

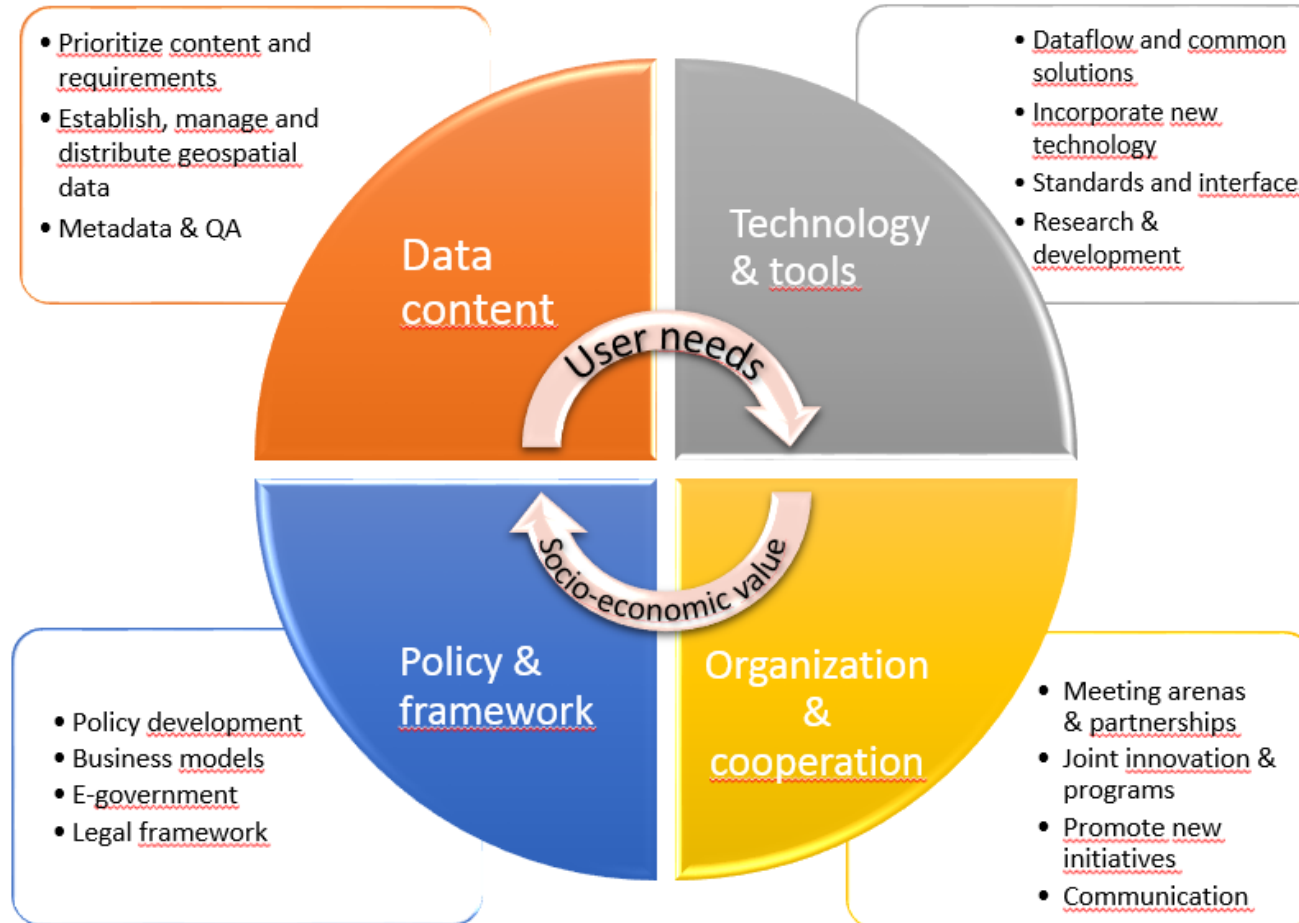


Kartverket

Current issues within the marine domain of the national SDI in Norway

Gerhard Heggebø
Geodata Coordinator
Hydrographic Service
Norwegian Mapping Authority

National Spatial Data Infrastructure

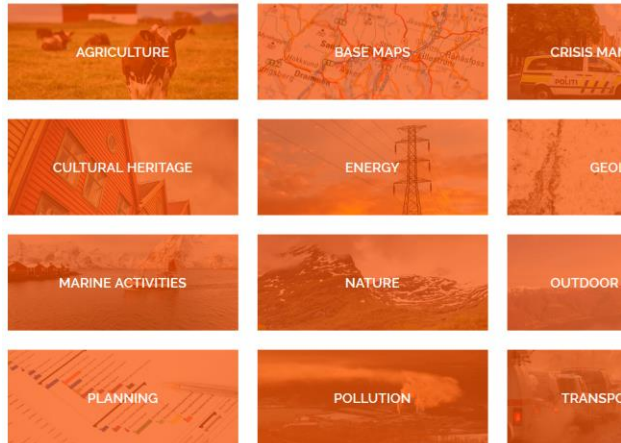


Geonorge.no



Username and passwords >

TOPICS



TITLE	TYPE	DATA OWNER	OPEN DATA	SHOW IN MAP	DOWN-LOAD
Hav og is - bølgekart	Dataset	Norwegian Meteorological Institute			
Ocean forecasts for the Nordic Seas (daily means)	Dataset	Norwegian Meteorological Institute			
Sea surface forecast	Dataset	Norwegian Meteorological Institute			
Kystinfo - Farledsforskrift	Application	The Norwegian Coastal Administration			
Marine transport - ISPS ports	Dataset	The Norwegian Coastal Administration			
INSPIRE Sea regions	Dataset	Norwegian Mapping Authority			
Marine transport - pilot areas	Dataset	The Norwegian Coastal Administration			
GeodataHI - Institute of marine research	Application	Institute of Marine Research			
Nasjonale laksefjorder i Finnmark	Dataset	Fylkesmannen i Finnmark			
Kystinfo Preperadness	Application	The Norwegian Coastal Administration			
Nautical chart vector	Dataset	Norwegian Mapping Authority			
Kystinfo web map solution	Application	The Norwegian Coastal Administration			
Electronic Navigational Charts (ENC)	Dataset	Norwegian Mapping Authority			
Sjøkart - elektroniske sjøkartdata	Dataset	Norwegian Mapping Authority			
The sea fishing registry in Norway	Dataset	Norwegian Environment Agency			
Strømretning og -fart	Dataset	Norwegian Meteorological Institute			

Distributions

The service

TITLE	TYPE	DATA OWNER	OPEN DATA	URL	SHOW IN MAP	FORMAT
Særlig verdifulle og sårbare områder WFS	WFS service	Norwegian Environment Agency				GML

Datasets the service operates on

TITLE	TYPE	DATA OWNER	OPEN DATA	DOWN-LOAD	FORMAT
Valuable areas in marine areas	External download site	Norwegian Environment Agency			ESRI Shape

Contact information



Contact metadata:

wms@miljodir.no - Norwegian Environment Agency

Contact owner:

wms@miljodir.no - Norwegian Environment Agency

Contact publisher:

[wms@miljodir.no](http://wms.miljodir.no) - Norwegian Environment Agency

Distribution

Format:
• GML

Distribution type: WFS service

Get Capabilities Url: <http://wms.miljodirektoratet.no/geoserver/svo/ows>

Units of distribution: landsfiler

Constraints

Use limitations: No conditions apply

Access constraints: Open data

Reference laws: Stortingmelding

Marine Spatial Management Tool

Support the marine spatial planning process in Norway with authoritative data

Governmental initiative based on the need for a more coherent and uniform geographic information content, suitable for underpinning tasks attached to marine spatial planning and marine management

- More effective updates of the management plans
- Better overview over political decisions and actions related to marine management
- Contribute to more transparency, openness and increased involvement from the stakeholders

