NYKOS – WP3 MARINE GEOLOGICAL MAPPING

GEOLOGICAL SURVEY OF NORWAY
- NGU -

Nicole Baeten, Aivo Lepland, Reidulv Bøe, Shyam Chand and Oddvar Longva, collaboration with UiT

NYKOS

NYKOS avslutningskonferanse May 14, 2019

Objectives:

Marine geological mapping of seafloor and stability and dispersal of submarine mine tailings

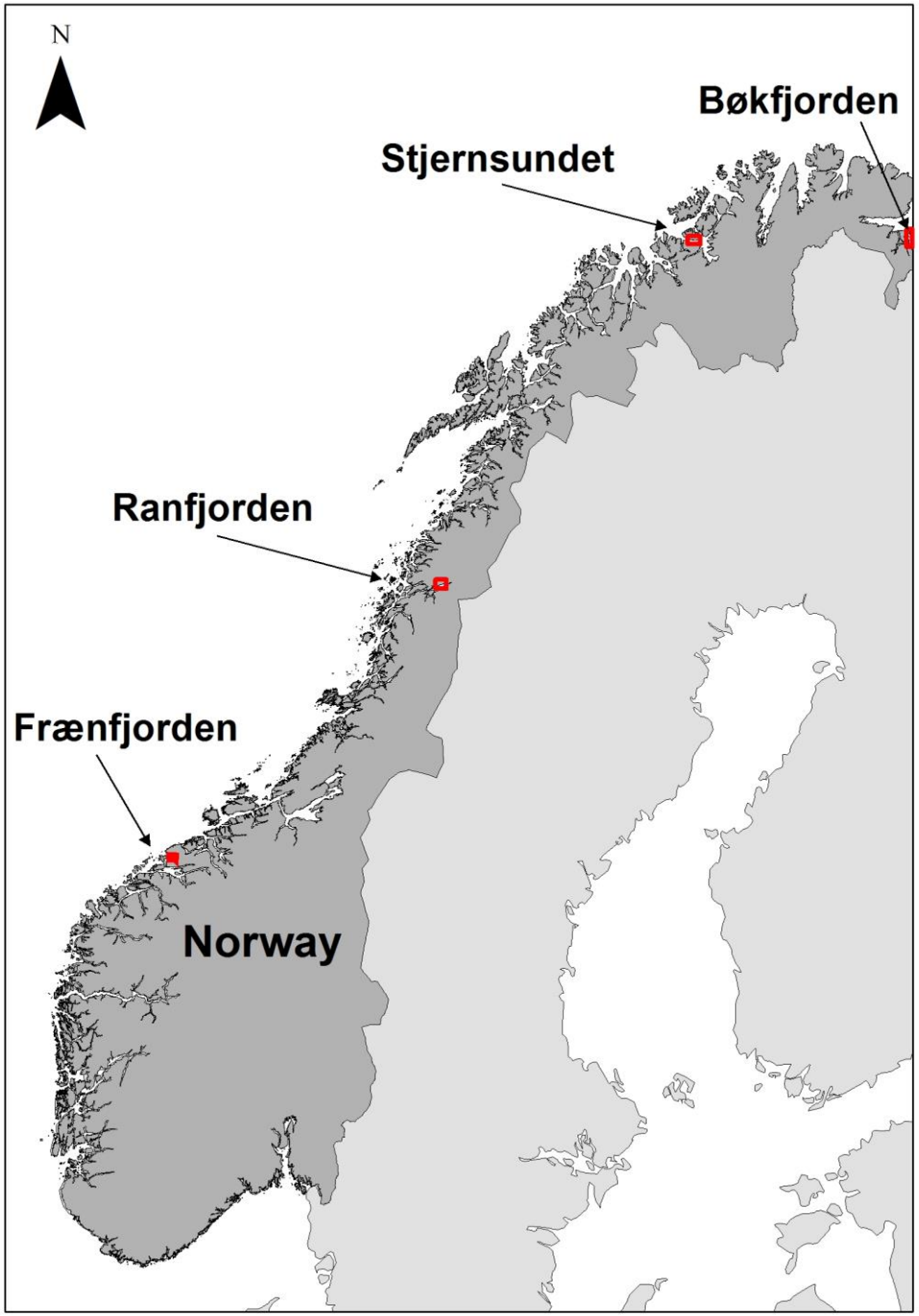
Methods:

Geophysical, Geological, Geochemical

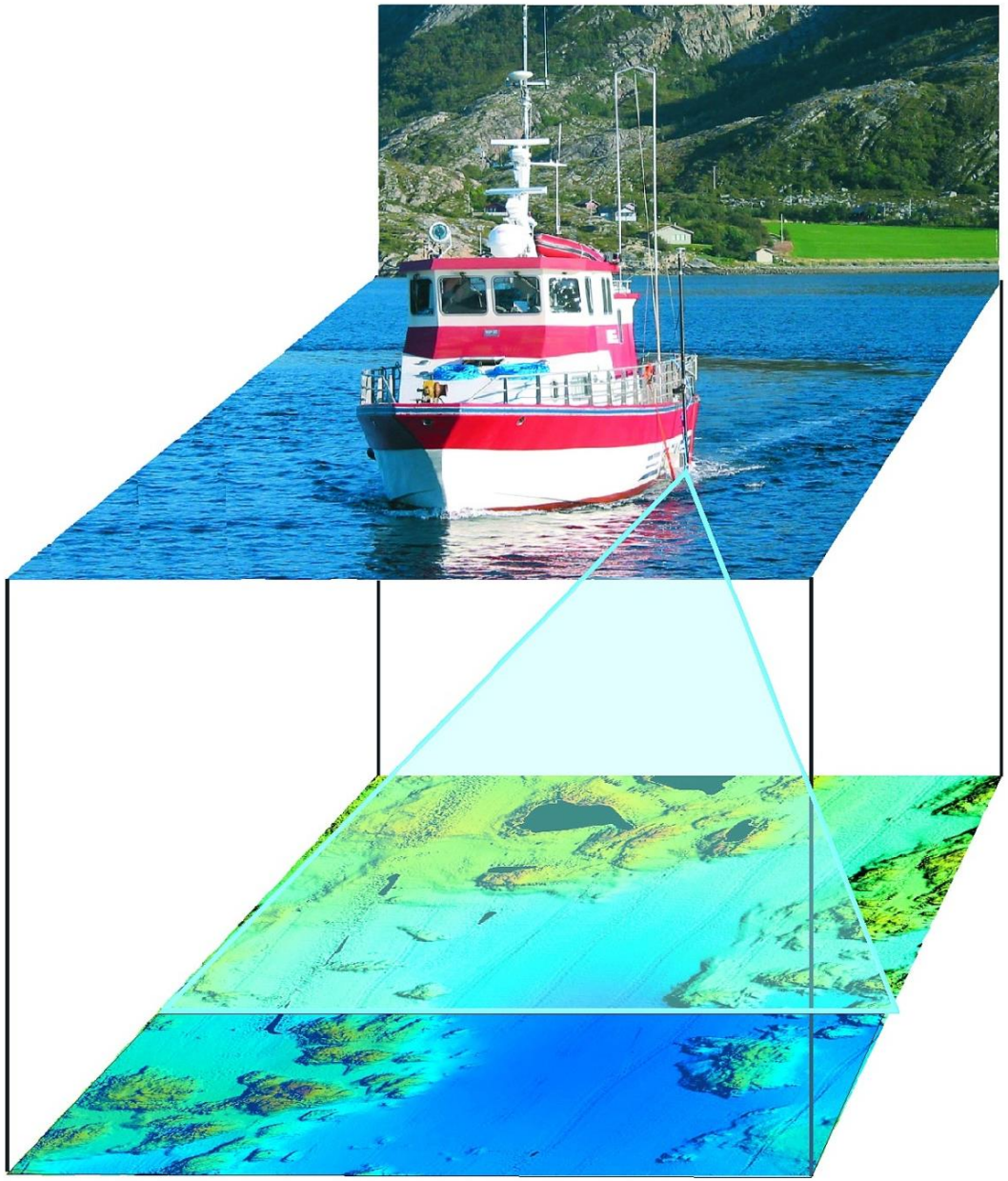
Data: new and existing

Studied fjords:

Bøkfjorden
Stjernsundet
Ranfjorden
Frænfjorden

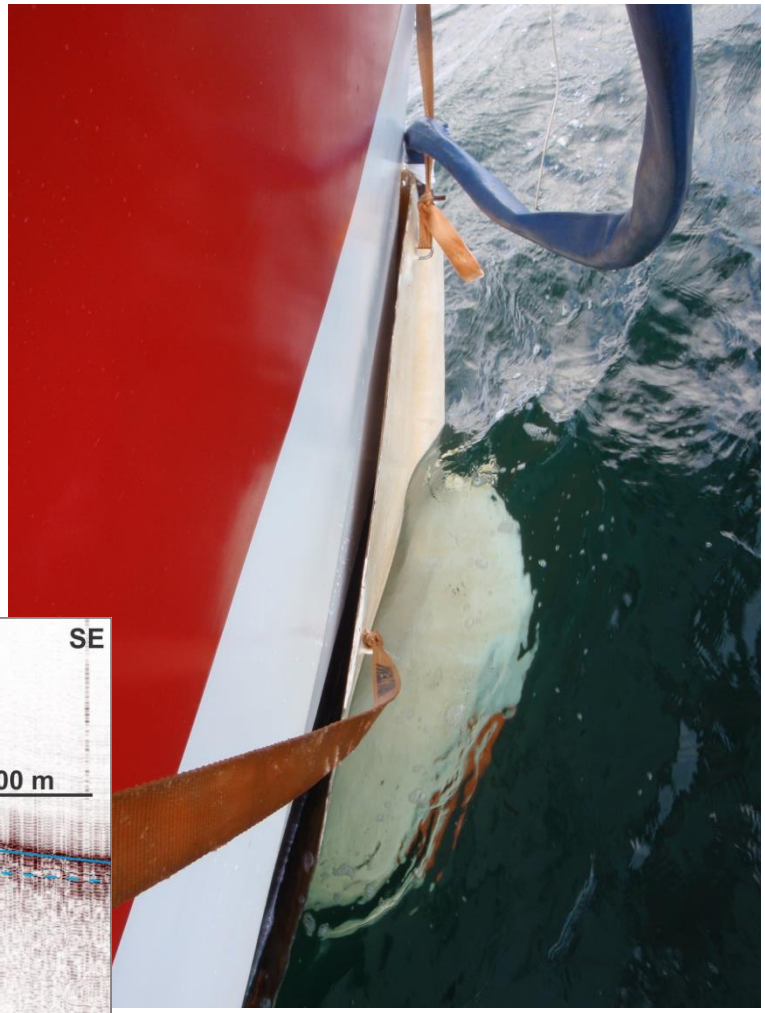


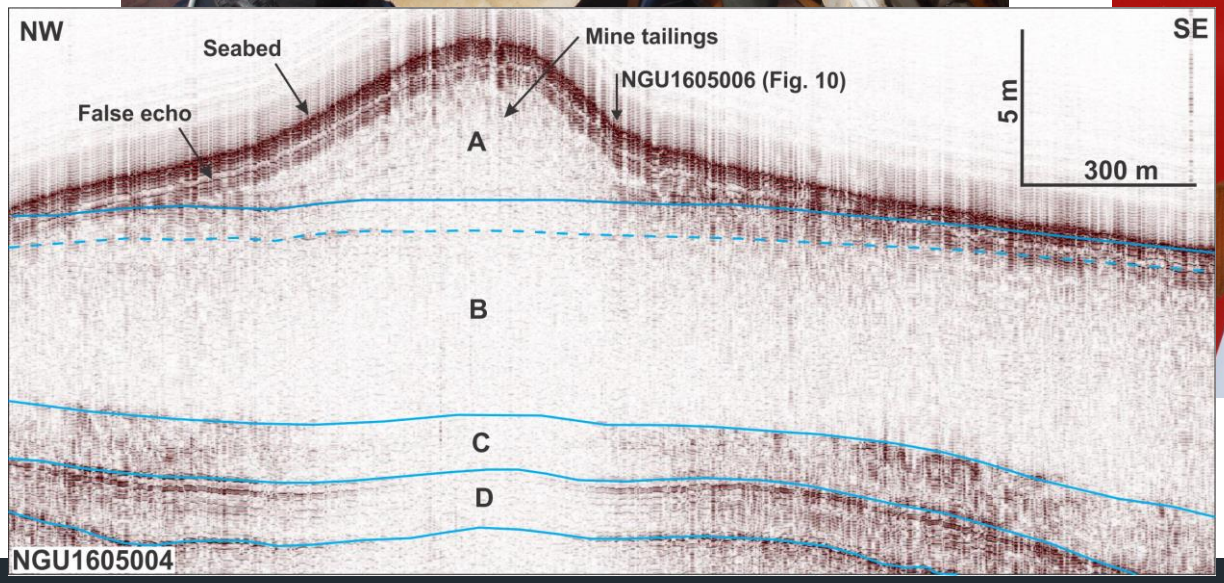
Multibeam echo-sounder data collection



Multibeam bathymetry

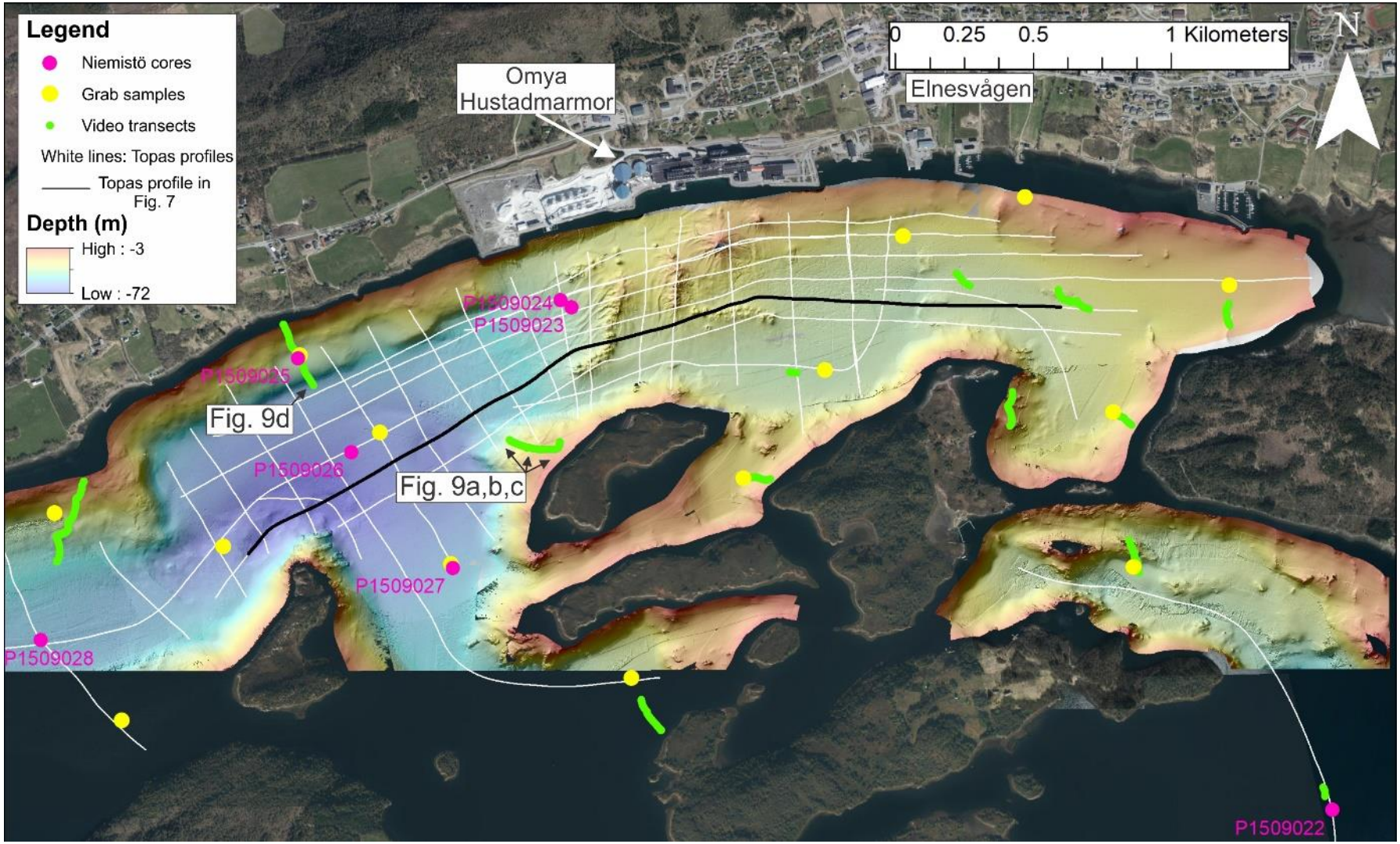
Sub bottom profiler – TOPAS (high resolution seismic)



