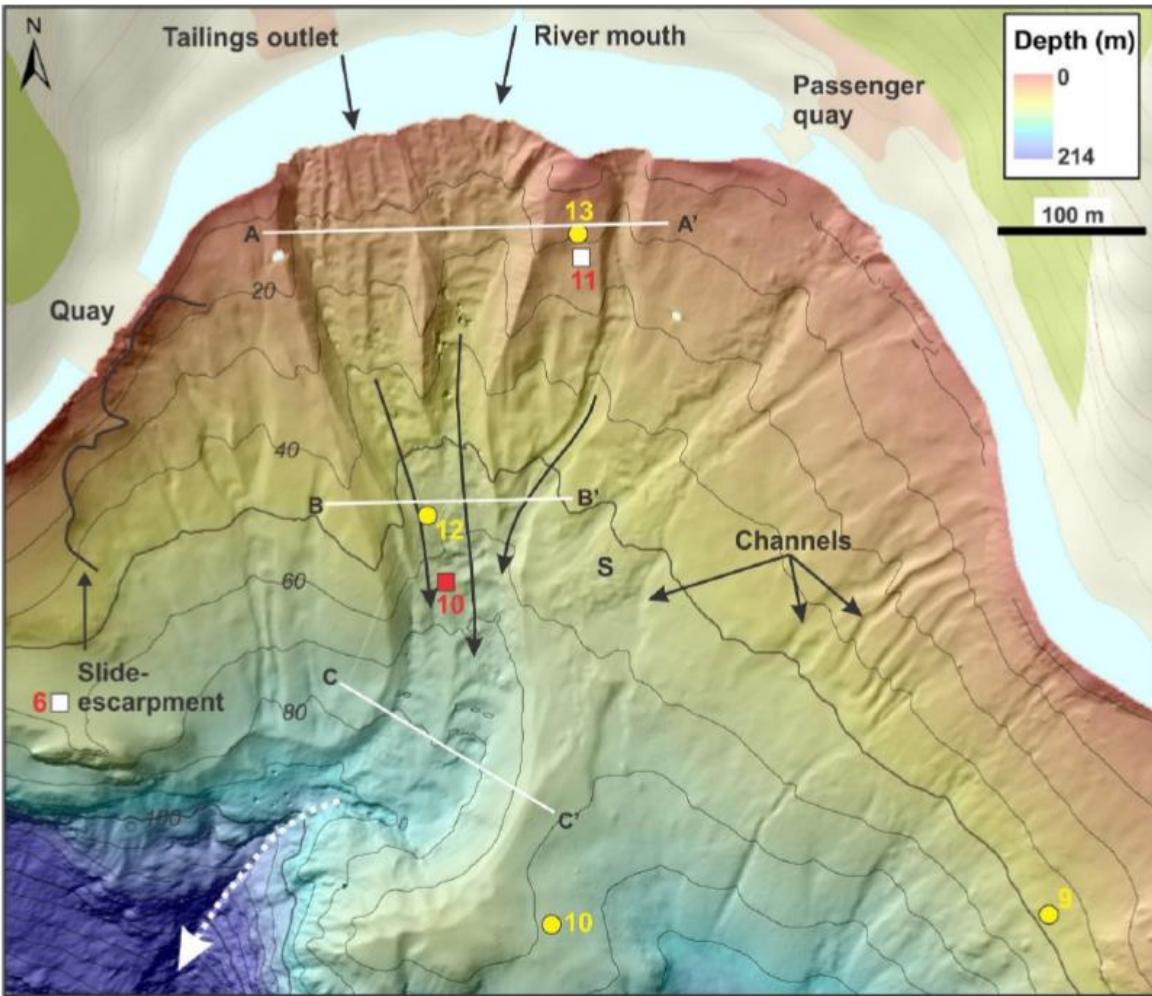


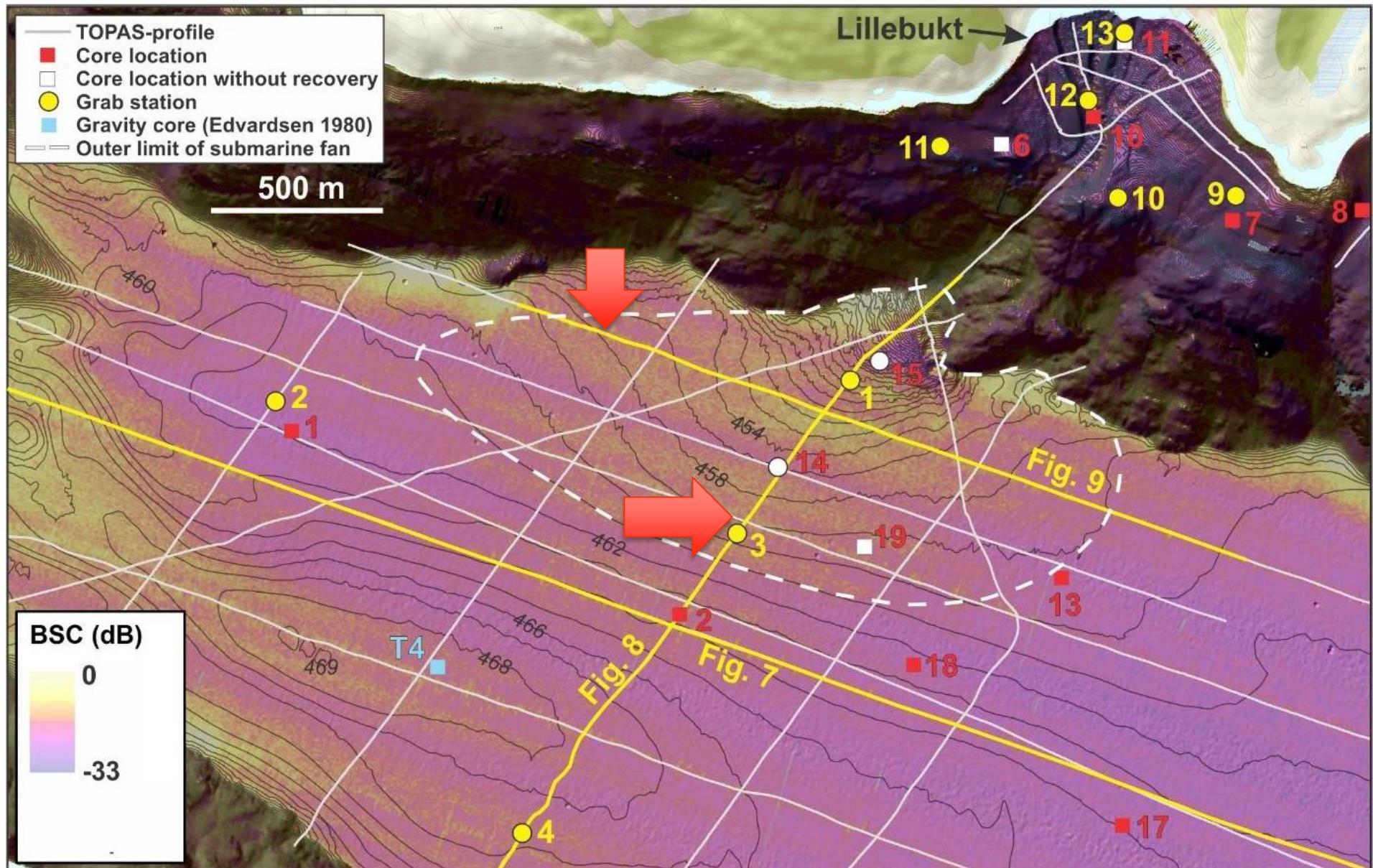
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Data Stjernsundet