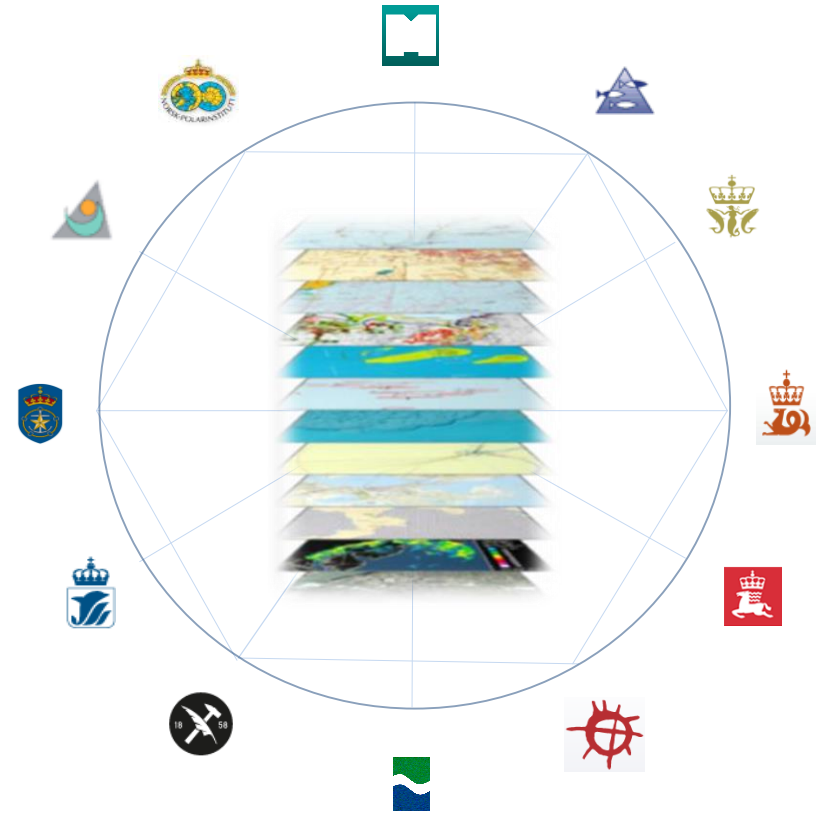


Marine Spatial Management Tool

Cross-sectoral project through an intergovernmental cooperation

Main stakeholders

- Norwegian Environment Agency
- Norwegian Mapping Authority
- BarentsWatch
- Directorate of Fisheries
- Institute of Marine Research
- Norwegian Coastal Administration
- Norwegian Maritime Authority
- Norwegian Petroleum Directorate
- Petroleum Safety Authority
- Norwegian Radiation Protection Authority
- National Institute of Nutrition and Seafood Research
- Norwegian Polar Institute
- Norwegian Mapping Authority

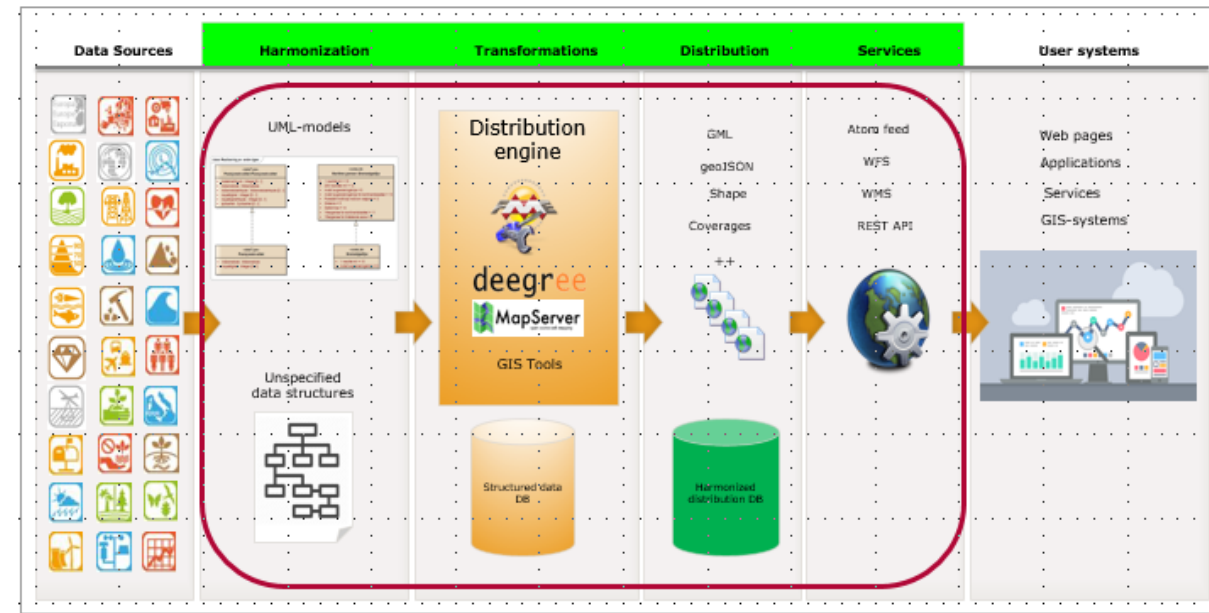


Marine Spatial Management Tool

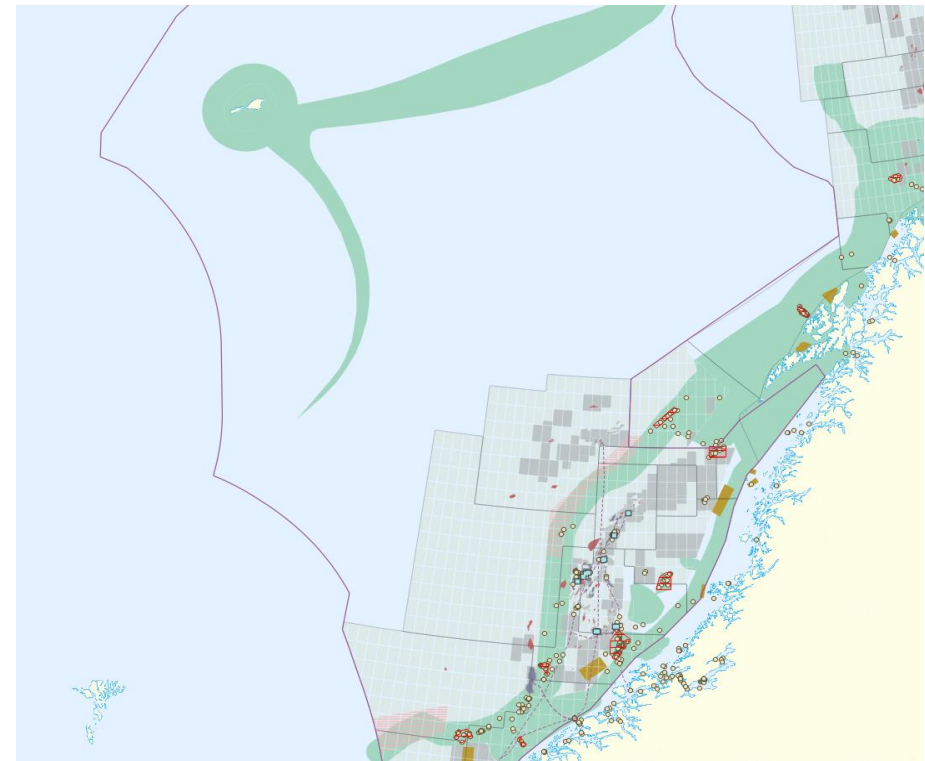
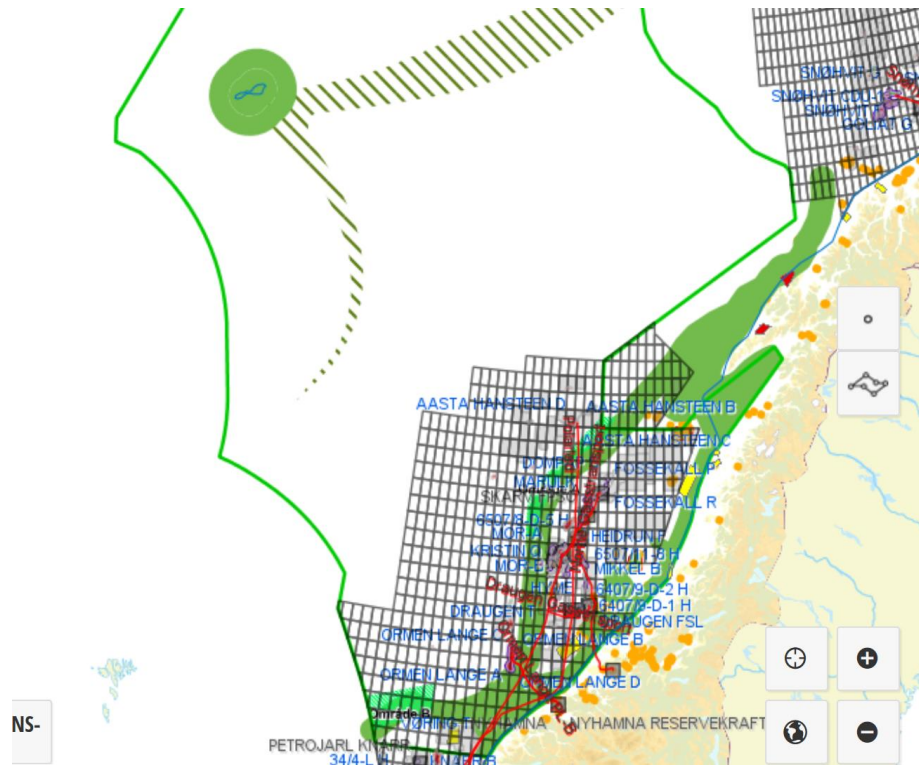
The data foundation

Key elements:

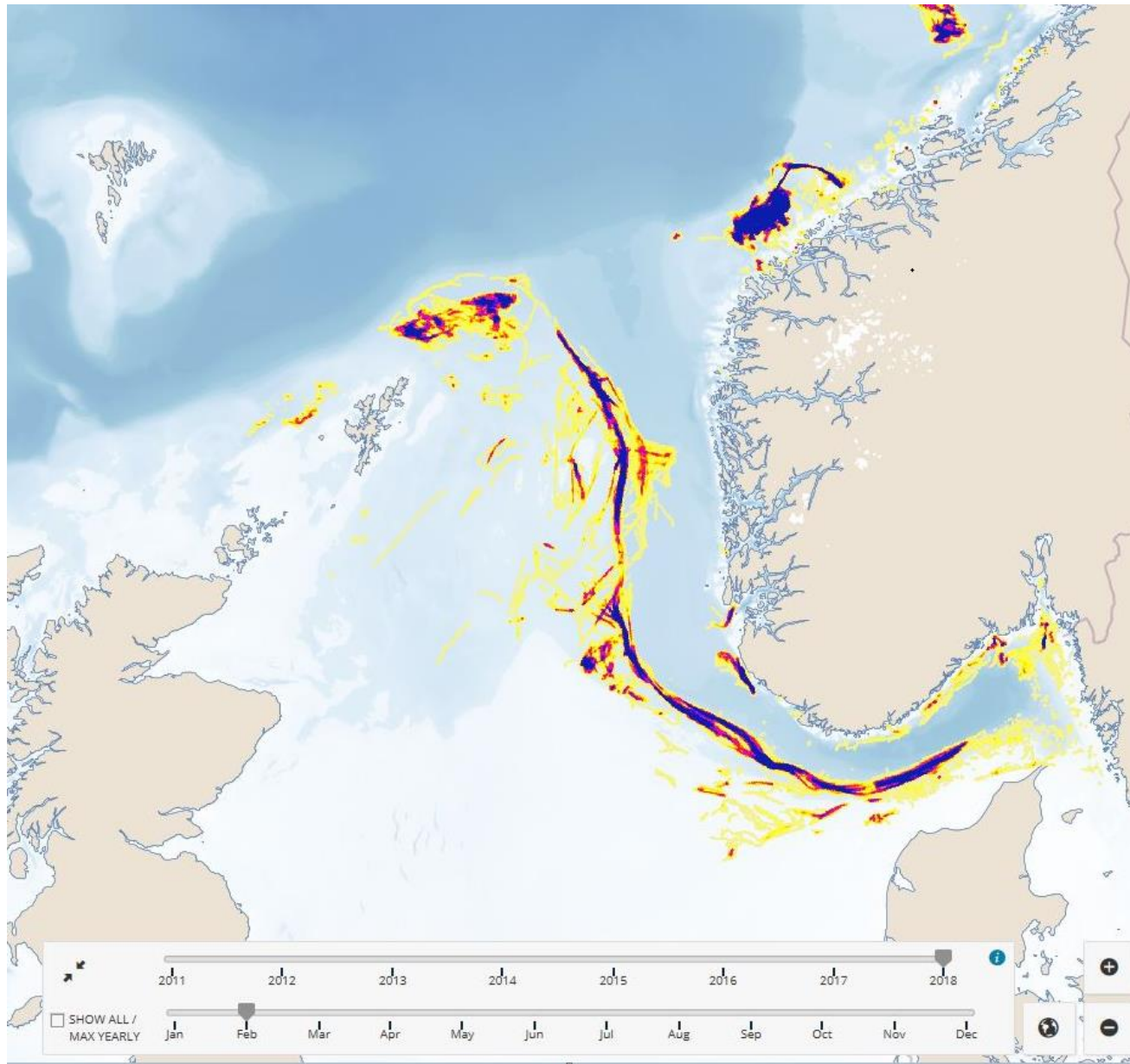
- Thematic datasets provided by the corresponding sectoral authority (data owners)
- Data available through standardized geospatial services by the individual data owner. (Mainly OGCs WMS, WMS-T, and WFS at the moment).
- Datasets and services documented by the data owner through metadata registrations in the national SDI (official announcement / productification of a dataset / service)
- Terminology and cartography harmonized and adjusted to the user needs



Harmonizing cartography



Support time dimension



Attributes and linked data

The image shows a web browser window displaying the FACTPAGES website from the Norwegian Petroleum Directorate. The browser address bar shows the URL: factpages.npd.no/FactPages/Default.aspx?nav1=facility&nav2=PageVi. The website has a navigation menu with tabs for Wellbore, Licence, BAA, Field, Discovery, Company, Survey, Facility (selected), TUF, and Stratigraphy. A search bar is visible at the top right.

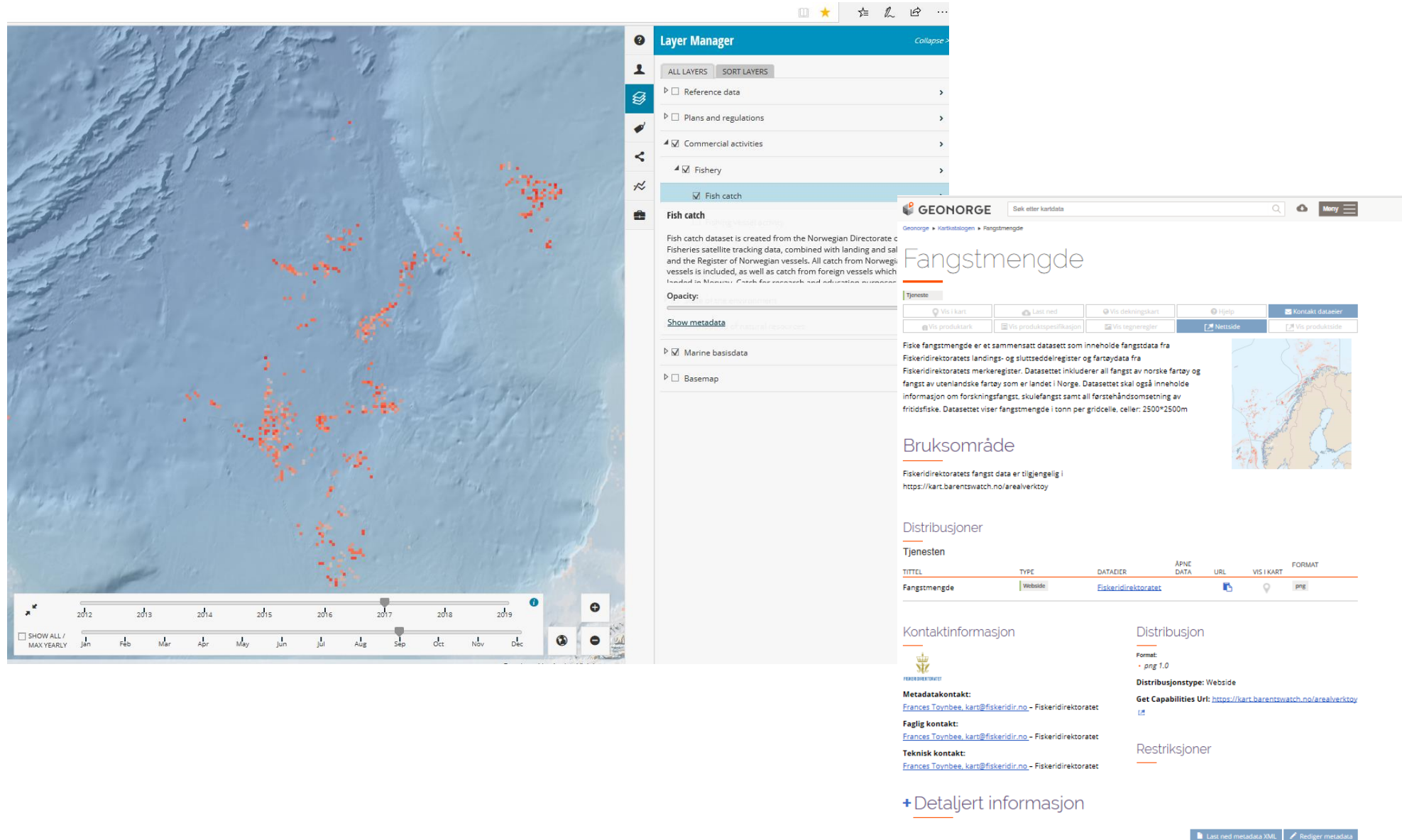
The main content area is divided into several sections:

- Attributes:** A list of facility identifiers including 1/2-1 IM Blane, 1/2-1 PE Blane, 1/2-1 PW Blane, 10/1-CDP1, 15/12-C Rev, 15/12-D Rev, 15/12-E-1 H Gaupe, 15/5-A-5 H Glitne, 15/5-A-7 H Glitne, 15/5-B-1 H Glitne, 15/6-A-1 H Glitne, 15/6-A-2 H Glitne, 15/6-A-3 H Glitne, 15/6-A-4 H Glitne, 15/6-A-5 H Glitne, 15/6-A-6 H Glitne, 15/9-E H, 24/6-A-5 Alvheim, 24/6-B-5 Alvheim, 24/9-P-6 AH Volund, 24/9-P-7 VIPER, 24/9-P-8 KOBRA, 25/11-A-19 H BALDE, 25/11-A-20 H BALDE, 25/11-A-21 H BALDE, 25/11-A-22 H BALDE, and 25/11-A-23 H BALDE.
- General information:** A table of key data for the selected facility:

Name	FLA
Nation	GRE
NPDID facility	377
Factmaps in new window	link
Kind	SUB
Phase	IN S
Functions	T-C
Surface facility	N
Water depth [m]	140
Design lifetime [year]	30
Belongs to	TAM
Current operator	Gas
Startup date	12.1
NS degrees	61°
EW degrees	1° 4
Geodetic datum	ED5
UTM zone	31
NS UTM	676
EW UTM	429
- Map:** A map of Norway showing the location of the facility. A pop-up window for the facility provides additional details:

Type	SUBSEA STRUCTURE
Oppstart	2007/10/12 00:00
Funksjon	T-CONNECTION
Faktaside URL	Link til faktaside
Faktakart URL	Link til faktakart
Installasjonstype	Bunninstallasjon
Operatørselskap	Gassco AS

Metadata integration



The screenshot displays a web application interface for metadata integration. On the left, a map shows fish catch data points in red and orange over a blue ocean background. A 'Layer Manager' panel on the right lists layers: Reference data, Plans and regulations, Commercial activities, Fishery, and Fish catch. The 'Fish catch' layer is selected. Below the map is a timeline from 2012 to 2019, with a 'SHOW ALL / MAX YEARLY' option.

