

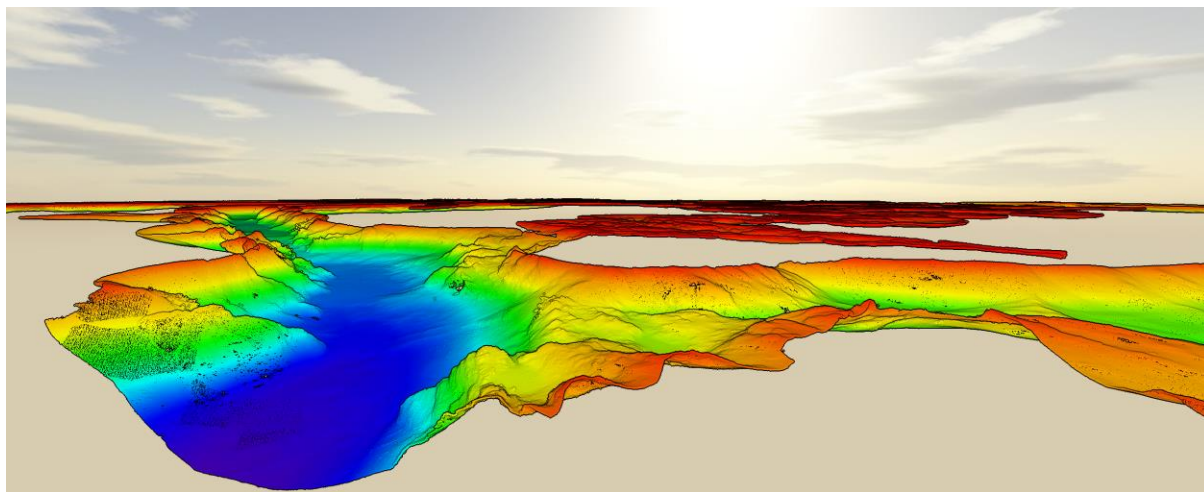
Developments at Nor Hyd Serv





New Hydrographic Infrastructure

for Management, Preparation and Dissemination of Marine Geodata



NAUTILUS

New Hydrographic Infrastructure

A modern solution, allowing **more data** faster **accessible** for **more users**