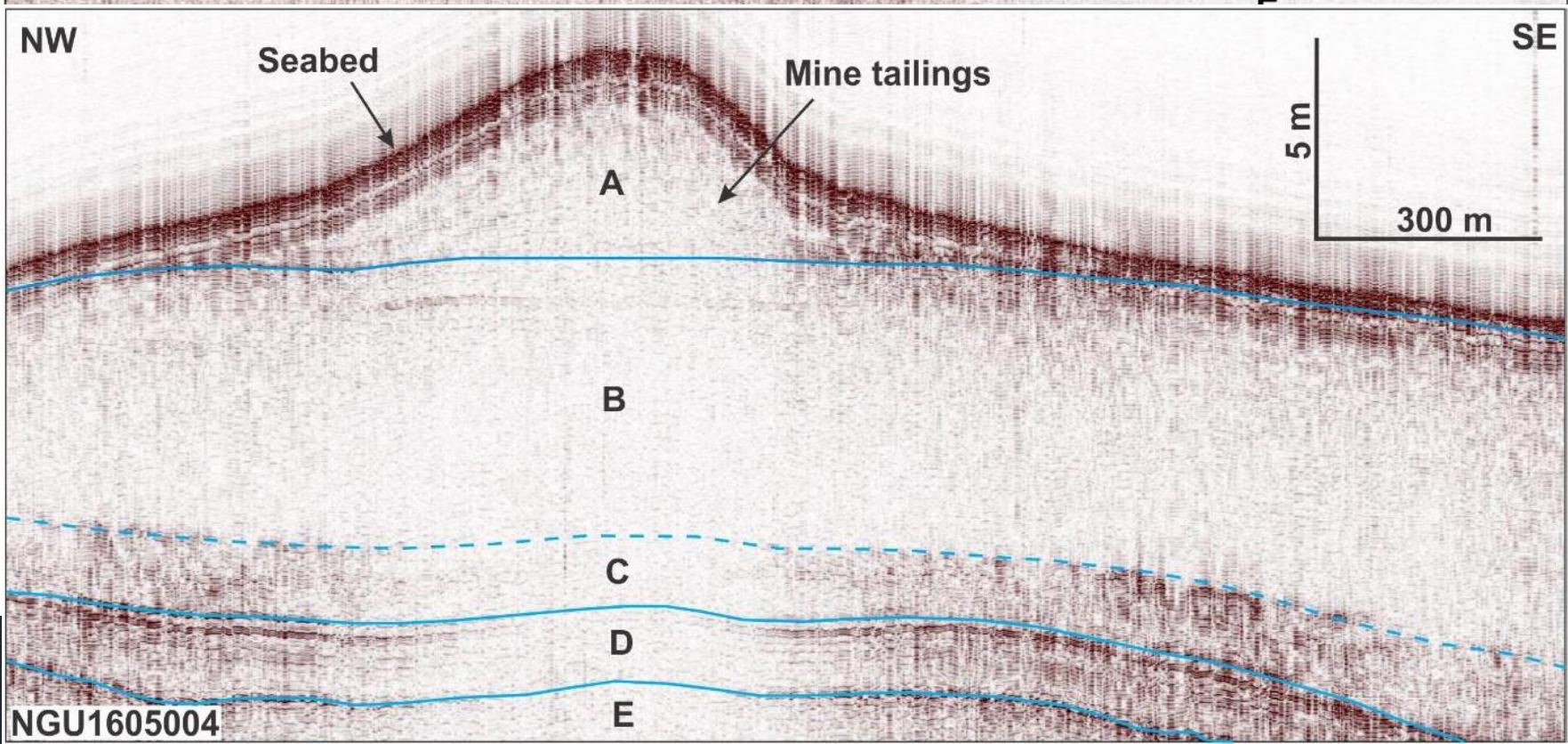
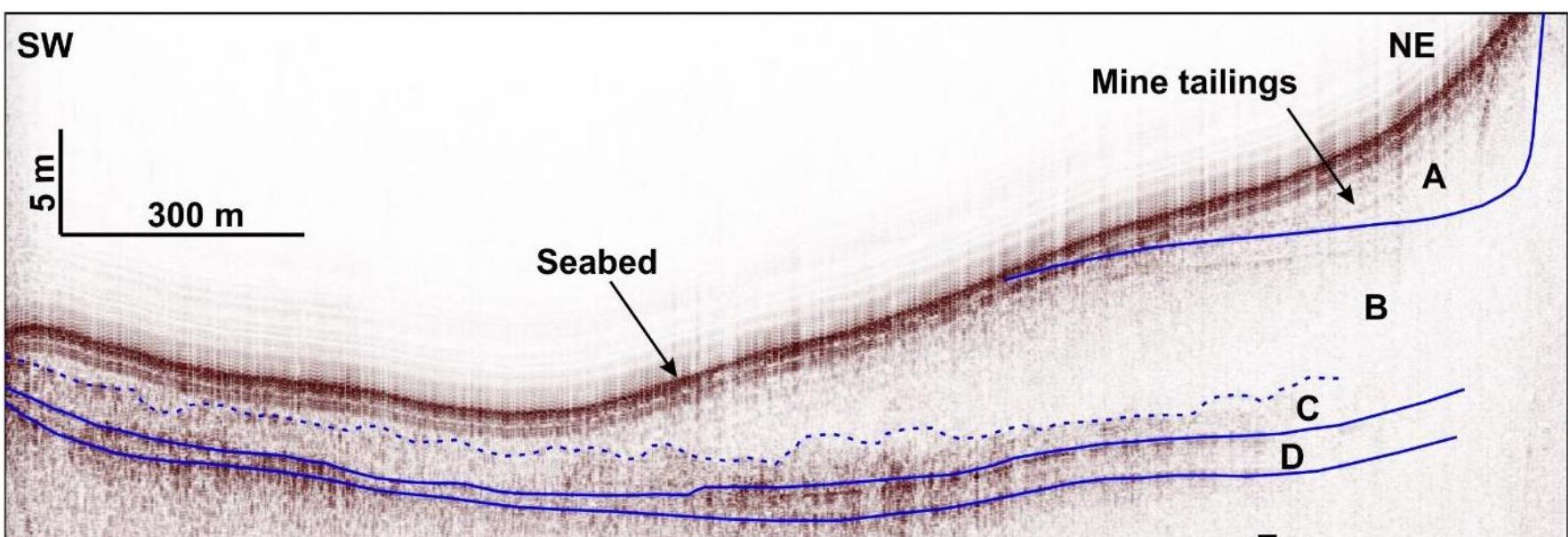






GEOLOGICAL SURVEY OF NORWAY

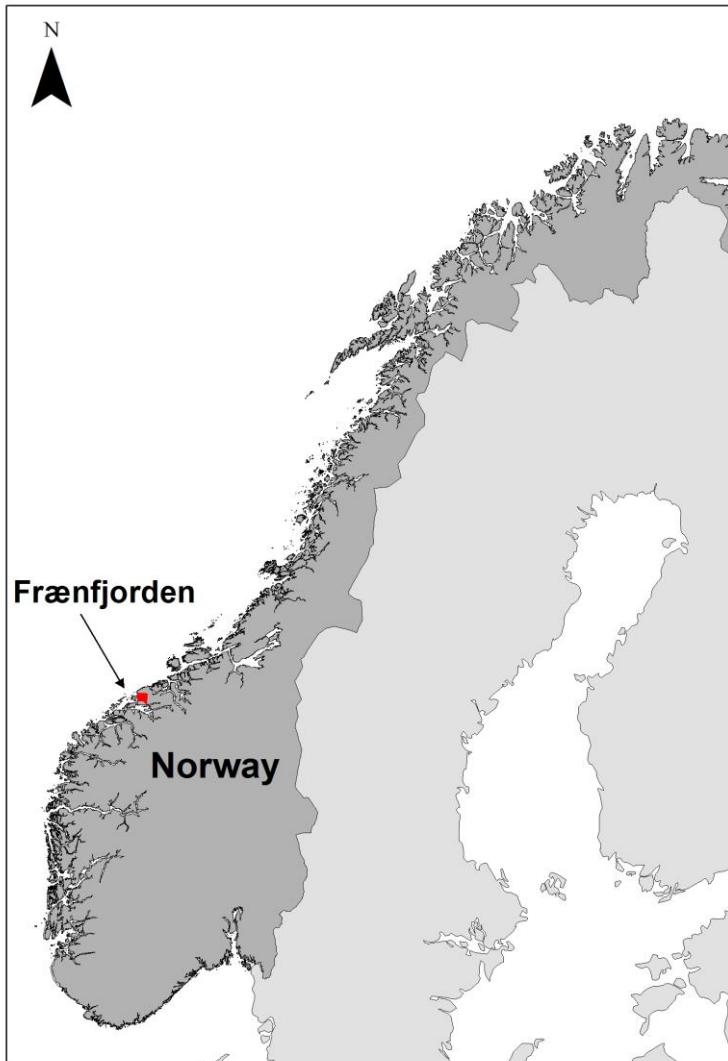
- NGU -



The distribution, deposition and impact of submarine mine tailings disposal on the fjord bottom in Frænfjorden, Norway

In prep.

Nicole Baeten, Aivo Lepland, Reidulv Bøe, Oddvar Longva, Shyam Chand, Arnstein Amundsen