The right panel, titled 'GEONORGE', shows the metadata for the 'Fangstmengde' dataset. It includes a search bar, a 'Nettside' button, and a description of the dataset. Below the description is a table of 'Bruksområde' (Usage) and 'Distribusjoner' (Distributions). The 'Distribusjoner' table has columns for 'TITTEL', 'TYPE', 'DATADIER', 'ÅPNE DATA', 'URL', 'VIS I KART', and 'FORMAT'. The 'Fangstmengde' entry is listed with 'Webside' as the type and 'Fiskeridirektoratet' as the URL. Below the table is a 'Kontaktinformasjon' section with contact details for Frances Toynbee, kart@fiskeridir.no. A 'Distribusjon' section shows the format as 'png 1.0' and the distribution type as 'Webside'. A 'Restriksjoner' section is also present. At the bottom, there is a '+ Detaljert informasjon' link and buttons for 'Last ned metadata XML' and 'Rediger metadata'.

Layer Manager

- Reference data
- Plans and regulations
- Commercial activities
- Fishery
- Fish catch

Fish catch

Fish catch dataset is created from the Norwegian Directorate of Fisheries satellite tracking data, combined with landing and sale data from the Register of Norwegian vessels. All catch from Norwegian vessels is included, as well as catch from foreign vessels which landed in Norway. Catch for research and education purposes is excluded.

Opacity: 100%

Show metadata

Marine basisdata

Basemap

GEONORGE | Søkk etter kartdata

Geonorge » Kartstøtten » Fangstmengde

Fangstmengde

Tjeneste

Vis i kart | Last ned | Vis delingskart | Hjelp | Kontakt databer

Vis produktark | Vis produktspesifikasjon | Vis tegnelegger | Nettside | Vis produktside

Fiske fangstmengde er et sammensatt datasett som inneholder fangstdata fra Fiskeridirektoratets landings- og sluttseideregister og fartøydata fra Fiskeridirektoratets merkeregister. Datasettet inkluderer all fangst av norske fartøyer og fangst av utenlandske fartøyer som er landet i Norge. Datasettet skal også inneholde informasjon om forskningsfangst, skulefangst samt all førstehåndsomsetning av frittidsfiske. Datasettet viser fangstmengde i tonn per gridcelle, celler: 2500*2500m

Bruksområde

Fiskeridirektoratets fangst data er tilgjengelig i <https://kart.barentswatch.no/arealverktoy>

Distribusjoner

Tjenesten

TITTEL	TYPE	DATADIER	ÅPNE DATA	URL	VIS I KART	FORMAT
Fangstmengde	Webside			Fiskeridirektoratet		PNG

Kontaktinformasjon

Metadatakontakt:
[Frances Toynbee, kart@fiskeridir.no](mailto:Frances.Toynbee.kart@fiskeridir.no) - Fiskeridirektoratet

Faglig kontakt:
[Frances Toynbee, kart@fiskeridir.no](mailto:Frances.Toynbee.kart@fiskeridir.no) - Fiskeridirektoratet

Teknisk kontakt:
[Frances Toynbee, kart@fiskeridir.no](mailto:Frances.Toynbee.kart@fiskeridir.no) - Fiskeridirektoratet

Distribusjon

Format:
• png 1.0

Distribusjonstype: Webside

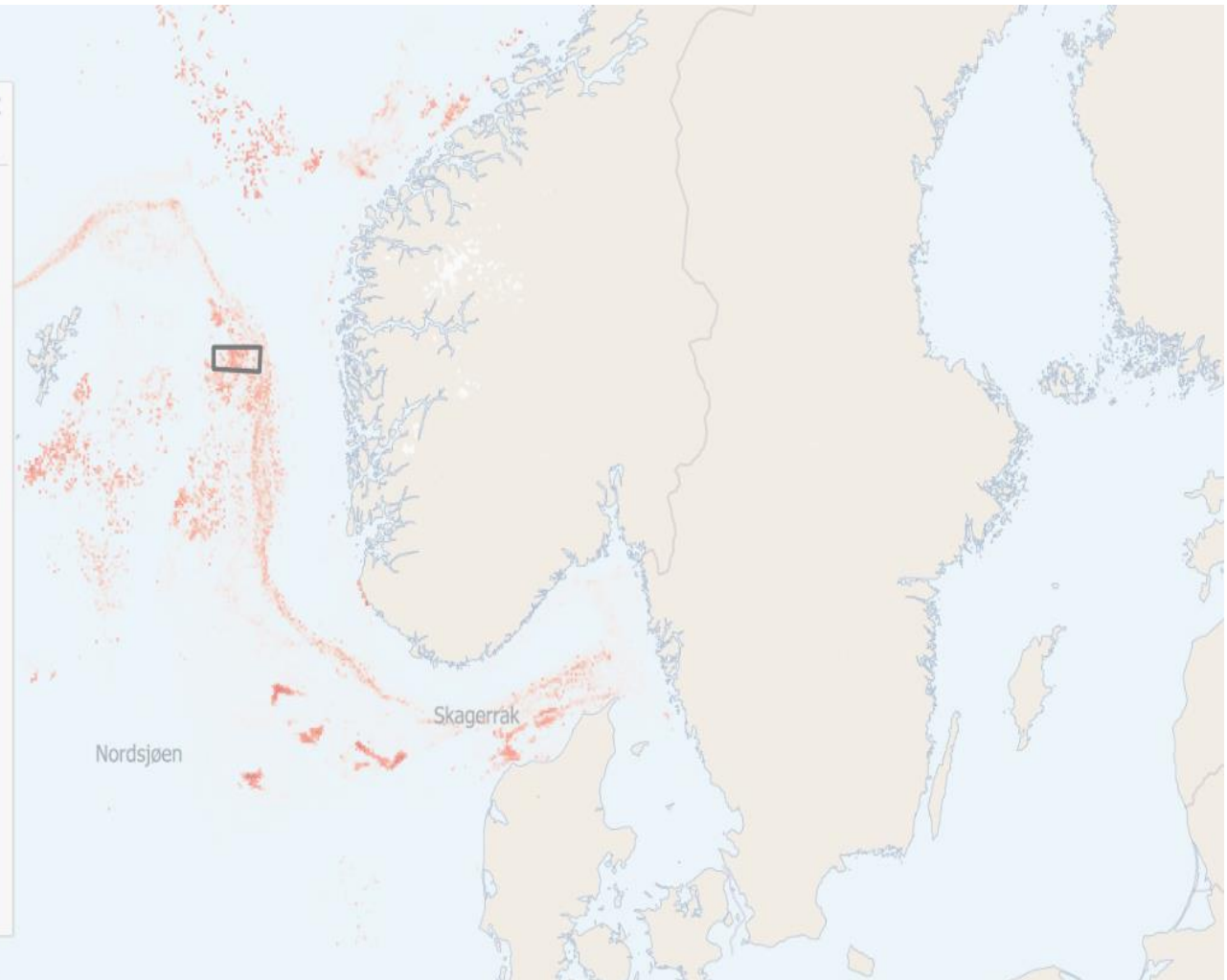
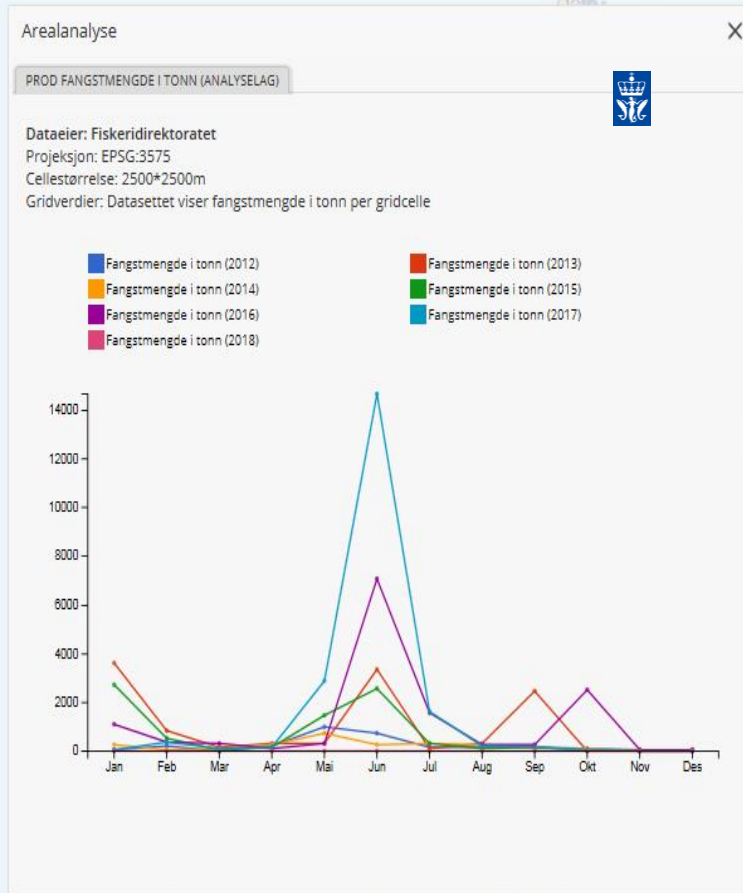
Get Capabilities Url: <https://kart.barentswatch.no/arealverktoy>