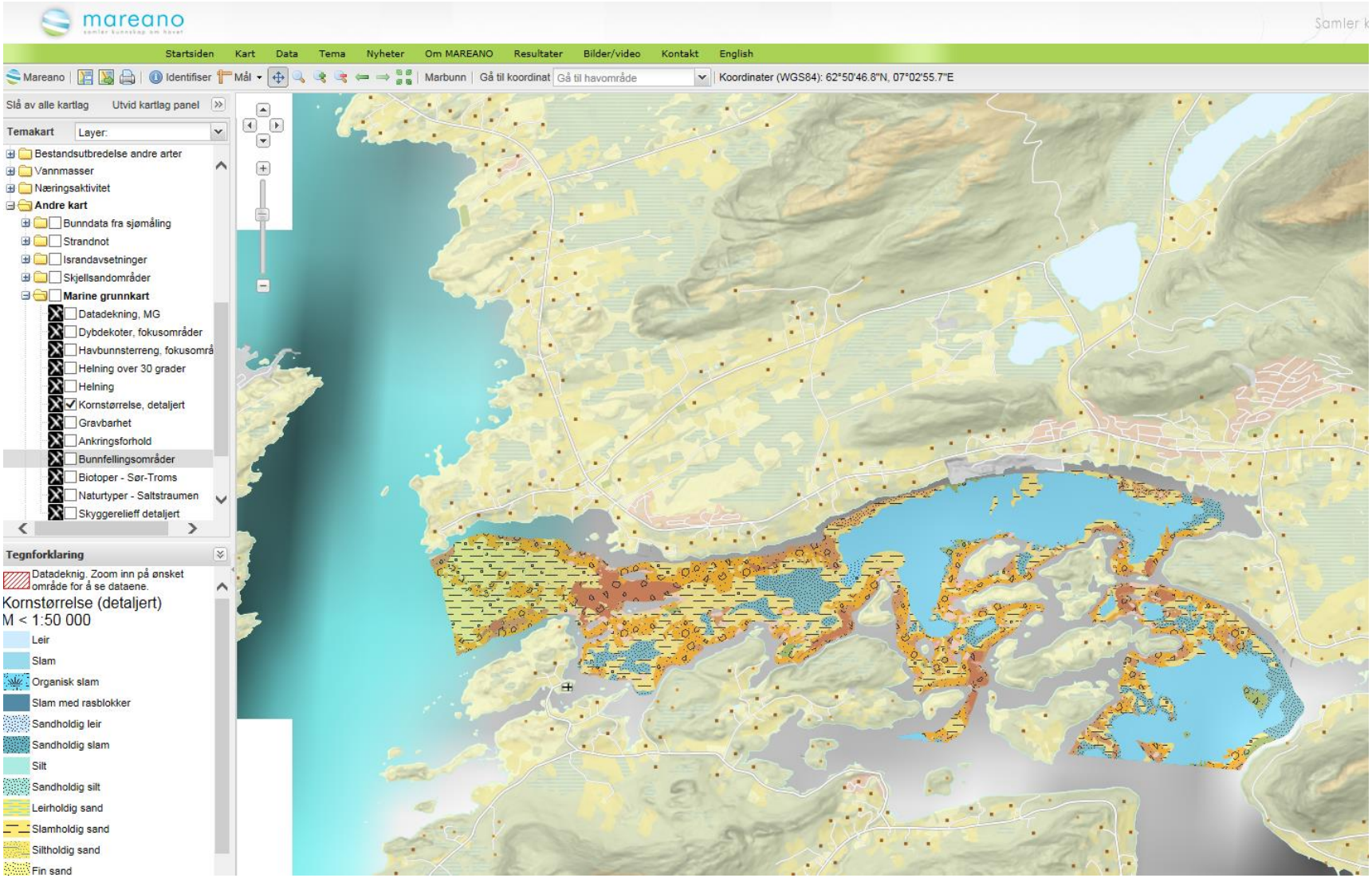


Sediment sampling

Frænfjorden STP - data

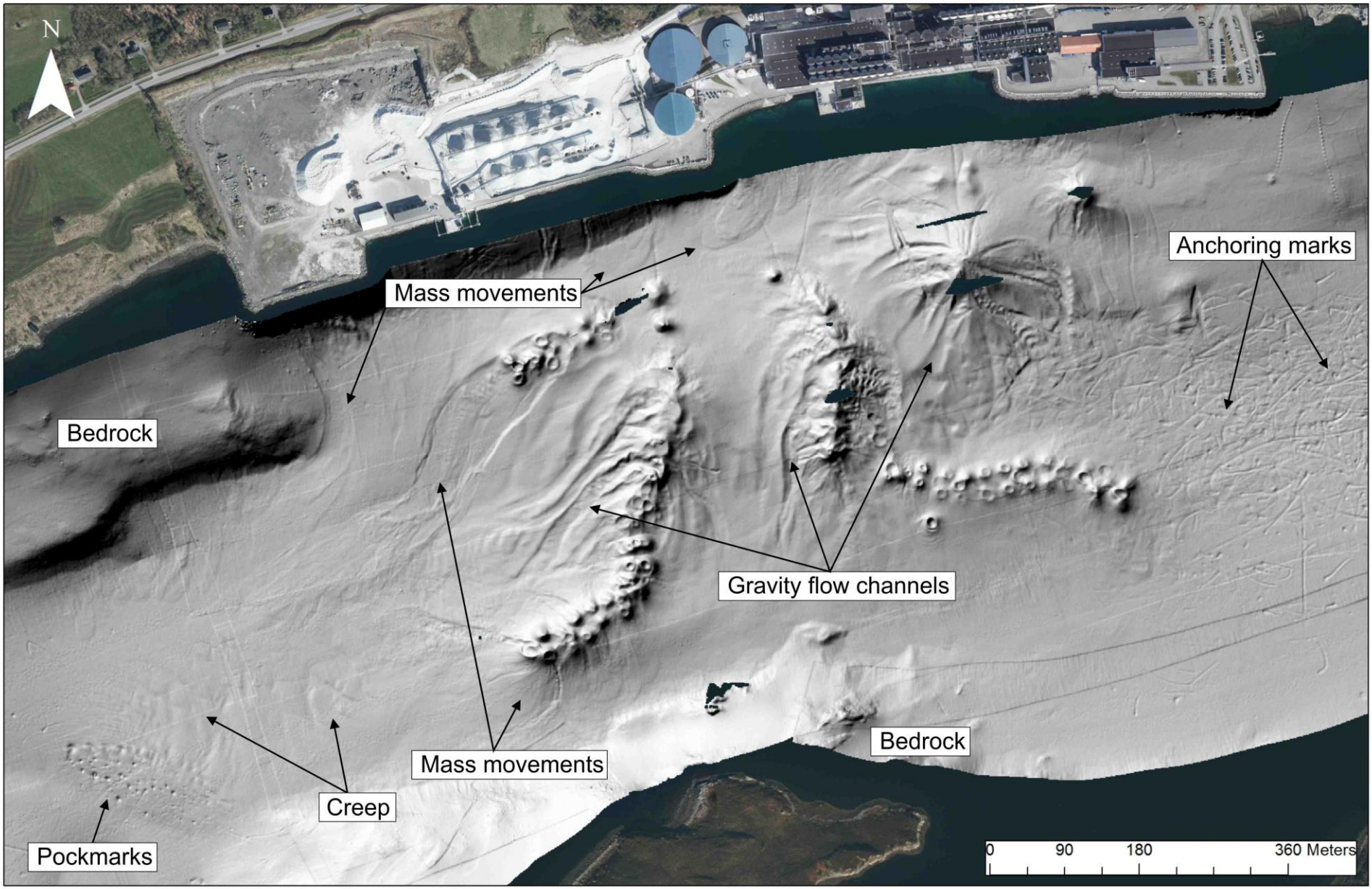


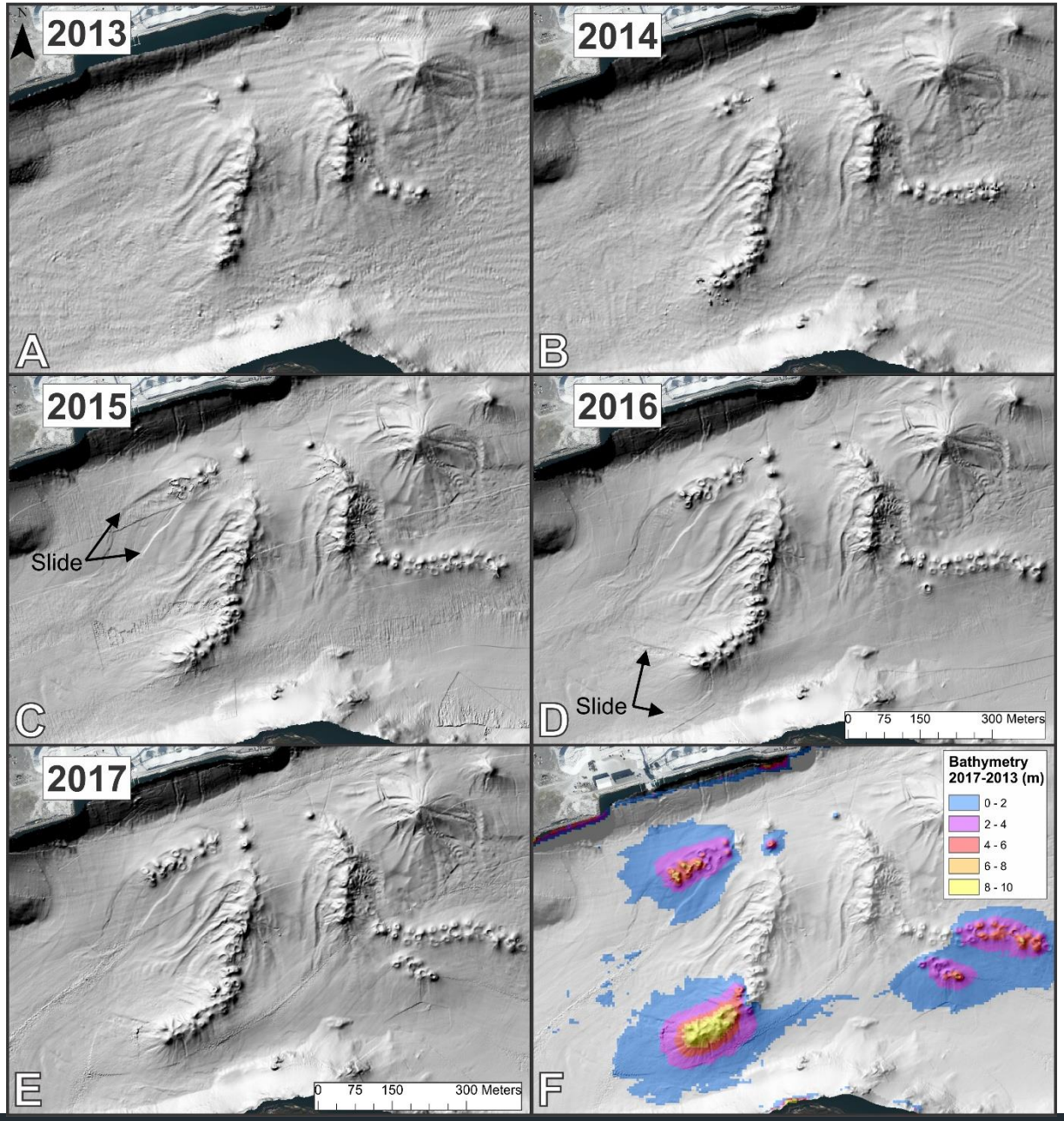