Frænfjorden - Omya Hustadmarmor AS



Subsea tailings deposition, in principle

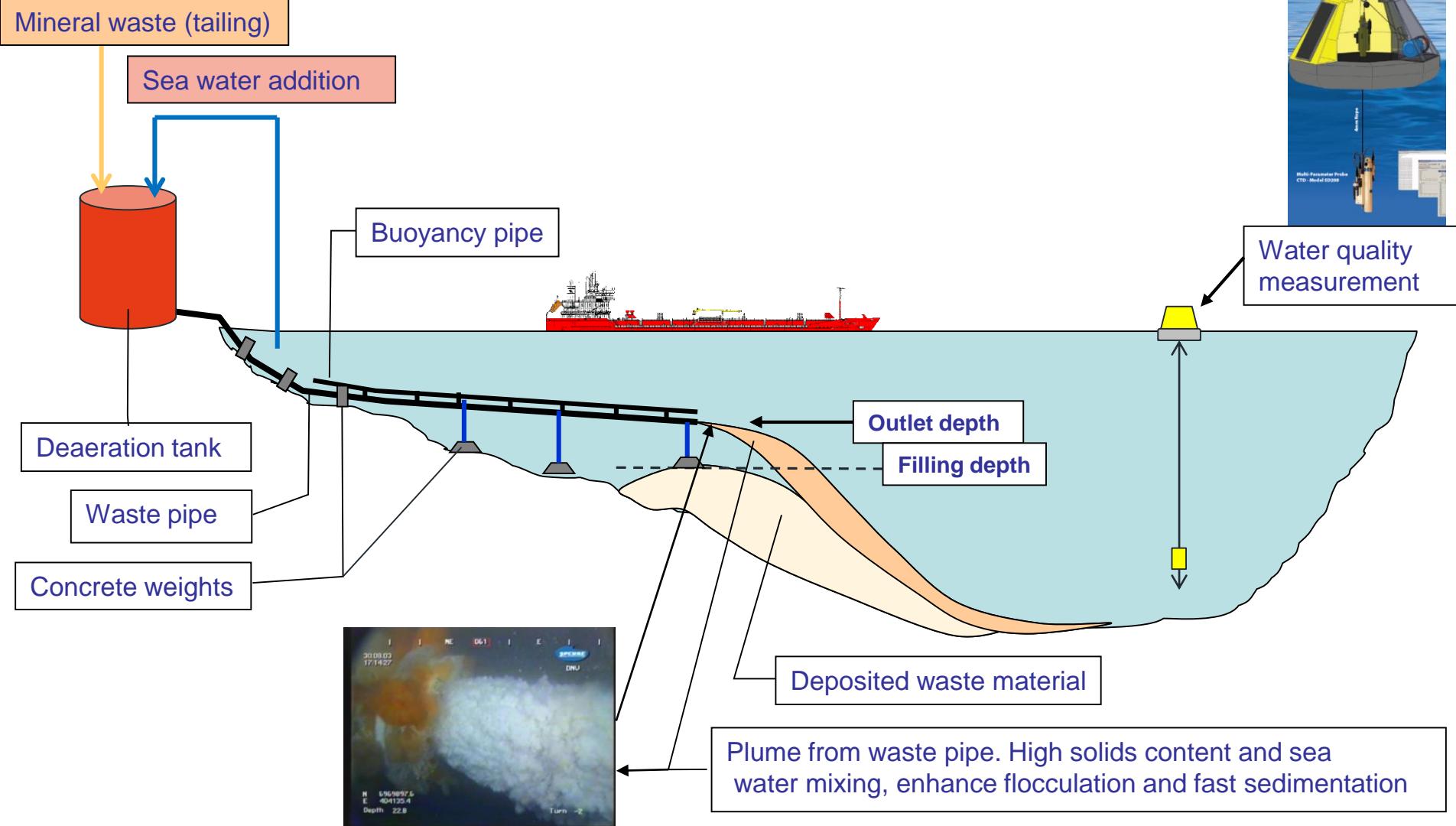


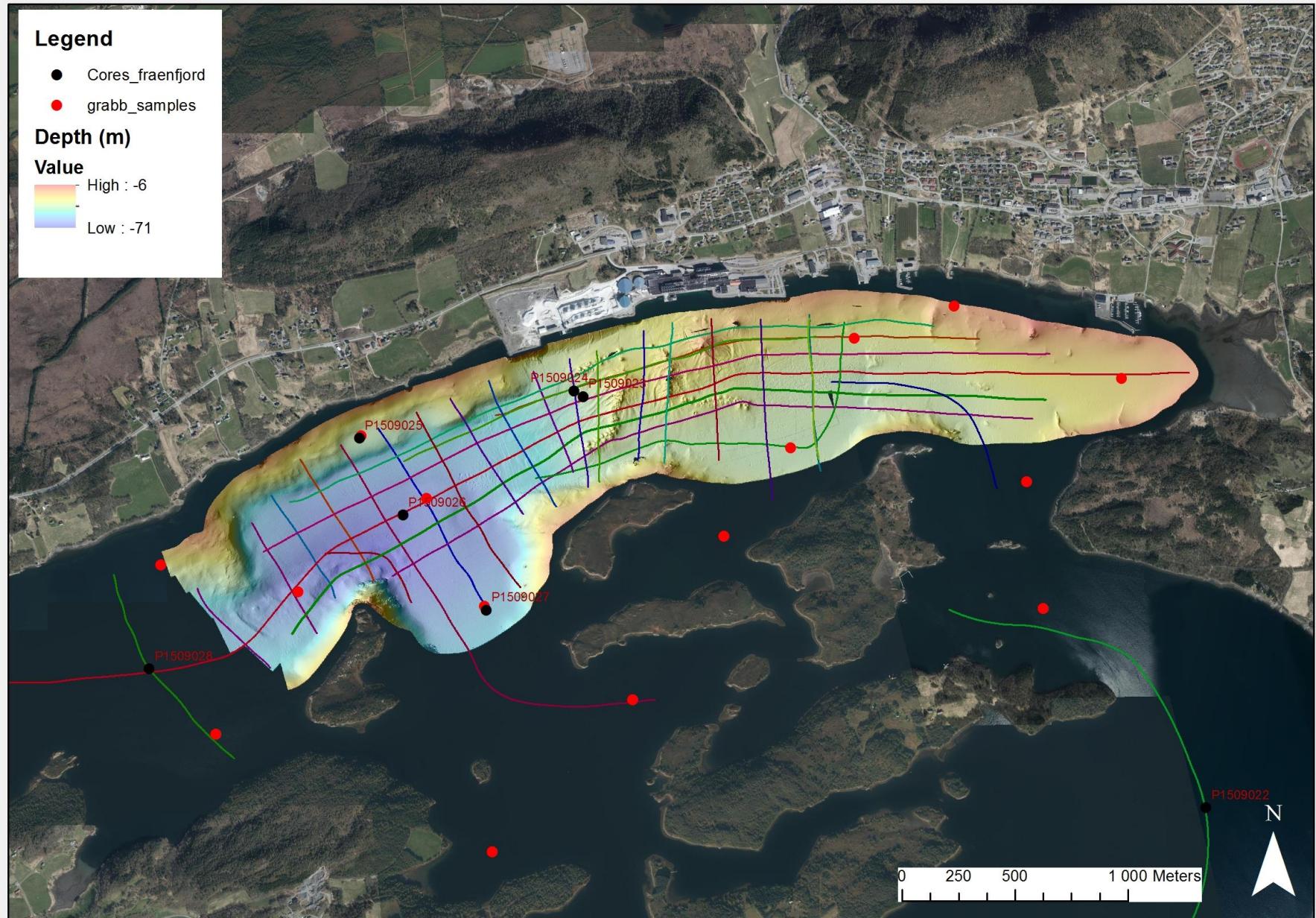
Figure from Hustadmarmor



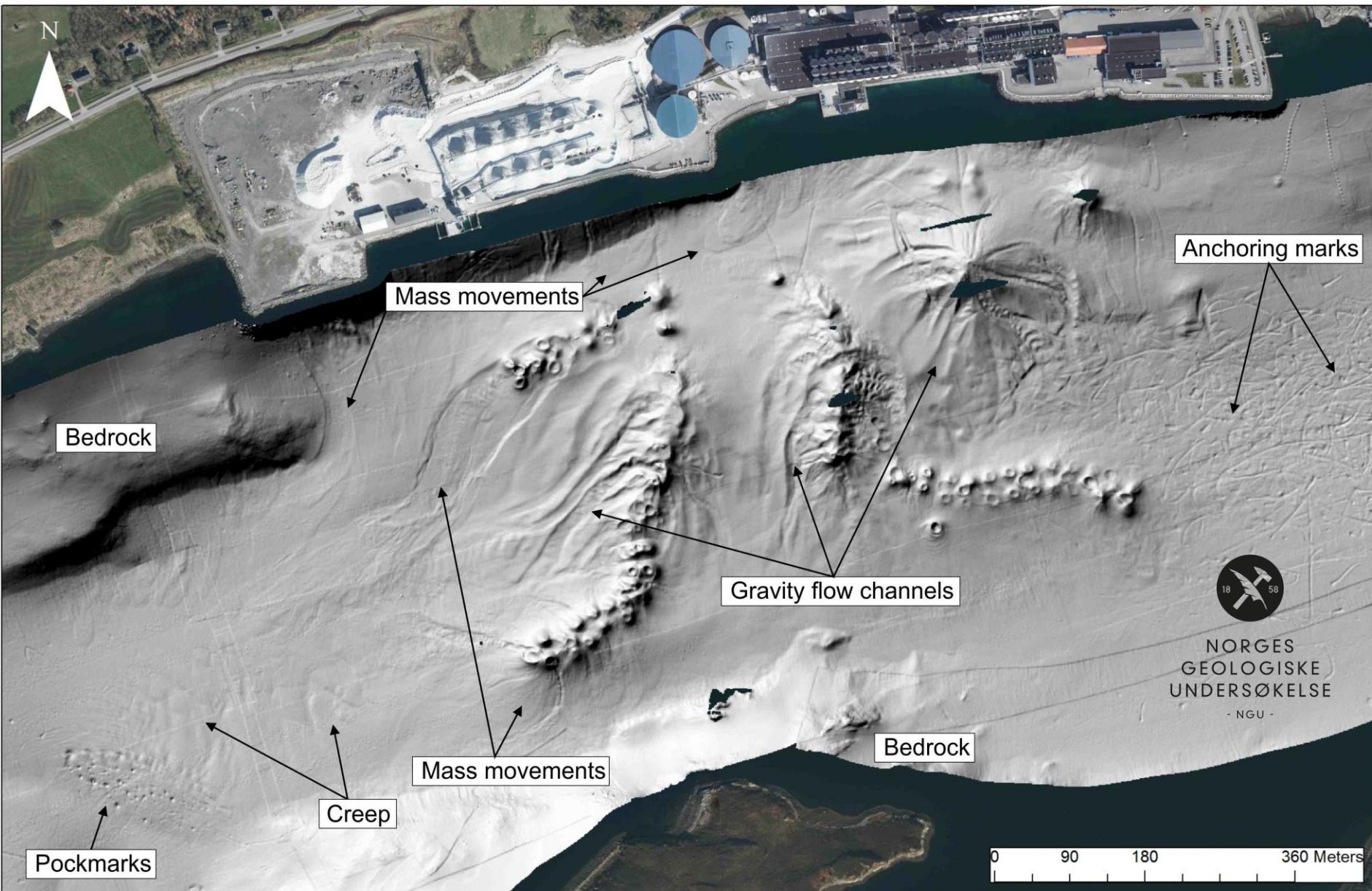
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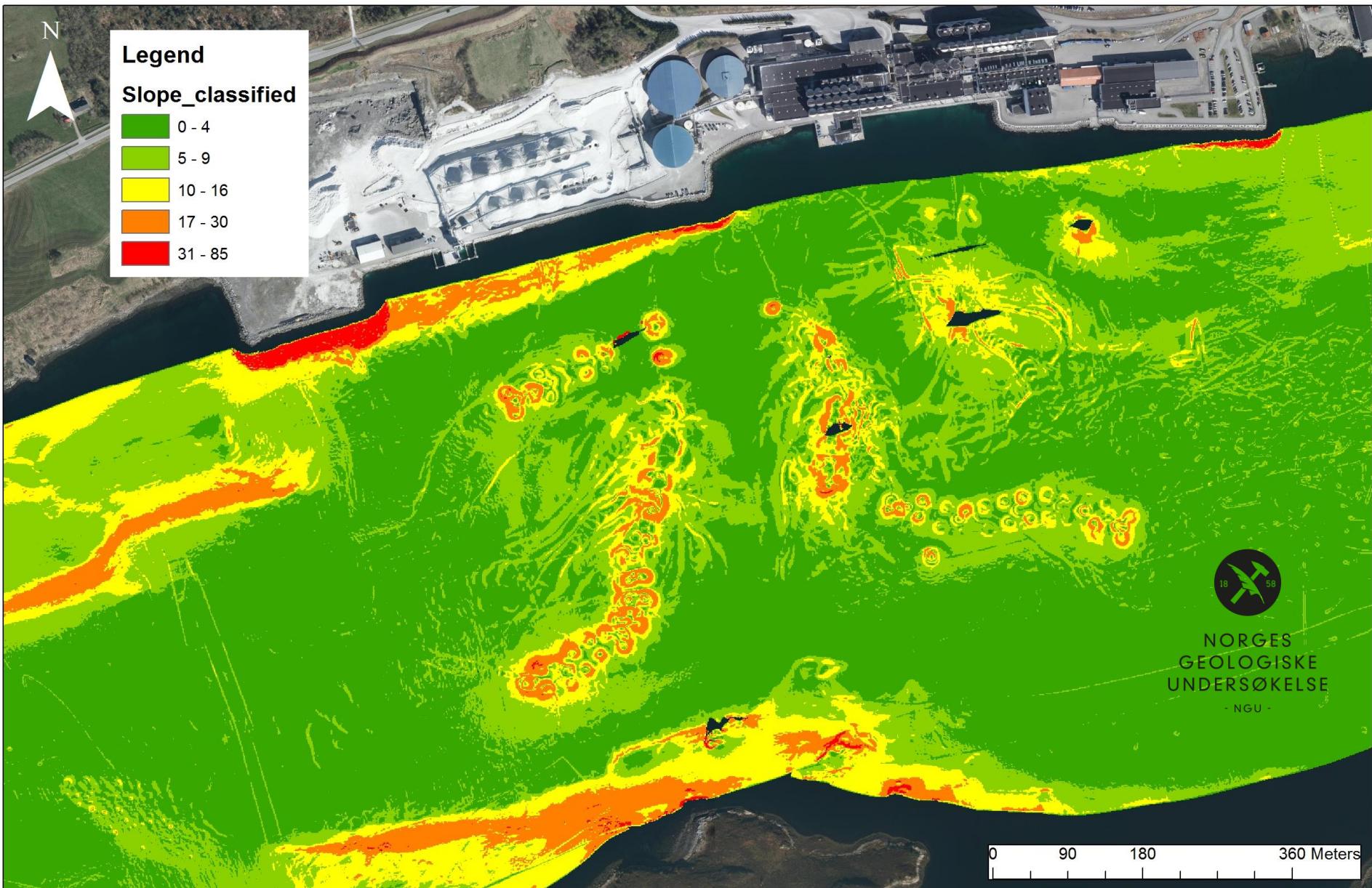
Frænfjorden STP