Restriksjoner

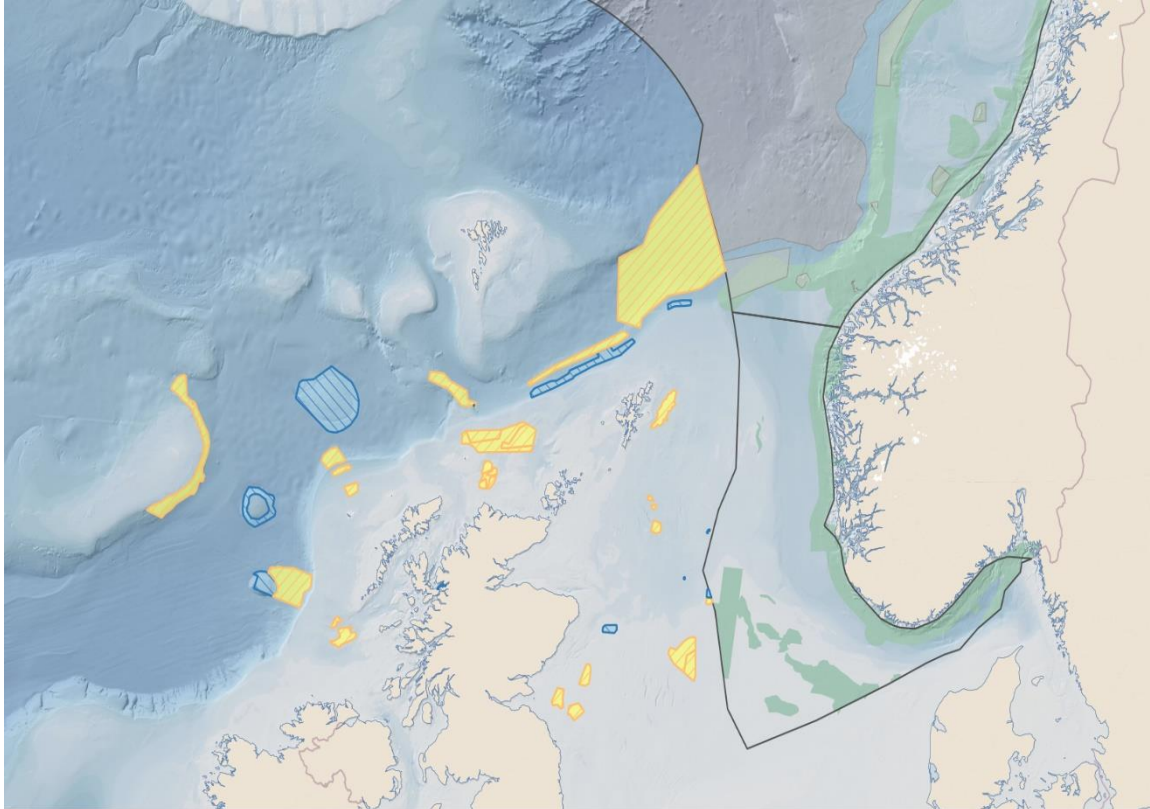
+ Detaljert informasjon

Last ned metadata XML | Rediger metadata

Geospatial statistics

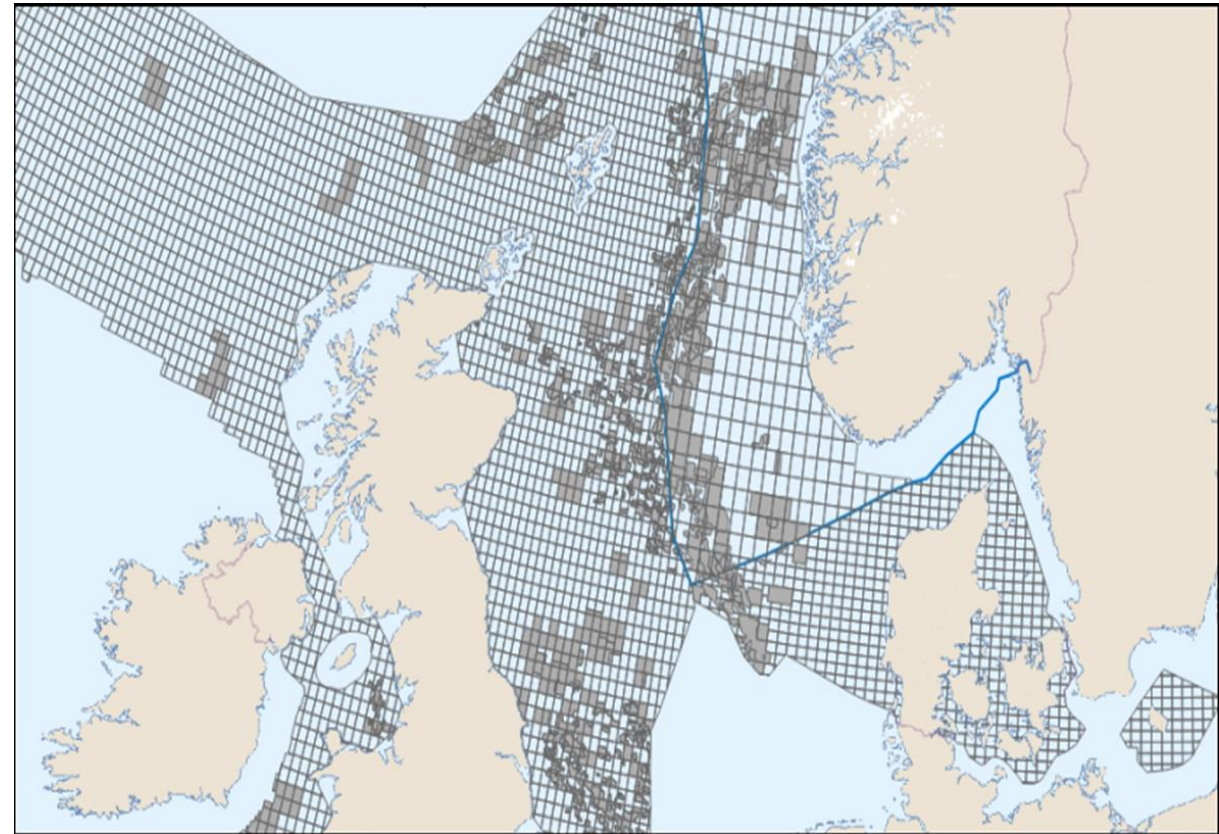


Re-use of data and services in a cross-border setting



Example from marine regulations - UK and Norway

Example from licencing systems - Norway, UK, Den



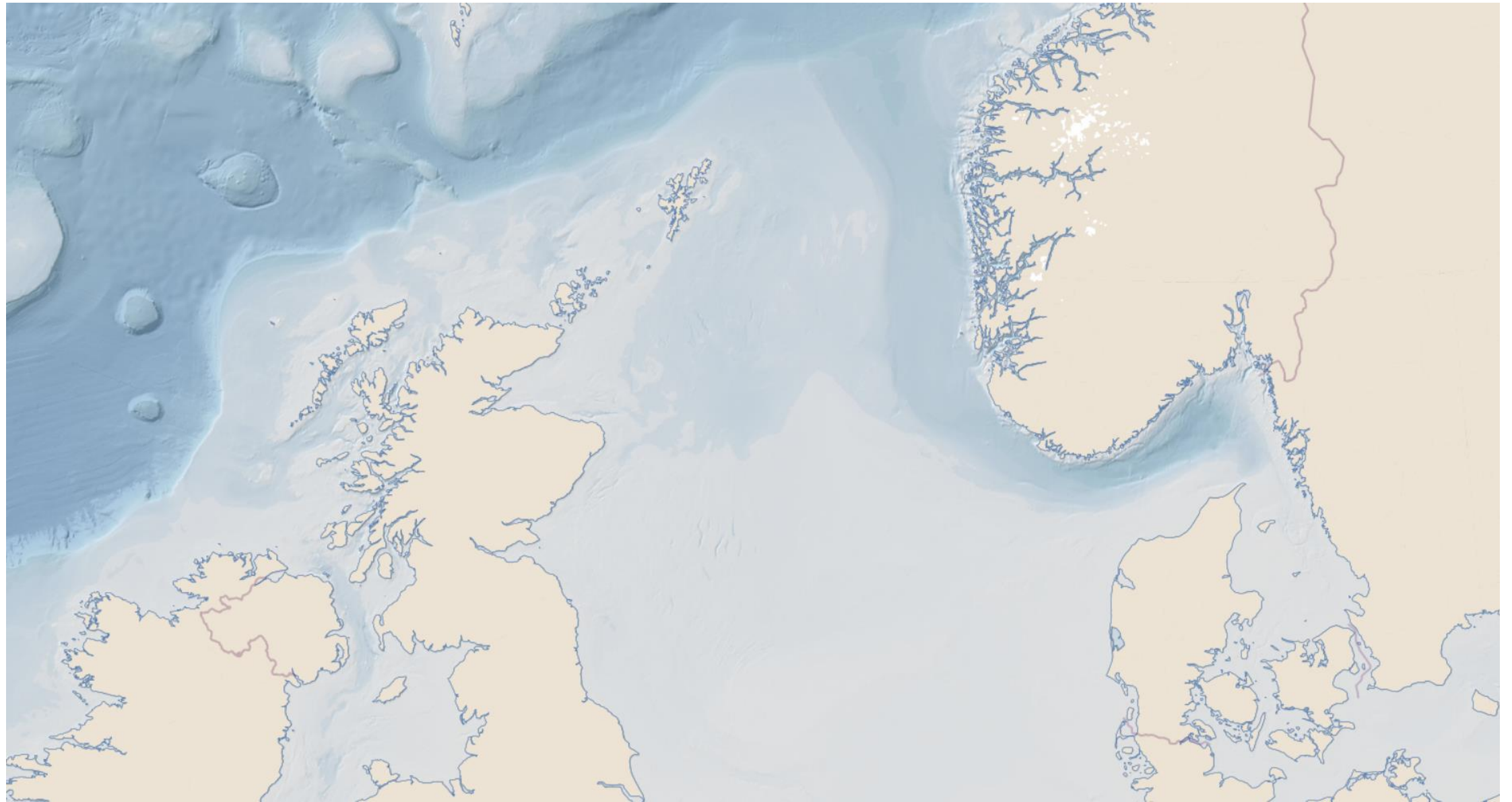