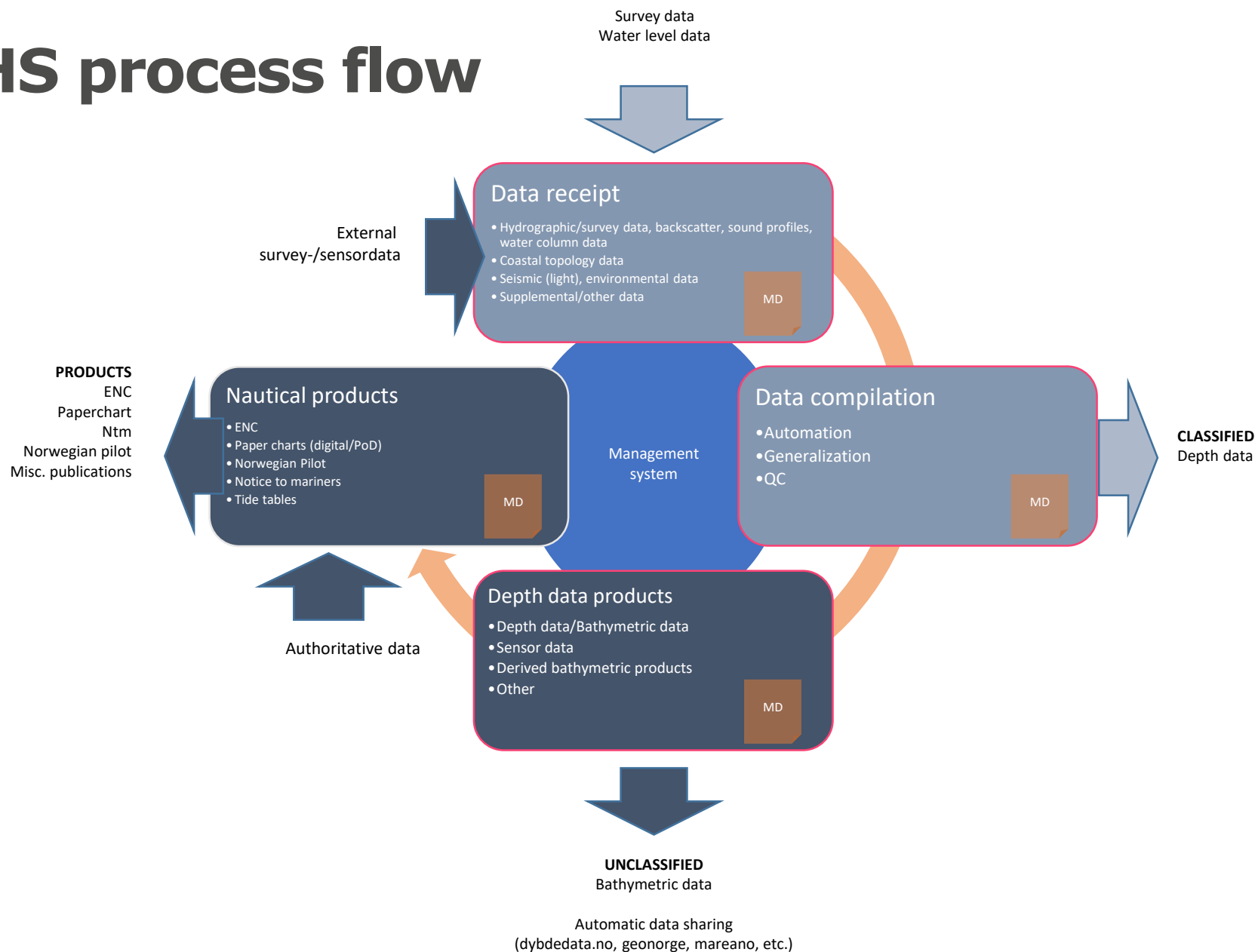


- One common and integrated solution
- Effective source data receipt, assessment and administration
- Automate processes and procedures
- Support new and improved products and services
- Effective and integrated data dissemination
- Build and promote innovation
- Support new classification regulations
- Improve and automate production
- Utilize authoritative data
- Improve/automate quality control procedures
- Ease system operation and maintenance
- Solution expected to be “data generic” and support “dynamic” data handling

NHI's Rational

- NHI is mainly based on user requirements and expectations
- Ensure effective access to and dissemination of high resolution hydrographic data
- Enable and actively seek innovation, machine-to-machine solution, automation and machine learning
- Continued focus on Safe and Effective navigation - *safety of life at sea*
- Better data will allow for a more effective and environmental friendly maritime and marine business
- Significant operational and financial values, both in the form of increased activity and cost savings, for shipping, aquaculture, port operations, environmental activities, coastal zone planning at municipalities & counties etc. are expected with better access to high quality data.
- Improved knowledge and competence

NHS process flow





Marine Base Maps for the Coastal Zone Norway

Is all about gathering detailed information and boosting the knowledge of the sea bed and marine coastal systems along Norway's coast - for a sustainable ocean economy.

FOTO: EILIV LEREN. TERRENGMODELL: KARTVERKET

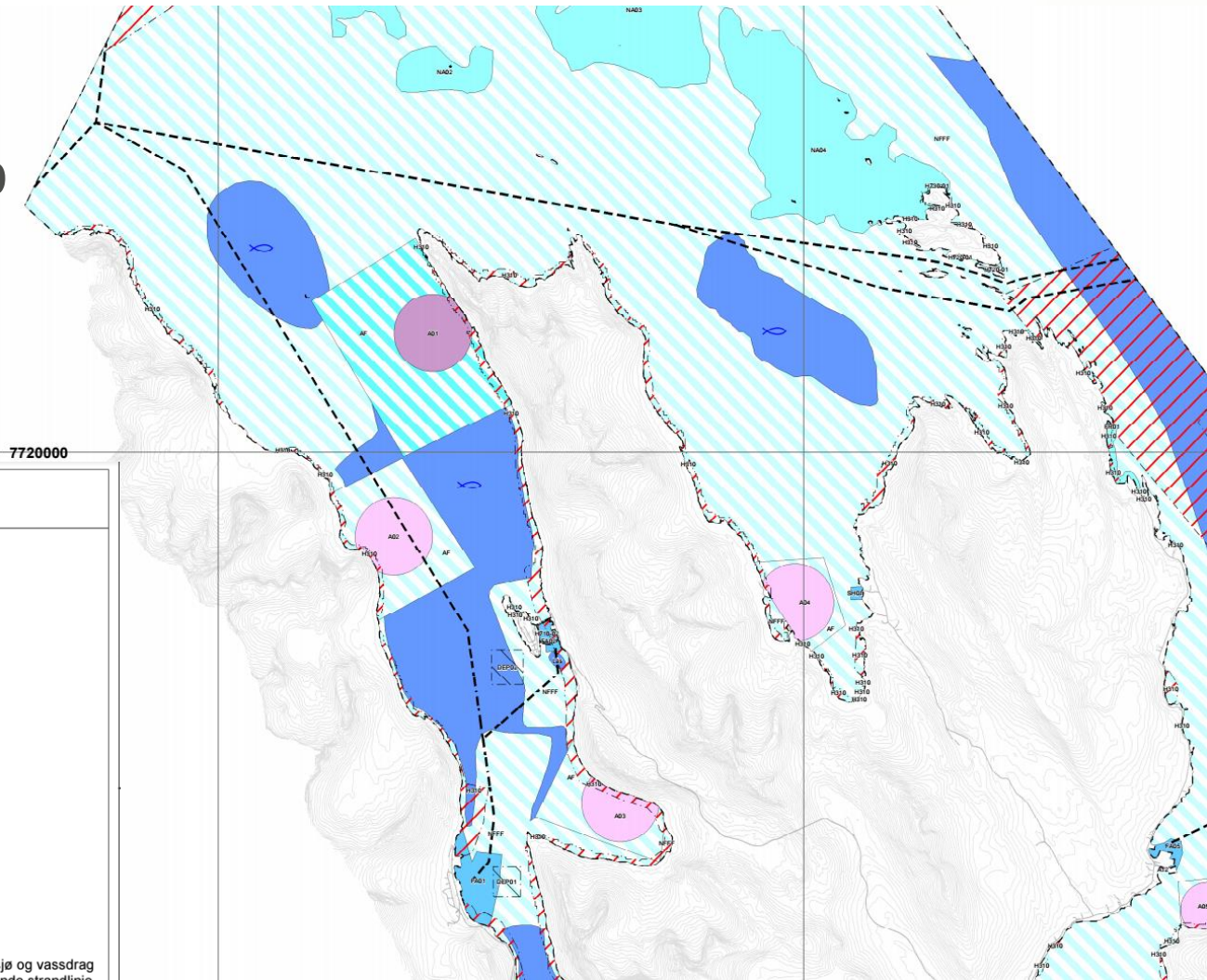
The aim is

- to provide new business opportunities
- stimulating and optimising the growth of industries
- better public administration and
- effective coastal zone management

