



GEOLOGICAL
SURVEY OF
NORWAY

- NGU -

MARINE BASE MAPS:

Tailoring geological information to marine spatial planners

Sigrid Elvenes, Aave Lepland
& Reidulv Bøe, NGU



Source: Norwegian Mapping Authorities



FISHERIES



NAVIGATION



WIND POWER

© Hans Hillewaert



TOURISM



INFRA- STRUCTURE



HOUSING

www.grilstadmarina.no



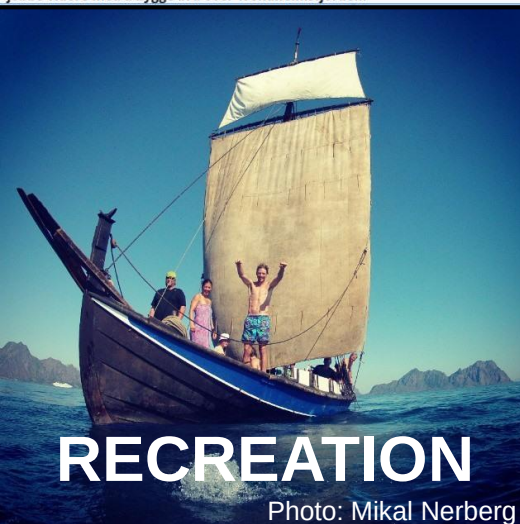
INDUSTRY

© Kvaerner

Slik kan en bru over Trondheimsfjorden fra Rånvik til Flakk fortone seg, roms, vertsses kossmu

Brekstad – Trondheim på 40 minutter

Det er drømmen og det konkrete målet for et nyetablerte bruselskap som skal jobbe videre med å bygge bru over Trondheimsfjorden.



RECREATION

Photo: Mikal Nerberg



AQUACULTURE

www.salmar.no



MINING



TRANSPORT

Trøndelag Tips oss 03030 Midt nytt Trønderradioen RBK Sosiale medier Trøndersk fotoalbum Historiske Trondheim

– Det er sensasjonelt

Skamsundet i Inderøy i Nord-Trøndelag har tatt verdensrekord i grunnforekomst av eyekorall.

BIODIVERSITY

Journalist
Kristin Heggdal

Journalist
Rita Kleven

• MER OM KLIMA OG MILJØ
• MER OM HAVFORSKNING

Publisert 02.10.2014 kl. 19:10

www.nrk.no



Kartverket



GEOLOGICAL SURVEY OF NORWAY
- NGU -

Nautical chart,
1:50.000



Kartverket

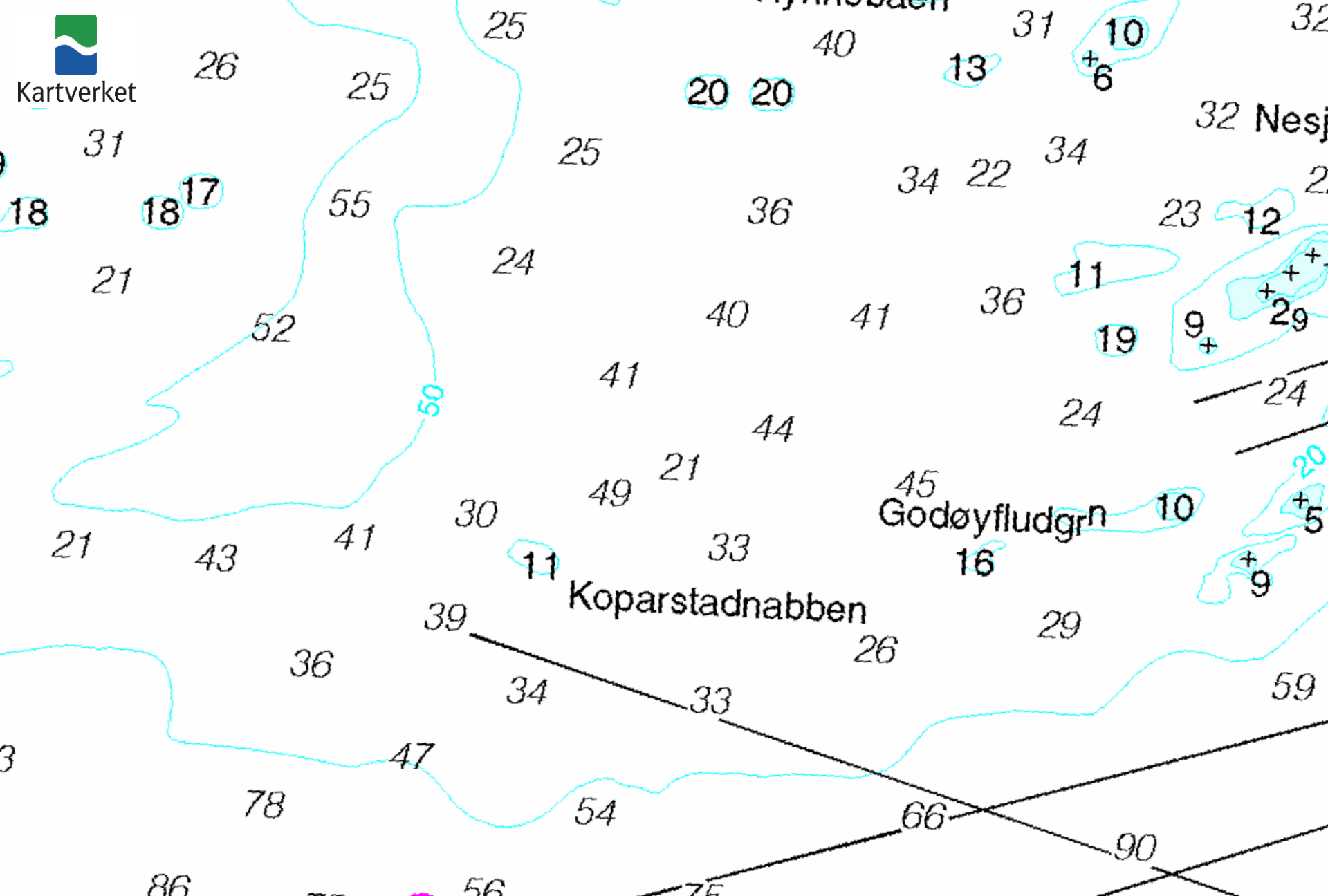


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Nautical chart,
1:50.000



Kartverket



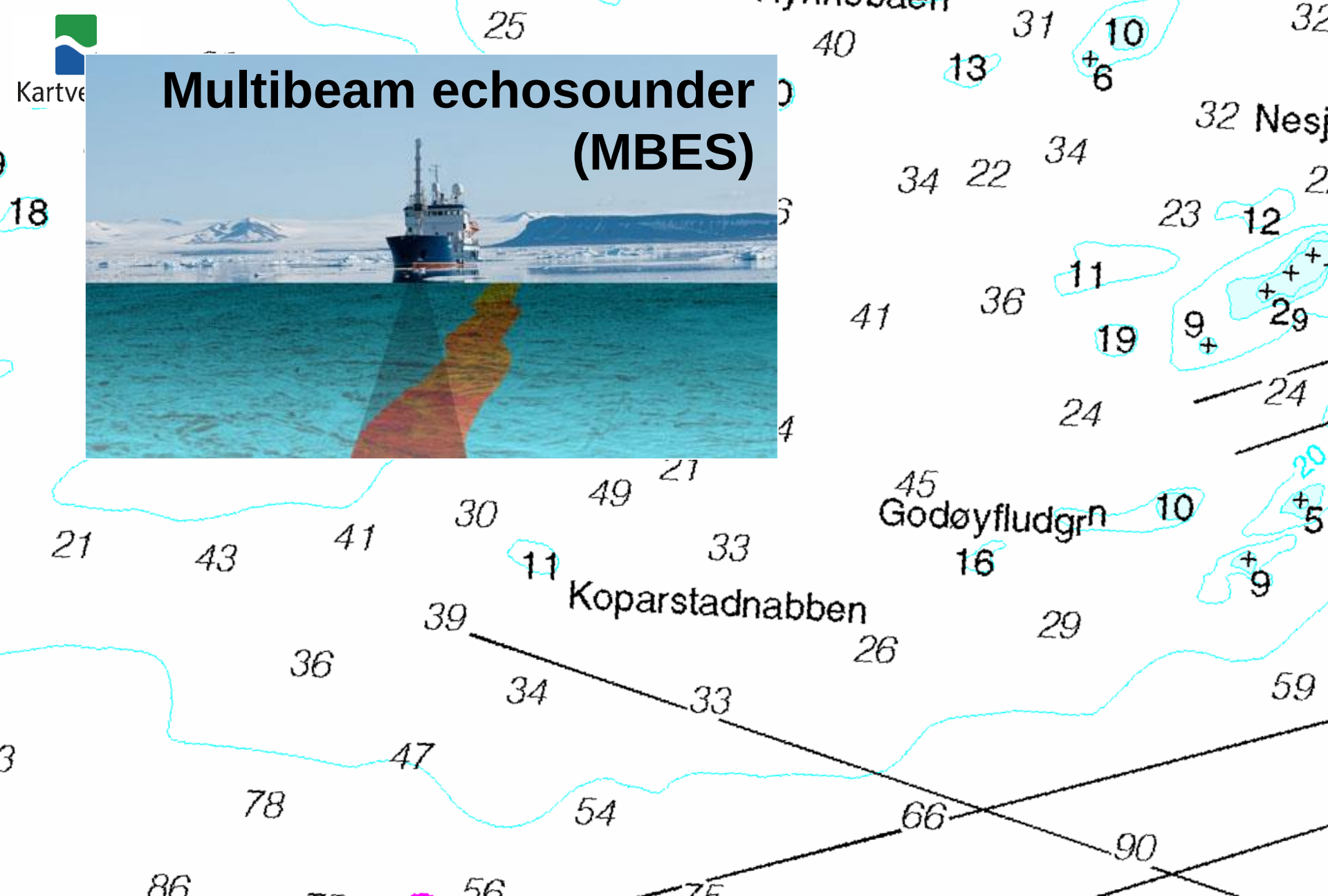
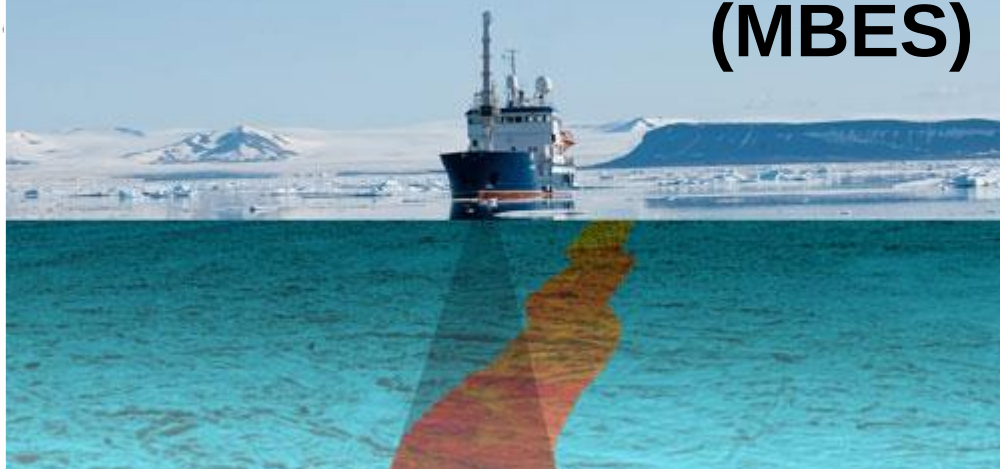
500 m



