

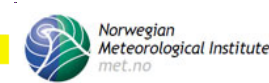
# Open service network for marine environmental data

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Nansen Environmental and Remote Sensing Center (NERSC)

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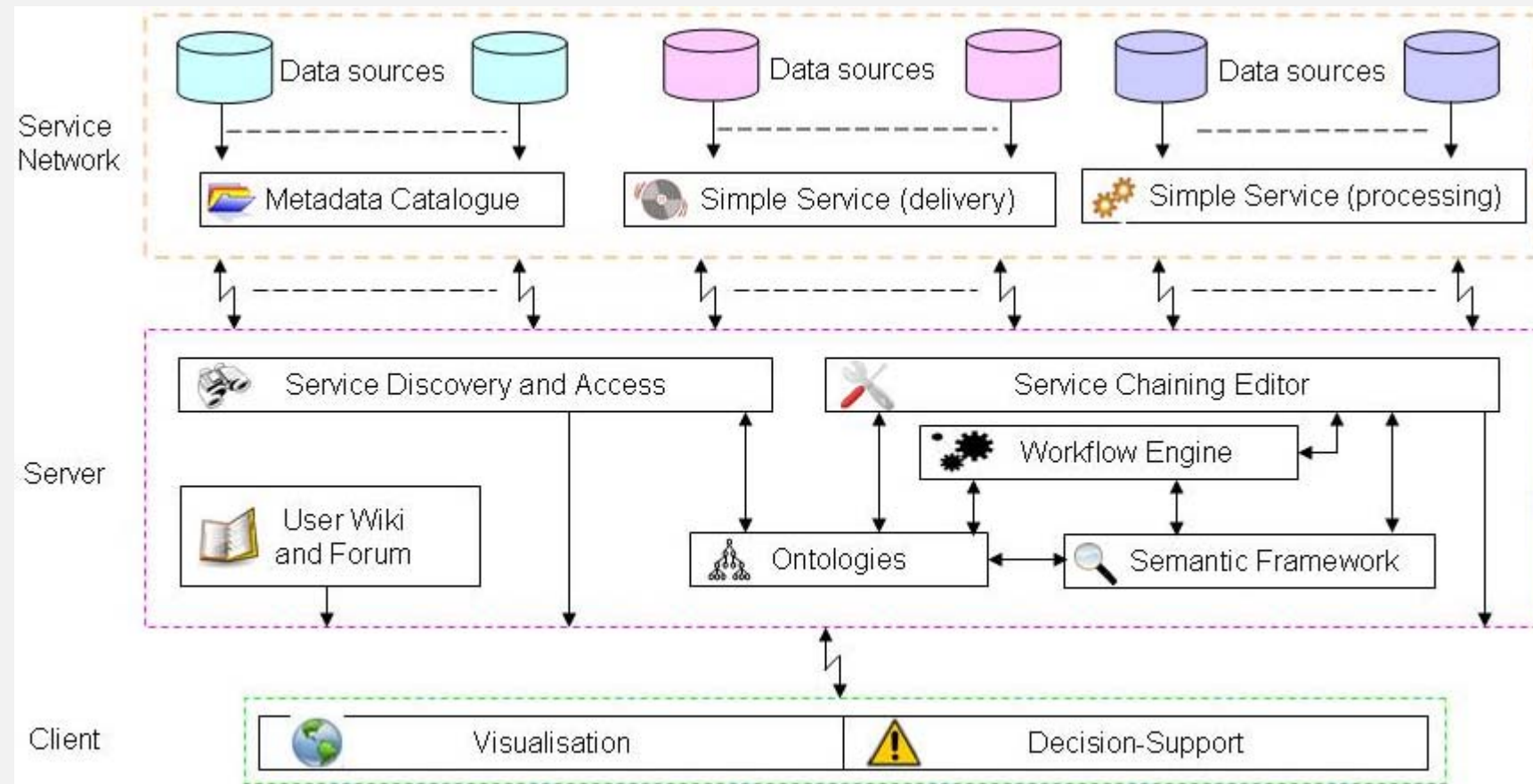
# Outline

- Objectives
- NETMAR System of Systems concept
- Pilots
- EUMIS portal and components
- Summary

# Objectives

- NETMAR aims to develop a ***pilot European Marine Information System (EUMIS)*** for searching, downloading and integrating satellite, in situ and model data from ocean and coastal areas. It will be a user-configurable system offering ***flexible service discovery, access and chaining facilities*** using OGC, OPeNDAP and W3C standards. It will use a ***semantic framework coupled with ontologies*** for identifying and accessing distributed data, such as near-real time, forecast and historical data. EUMIS will also enable further processing of such data to generate ***composite products and statistics*** suitable for decision-making in diverse marine application domains.