to benefit people, nature and the economy



Regulation of the Sea basin with help of marine spatial management tool



TEGNFORKLARING

PBL § 11 KOMMUNEPLANENS AREALDEL

Nåværende

Fremtidig

BEBYGGELSE OG ANLEGG (PBL § 11-7, nr 1)

FT Fritids- og turistformål

N Næringsvirksomhet

SAMFERDSELSANLEGG OG TEKNISK INFRASTRUKTUR (PBL § 11-7, nr 2)

Veg

H Havn

---- Farled

----- Småbåttled

BRUK OG VERN AV SJØ OG VASSDRAG (PBL § 11-7, nr 6)

FE Ferdsel

FA Farled

SH Småbåthavn

⌘ Fiske

A Akvakultur

NA Naturområde

FR Friiluftsområde

Kombinerte formål i sjø og vassdrag med eller uten tilhørende strandlinje

SH Småbåthavn

A Akvakultur

Kombinerte formål i sjø og vassdrag med eller uten tilhørende strandlinje

HENSYNSONER (PBL § 11-8)

H190 Andre sikringssoner (settefiskanlegg)

H570 Bevaring kulturminner

H710 Båndlegging for req. etter pbl. (nåv.)

Digitalization and standardization of port data, why?

- Better digital services
 - Less e-mails back and forth (100+ e-mails/10 h work for each port call)
 - Digital twin
 - 3D models, simulating port calls with small margins
 - New products: S-102/S-129 UKC
 - InnovationUtilization of ships loading capacity
- Utilization of ships loading capacity
 - 60 cm deeper port basin = 3000 tonn extra
- Autonomous operations
- Waste management: recive sorted waste from ship
- Establish new industry based on ports capacity
- Preparedness

Users

- Port authorities
- Municipalities
- Government agencies
 - The Norwegian Coastal Administration
 - The Norwegian Mapping Authority
 - The Norwegian Hydrographic Office
 - The Norwegian Pilots and Emergency Services
- Norwegian Armed Forces
- The Norwegian Pilots
- Emergency Services
- Business development
- Ships, shipping companies, navigators
- Autonomous ships and operations

photo credit: Port of Stavanger



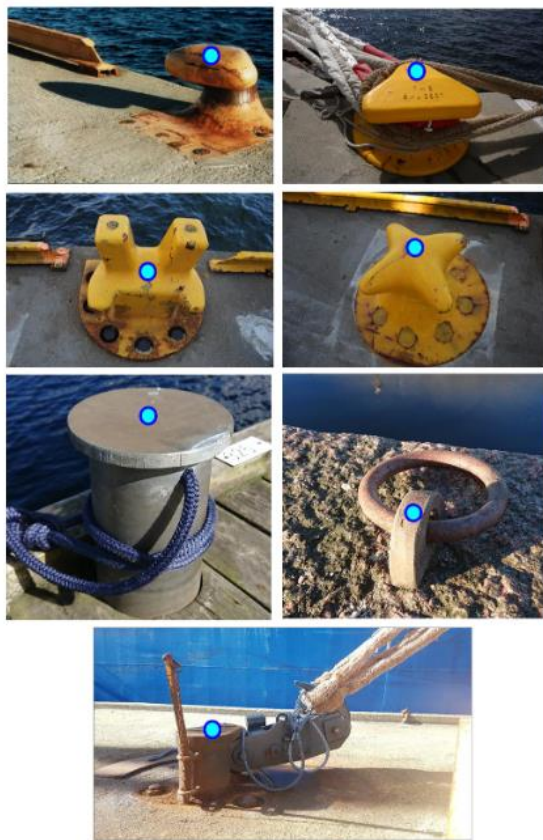
What has been done

- National Port Standard
 - Mapped 17 ports
 - Registration instruction
 - Development of digital infrastructure
-
- Outstanding work :
 - Finish Product specification (norwegian/english)
 - Mapping more ports
 - Participation NIPWIG on development of international standard (S-131)