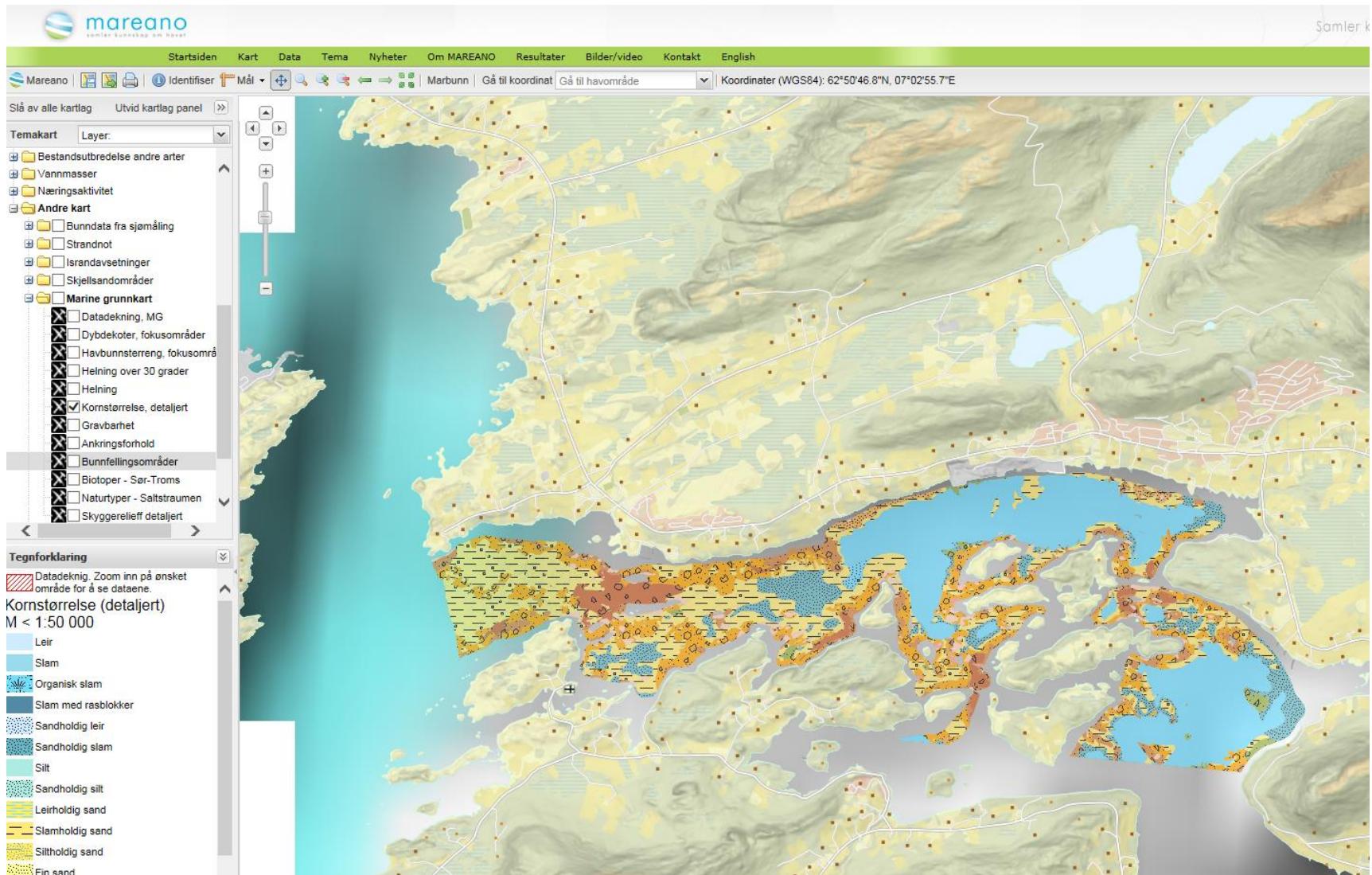
Frænfjorden STP



Slope STP



Frænfjorden marine base maps



www.mareano.no -> Kart -> Andre kart -> Marine grunnkart



GEOLOGICAL SURVEY OF NORWAY

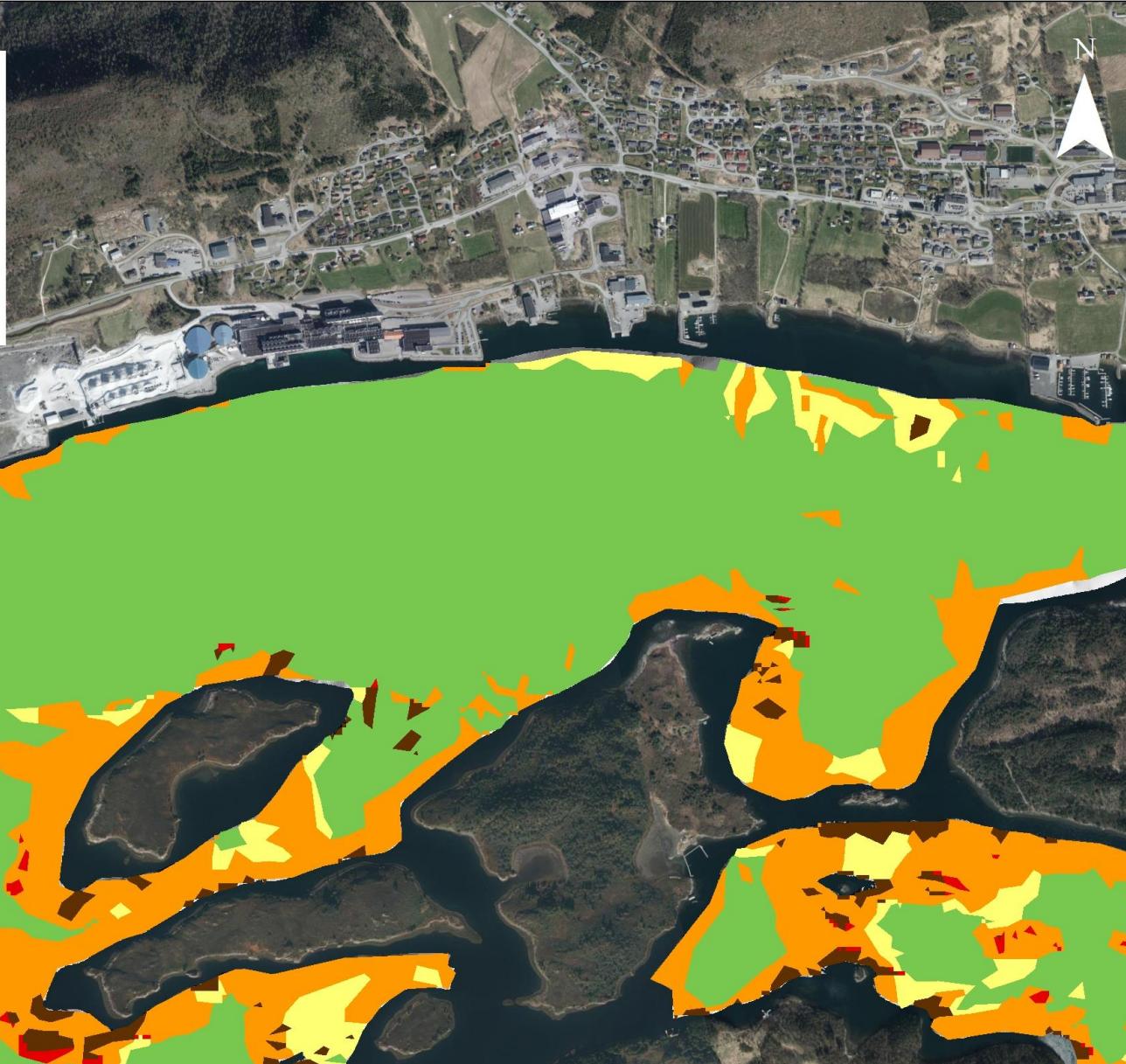
- NGU -

Frænfjorden - marine base maps

Legend

ANKRINGSFORHOLD

- Meget gode ankringsforhold (slambunn)