GEOLOGICAL SURVEY OF NORWAY
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Nautical chart,
1:50.000

Multibeam echosounder (MBES)



500 m

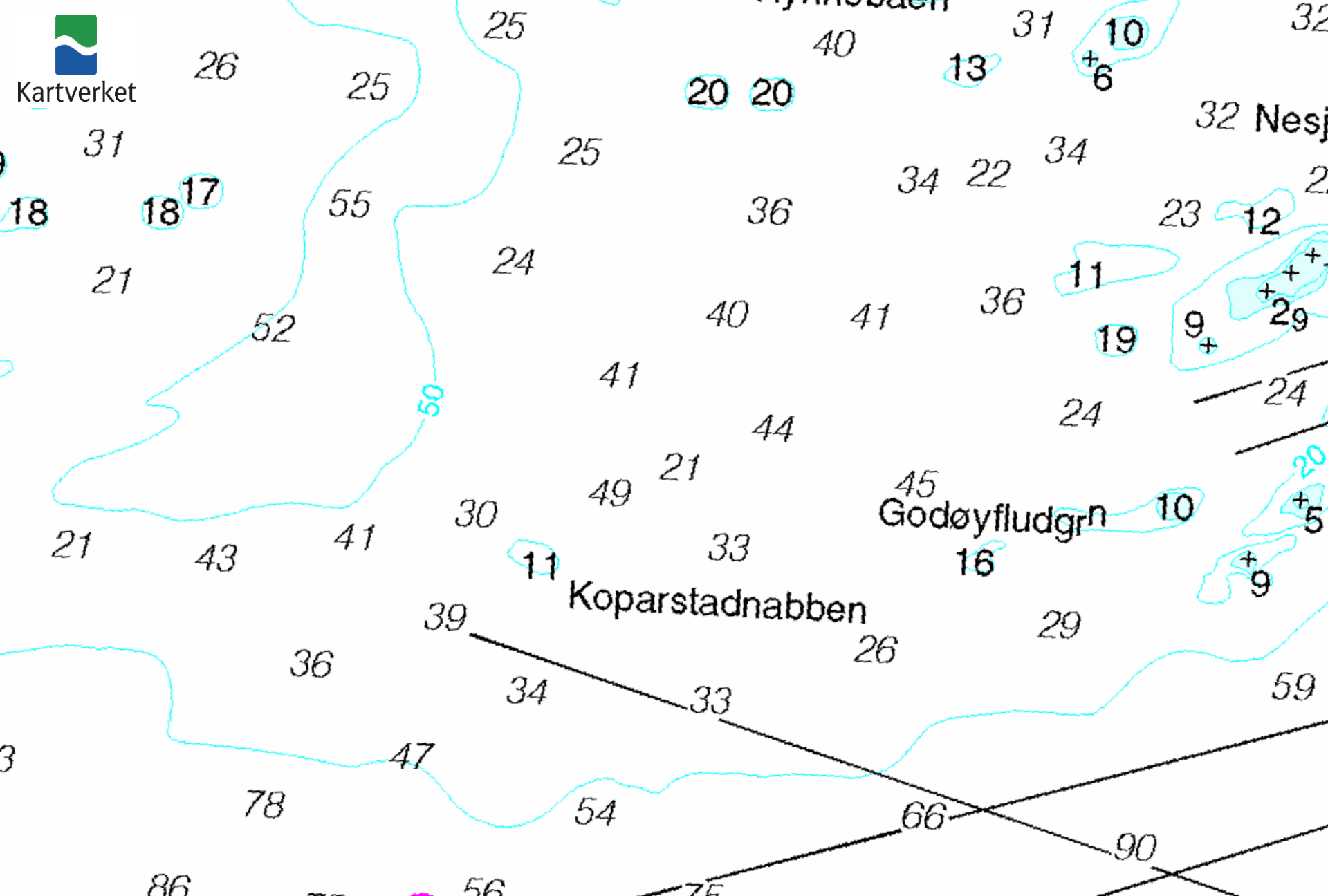


GEOLOGICAL SURVEY OF NORWAY
- NGU -

Nautical chart,
1:50.000



Kartverket

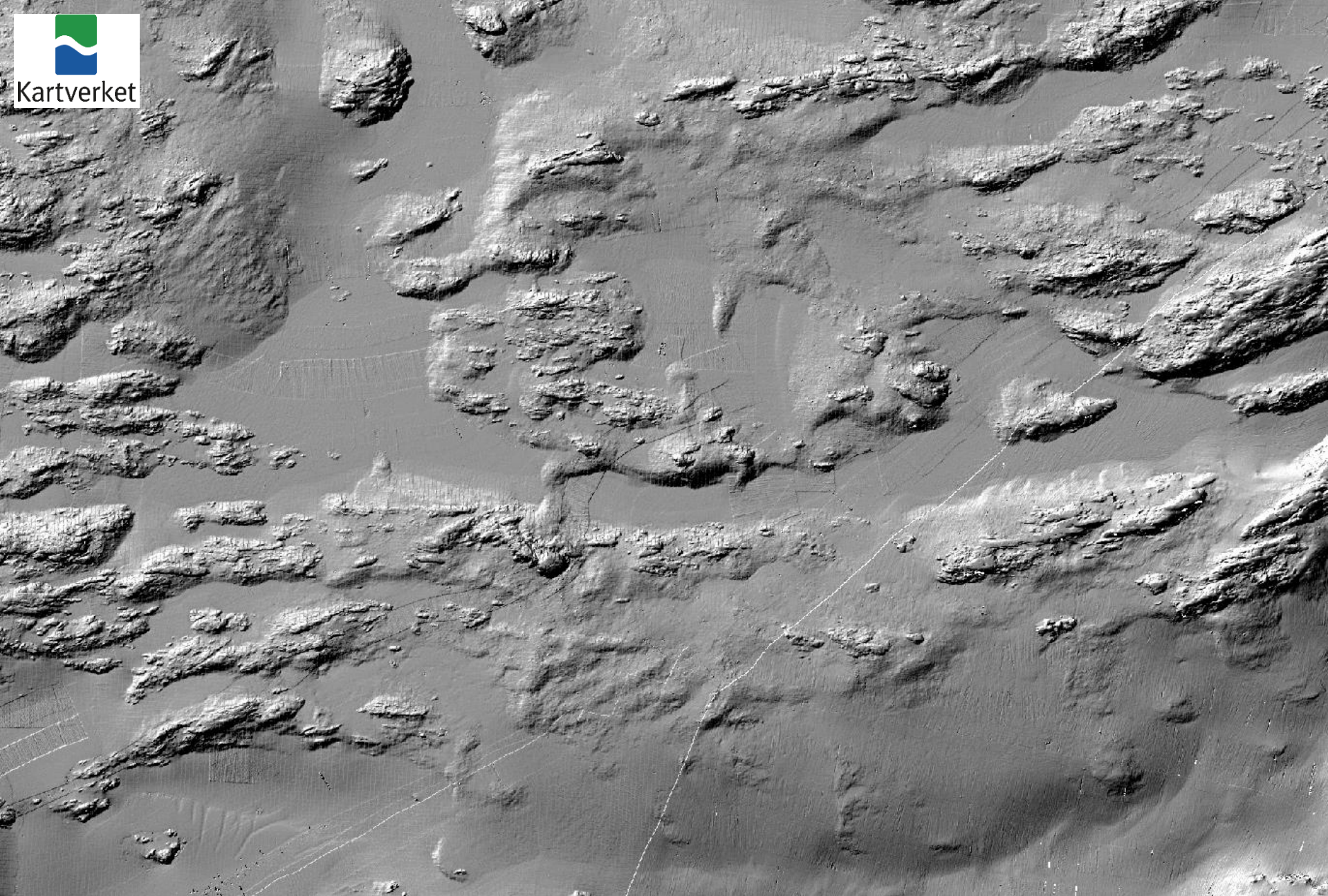


500 m



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Nautical chart,