Marine Spatial Management Tool

Examples of building thematic maps

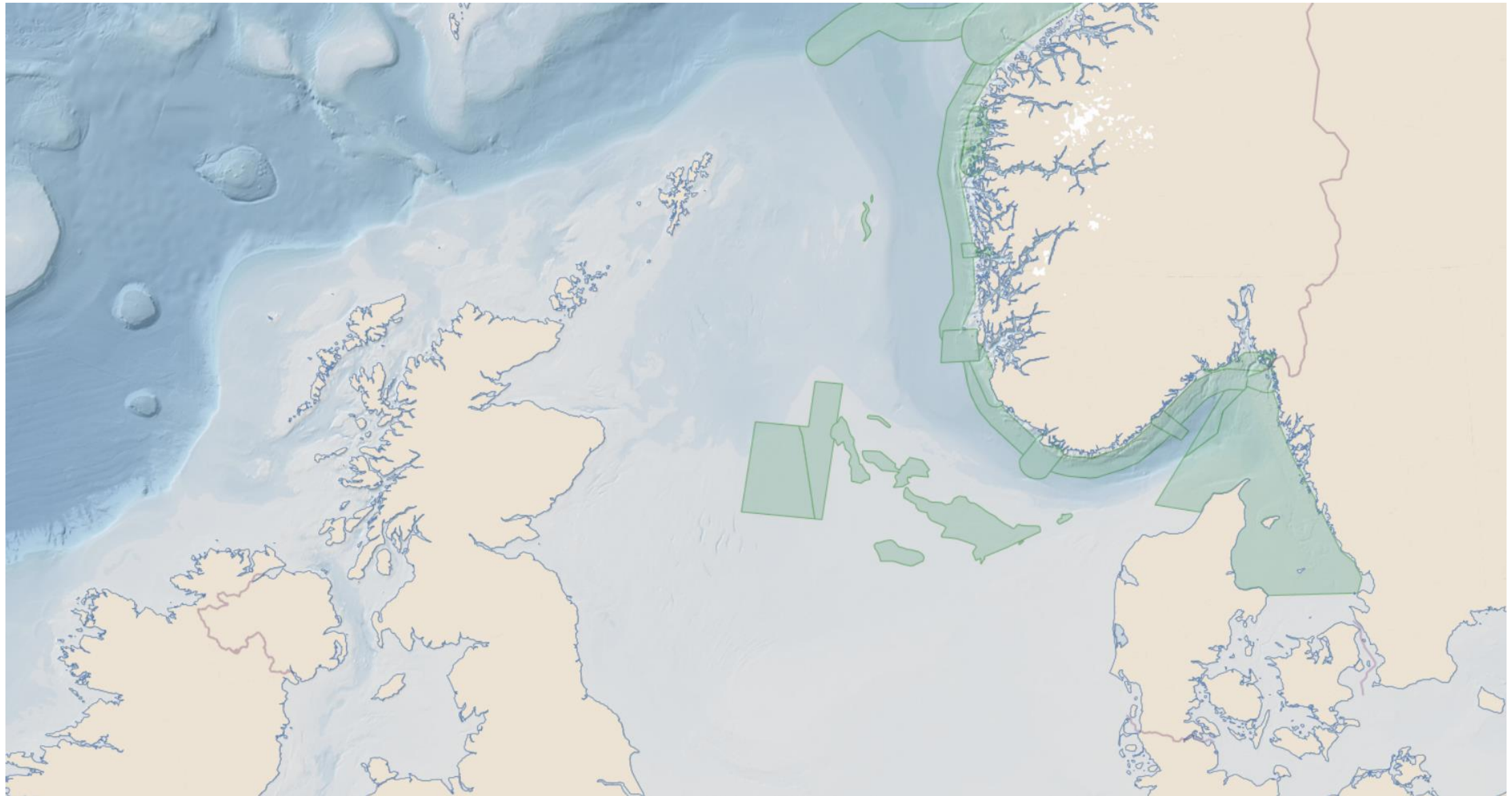
Status at the moment:

- 30 main categories of thematic data available through corresponding geospatial services
- 11 governmental agencies serving their respective thematic datasets and geospatial services

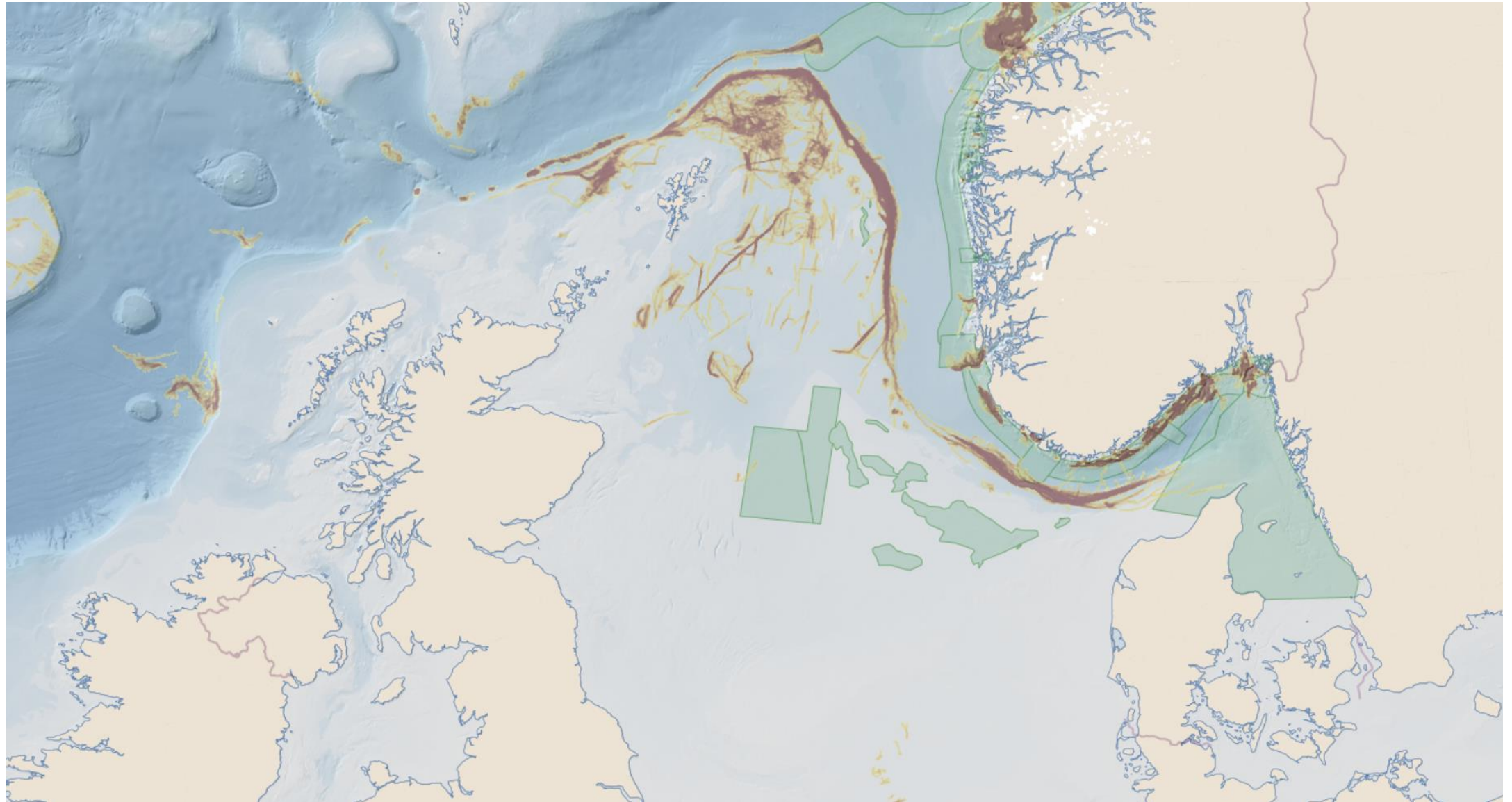
Base map (+ bathymetry)