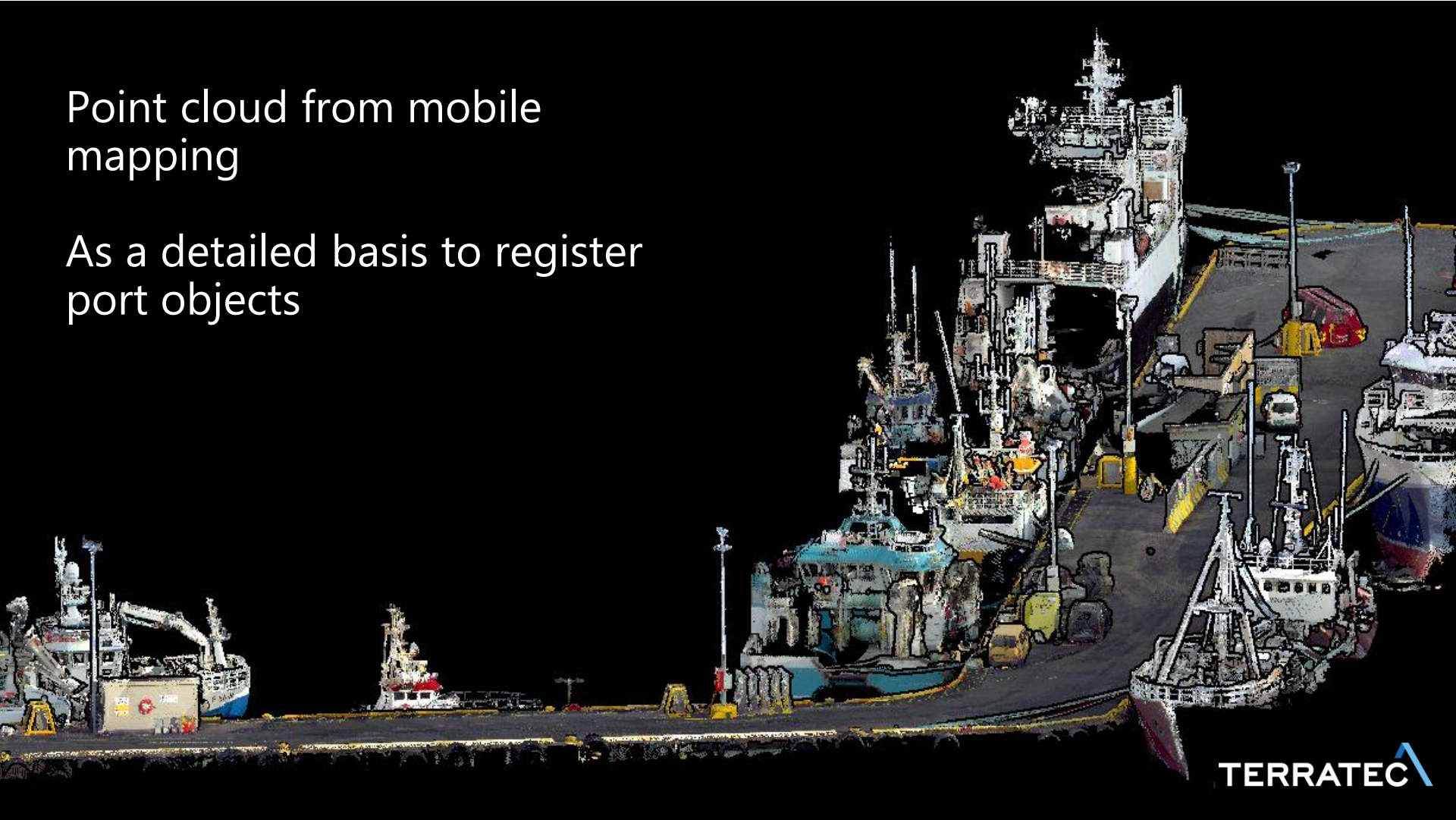
Photo credit: Port of Kristiansand

Registration instruction, example



Point cloud from mobile
mapping

As a detailed basis to register
port objects