# System of Systems concept



# Pilots

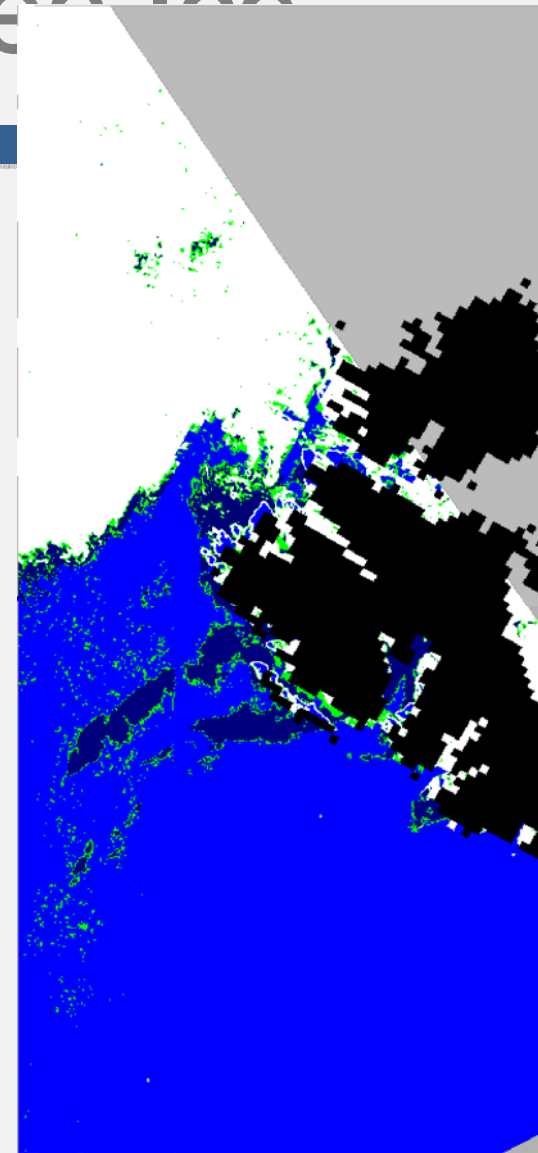
- Arctic Sea Ice and Met-ocean Observing System
- Oil spill drift forecasting and shoreline cleanup
- Ocean Colour - Marine Ecosystem, Research and Monitoring
- International Coastal Atlas Network (ICAN) for coastal zone management

# Pilot 1 – Arctic Sea Ice

- Arctic Sea Ice and Met-ocean Observing System
  - Driven by observed reduction of the Arctic sea ice extent in particular during the summer months and an increasing demand for natural resources. The expected growth in ship traffic, oil and gas exploration, fisheries and tourism will increase the need for a marine monitoring and forecasting system.
  - Users:
    - Offshore oil and gas industry,
    - Fisheries authorities,
    - Environmental agencies (e.g. EEA),
    - Operational sea ice forecasting

# Pilot 1 Arctic Sea Ice

- Sea ice type classification from ASAR (NERSC)

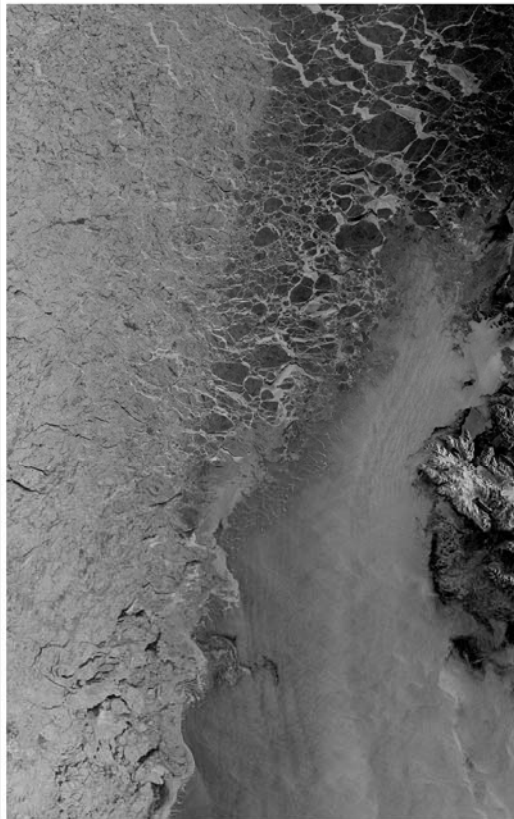


5 October 2011

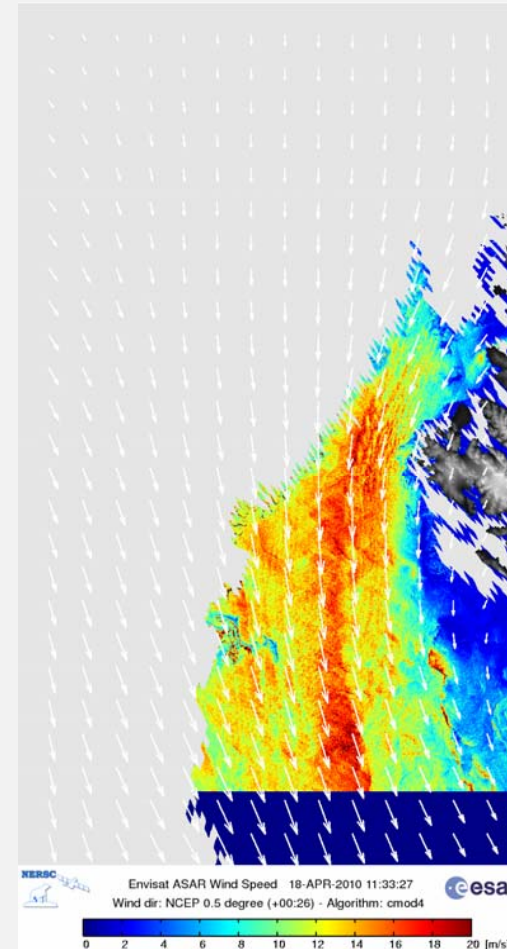


# Pilot 1 – Arctic Sea Ice

- ASAR and derived wind fields (NERSC)