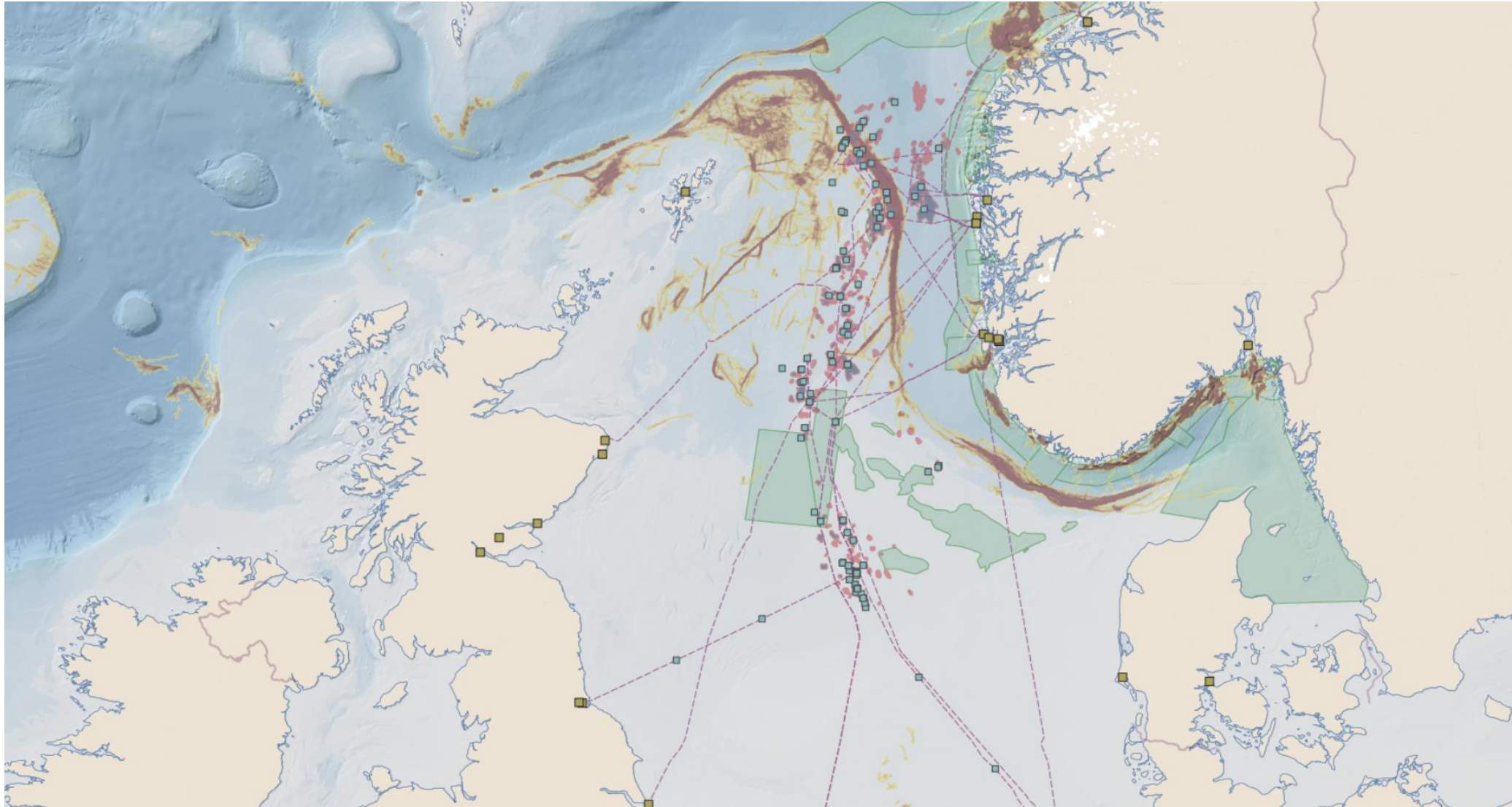
Particularly valuable marine areas  + Base map 



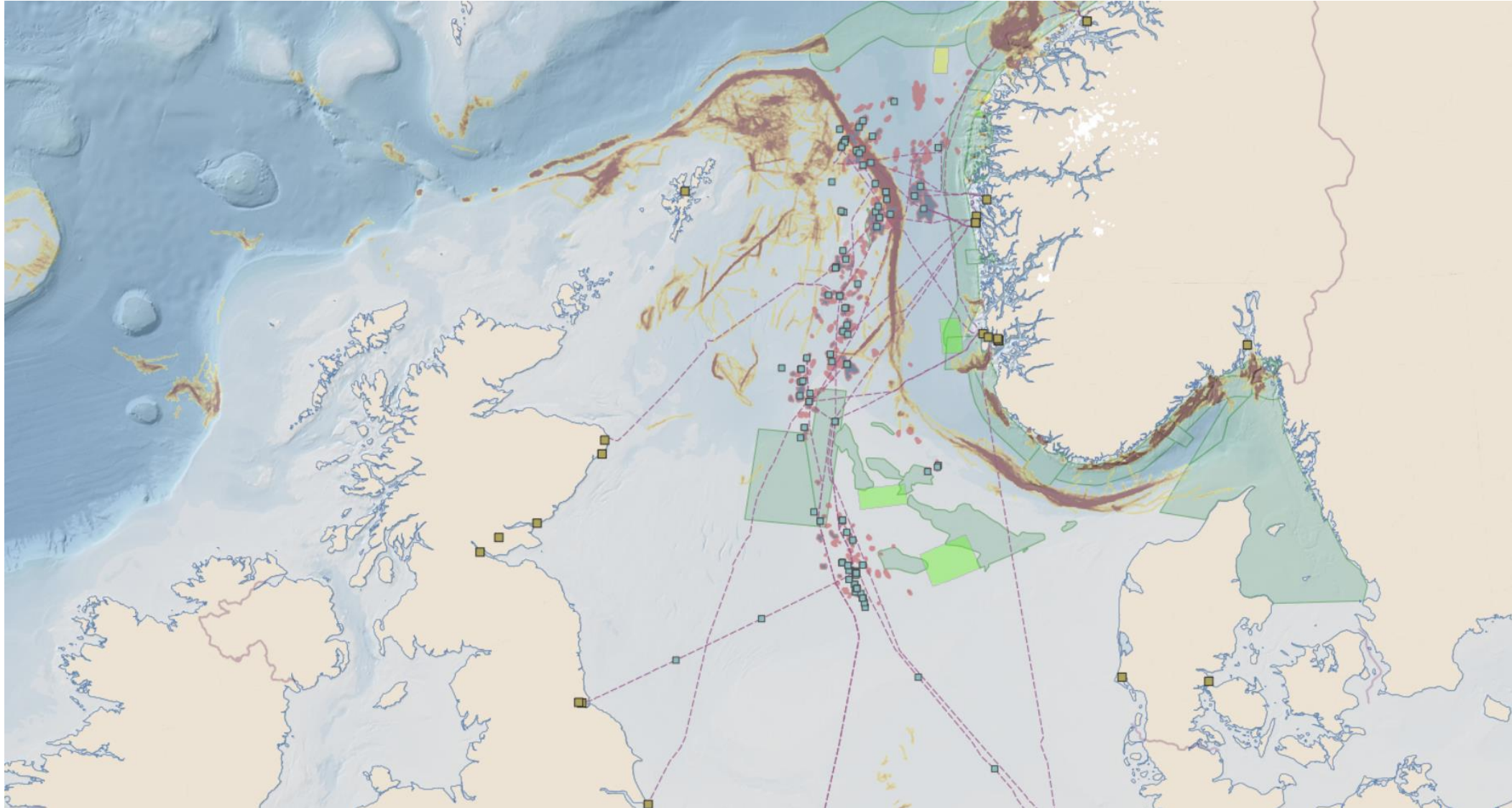
Commercial fishing  + Valuable marine areas  +
Base map 



Petroleum activity 🏰 + **Commercial fishing** 🏰 +
Valuable marine areas 🏠 + **Base map** 🌊



Offshore wind farm assessments  + **Petroleum activities**  + **Commercial fishing**  + **Valuable marine areas**  + **Base map** 



Marine Base Maps in coastal Norway

Utilizing marine geospatial data in the development of sustainable blue growth in coastal communities



“ The government will contribute to the greatest possible overall sustainable value creation and employment in the blue industry”

“...increase fivefold the export value of seafood by 2050”



“Government facilitates offshore wind farms in Norway”

“ Norway will create increased international understanding of the ocean's economic importance, for sustainable use of the sea's resources and for clean and healthy seas as a source of increased value creation”

“.....”