1:50.000



500 m



GEOLOGICAL SURVEY OF NORWAY
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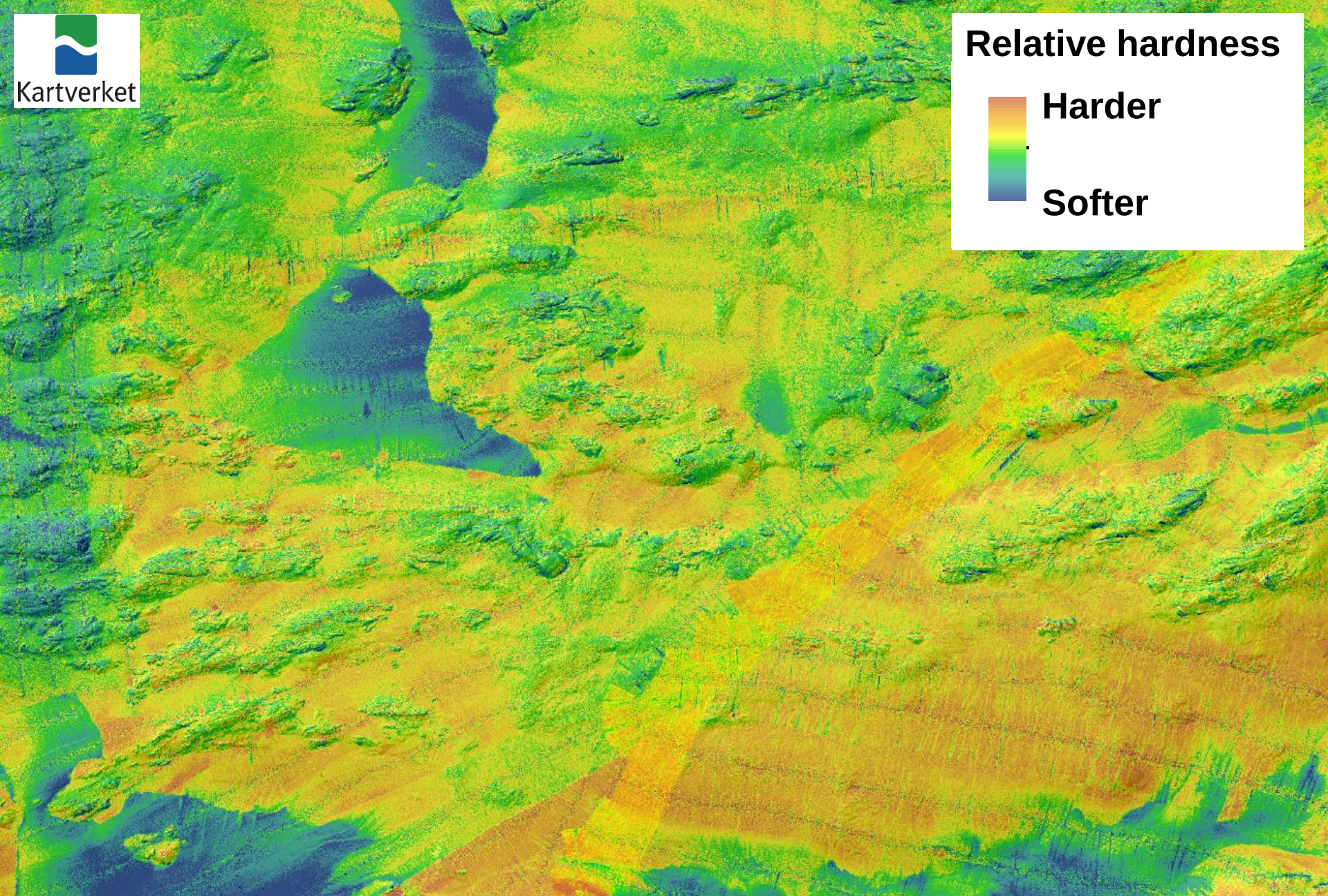
MBES bathymetry
(1x1 m)

Relative hardness



Harder

Softer



500 m



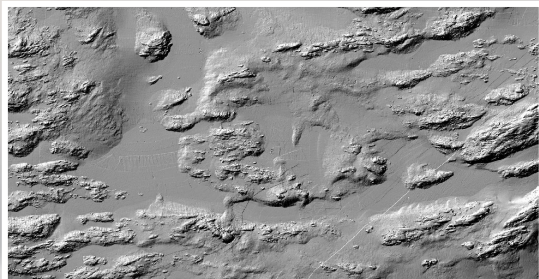


500 m

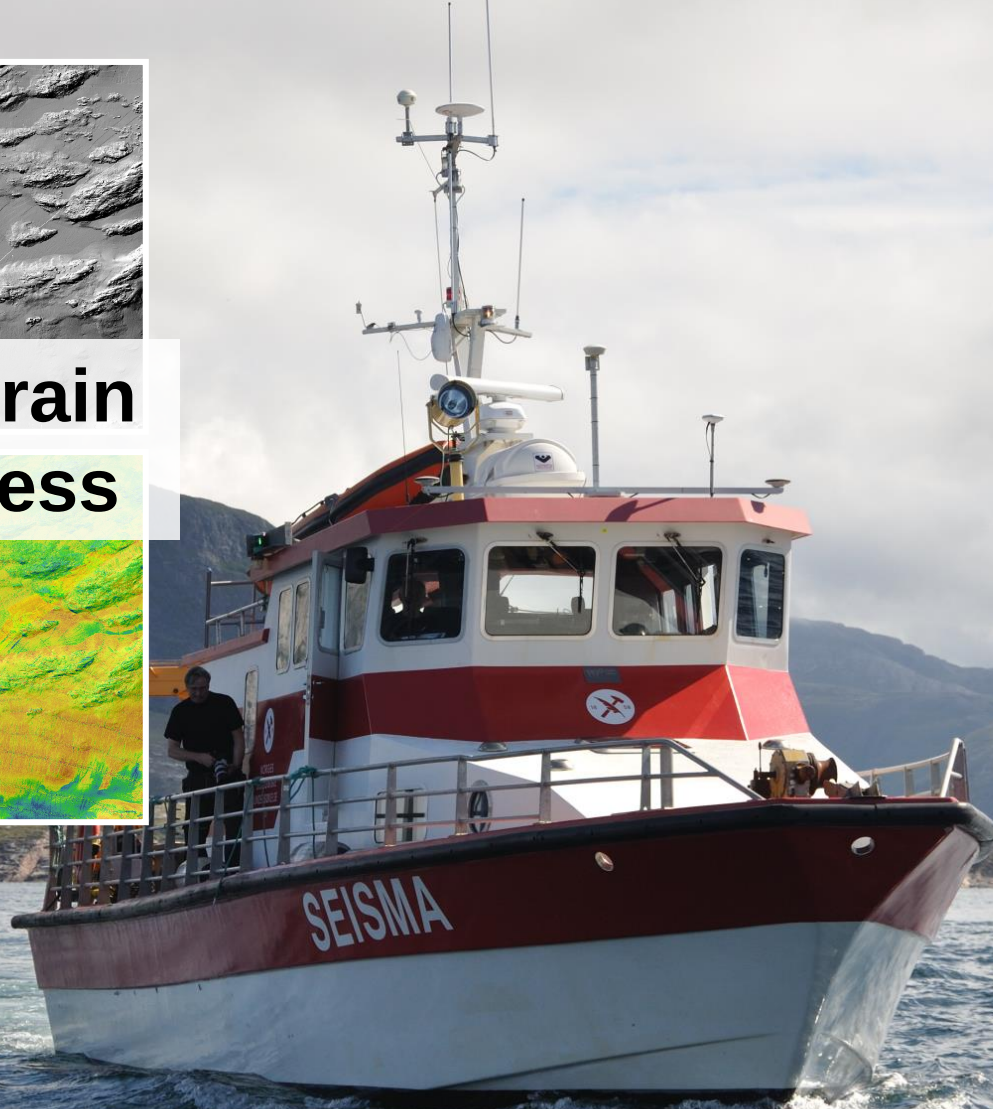
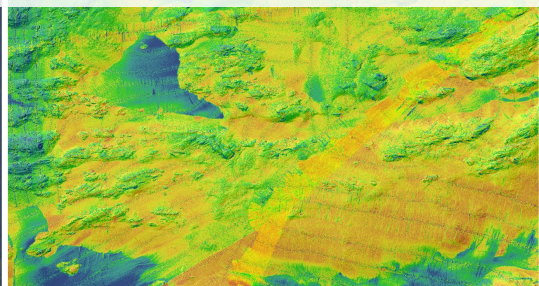