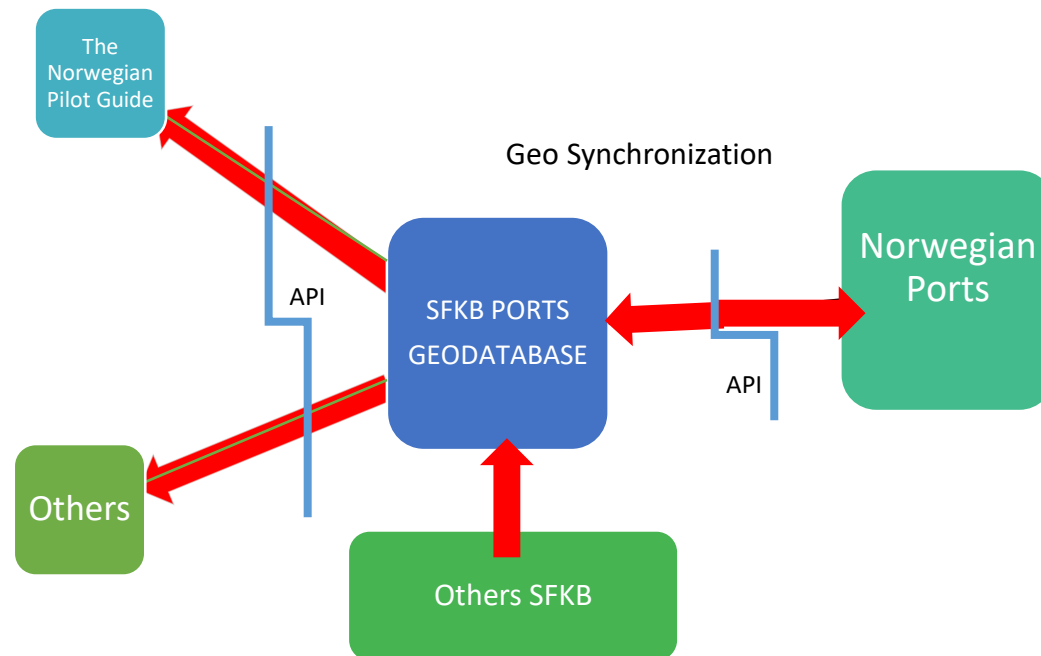


TERRATEC

TERRATEC

GeoSynchronization SFKB – PORTSGEODATABASE

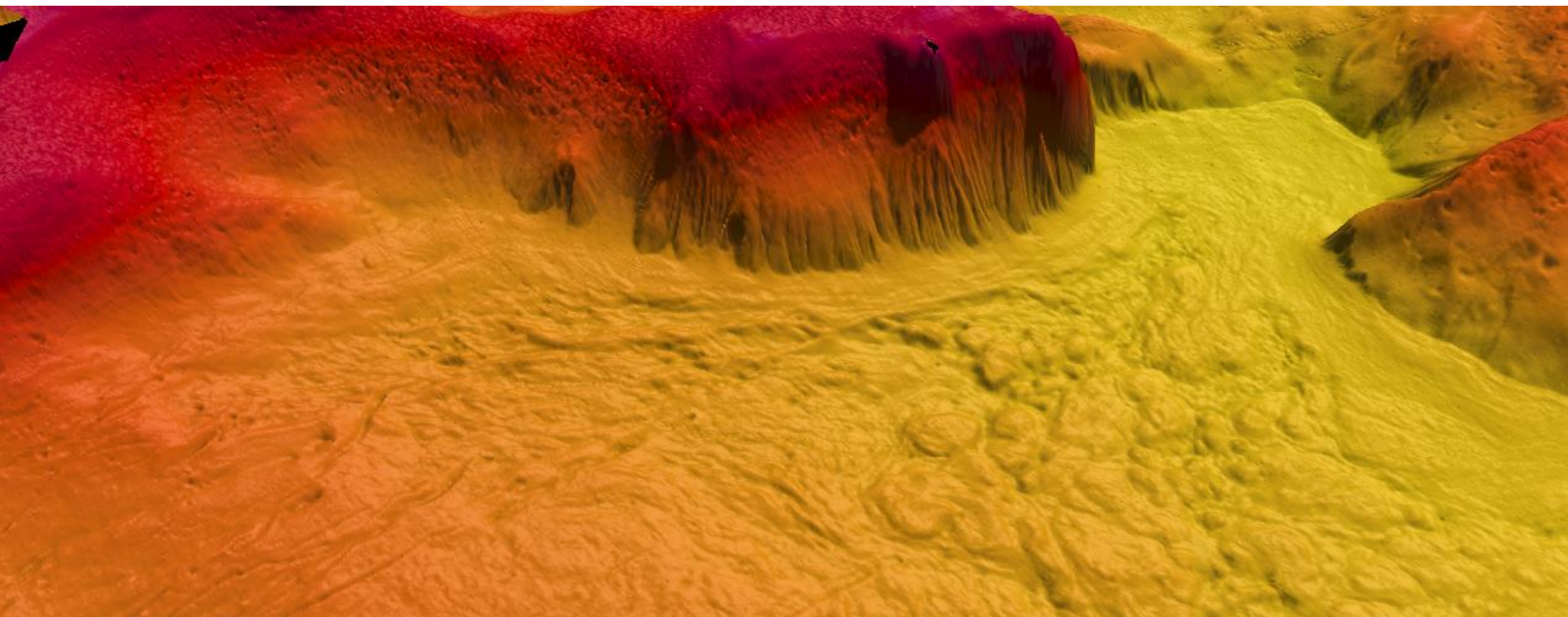
(SFKB common map database)