Frænfjorden - marine base maps



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

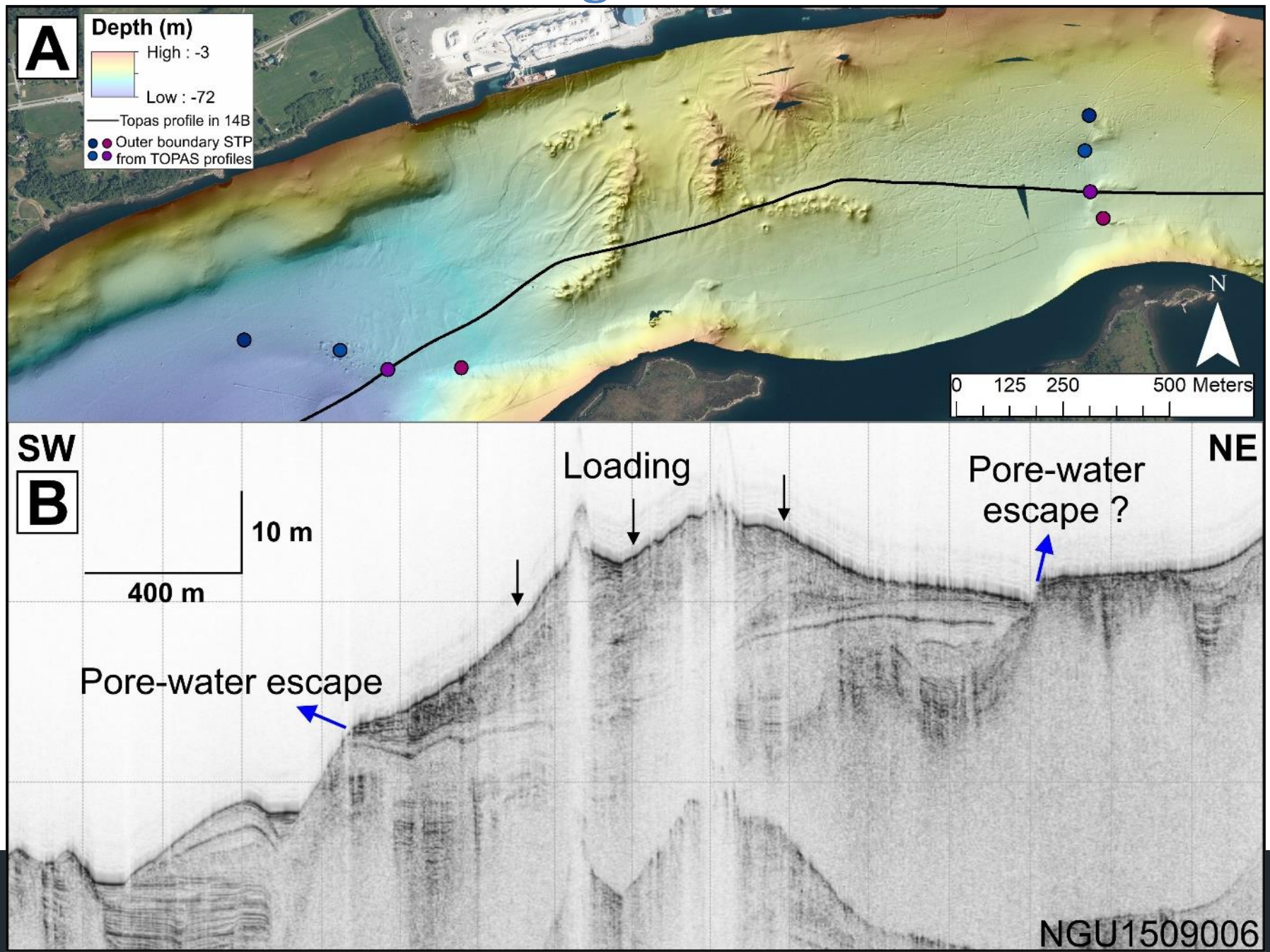
Frænfjorden STD



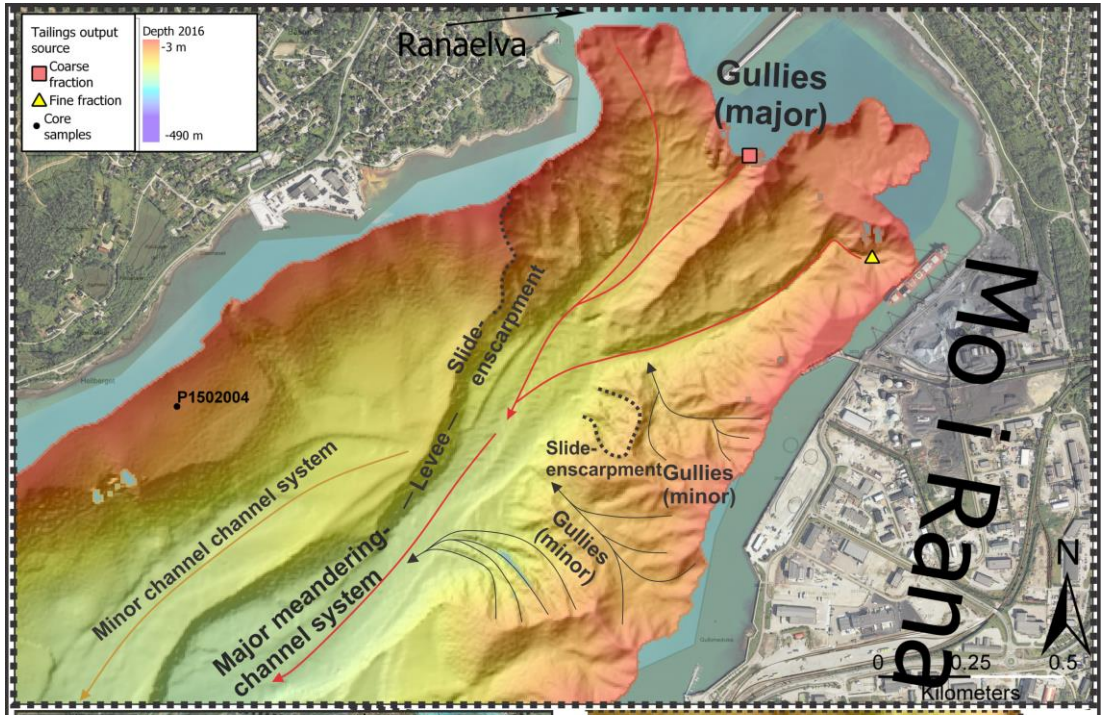