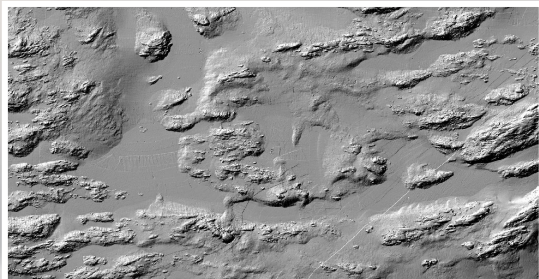
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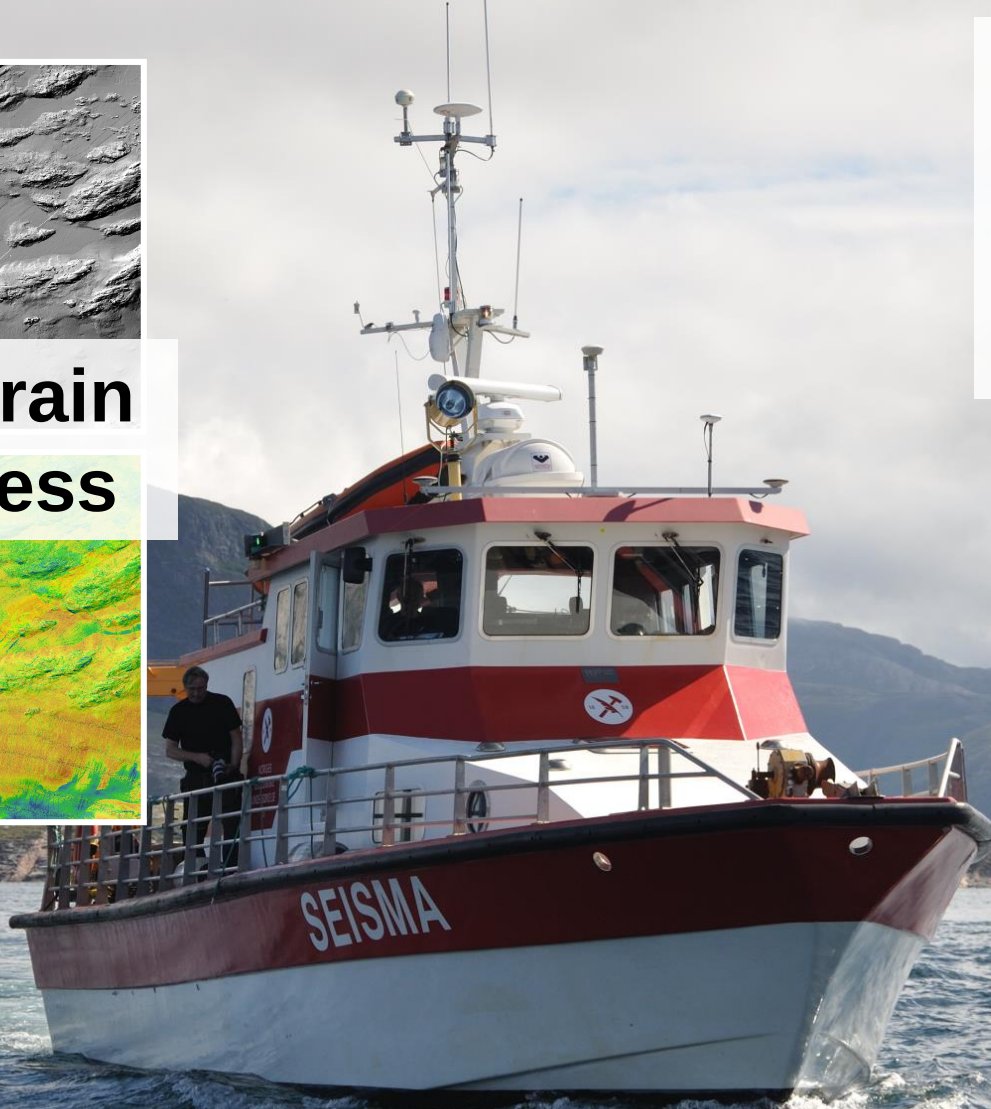
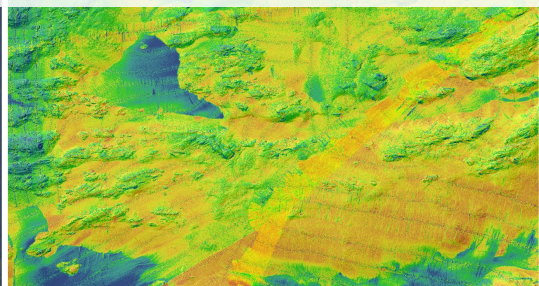
Seabed terrain and hardness



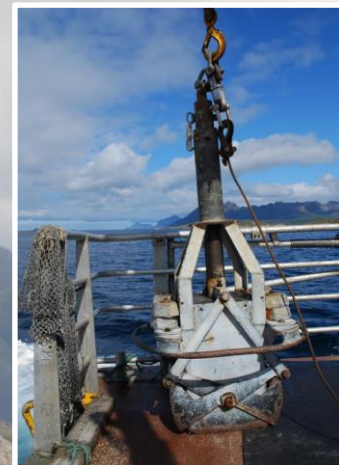
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**Seabed terrain
and hardness**