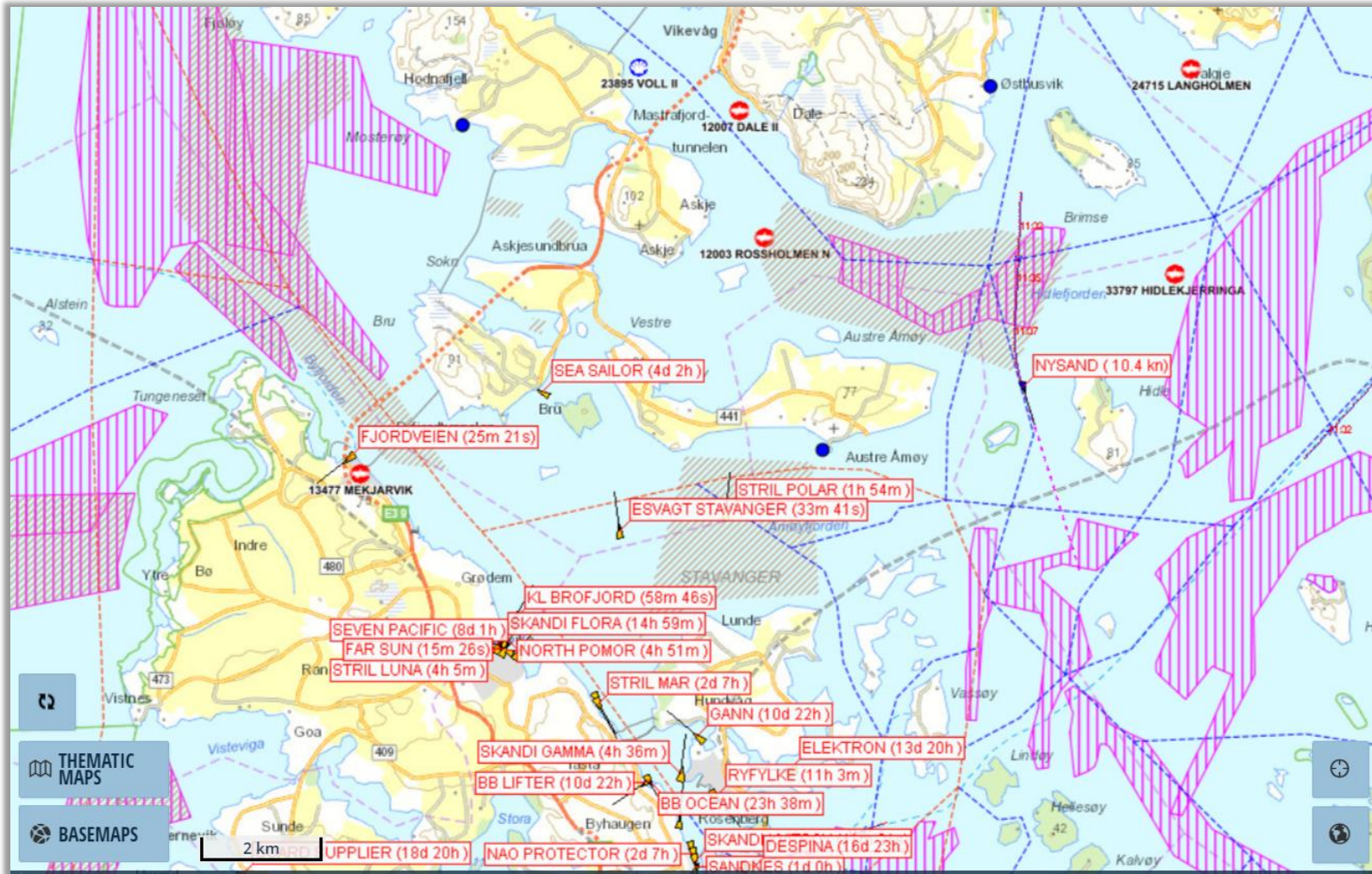
User Needs Assessment

- Various workshops with stakeholders
- Understand work flow and data needs to accomplish tasks

User 13: Private Sector						
	MY RESPONSIBILITY: Sanfunnskontakt	MY TASKS (GOALS): Goal 1:Lokalitetssøknader Goal 2:Forankring av anlegg Goal 3:Lusebehandling	MY DEPTH INTEREST: 0m - 30m 50m - 200m			
Goals	Actions	Data Used	Not Used But Useful	Pain Points	Access	
Goal 1						
Goal 2						
Goal 3						
User 3: Public Sector						
	MY RESPONSIBILITY: Areal planlegger Plan avdeling	MY TASKS (GOALS): Goal 1:Planlegging småbåt havn Goal 2:Utlegg av akvakultur områder	MY DEPTH INTEREST: 0m - 50m 50m - 200m			
Goals	Actions	Data Used	Not Used But Useful	Pain Points	Access	
Goal 1						
Goal 2			WHY NOT USED:	PROBLEMS WITH DATA	FORMAT:	
					FUTURE FORMAT:	

The Dilemma for Area Planners

- Allocation of “space” for new possibilities
- Optimization of existing “space”
- Knowledge gap



Many conflicts, growing pressures

Why Marine Base Maps?



- Blue growth
- Environmental protection and management

Coastal Mapping:

- New knowledge of underwater landscape and conditions
- No coordinated data collection and publishing of marine data
- Will take many years to achieve with today's processes

Knowledge based decision making:

- Conflict reduction / identification of compatible uses
- Improve capacity to plan for new activities
- Efficient allocation and sustainable use of «space»



The Norwegian Coastal Areas

- 422 municipalities in Norway
279 COASTAL MUNICIPALITIES
- Coastal municipal administrative border: 12 nautical miles
- 100 915 km total coastline (with Islands)
- About 80% of the population live in the coastal municipalities

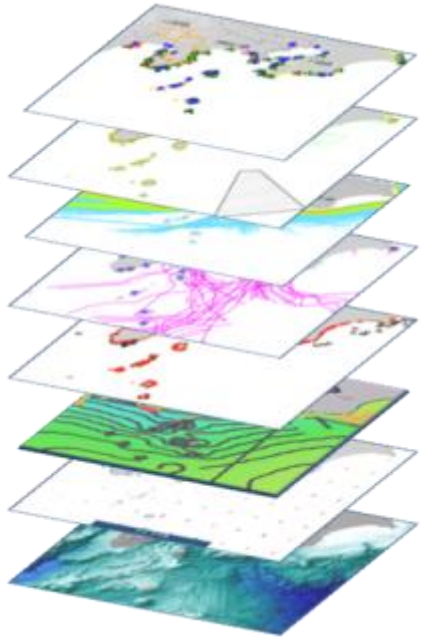
Marine Base Maps Project

- Submitted investment proposal to Ministry of Local Government and Modernization
- 3 pilot areas identified – national programme
- Methods development. Will test new technology
- Standardized set of products
 - Themed according to tasks / user type
 - Datasets, digital maps, services (WMS, WFS, WCS) and statistics WPS
 - Self –service: combine and create own unique marine base maps
 - INSPIRE compliant
- Easy access and FREE on national geodata portal
- Easy to use across competence levels and platforms
- 2 years timeline from data collection to products. Product rolled out as it becomes available



Testing new technology at Runde, June 2017.
Photo: Arild Hareide/Runde Environment
Centre

Marine Base Maps Project: Some Products



Kartverket

Base products:

- Bathymetry
- Backscatter processed
- Water column
- Water level and tidal info

Derivatives:

- Terrain models
- Shaded relief

Geological Survey

Base products:

- Bottom types
- Sediments
- Landscapes and landforms
- Environmental chemistry and pollution

Derivatives:

- Bottom field maps
- Anchorage conditions
- Marine - Diggability

Institute of Marine Research

Base products:

- Marine habitats
- Waves and Currents
- Salinity & Temperature

Derivatives:

- Marine protected areas

Thank you!