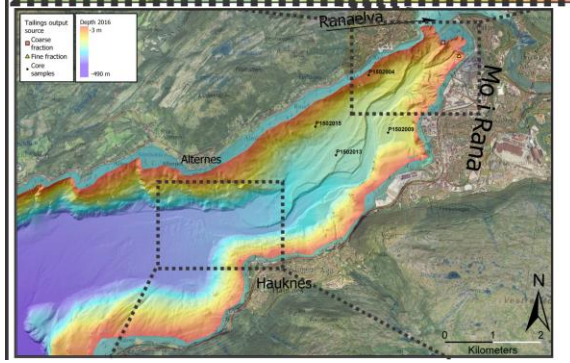
Frænfjorden: bathymetry changes

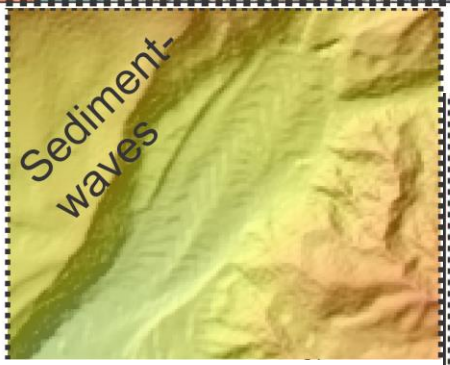
Loading of STP

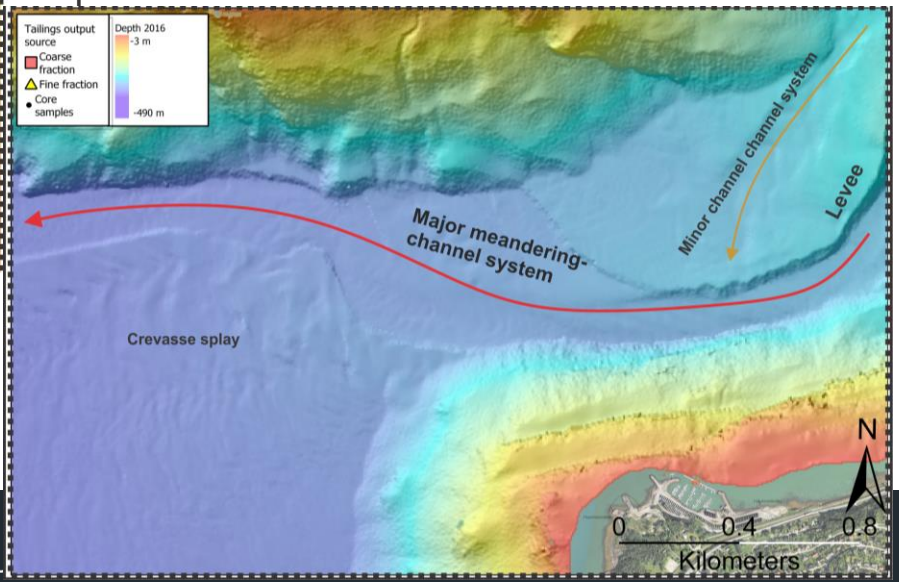


Bathymetry, Ranfjorden:

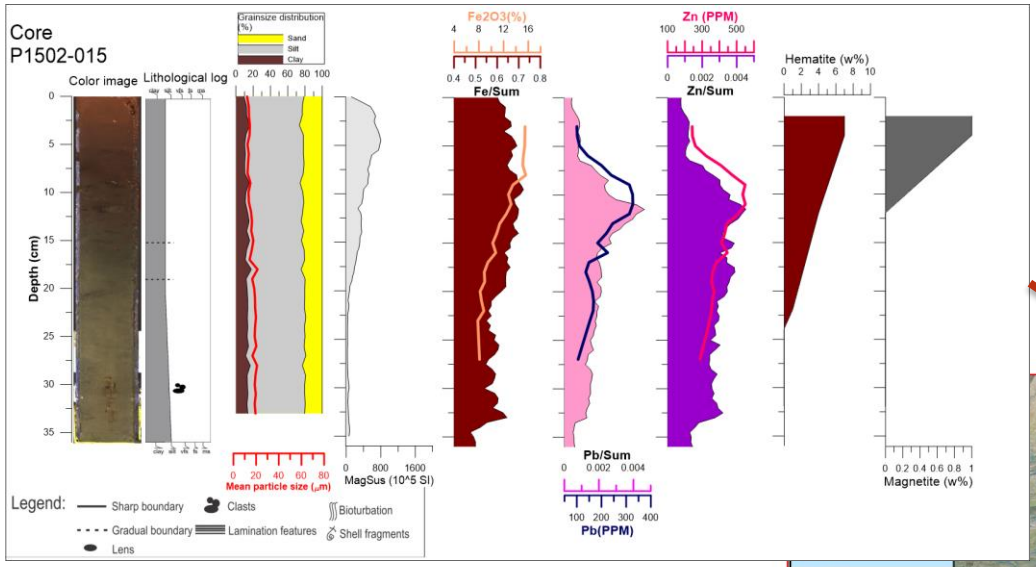


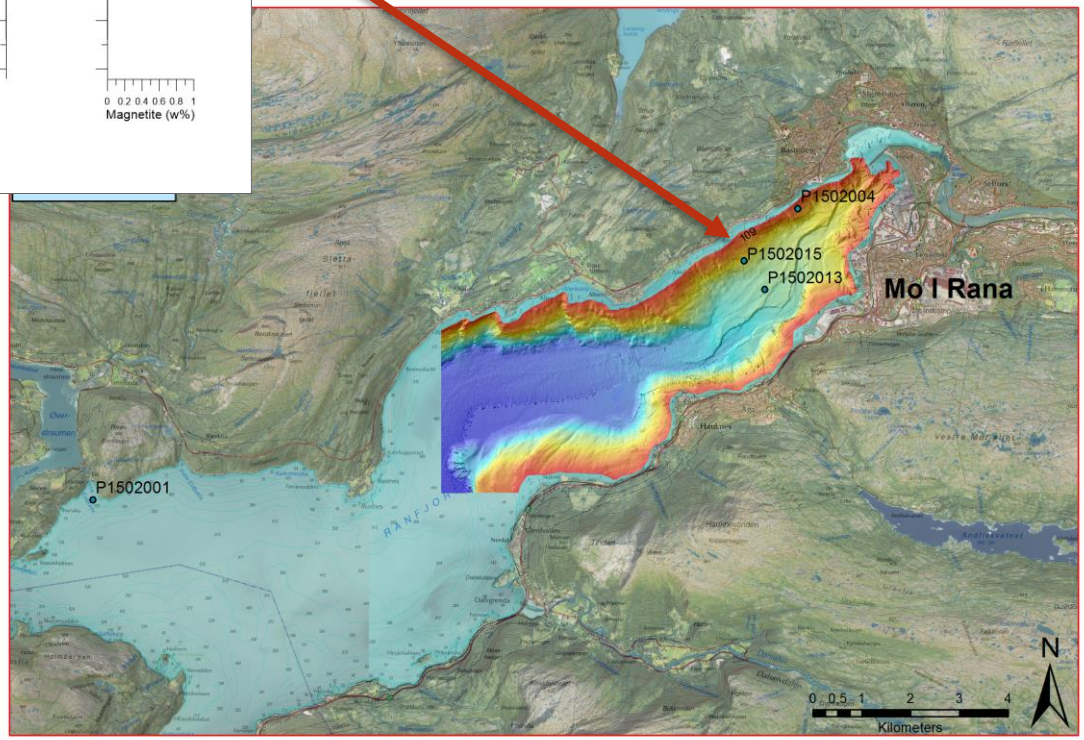




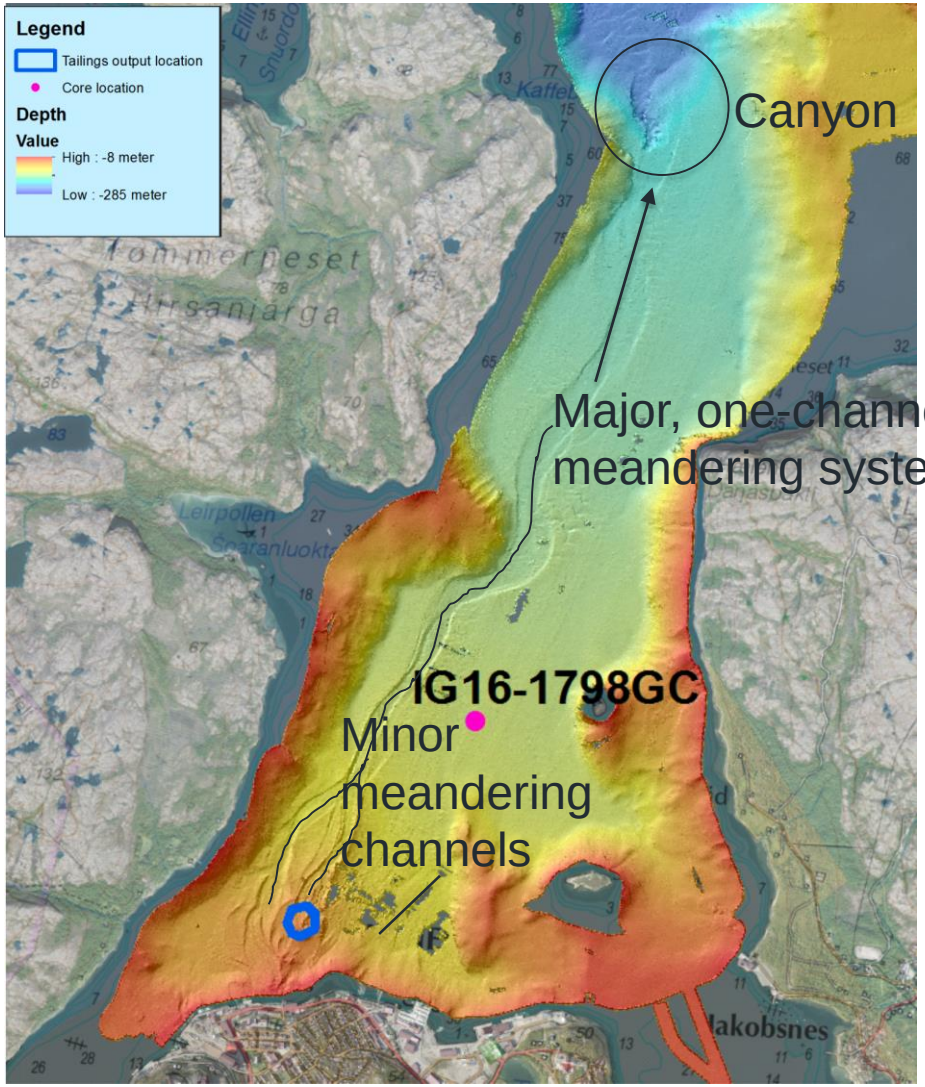


Sediment cores - Ranfjorden

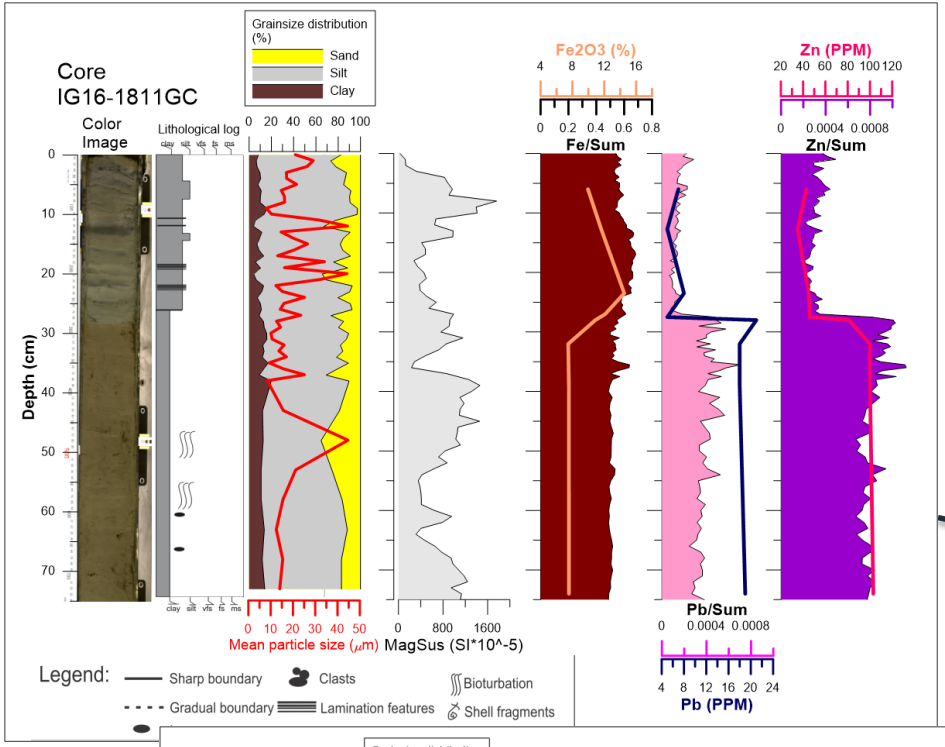


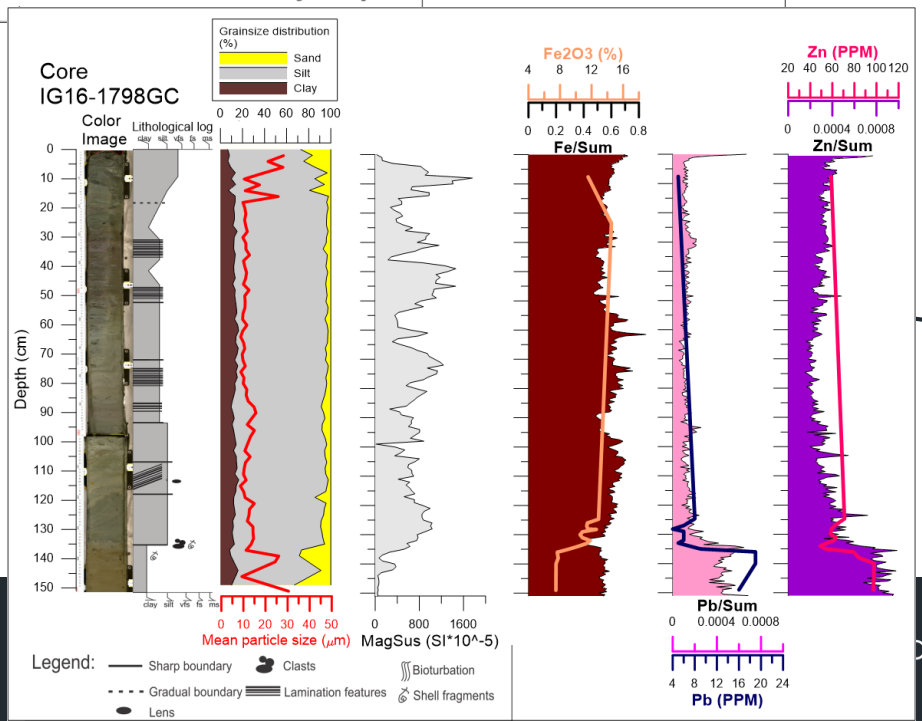


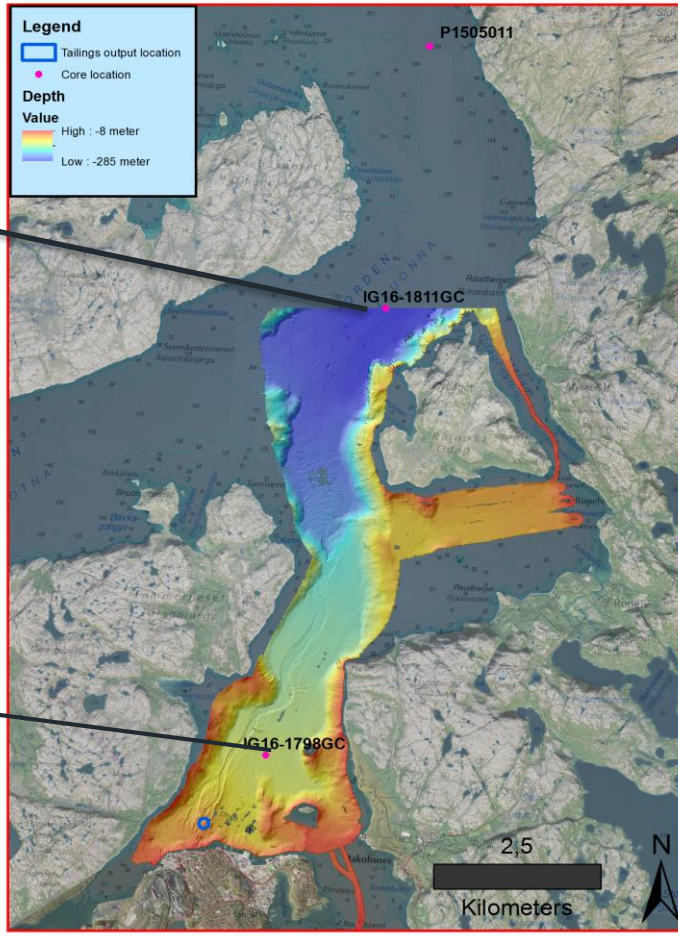
Bathymetry - Bøkfjorden



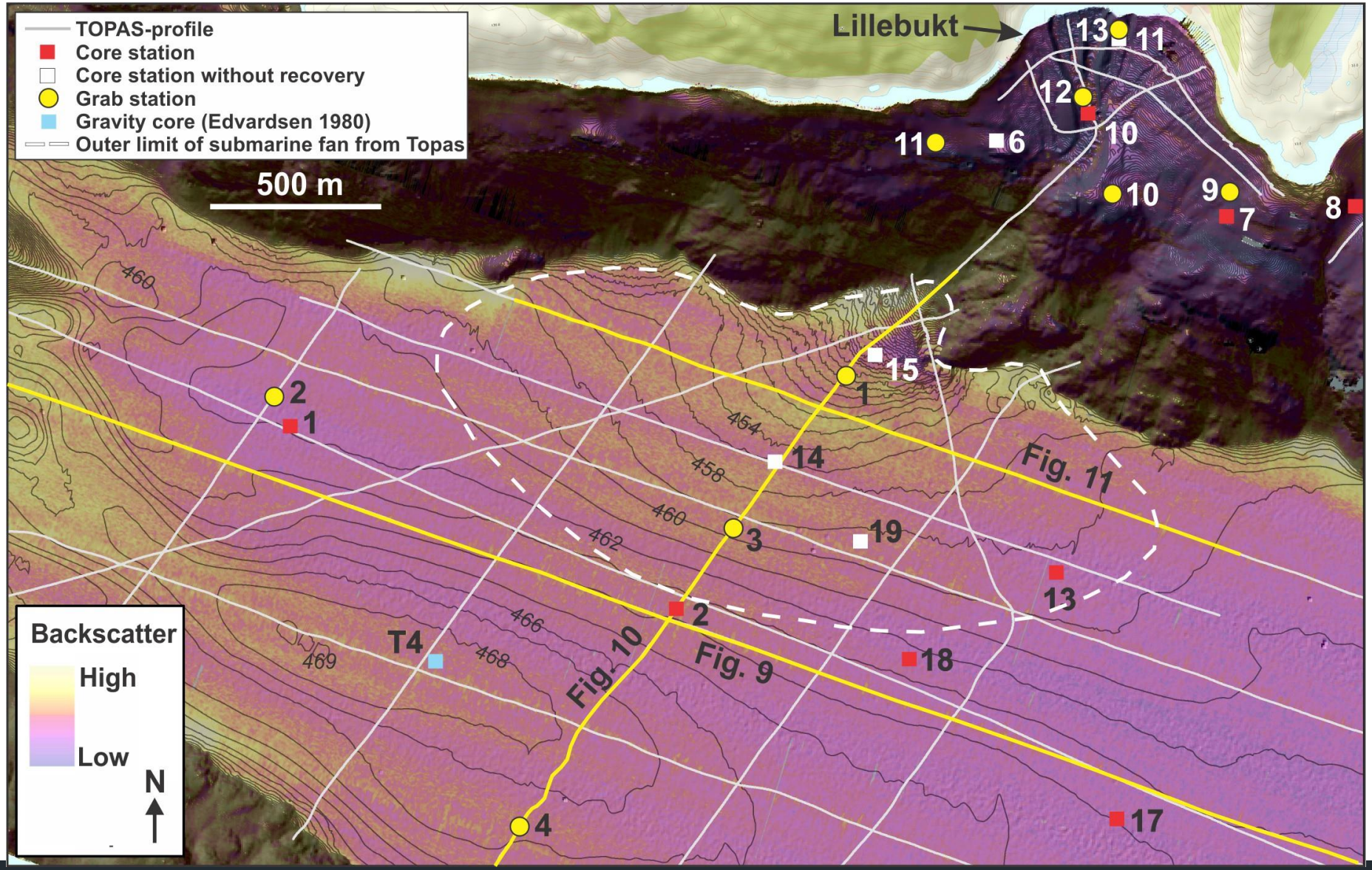
Sediment cores Bøkfjorden



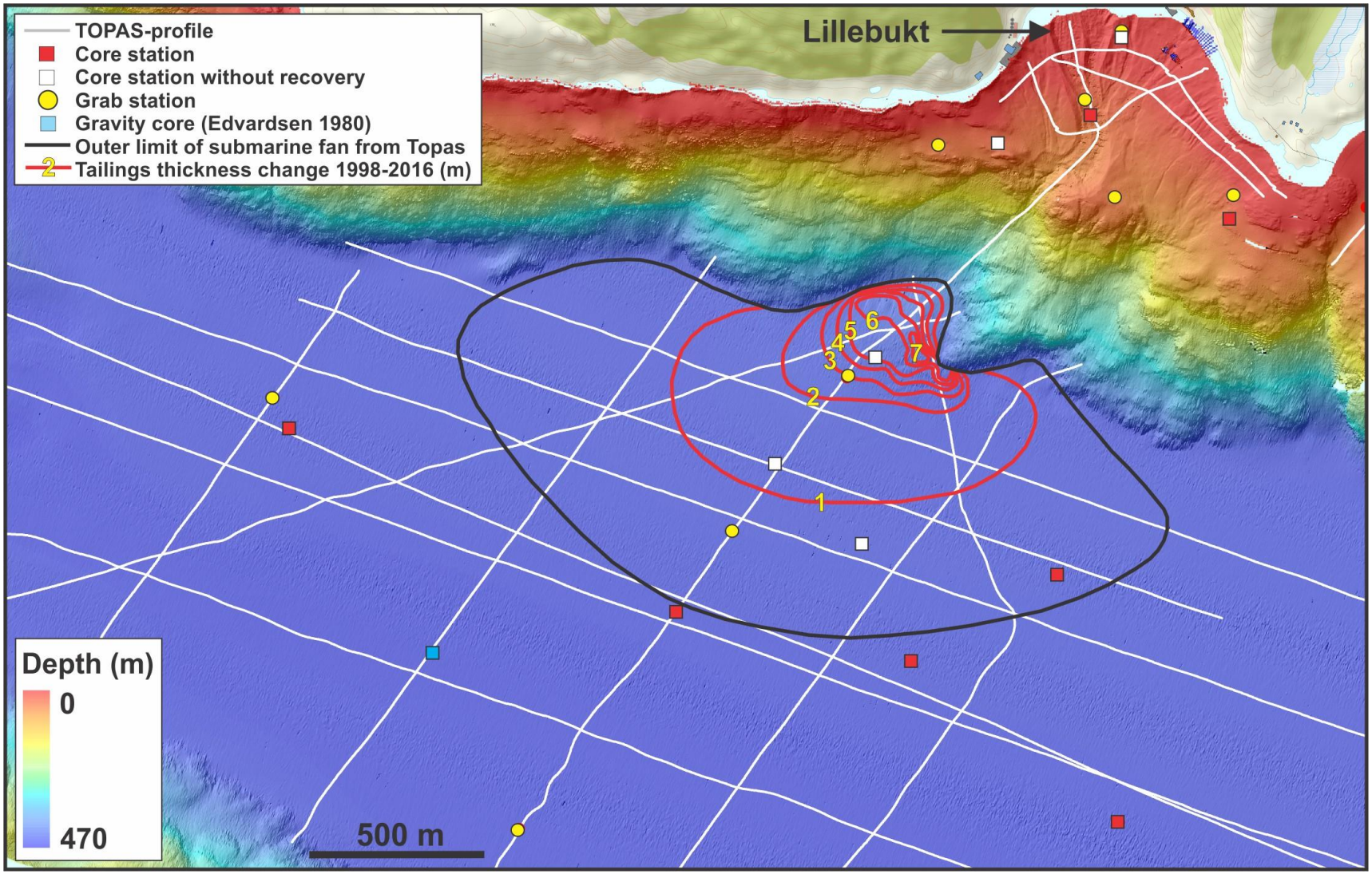




Stjernsundet: backscatter & bathymetry contours



Stjernsundet: Tailings thickness change 1996-2016 (m)



NYKOS-WP3: Publications/published data