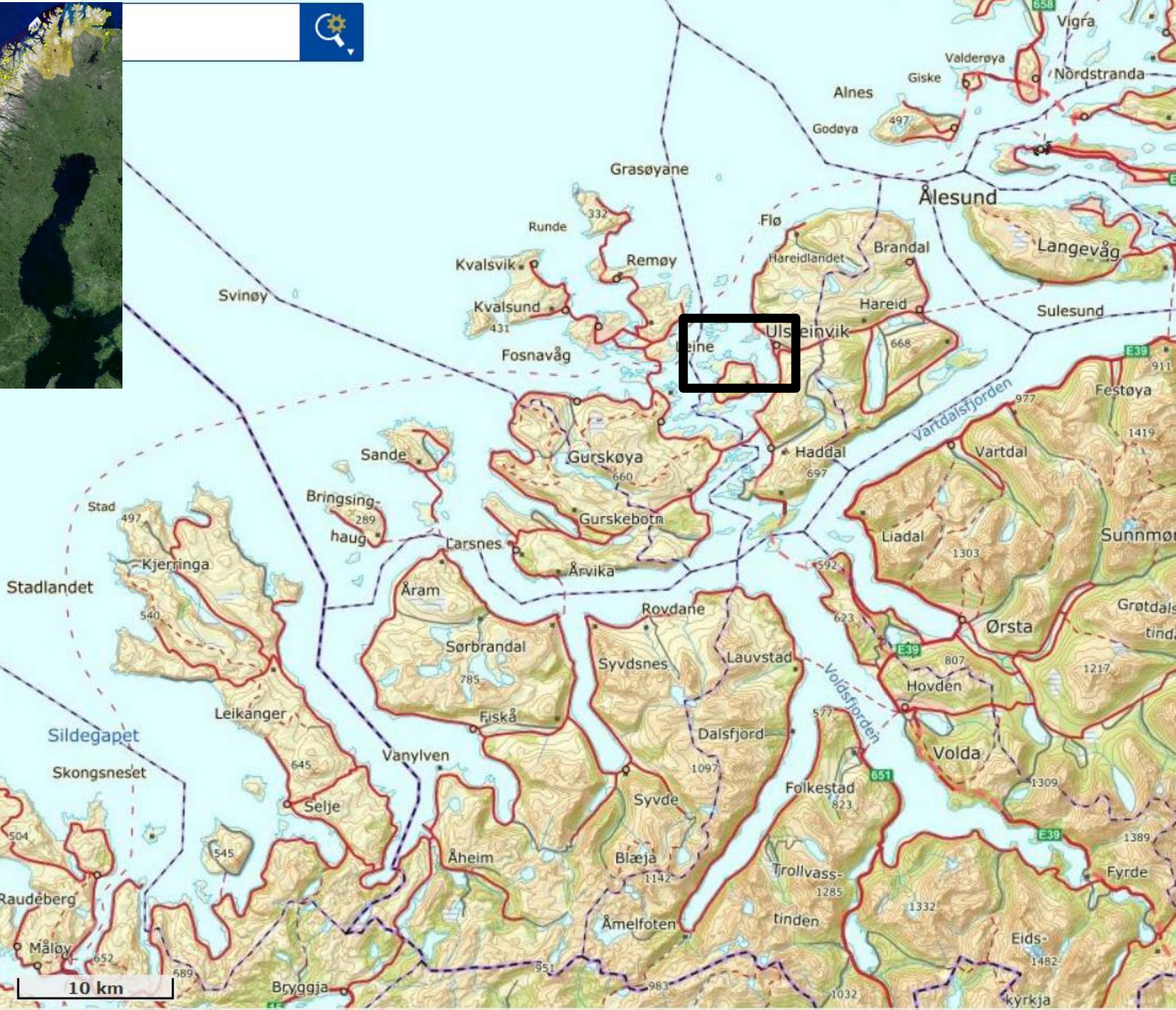


**Video and
sediment
sampling
equipment**

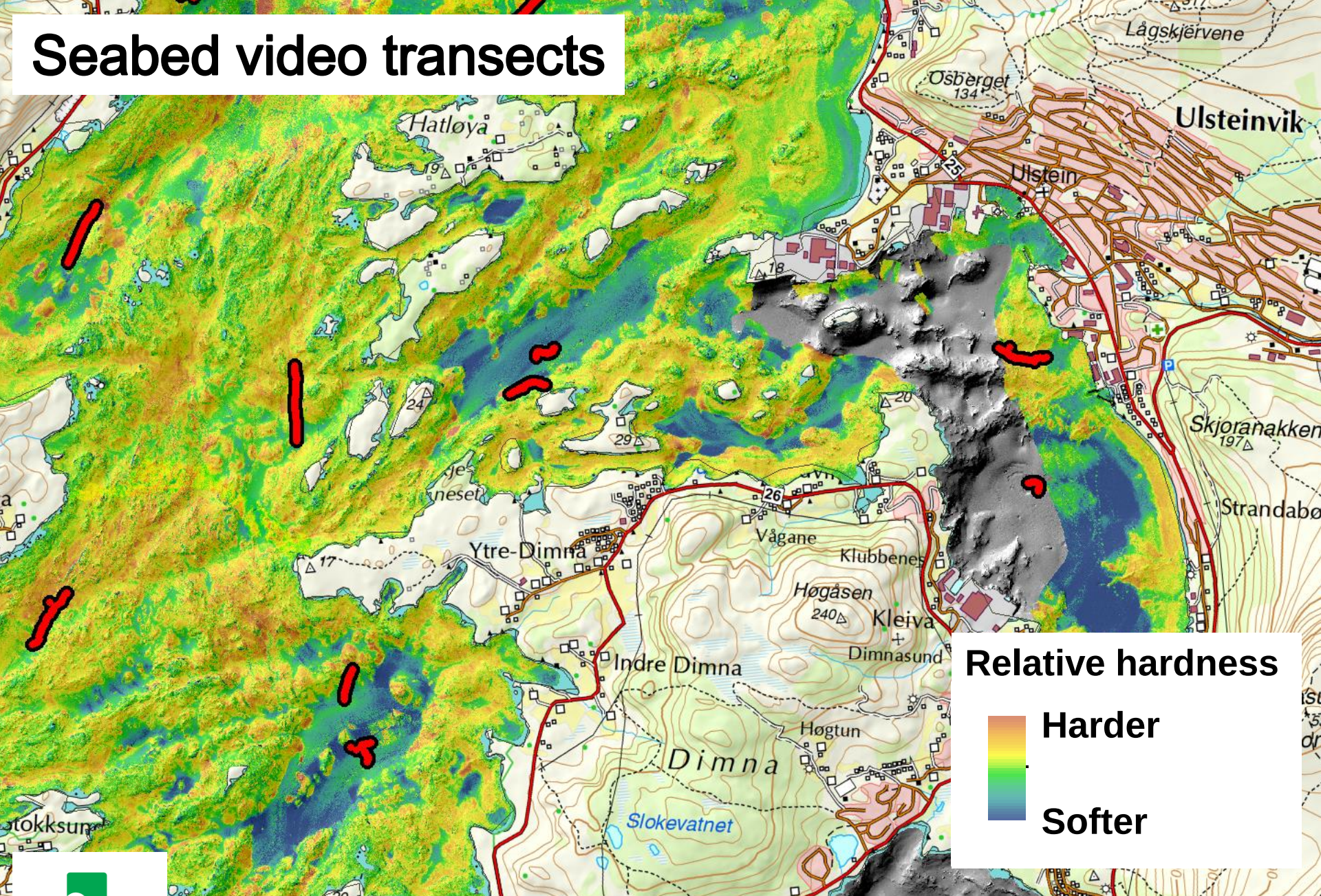




Stadhavet



Seabed video transects

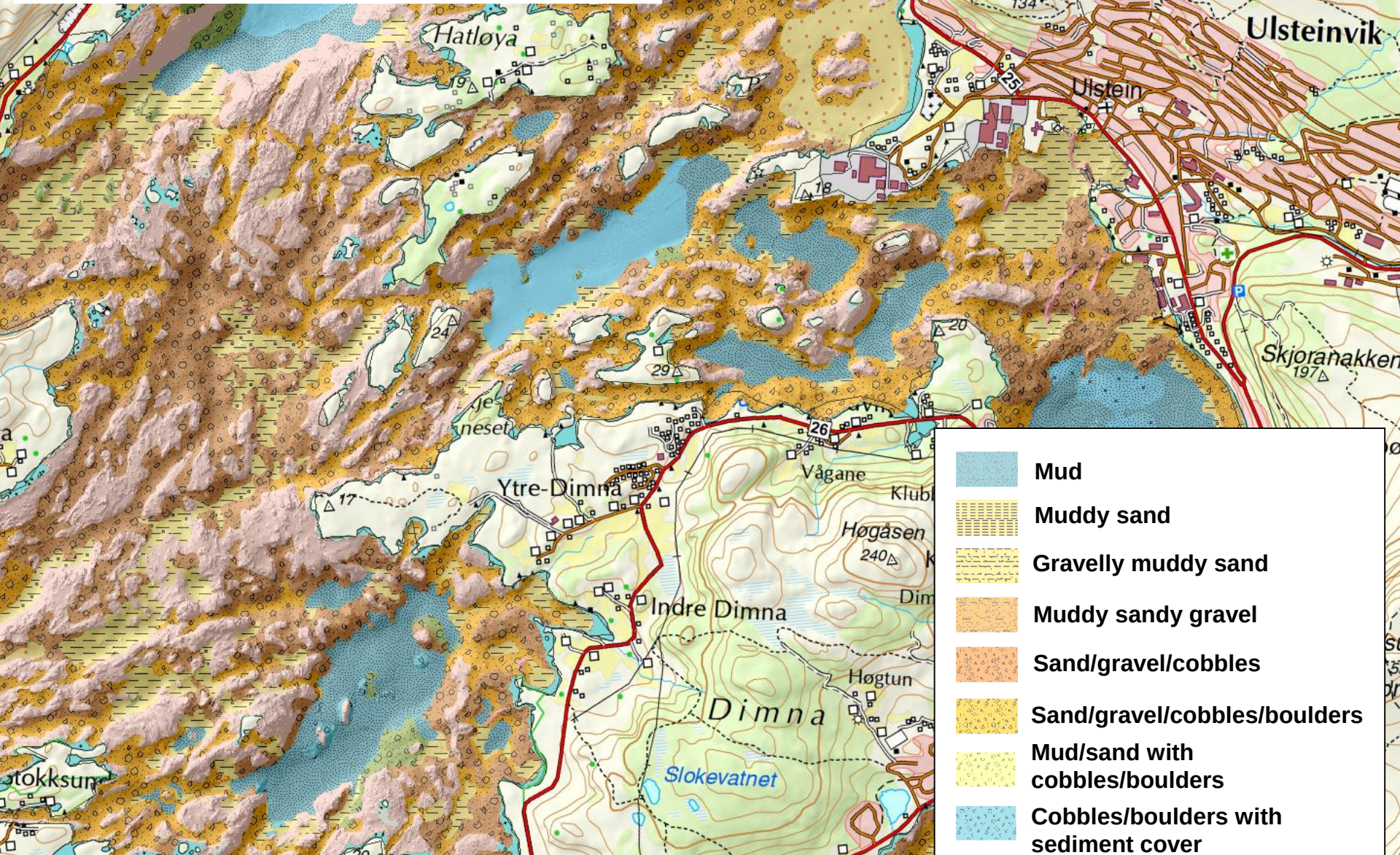


Relative hardness



MBES data (1x1 m)