- Gode ankringsforhold (sand, grus)
- Vanskelige ankringsforhold (hard steinrik bunn)
- Dårlige ankringsforhold (fjell dypere enn 30m)
- Forankring mulig (fjell grunnere enn 30m)



Bathymetry 2013-2017

2017

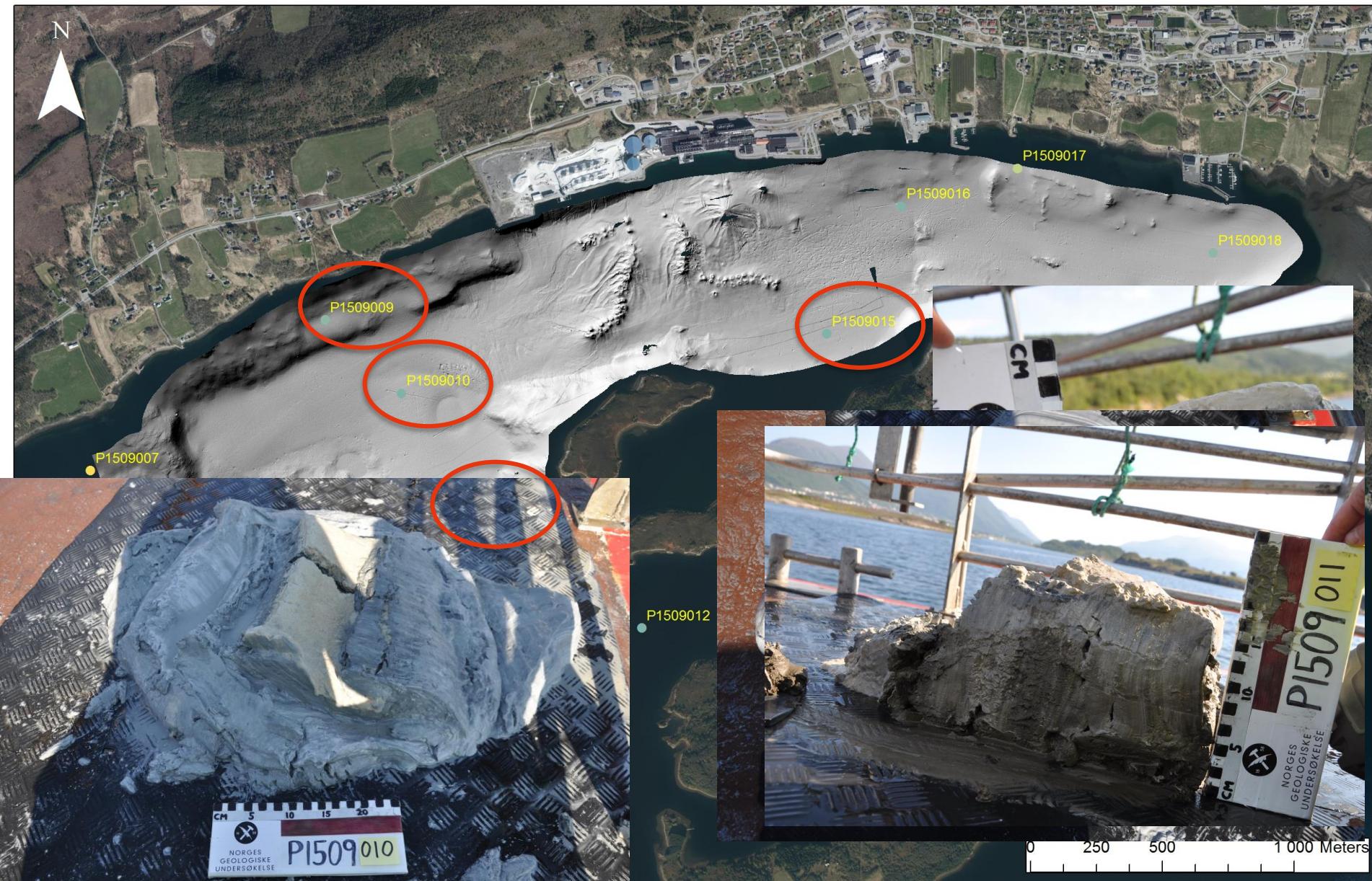
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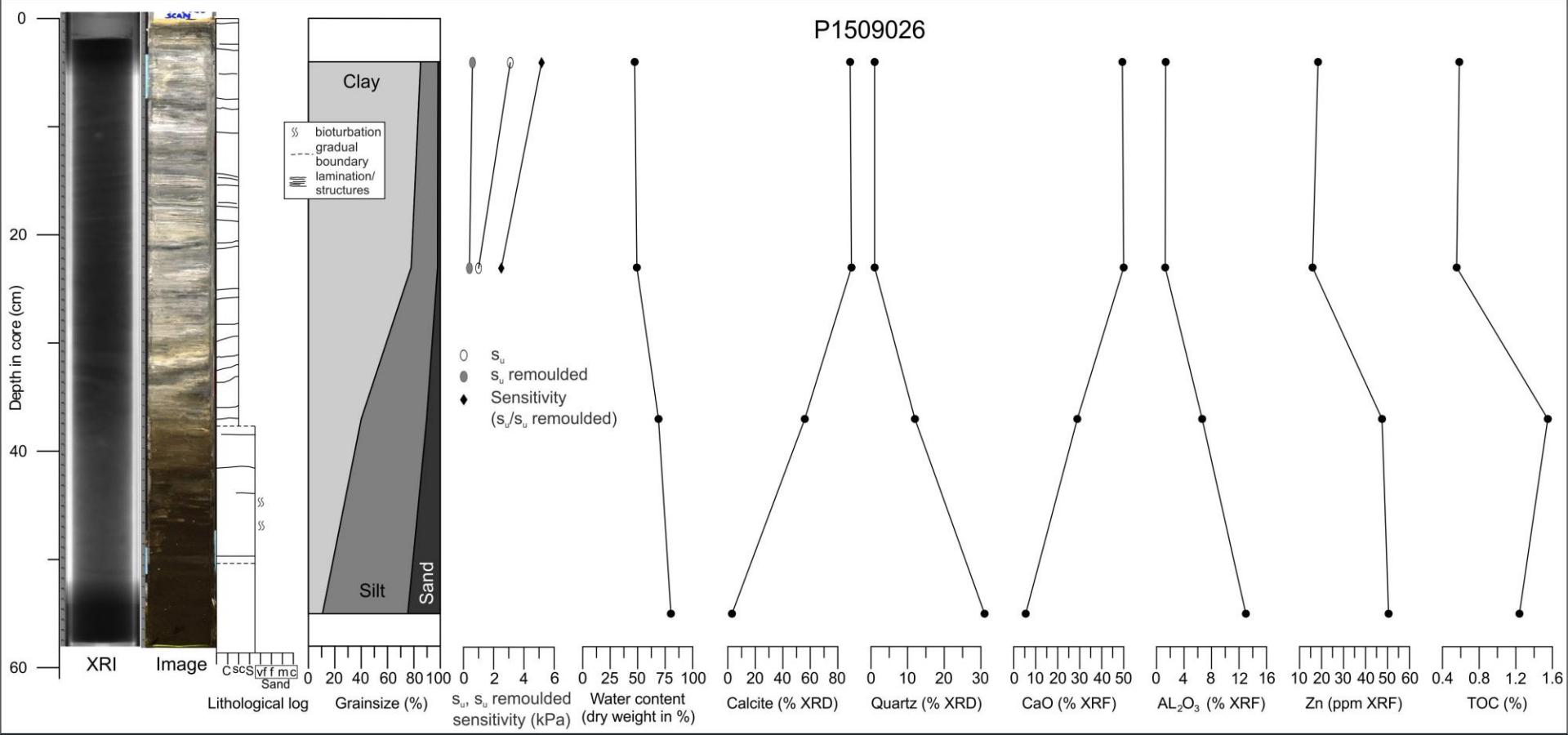