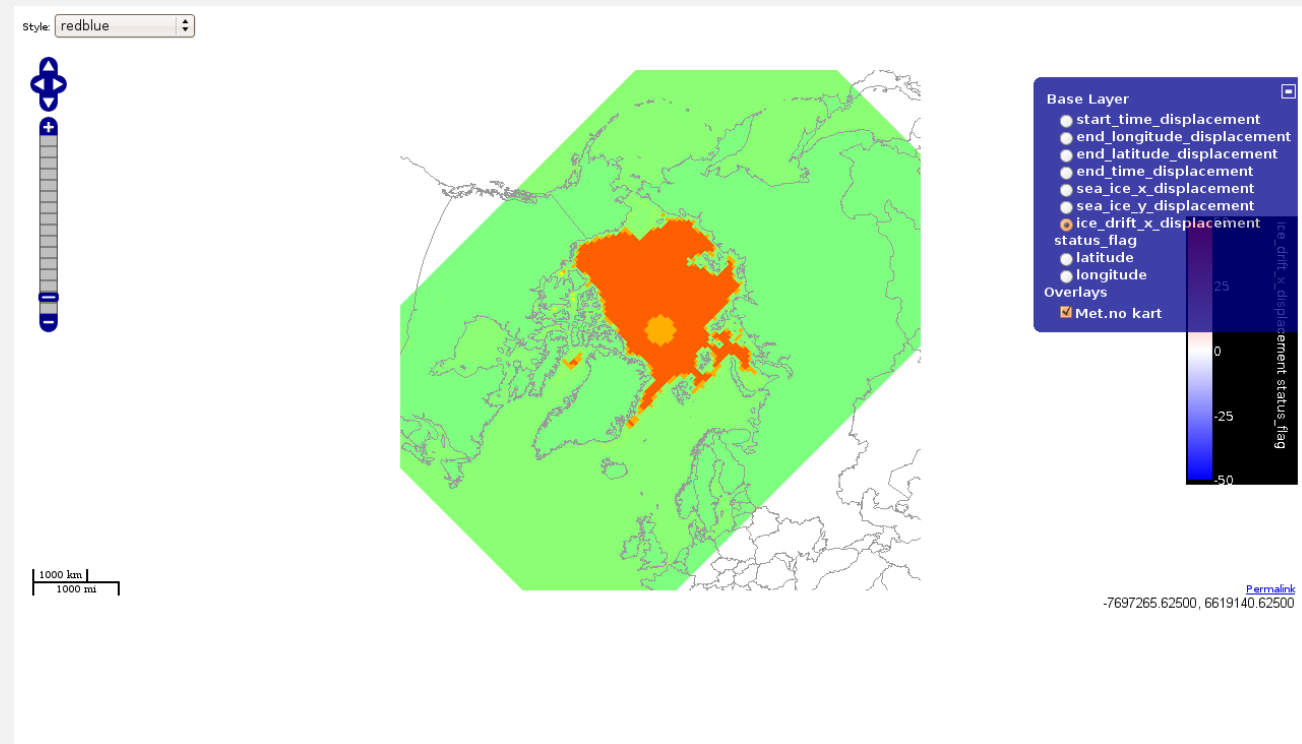
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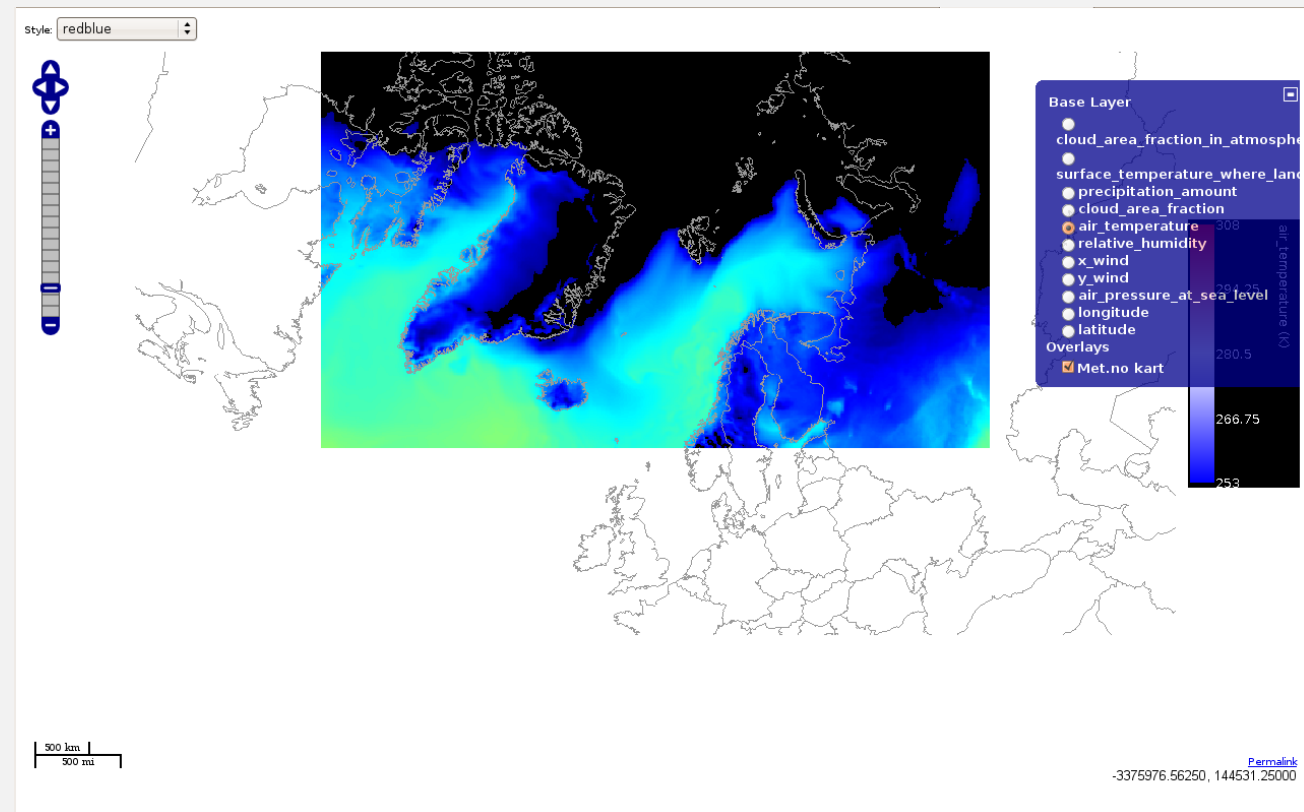
# Pilot 1 – Arctic Sea Ice