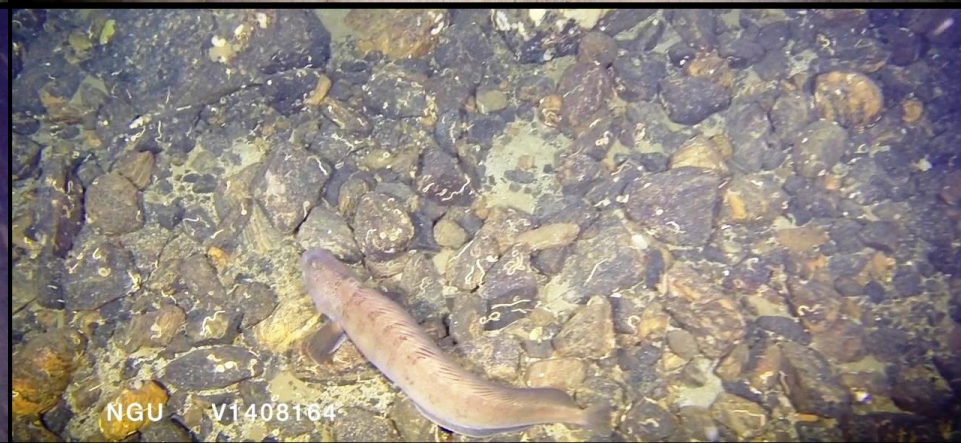
Seabed sediment types



Polygon map for use
at scale 1:20 000

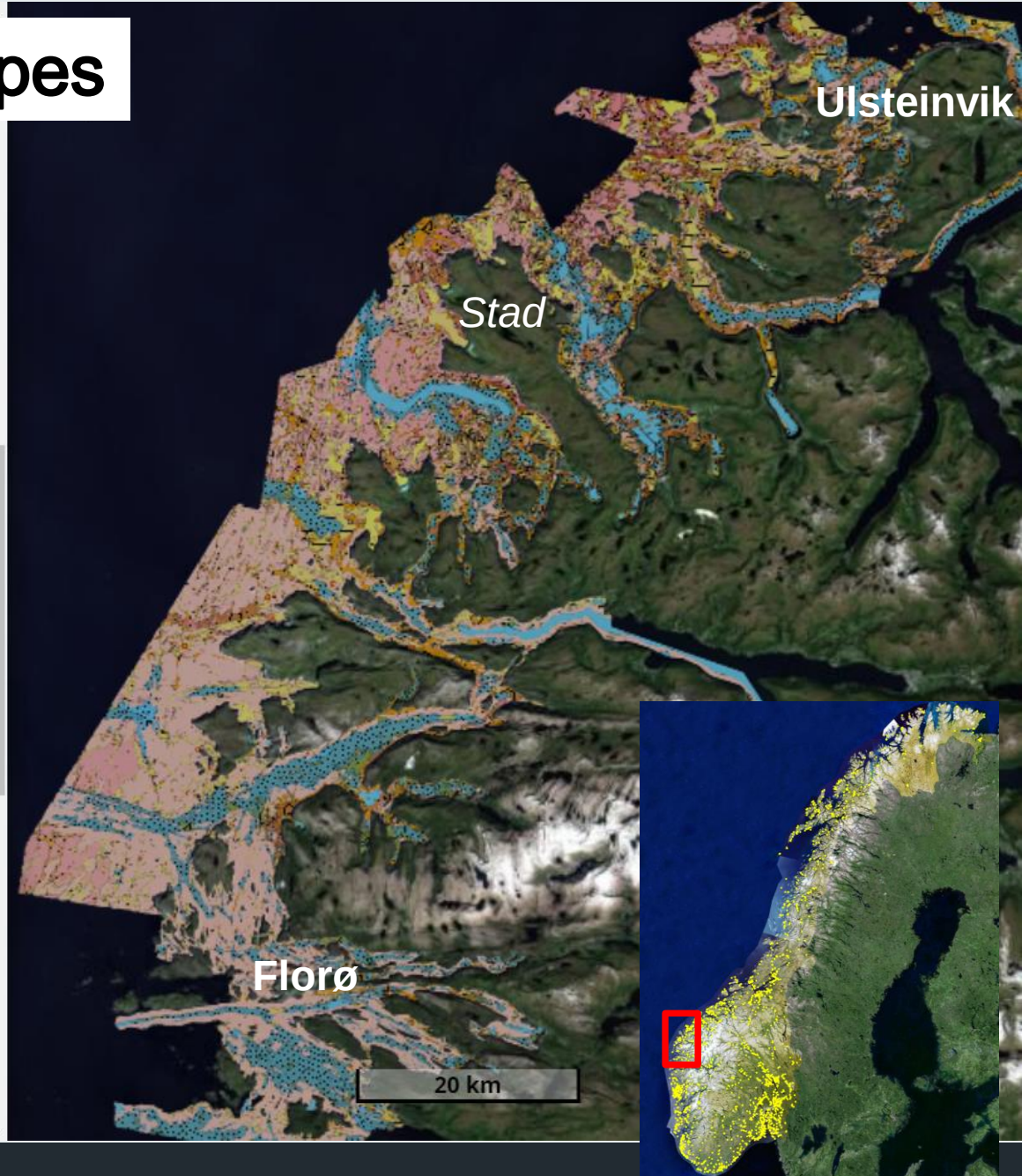


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Seabed sediment types

- Tynt eller usammennengende sedimentdekke over
- Bart fjell
- Leir
- Organisk slam
- Slam
- Slam i veksling med blokker av harde sedimenter
- Sandig leir
- Sandholdig slam
- Silt
- Sandig silt
- Leirholdig sand
- Slamholdig sand
- Siltholdig sand
- Fin sand
- Sand
- Grov sand
- Grusholdig slam
- Grusholdig sandholdig slam
- Grusholdig slamholdig sand
- Grusholdig sand
- Slamholdig grus
- Slamholdig sandholdig grus
- Sandholdig grus
- Grus
- Sand, grus, stein
- Sand, grus, stein, blokk
- Grus og stein
- Grus, stein, blokk
- Stein og blokk
- Sand og blokk
- Blanding av kornstørrelser
- Slam og sand med grus, stein og blokk



Polygon map for use
at scale 1:20 000



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Map service: Geonorge

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- Grus
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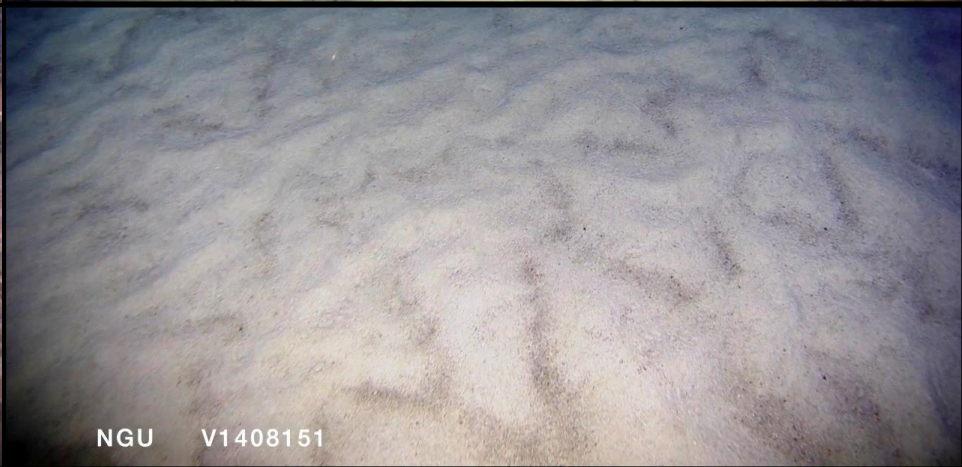


**Polygon map for use
at scale 1:20 000**



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Soft sediment accumulation

☐ Helning

☐ Helning

☐ Helning over 30 grader

☐ Naturtyper

☐ Naturtyper i Saltstraumen

☐ Biotoper i Sr-Troms

☐ Naturtyper - datadekning

☐ Bunnsedimenter (kornstrrelse) detaljert

▼ Vis tegnforklaring

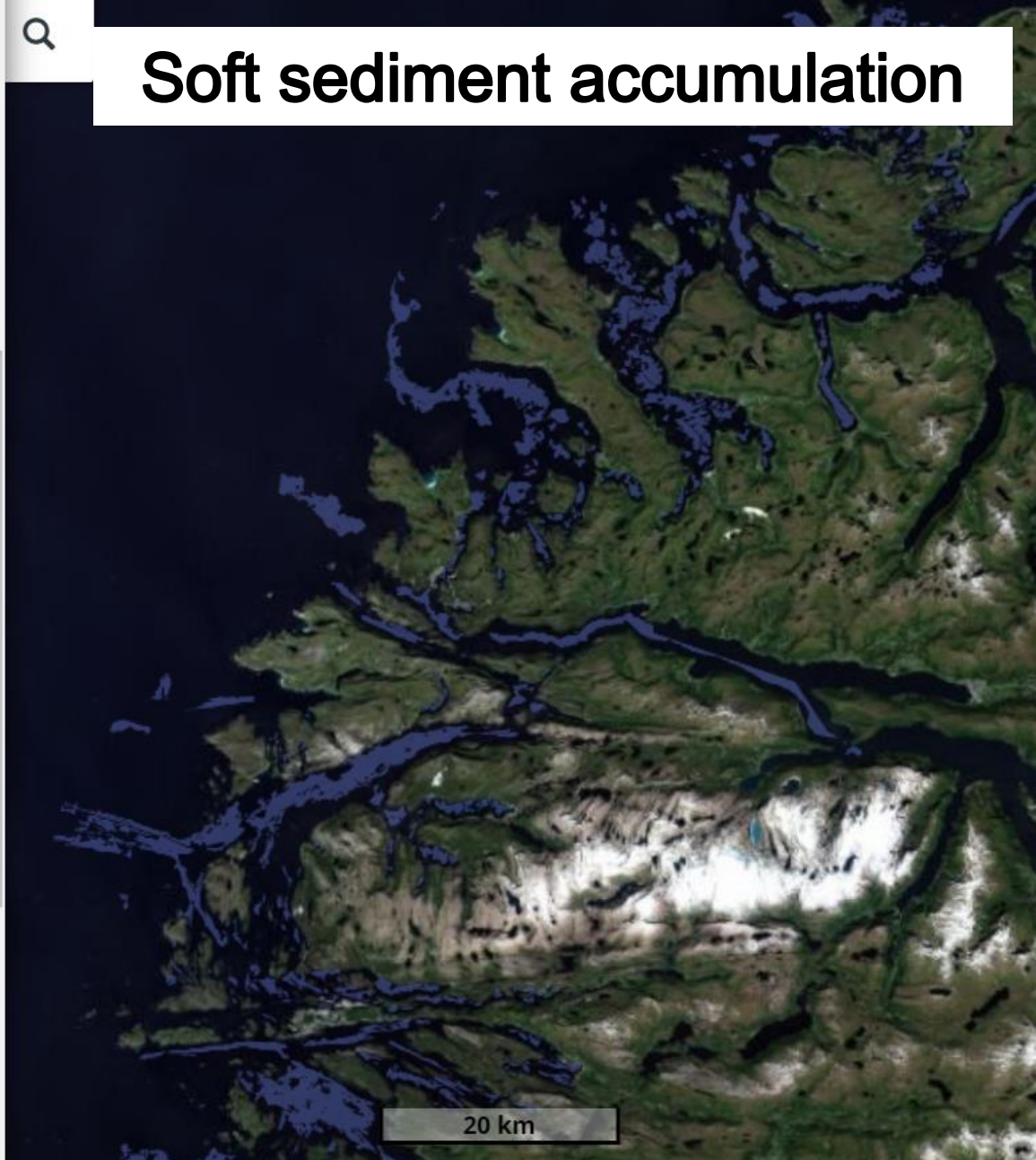
☐ Ankringsforhold ▼ Vis tegnforklaring

☐ Gravbarhet

☒ Bunnfellingsomrder ▲ Skjul tegnforklaring

☒ Bunnfellingsområder

☐ Marine grunnkart - datadekning



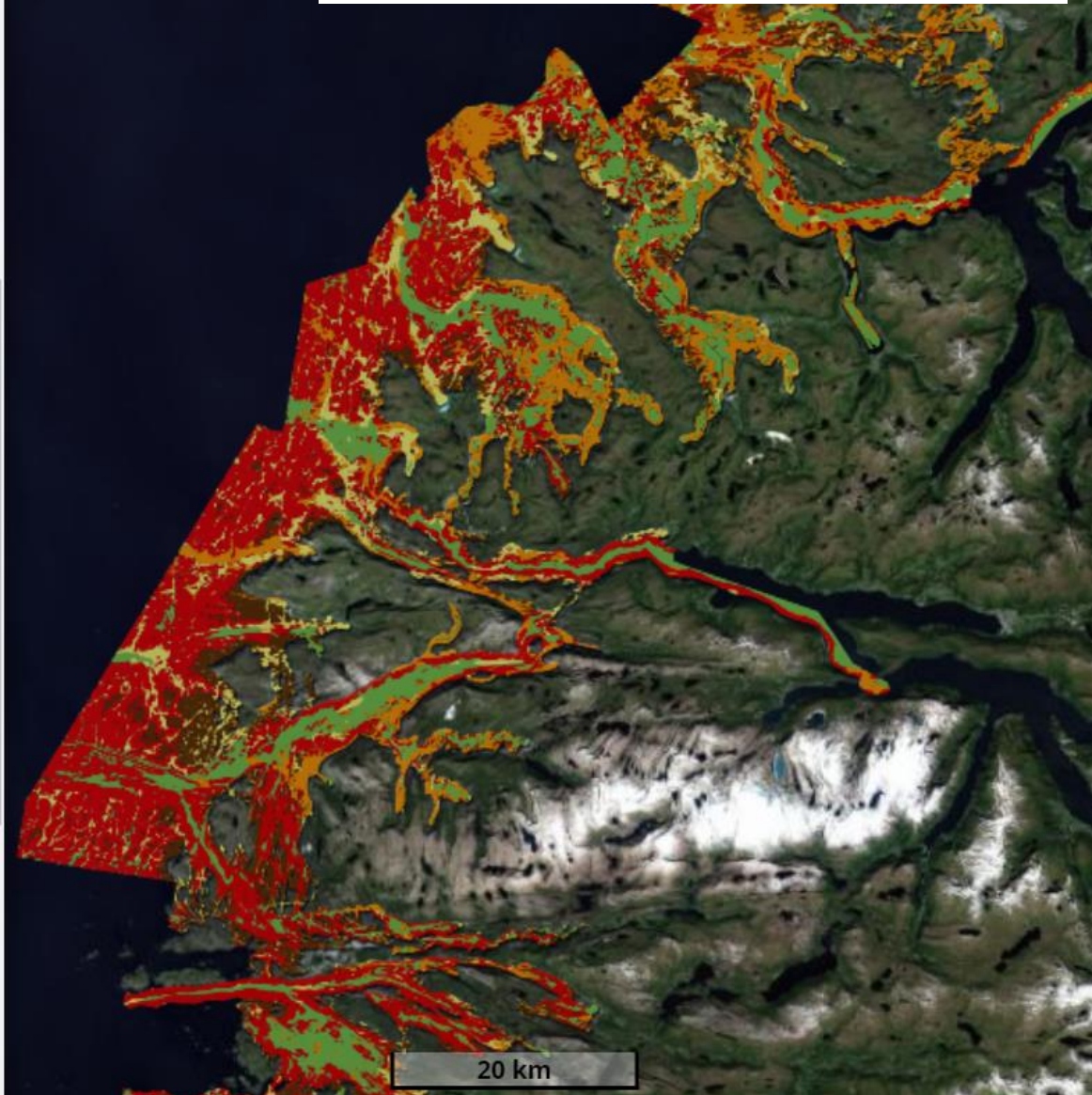
**Polygon map for use
at scale 1:20 000**