- **3 Master thesis at the institute of geosciences, UiT:**
  - Nikolai Figenschau, May 2018. Interaction of submarine tailings with natural sediments in three northern Norwegian coastal areas: Sedimentological, mineralocial and geochemical constraints.
  - Anette Klev Ladstein, May 2018. Natural and anthropogenic deposition in Bøkfjorden.
  - Anders Eirik Haugen, July 2018. Distribution, deposition and impact of tailing disposal on the seafloor in Ranfjorden, northern Norway.
- **Paper Stjernsundet**: Norwegian Journal of Geology: 2018: 98, 461-482
  - Reidulv Bøe, Roar Sandøy, Nicole J. Baeten, Aivo Lepland, Valérie K. Bellec, Shyam Chand, Oddvar Longva, Martin Klug, Liv Plassen & Jasmin Schønenberger. Marine mine tailings disposal at Lillebukt, Stjernsundet, North Norway: distribution, sedimentary processes and depositional impacts
- **Paper Frænfjorden**: Nicole J. Baeten et al – submitted to Norwegian Journal of Geology, April, 2019
- **Paper Bøkfjorden & Ranfjorden**: Nikolai Figenschau et al – to be submitted soon

Conclusions:

- High resolution marine base maps integrating bathymetry and sediment data are required for:
  - selection of optimal disposal site
  - monitoring the stability of disposed tailings


18
58