- Ice drift, x-displacement (METNO, OSISAF)



# Pilot 1 – Arctic Sea Ice

- Air temperature forecast (METNO)



# Pilot 2 – Oil Spill

- Oil spill drift forecasting and shoreline cleanup
  - Timely access to satellite/aircraft/in situ data, as well as model predictions is critical to support efficient emergency response services during oil spill crisis situations. Focus is on improving oil spill drift forecast service in France, and collection of all operational information about onshore pollution landings and mitigation actions during the response phase.
  - Users:
    - Members of the French Slick Drift Monitoring and Prediction Committee (Cedre, Ifremer, MRCC, French Navy)
    - Decision makers in charge of the oil spill response

# Pilot 3 – Ocean Colour

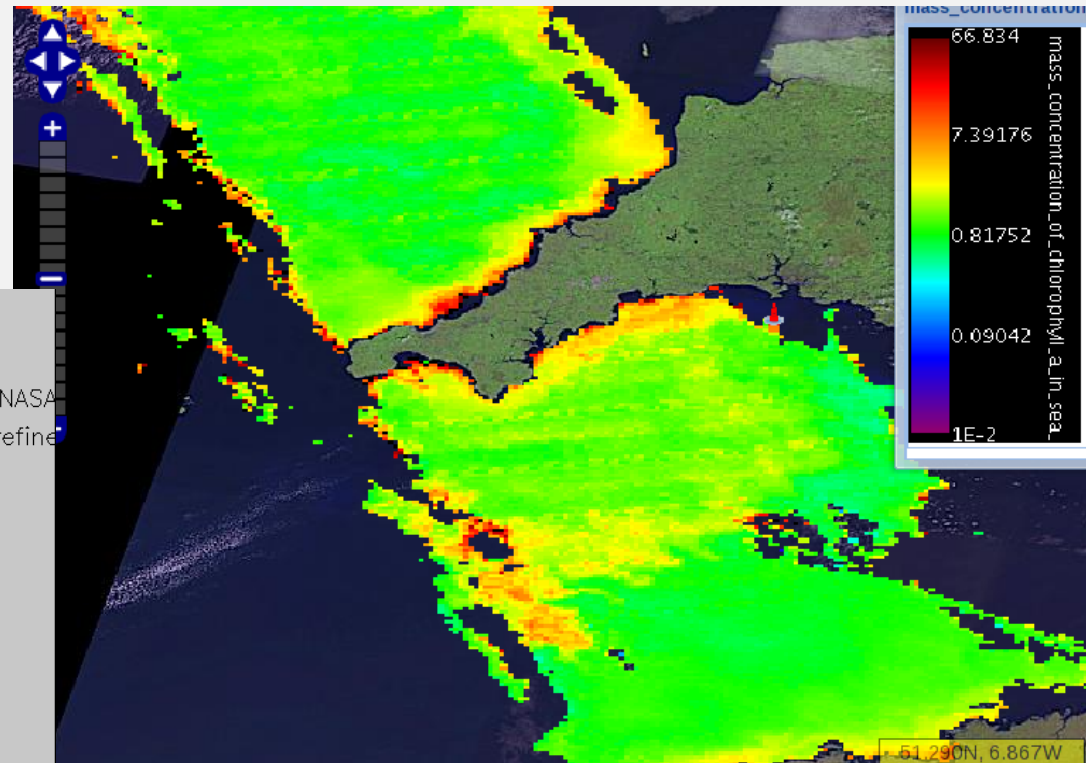
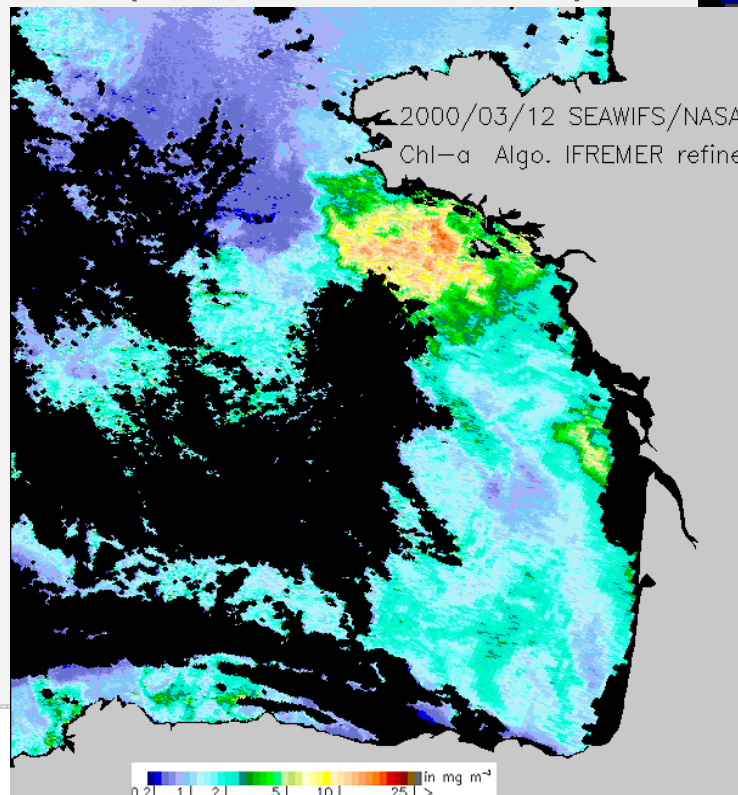
- Ocean colour - Ecosystems modelling
  - Researchers in ecosystems need to be able to identify and use long-term time series to quantify ecosystem responses to natural variability, climate change or the impact of anthropogenic activities.
  - Operational users may find it useful to compare, in near real time, contemporary satellite and in situ data in order to provide input to water quality monitoring systems, for example, on phytoplankton chlorophyll-a concentration.