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Map service: Geonorge

Anchoring conditions



☐ Helning

☐ Helning

☐ Helning over 30 grader

☐ Naturtyper

☐ Naturtyper i Saltstraumen

☐ Biotoper i Sr-Troms

☐ Naturtyper - datadekning

☐ Bunnsedimenter (kornstrrelse) detaljert

▼ Vis tegnforklaring

☒ Ankringsforhold ▲ Skjul tegnforklaring

- ☒ 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)

☐ Gravbarhet

☐ Bunnfellingsomrder ▼ Vis tegnforklaring

**Polygon map for use
at scale 1:20 000**



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Trenching properties

☐ Helning

☐ Helning over 30 grader

☐ Naturtyper

☐ Naturtyper i Saltstraumen

☐ Biotoper i Sr-Troms

☐ Naturtyper - datadekning

☐ Bunnsedimenter (kornstrrelse) detaljert

▼ Vis tegnforklaring

☐ Ankringsforhold ▼ Vis tegnforklaring

☒ Gravbarhet ▲ Skjul tegnforklaring

- ☐ Gravbar, stabil grøft
- ☐ Gravbar, ustabil grøft
- ☐ Vanskelig gravbar
- ☐ Ikke gravbar

☐ Bunnfellingsomrder ▼ Vis tegnforklaring

☐ Marine grunnkart - datadekning



**Polygon map for use
at scale 1:20 000**



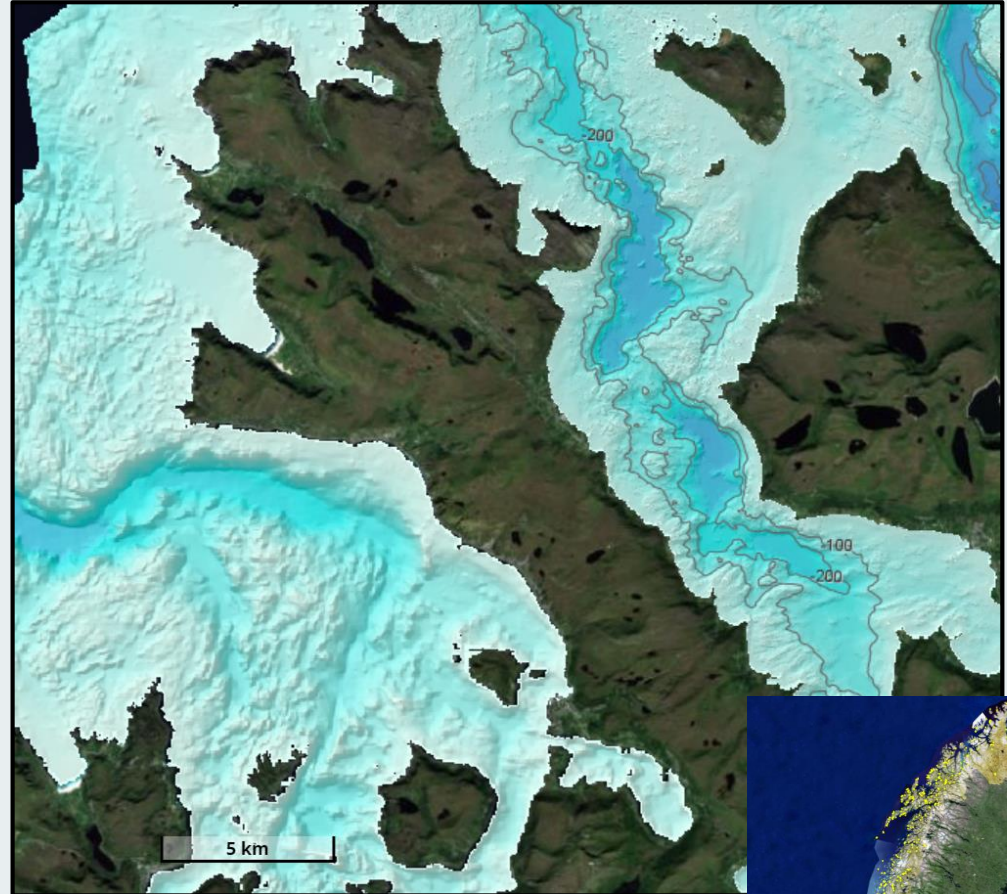
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Map service: Geonorge



MARINE BASE MAPS:

**Seabed terrain
(best available)**

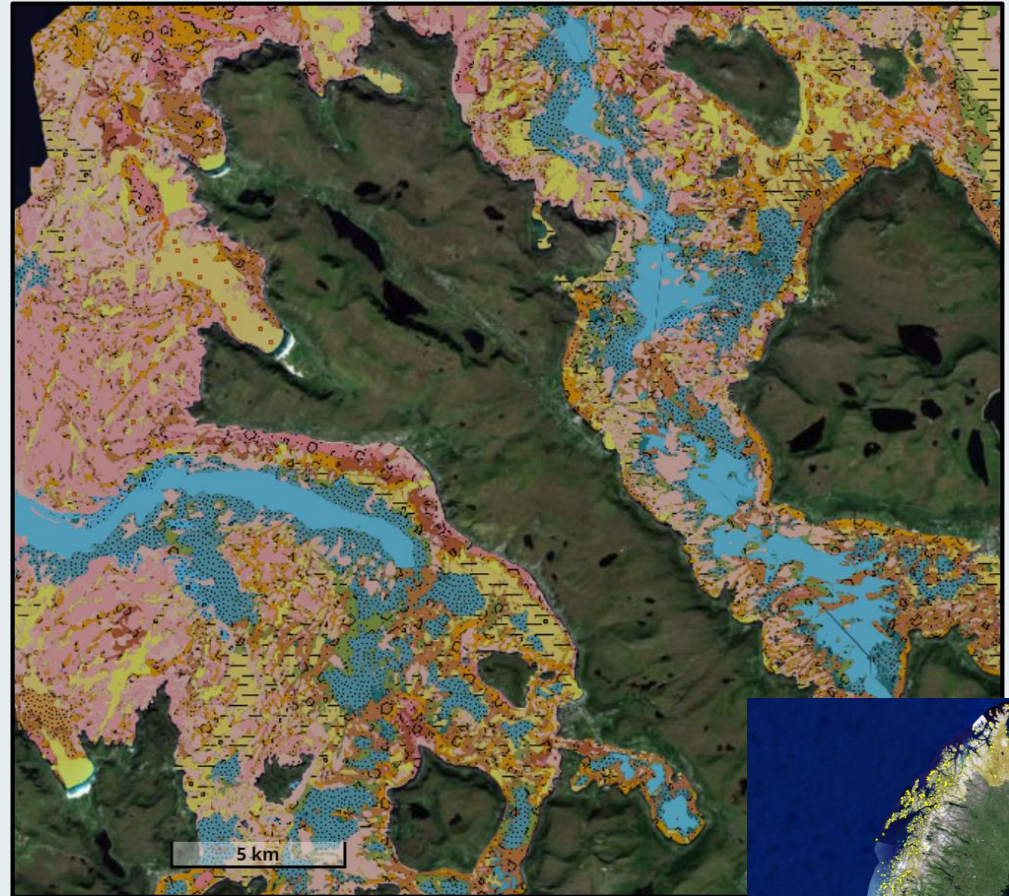




MARINE BASE MAPS:

Seabed terrain
(best available)