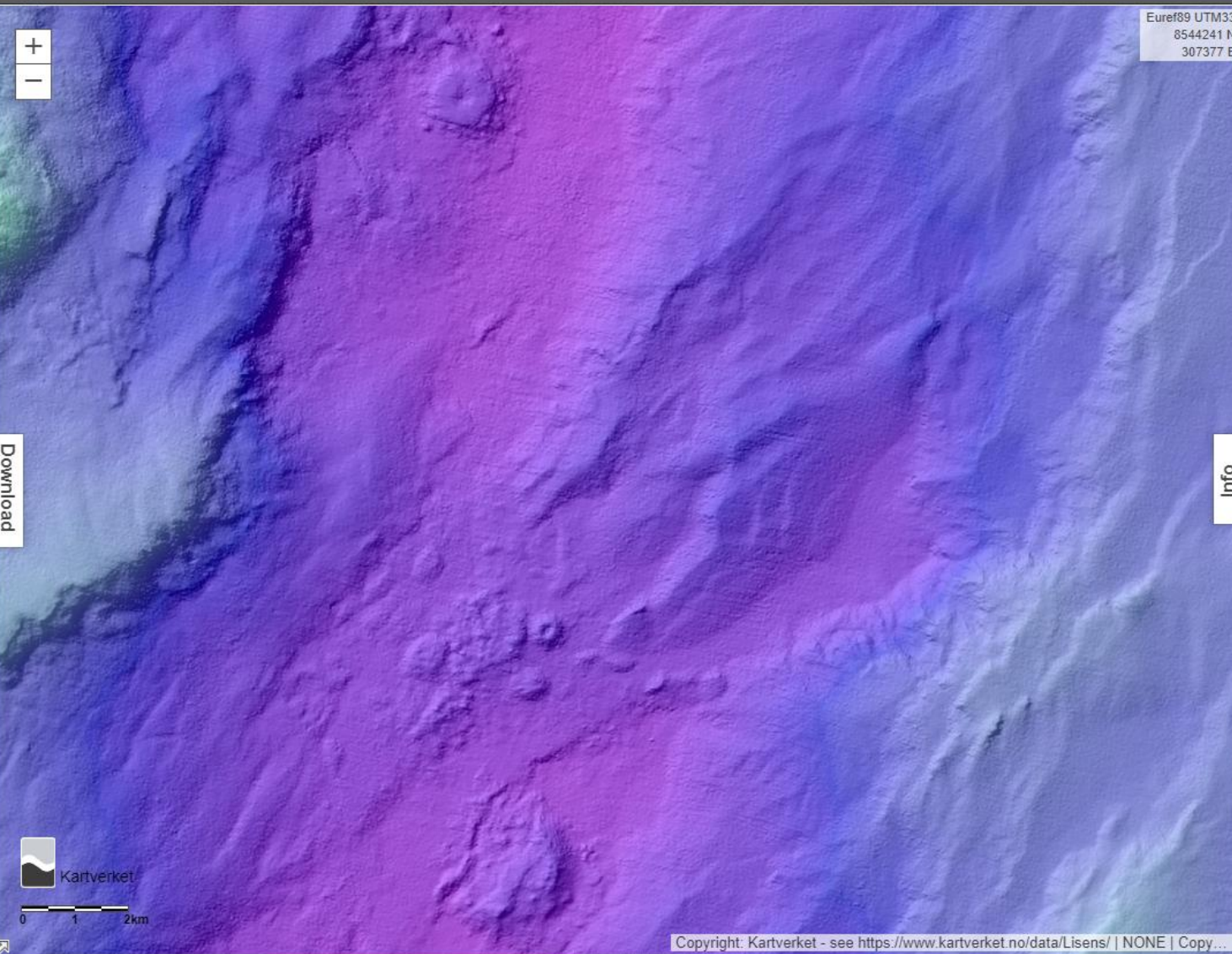
Kartverket

Launch of website
dybdata.no (depthdata)



Kartverket

Norwegian Mapping Authority



Euref89 UTM33
8544241 N
307377 E

Map layers Last projects

Basemap

Circumpolar basemap

Batymetri

☒ D-cell

☒ Dynamic color depth

☐ Slope

☐ Ruggedness (beta)