# Pilot 3 – Ocean Colour

- Ocean colour - Ecosystems modelling
  - Users:
    - Western English Channel Observatory (WECO)
    - The Chlorophyll Global Integrated Network (ChloroGIN)
    - Marine Ecosystem Evolution in a Changing Environment (MEECE) project
    - Department Prefectures in France
  - Products and providers:
    - Satellite ocean colour products (PML, Ifremer, MEECE)
    - Ecosystem models (PML, MEECE)
    - In situ observations (Ifremer)

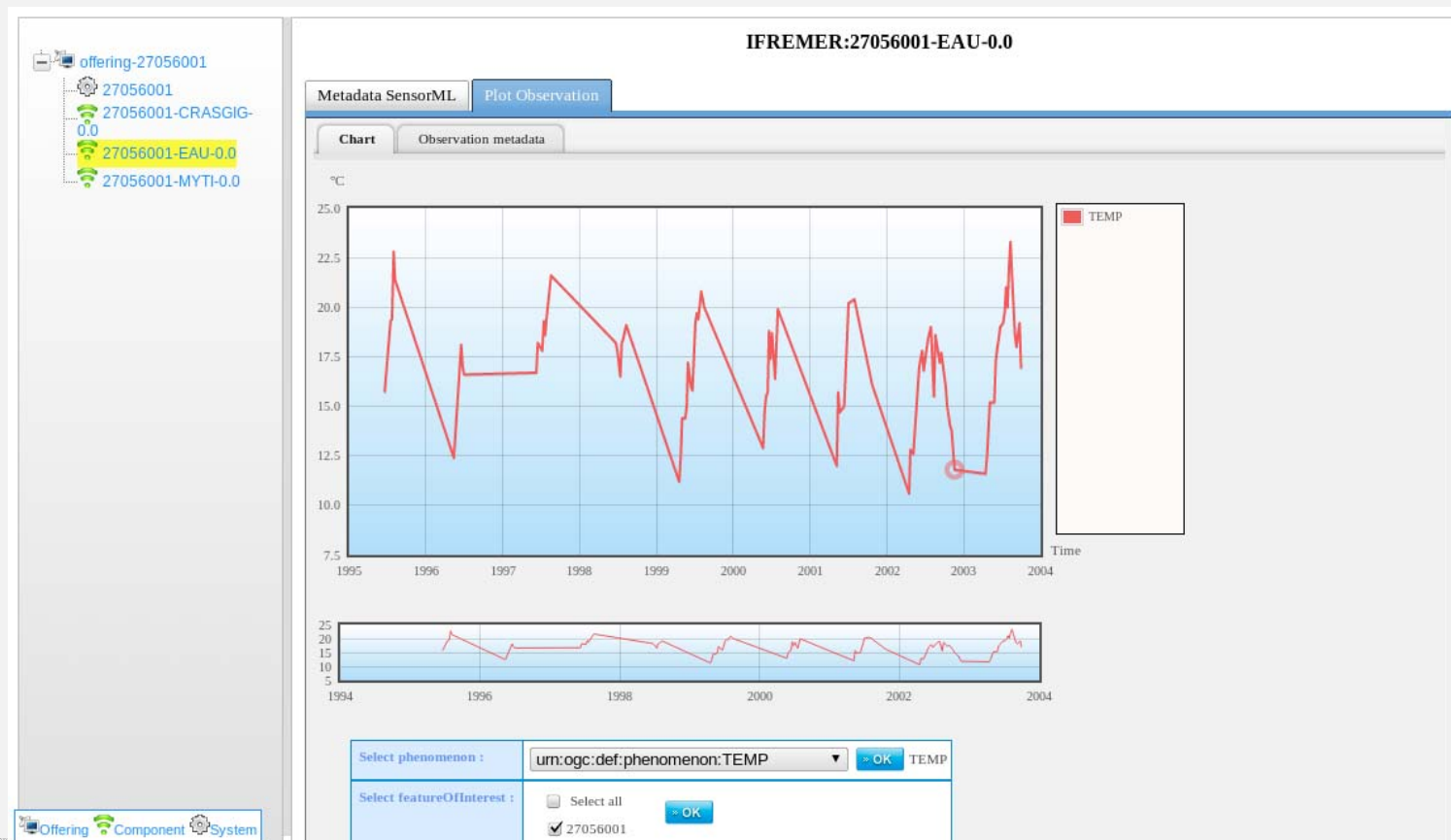
# Pilot 3 – Ocean Colour

- MODIS Chl-a images (PML, Ifremer)



# Pilot 3 – Ocean Colour

- In situ observations of temperature (Ifremer)






# Pilot 4 – ICAN


- International Coastal Atlas Network ( ICAN)
  - Need for seamless integration of resources available in distributed Coastal Web Atlases (CWAs) to support decision-making in the coastal zone.
  - Requires flexible data and service discovery, with subsequent integration in an Environmental Information System (EIS)
  - Users:
    - The ICAN community, comprised of, among others, marine spatial managers, conservation organisations, commercial organisations

# EUMIS portal and components

Sign In

WelcomeWIKIForumThe PilotsTest

NETMAR>Welcome

 Site Map

- [Welcome](#)
- [WIKI](#)
- [Forum](#)
- [The Pilots](#)
- [Test](#)

 Search

Everything


 Sign In

Email Address


Password

☐ Remember Me

[OpenID](#) [Create Account](#) [Forgot Password](#)

 Acknowledgement

The EUMIS portal is developed by the NETMAR project. Read more at the [NETMAR web site](#).