**Interpreted map of
seabed sediments**

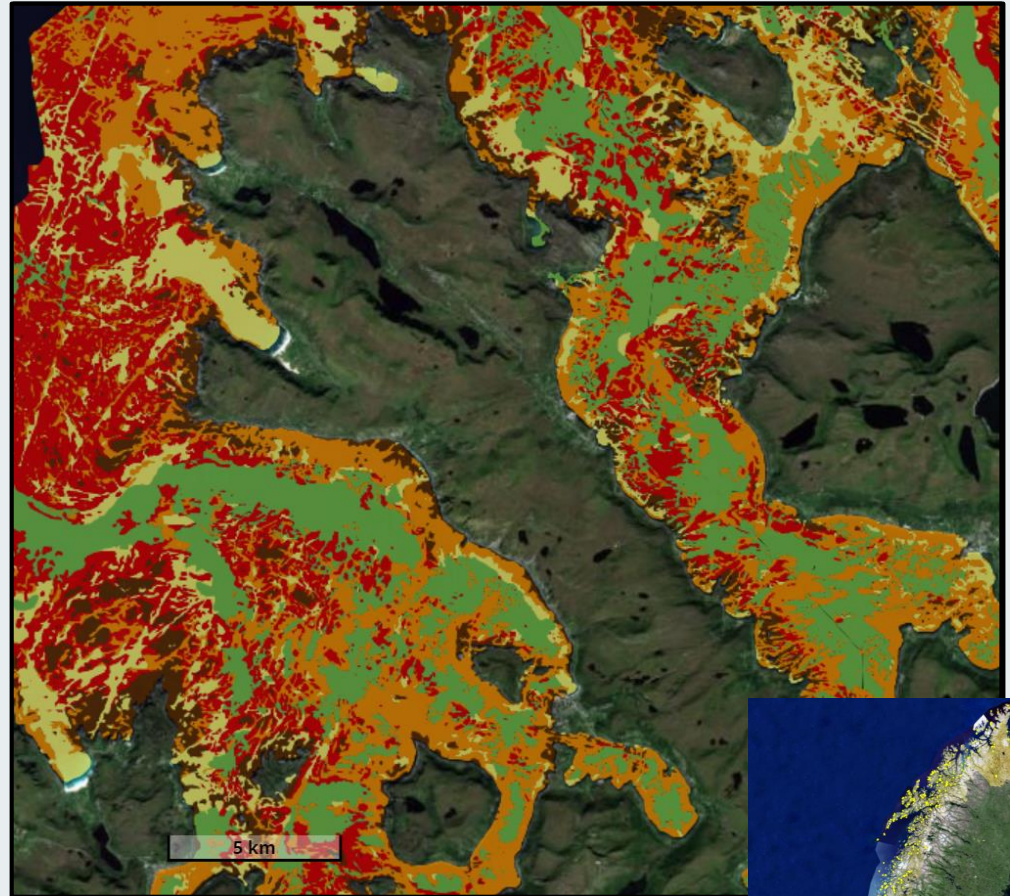


MARINE BASE MAPS:

Seabed terrain
(best available)

Interpreted map of
seabed sediments

**Set of derived
thematic maps**
(e.g. anchoring conditions)



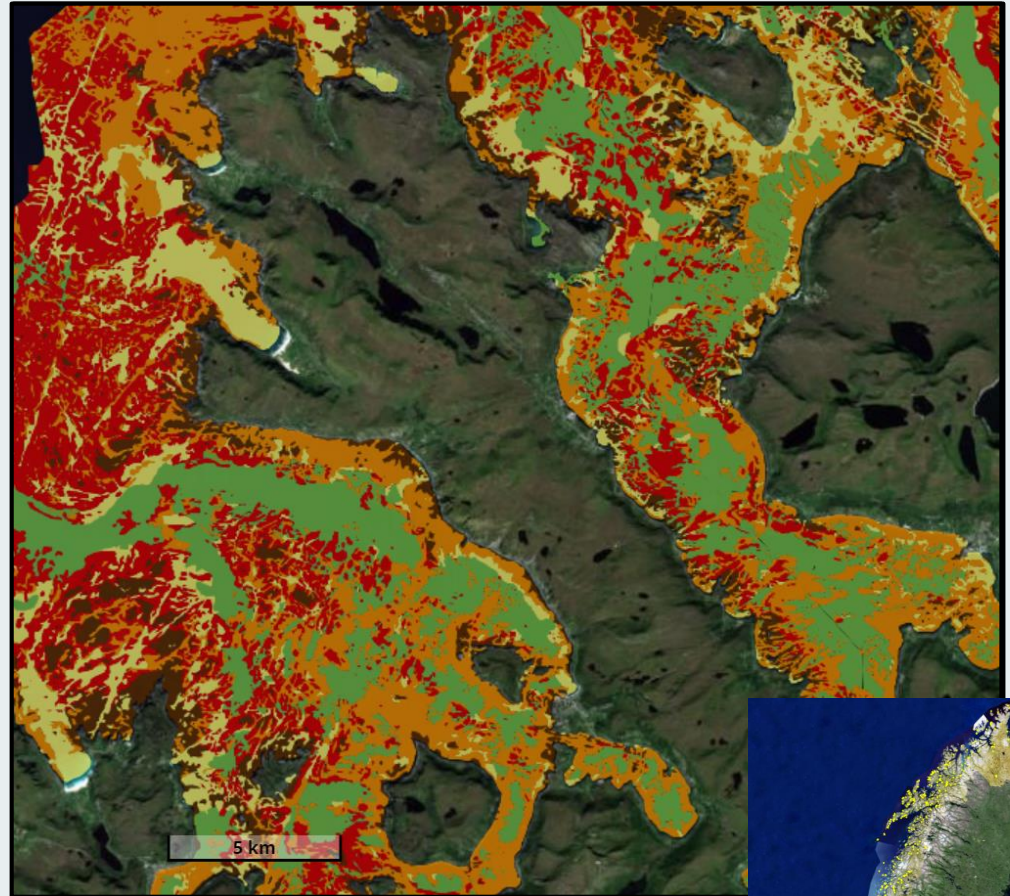
MARINE BASE MAPS:

Seabed terrain
(best available)

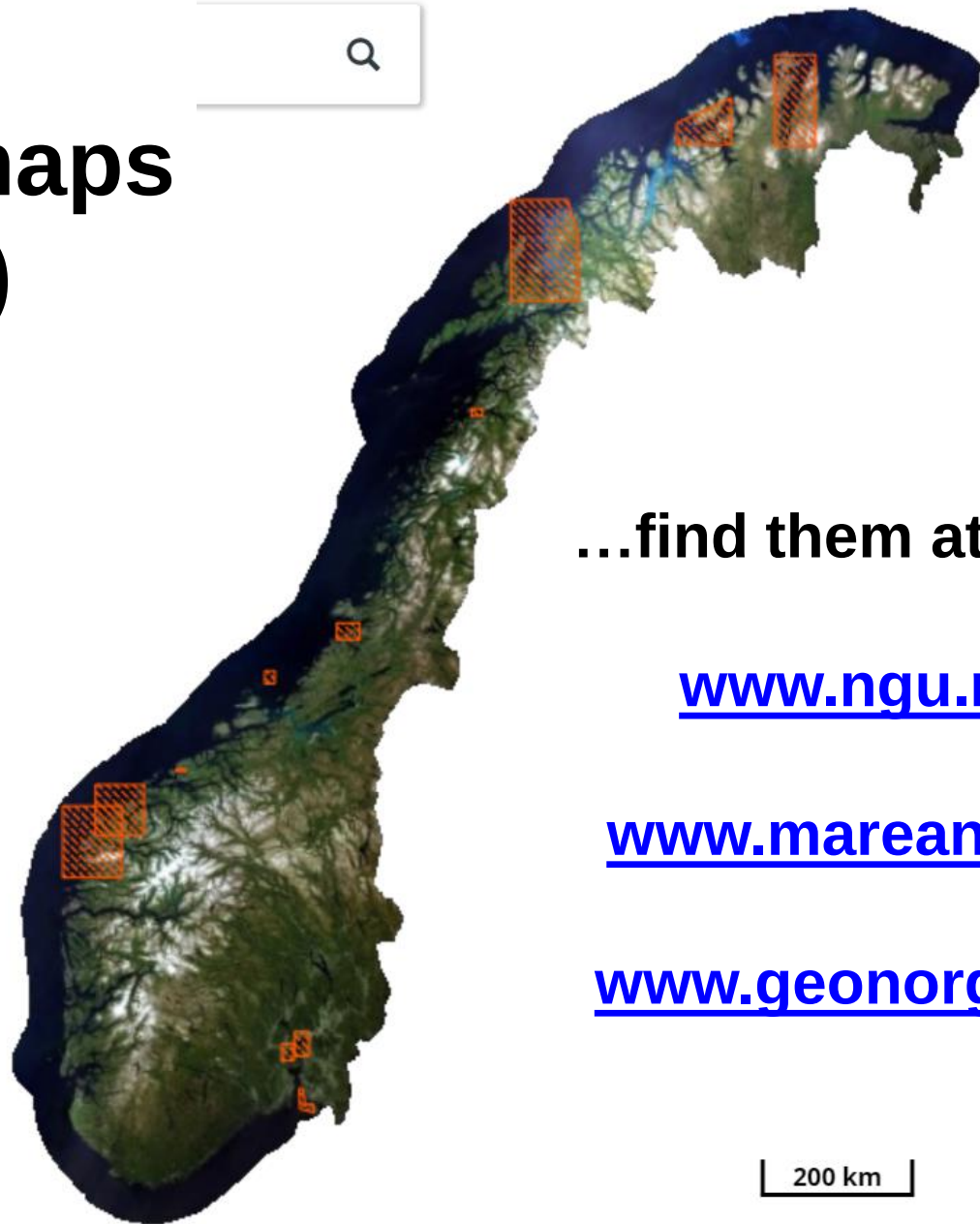
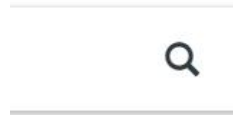
Interpreted map of
seabed sediments

Set of derived
thematic maps
(e.g. anchoring conditions)

**Freely available for viewing, download,
or use in any map application**



Areas with marine base maps (Feb. 2019)



...find them at (e.g.)

www.ngu.no

www.mareano.no

www.geonorge.no



Kartverket

200 km



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Map service: Geonorge

Mapping in progress



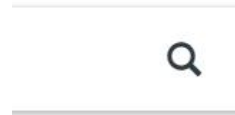
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Map service: Geonorge

Mapping in progress ...and possible future mapping projects



Mapping in
progress
...and possible
future mapping
projects



**We are hoping for a national
coastal mapping effort**



Kartverket



200 km



GEOLOGICAL SURVEY OF NORWAY
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Map service: Geonorge



GEOLOGICAL SURVEY OF NORWAY
- NGU -



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