Bathymetry filter

☒ 5m

☒ 25m

☒ 50m

Bathymetry

☐ 5m resolution

☐ 25m resolution

☐ 50m resolution

☐ Per year

☐ Per resolution

Surveys

☐ Per type

☐ Per year

Info

Projects within map extent

☐ dof-2019-nh05-b02 50m

☐ dof-2019-nh05-b02 25m

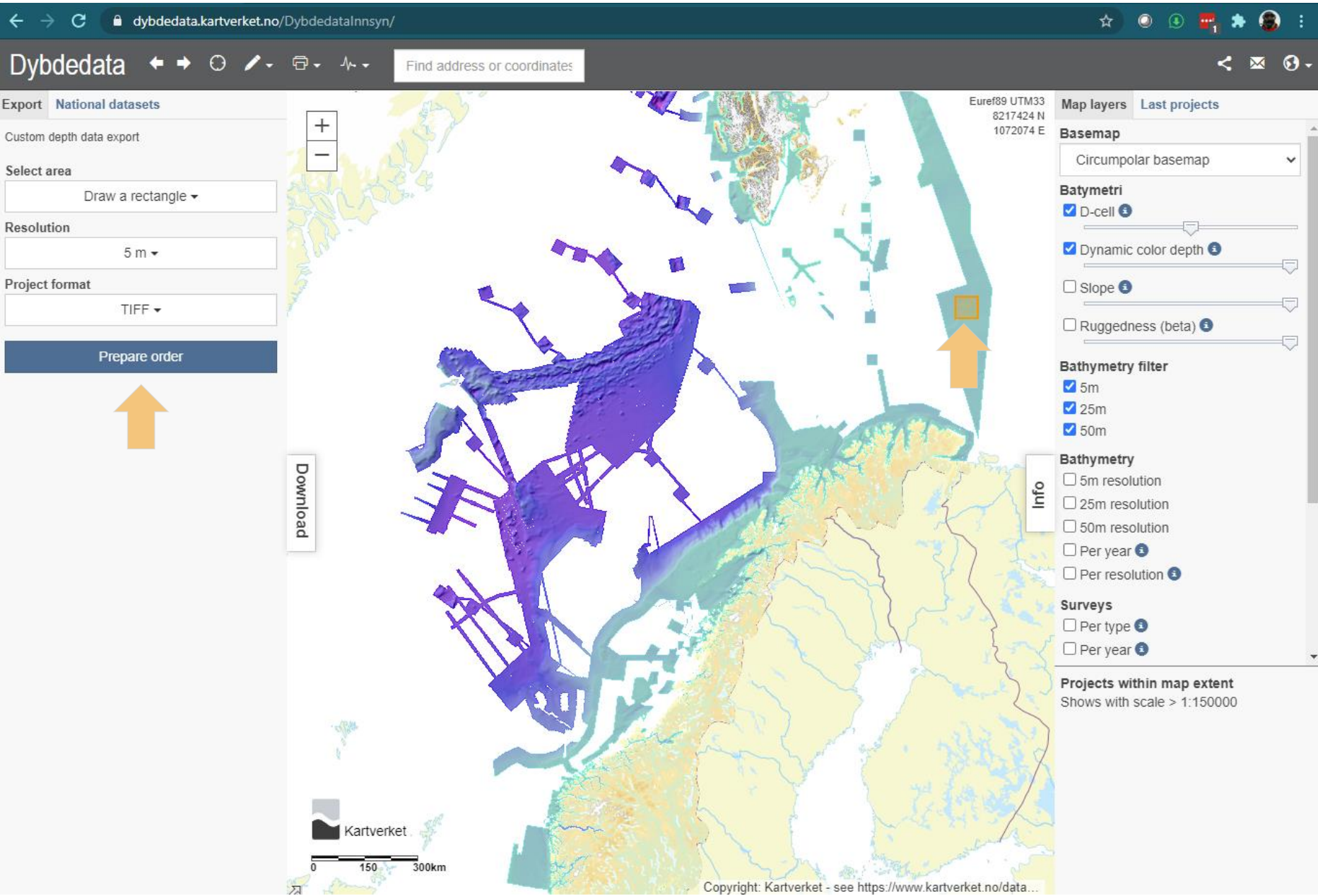
☐ dof-2019-nh05-b02 50m

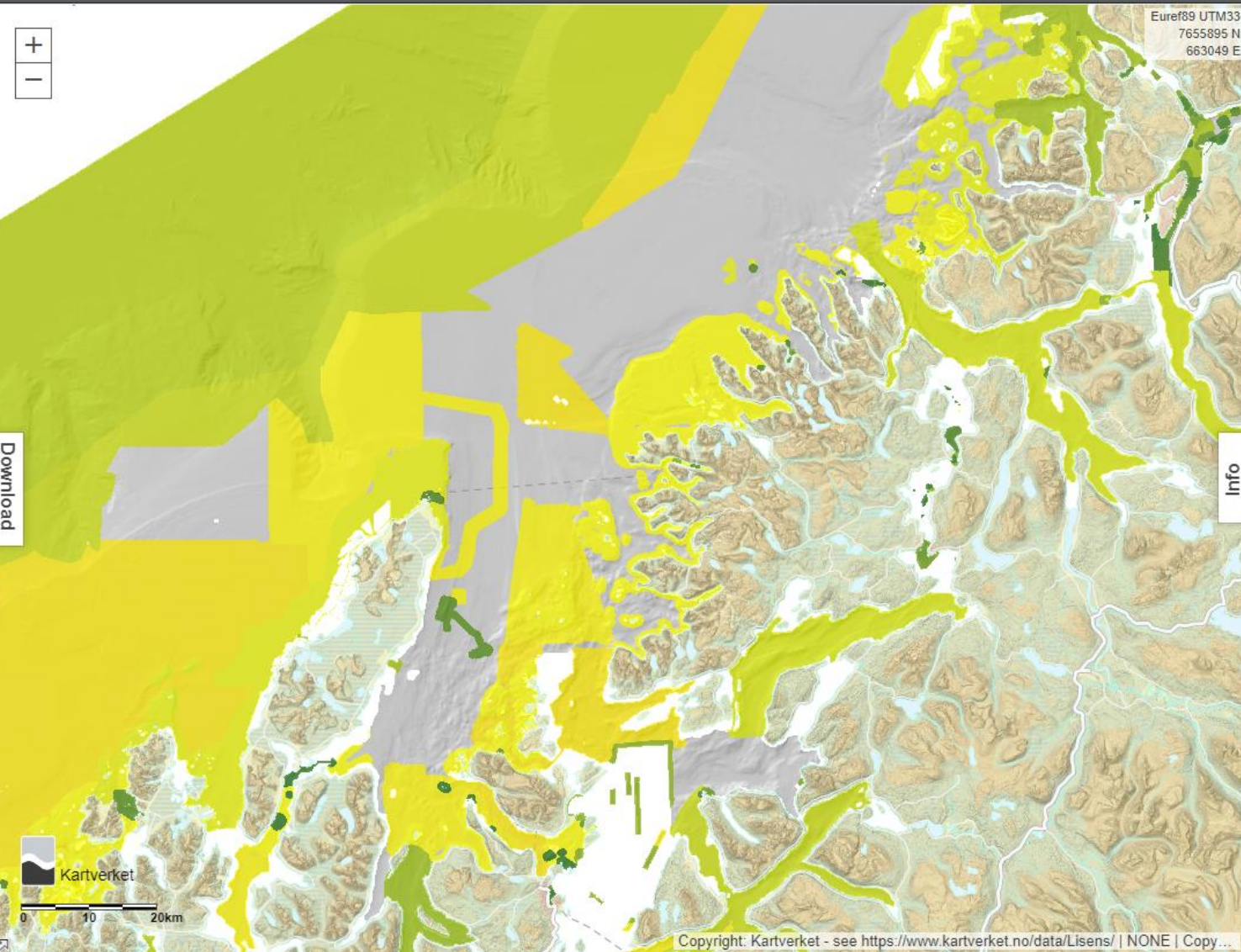
☐ dof-2019-nh05-b02 25m

☐ dof-2019-nh05-b02 50m

☐ dof-2019-nh05-b02 25m







Map layers Last projects

☒ Dynamic color depth ⓘ

☐ Slope ⓘ

☐ Ruggedness (beta) ⓘ

Bathymetry filter

☒ 5m

☒ 25m

☒ 50m

Bathymetry

☐ 5m resolution

☐ 25m resolution

☐ 50m resolution

☒ Per year ⓘ