 Welcome to EUMIS!

Welcome to the **European Marine Information System** portal!

It offers a user-configurable system offering **flexible service discovery, access and chaining** facilities using OGC, OPeNDAP and W3C standards. **Smart search** facilities using **ontologies** and **semantic frameworks** will help in finding relevant information.

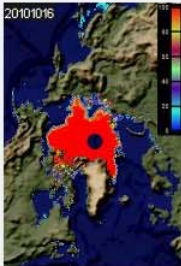
Learn about our products and services in the [Wiki](#) or [Forum](#), or go straight to one of pilots:

- [Arctic sea ice monitoring and forecasting](#)
- [Oil spill drift forecasting and shoreline cleanup](#)
- [Ocean colour - Ecosystems modelling](#)
- [International Coastal Atlas Network \(ICAN\)](#)

 Product News

### NERSC Arctic Sea Ice product (Pilot 1)

20101016



This map shows the area and concentration of ice (red color) in the Arctic region. The remote sensing SSM/I data is recorded by NASA's DMSP series of polar orbiting satellites. The files are further processed by NERSC using the NORSEX algorithm.

This product is offered by [Pilot 1](#).

This product is also published on the ArcticROOS web portal: <http://arctic-roos.org>

Sea ice area map of SSM/I data.  
Copyright: NERSC.

 Service News

The PyWPS software for service chaining has been further developed in the NETMAR project. The wiki with installation guide, examples, and much more is found at the [PyWPS Wiki](#).

 News

[INSPIRE News \(Opens New Window\)](#)

- [Less than one month to comment on INSPIRE Annex II and II data specifications \(Opens New Window\)](#)
- [Call for Facilitators and Editor for Thematic Working Groups: \(Opens New Window\)](#)
- [Consultation on the draft legal act on the harmonization and interoperability of environmental information \(as defined in Annexes II and III of the INSPIRE Directive \(2/2007\)\) \(Opens New Window\)](#)
- [Review of Data and Service Sharing documents \(Opens New Window\)](#)

 Meetings & Workshops

ECCOP Research Project Symposium, 28 July 2011, Lancaster, UK: [Program](#)

ICAN 5 Workshop, 31 August - 2 September 2011, Oostende, Belgium: [Program](#)

# EUMIS portal and components

The screenshot displays the EUMIS portal interface. At the top, the 'eumis' logo is on the left, and a 'Sign In' link is on the right. A dark navigation bar contains links for 'Welcome', 'Wiki', 'Forum', 'The Pilots', and 'Test'. Below this, a breadcrumb trail shows 'NETMAR' > 'Wiki'. The main content area is titled 'Wiki' and includes a search bar and links for 'Home', 'Recent Changes', 'All Pages', 'Orphan Pages', and 'Draft Pages'. The 'Home' section features the 'NETMAR Wiki' title and a welcome message. It lists several pilot projects with icons and descriptions: 'Arctic Sea Ice and Met-ocean Observing System', 'Near real time monitoring and forecasting of oil spill', 'Ocean colour - Marine Ecosystem, Research and Monitoring', 'International Coastal Atlas Network (ICAN) for coastal zone management', 'Metadata', and 'Technologies and tools'. Each entry includes a brief description of the pilot's purpose. On the right side, there is a 'News' section with an 'Entries' button. At the bottom left, there are links for '0 Attachments', '1395 Views', and '▼ Comments'.

**eumis**

Welcome Wiki Forum The Pilots Test

NETMAR > Wiki

Wiki

Home Recent Changes All Pages Orphan Pages Draft Pages Search

Home

**NETMAR Wiki** Details Print

Welcome to the NETMAR Wiki. Here, you will find information and examples of products and services offered by NETMAR. There is also short descriptions of technologies and tools used to develop these. Have a look and let us know what you think!

**Arctic Sea Ice and Met-ocean Observing System**  
This pilot provides operational and research-based satellite sea ice products, ocean and ice model forecasts, sea ice charts, weather forecasts, and more. The products contain sea ice parameters such as concentration, type and displacement, as well as met-ocean parameters such as wind and waves.

**Near real time monitoring and forecasting of oil spill**  
This pilots aims at supporting oil spill drift predictions and shoreline clean-up activities by offering a wide range of met-ocean datasets, consensus oil drift forecasts, as well as observations from shoreline surveys and cleanup sites.

**Ocean colour - Marine Ecosystem, Research and Monitoring**  
This pilot combines a number of related areas based around observations of biogeochemical parameters such as chlorophyll. It combines satellite, in situ and model data in long term analyses as well as describing an operational use for near real time data.

**International Coastal Atlas Network (ICAN) for coastal zone management**  
This pilot offers semantic search and access tools for development of Coastal Web Atlases. It provides access to products such as coastal access and recreation, cadastral datasets, geology, land use and zoning, topography, coastal erosions, and more.

**Metadata**  
This wiki describes metadata topics, standards and tools that are used for the products and the services in the EUMIS pilots.

**Technologies and tools**  
This wiki describes standard technologies and open source tools that can be used to develop Environmental Information Systems. It also contains references and suggestions for how to get started with web-GIS development.

0 Attachments | 1395 Views  
▼ Comments

News  
Entries

Wiki

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## Arctic Sea Ice and Met-ocean Observing System

[Details](#) [Print](#)

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### Users

The users of the Arctic Sea Ice and Met-ocean Observing System pilot comprises of representatives from offshore and shipping companies, ship and icebreaker captains/ice pilots, national authorities, regional environmental agencies, national ice services and scientists.