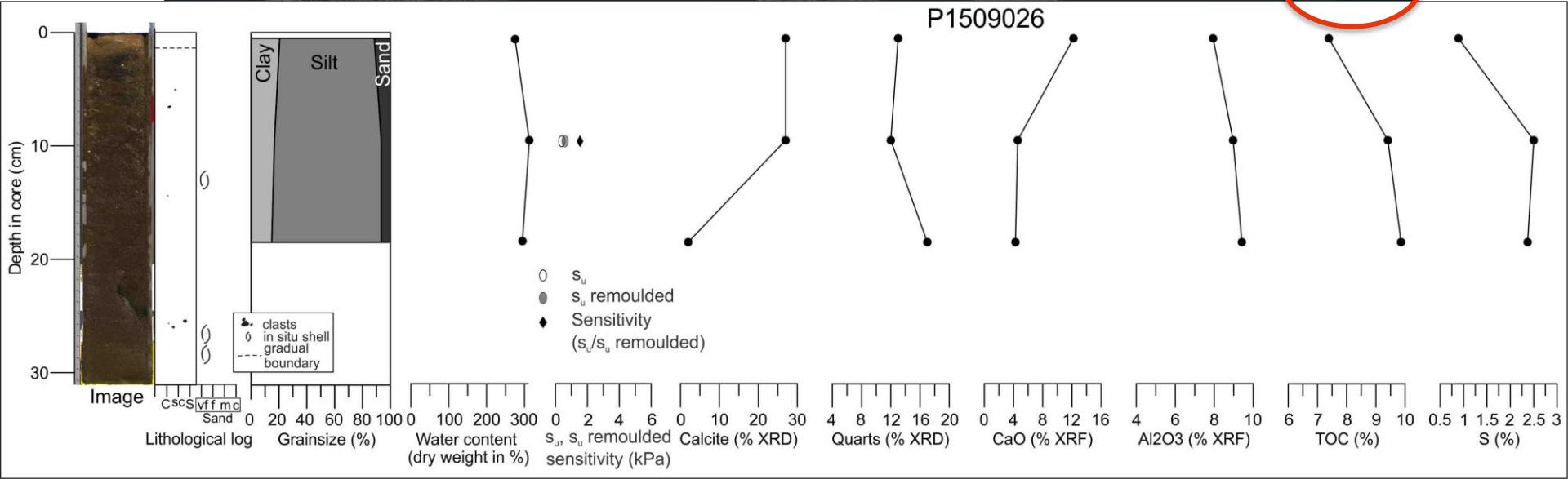
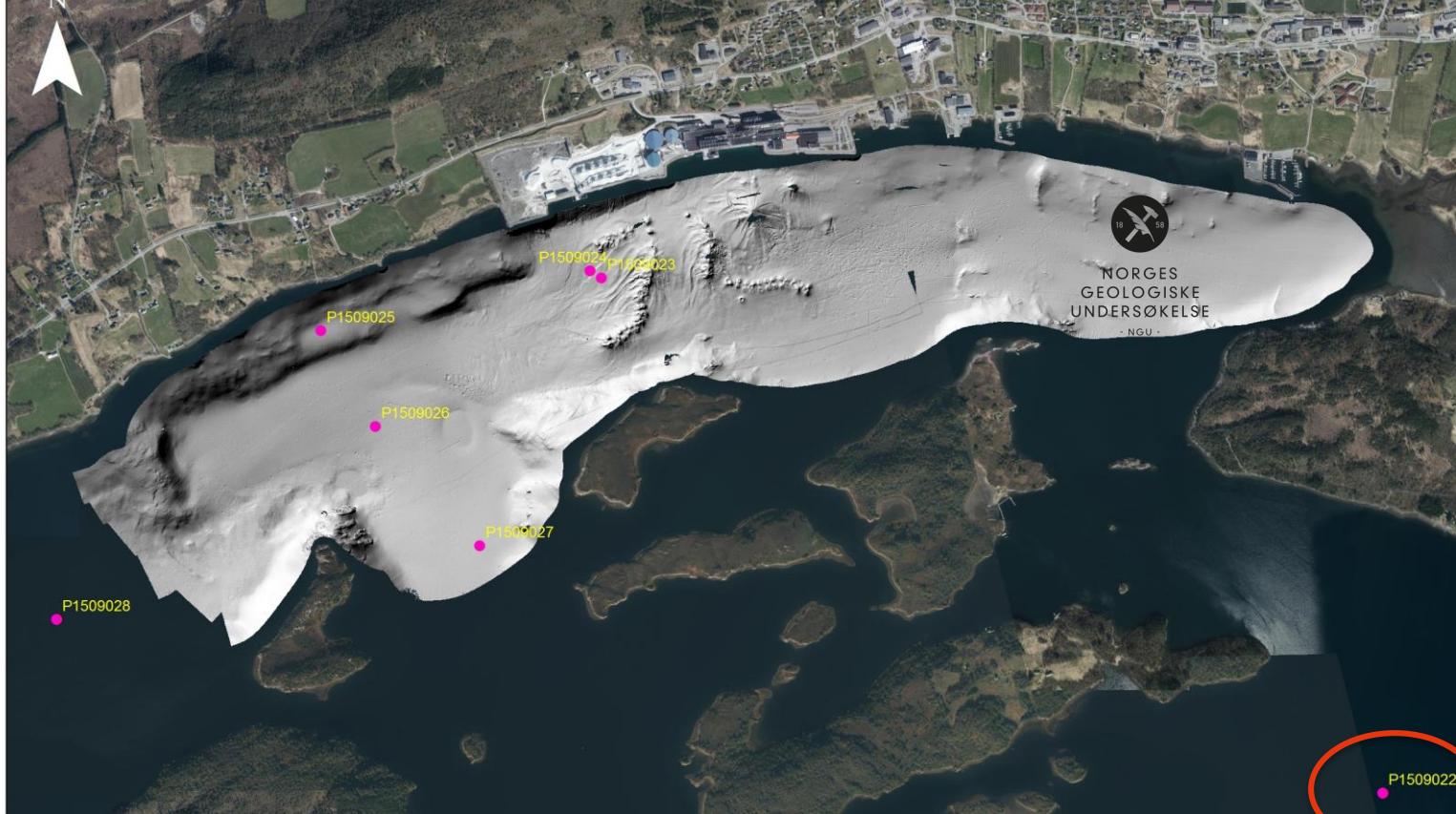
NORGES
GEOLOGISKE
UNDERSØKELSE
NGU