Bathymetry by year

Red = 1991, Green = 2021



☐ Per resolution ⓘ

Surveys

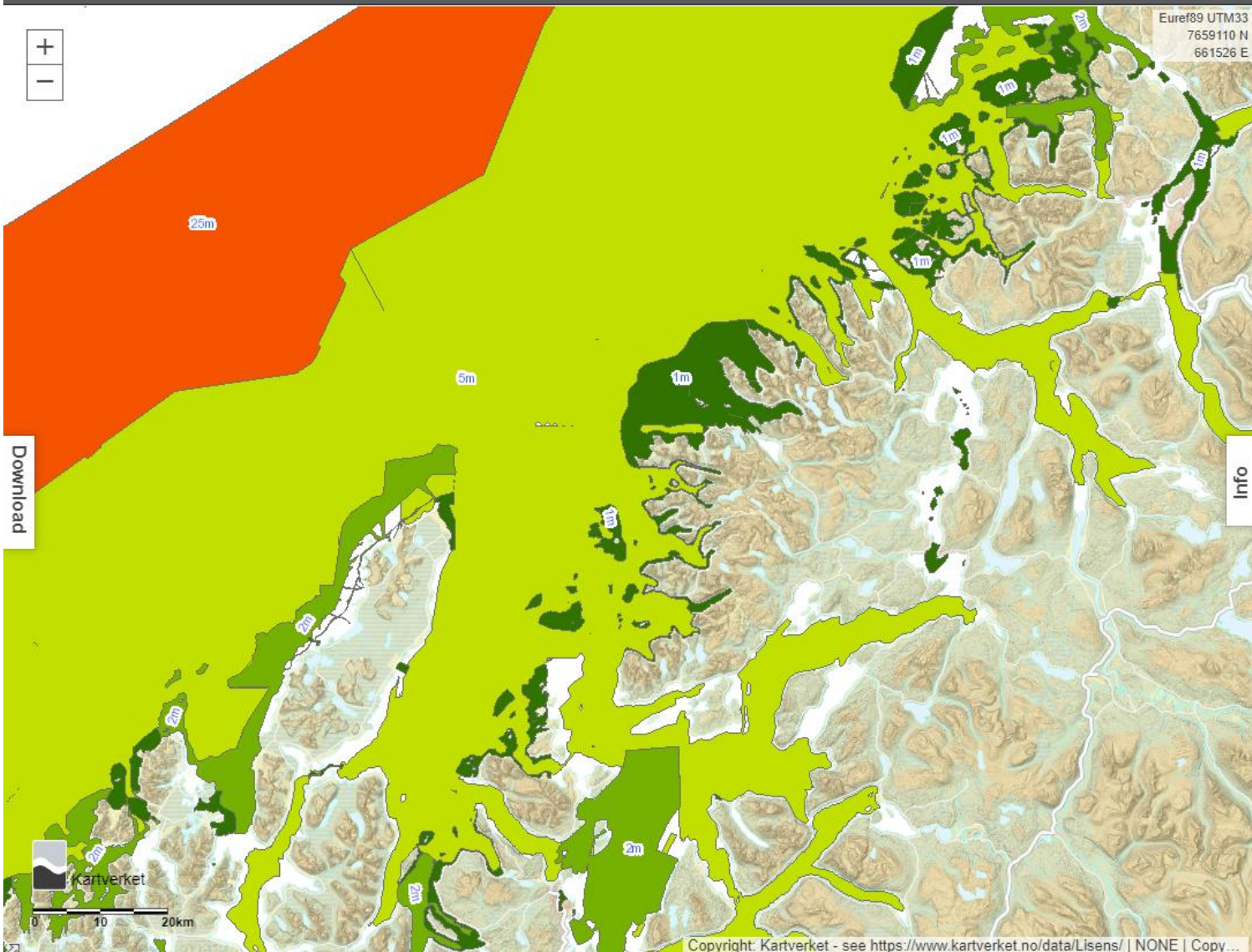
☐ Per type ⓘ

☐ Per year ⓘ

Surveys by year

Projects within map extent

Shows with scale > 1:150000



Euref89 UTM33
7659110 N
661526 E

Map layers

Last projects



☒ Dynamic color depth ⓘ

☐ Slope ⓘ

☐ Ruggedness (beta) ⓘ

Bathymetry filter

☒ 5m

☒ 25m

☒ 50m

Bathymetry

☐ 5m resolution

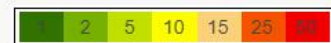
☐ 25m resolution

☐ 50m resolution

☐ Per year ⓘ

☒ Per resolution ⓘ

Surveys by resolution



Surveys

☐ Per type ⓘ

☐ Per year ⓘ

Projects within map extent

Shows with scale > 1:150000