The second user category, ship and icebreaker captains and ice pilots, makes both selection of sailing routes between ports of destinations as well as tactical decisions on how to penetrate through rough ice conditions when the ship (un)expectedly experience such situations. Decisions need to be made in order to operate safely and efficiently.

### Products

Some examples of products offered for planning of sailing routes and convoy operations in sea ice covered areas are shown below. Satellite Synthetic Aperture Radar (ASAR) images provide detailed information about sea ice conditions as illustrated in Figure 1. SAR images can be classified by automatic algorithms (Figure 2) and trained operators of an ice service (Figure 3). Other products that are useful for captains and ice pilots include ice drift predictions, met-ocean forecasts and observations from ships and airplanes.

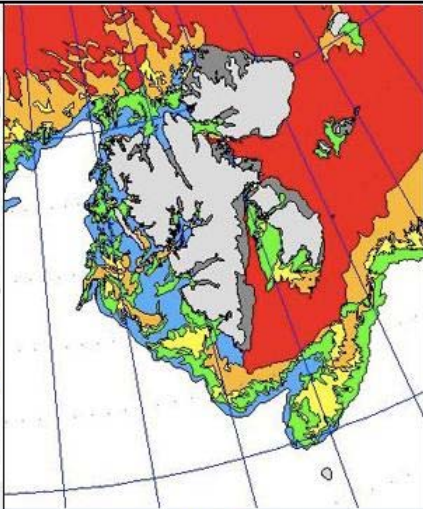
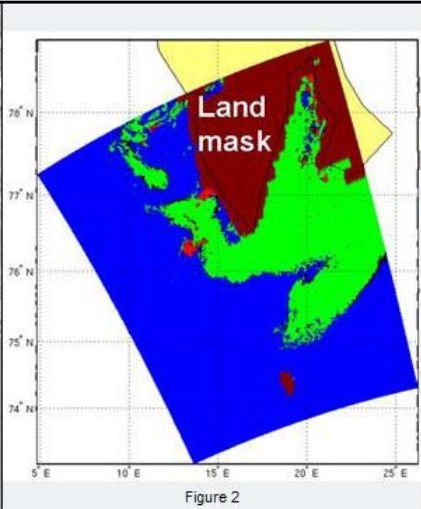
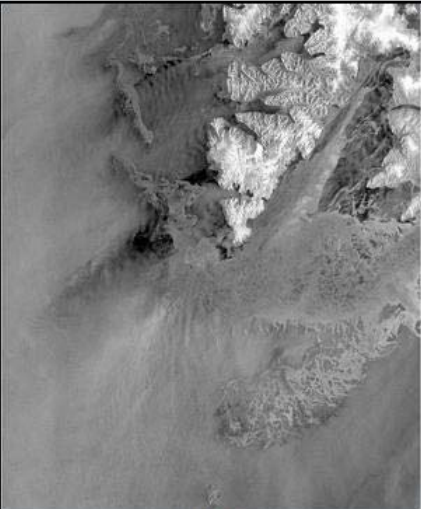