0 90 180 360 Meters

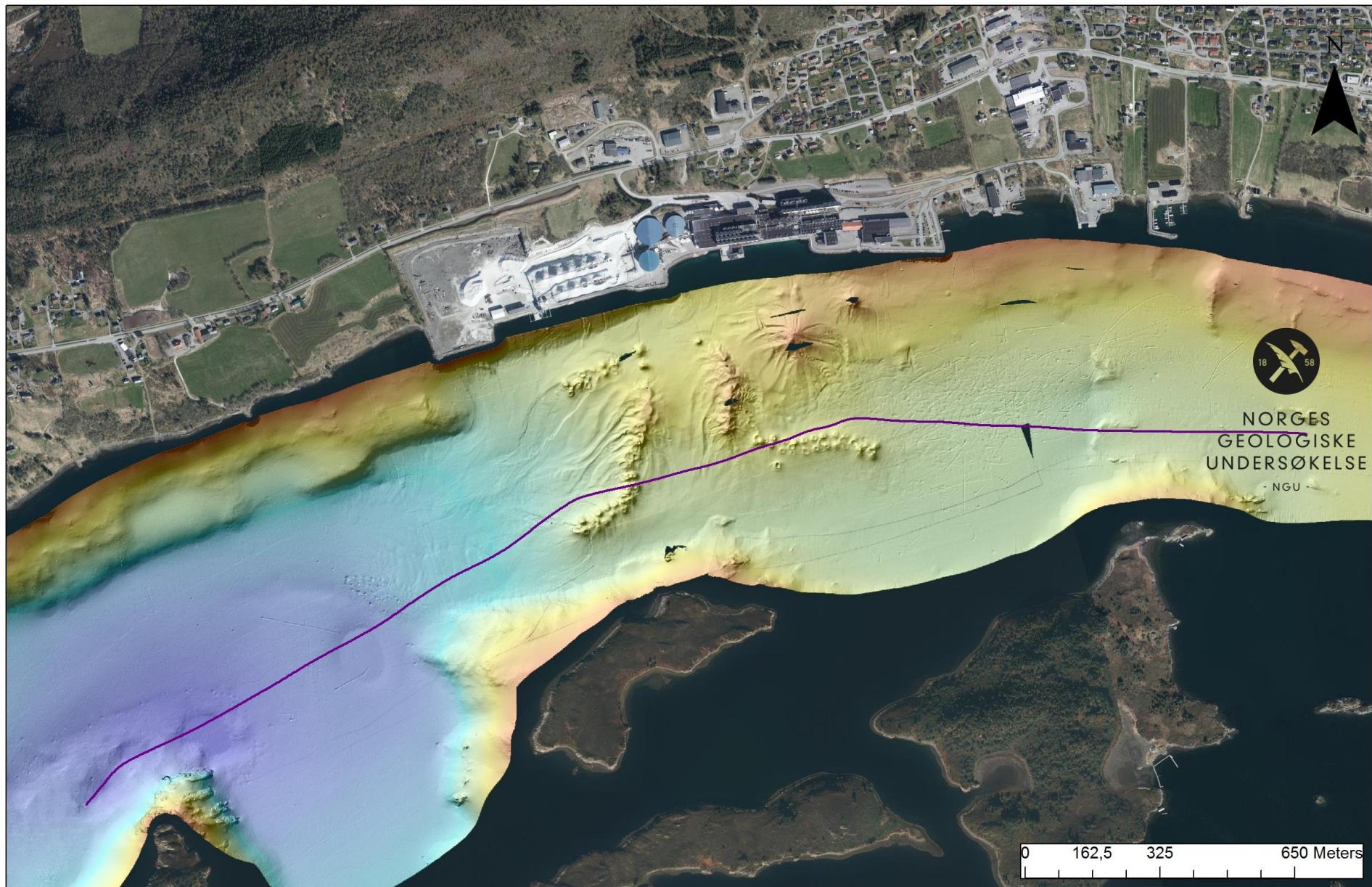
Grab samples



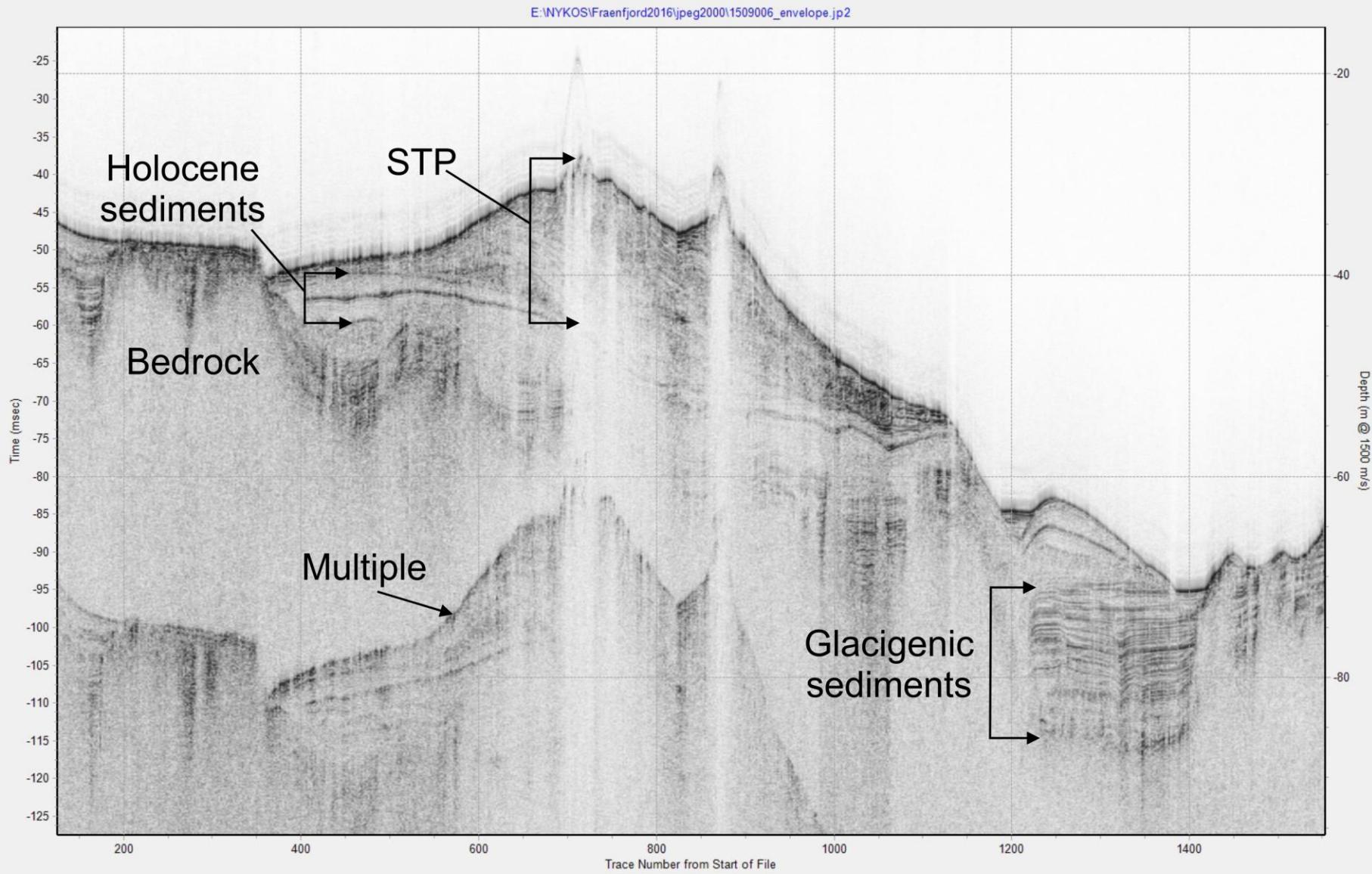




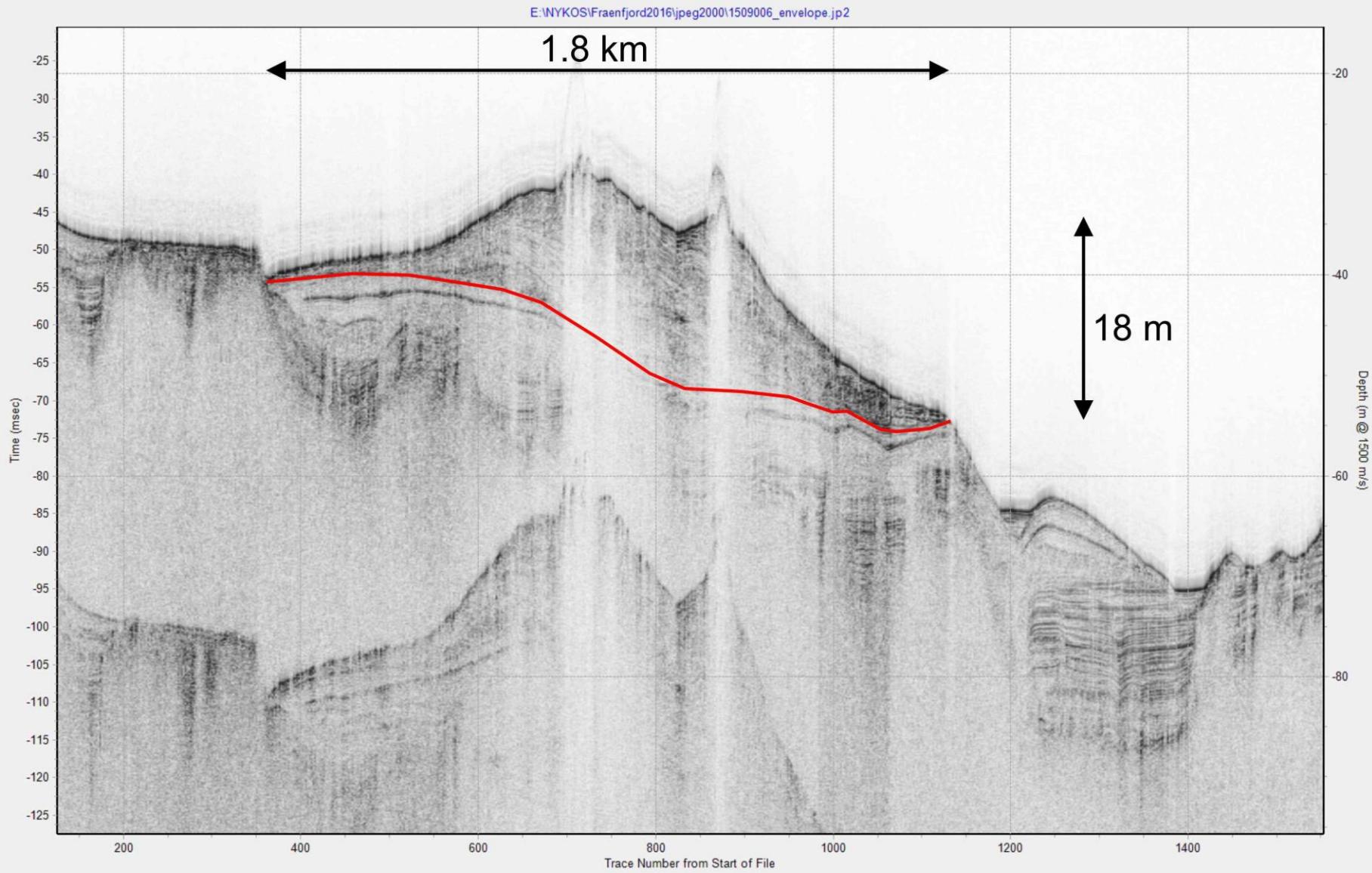
TOPAS (shallow seismic)