Figure 1

Figure 2

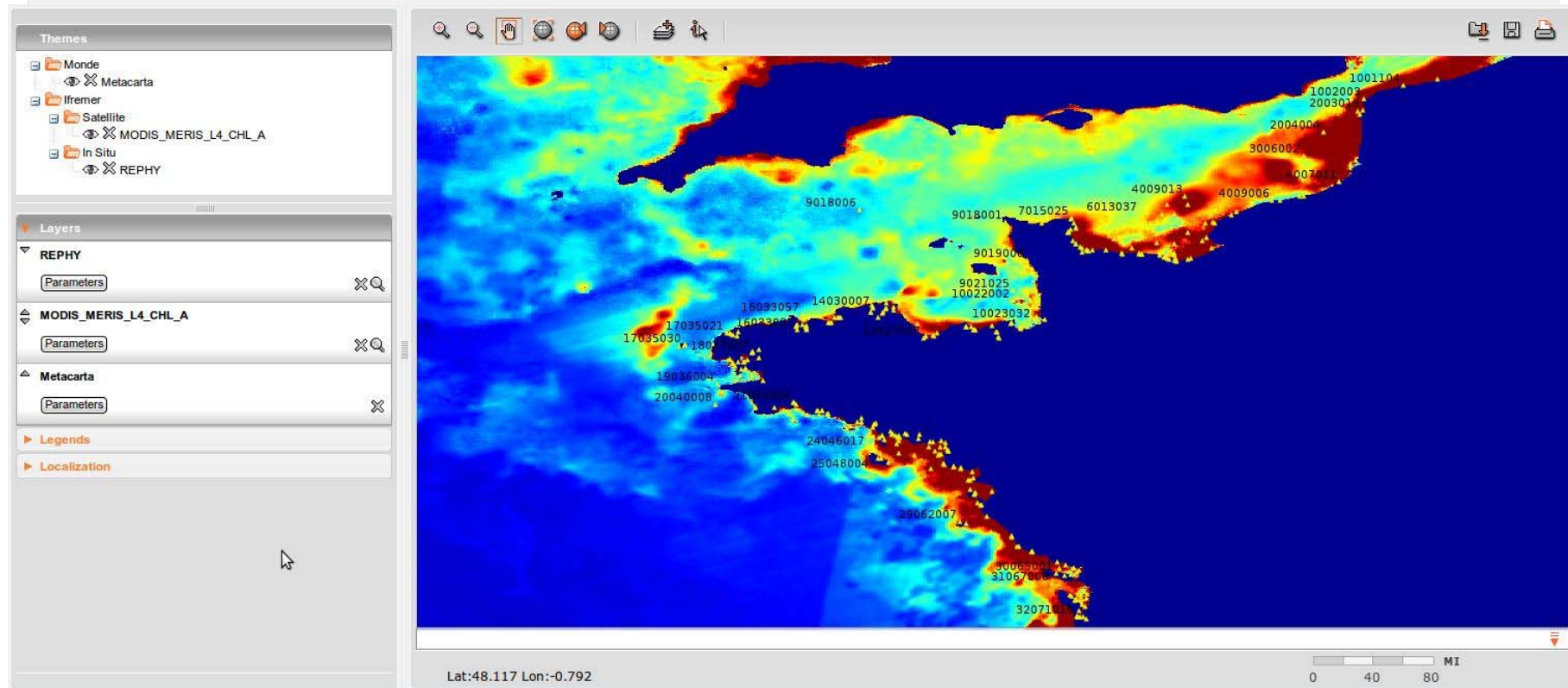
Figure 3

### Services

These and other products will become available through the [Arctic Sea Ice and Met-ocean Observing System Pilot](#).

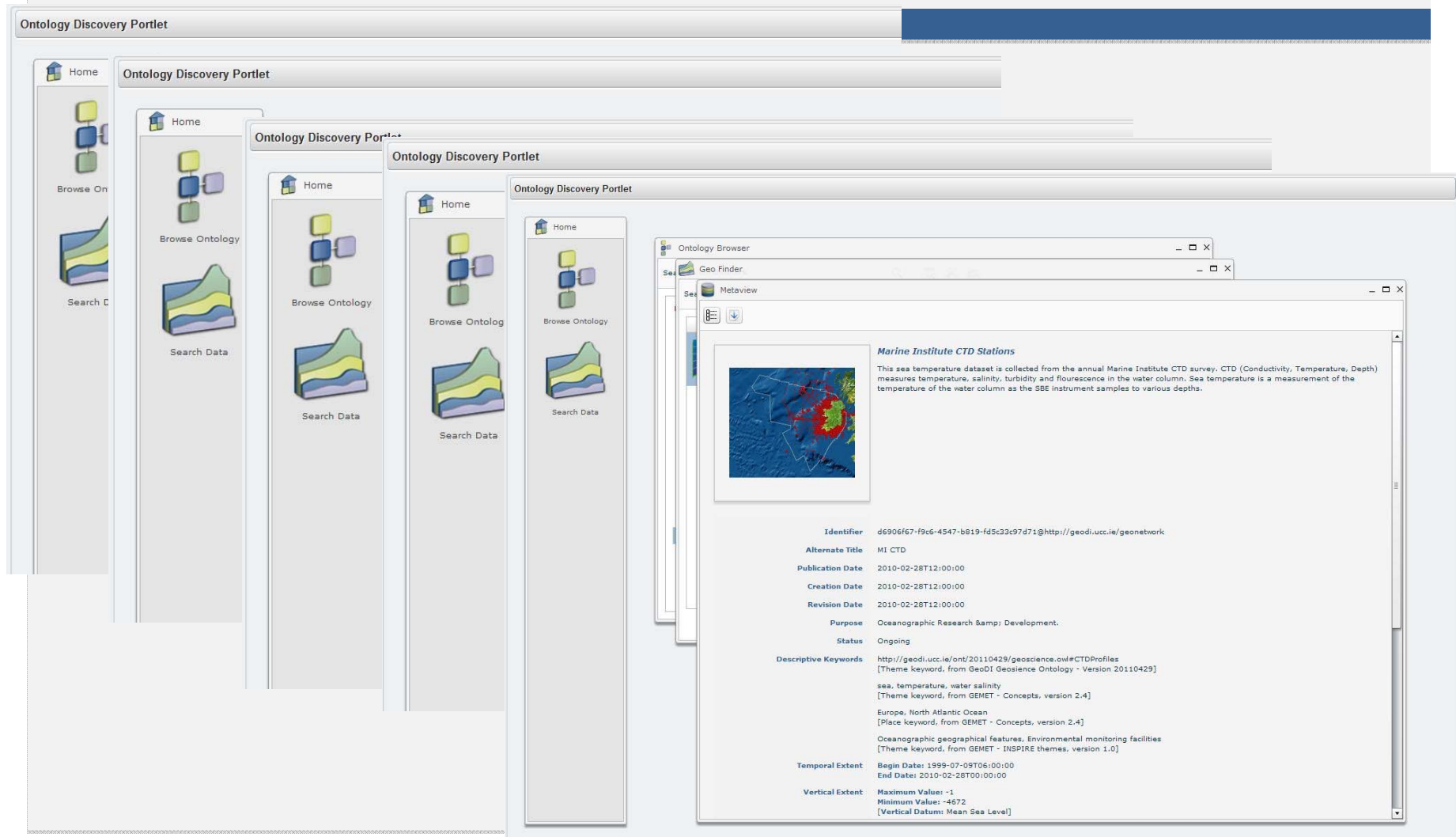


# EUMIS portal and components



Example of satellite (Chl-a from MODIS-MERIS) and  
In situ (Phytoplankton and Phytotoxins networks : REPHY) datasets

# EUMIS portal and components



# Summary

- NETMAR is developing a pilot European Marine Information System (EUMIS) for searching, downloading and integrating satellite, in situ and model data from ocean and coastal areas. A first version of the pilot, including a wiki & forum, a GIS viewer, a search and discovery client, a service chaining editor, and integrating data delivery and processing services will be available by end 2011.
- Please visit NETMAR web pages <http://netmar.nersc.no/> for more information.



# Thank you!

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Stein Sandven <[stein.sandven@nersc.no](mailto:stein.sandven@nersc.no)>

Nansen Environmental and Remote Sensing Center (NERSC)