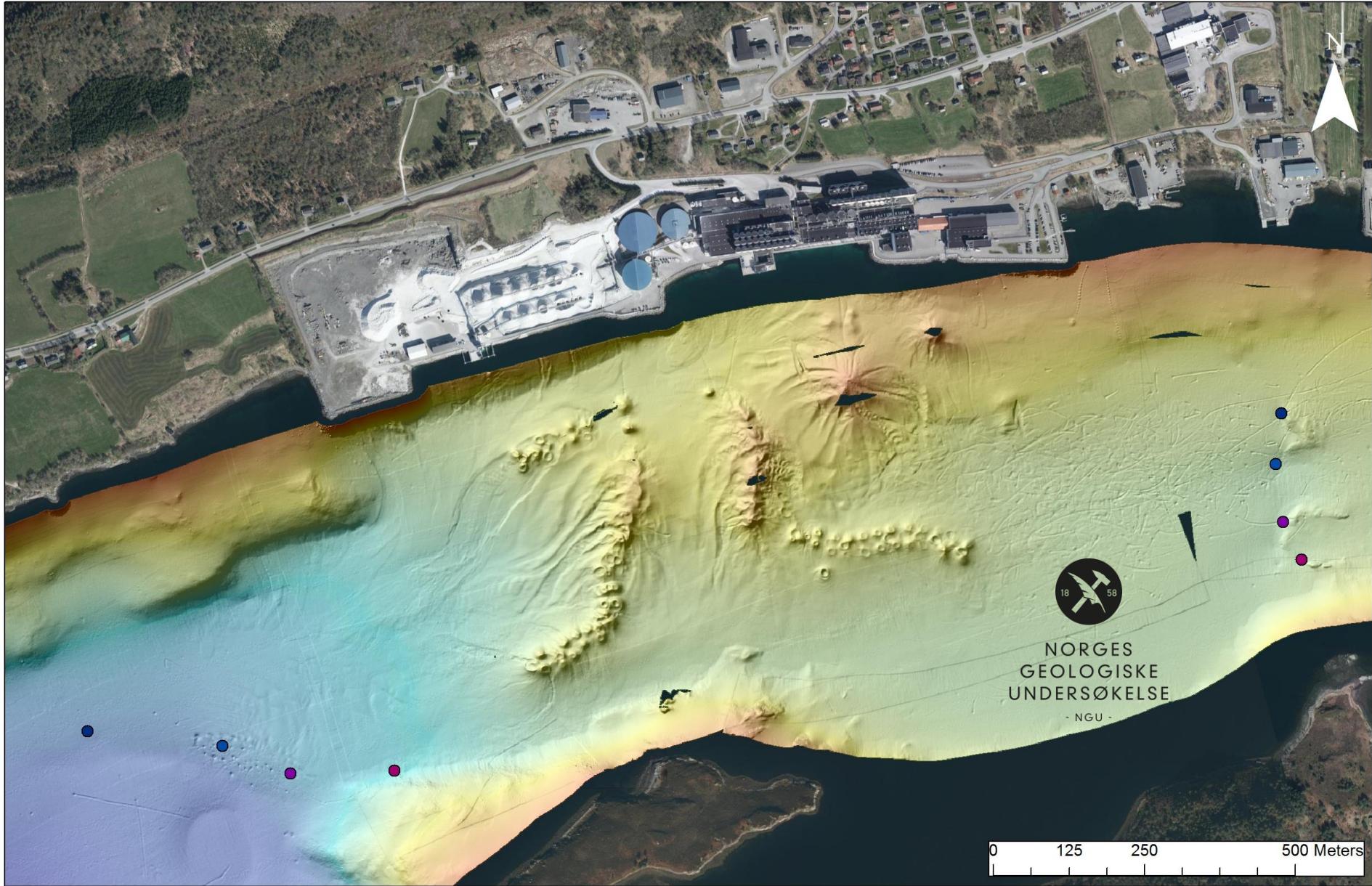
TOPAS STP



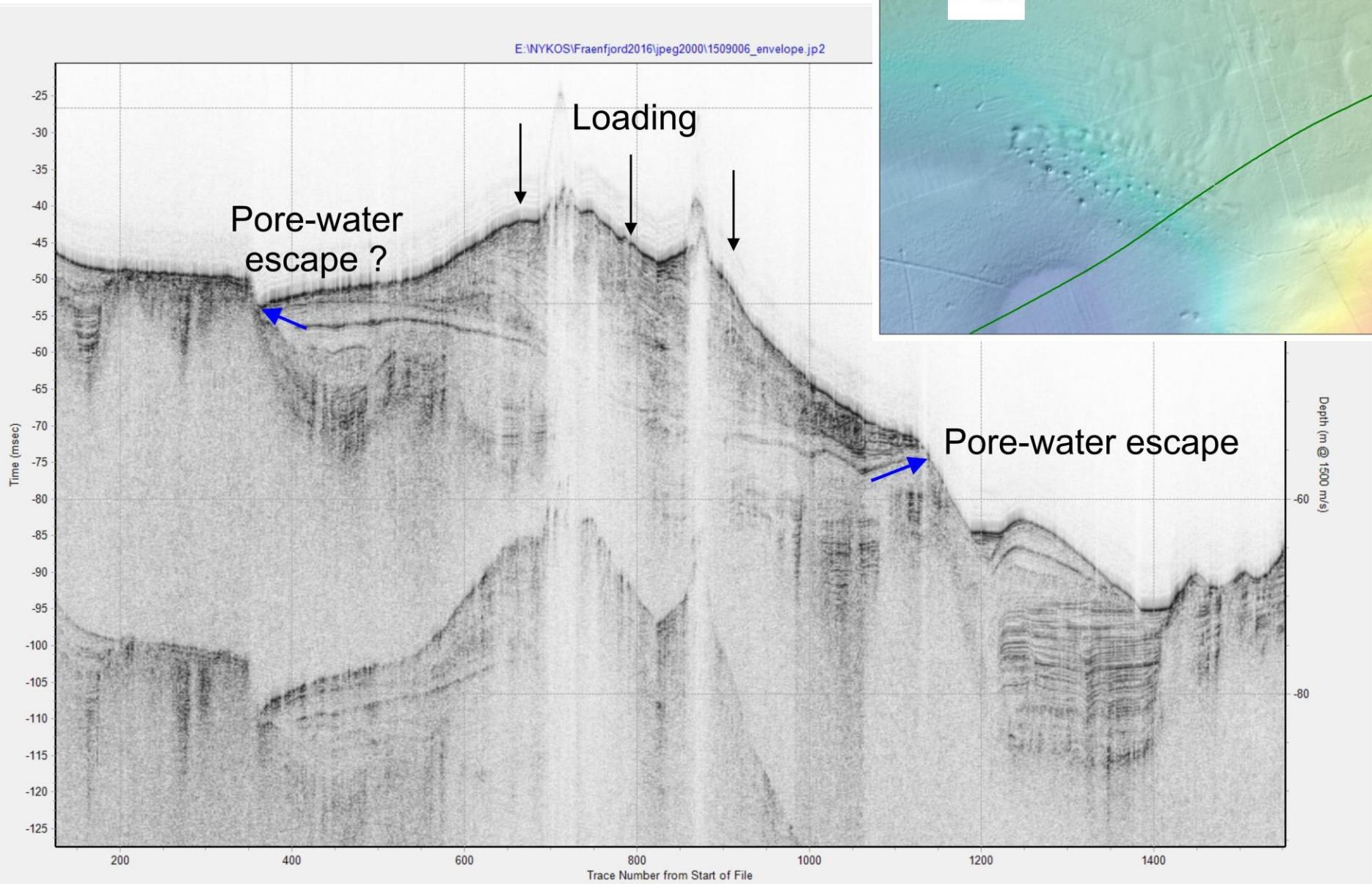
TOPAS STP



STP



Loading of STP





Thank you for the attention!