European Marine Ecosystem Observatory (EMECO)

EMECO Datatools: Regional scale information products for environmental policy needs

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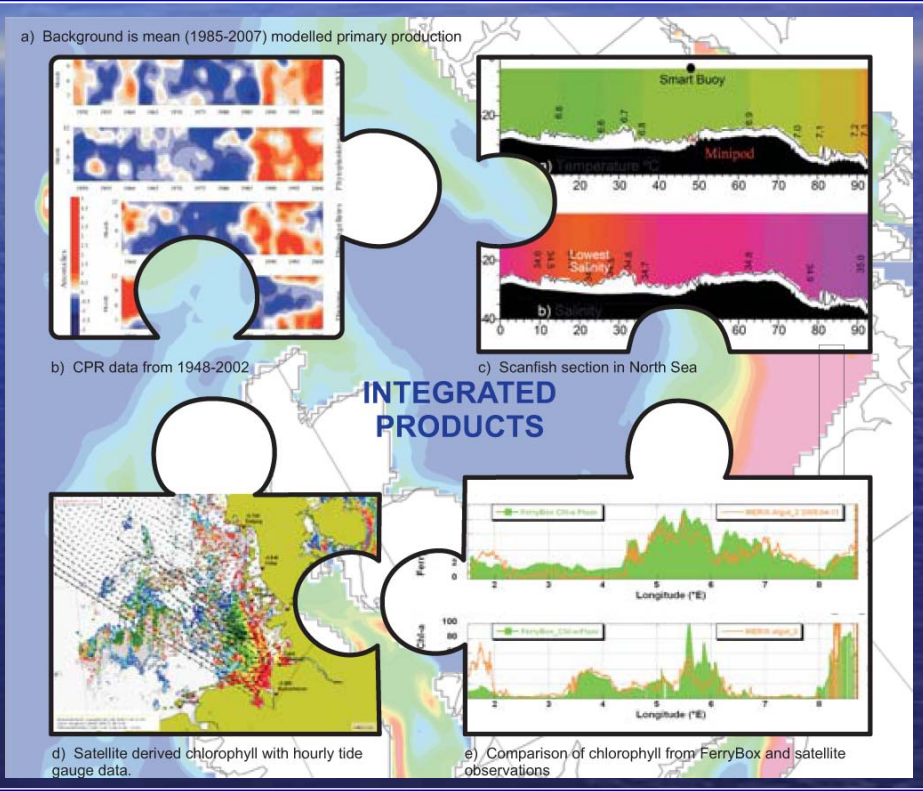
Cefas

Oceanology International, London 2010

What is EMECO?

EMECO is a an informal European network for integration of monitoring, modelling & research.



Builds on existing infrastructure to

- Improve knowledge
- Strengthen the evidence base for environmental assessments
- Increase uptake
- Highlight gaps

UK-Cefas, EA, NOC, SAHFOS; NL-Rijkswaterstaat, Deltares, NIOZ, Norway-IMR, NERSC, Met Off; DE-GKSS, BSH, BE – MUMM, F – IFREMER, Ire – Marine Institute, D – NIVA; S - SMHI

Models

Ferries

Research vessels

Gliders

Towed bodies

Satellites

Buoys

The Challenges

- Existing challenges
  - Improving evidence base for environmental assessments that can be challenged in court
- Future requirement
  - Marine Strategy Framework Directive
  - Need to define "good environmental status" (GES)
  - Integrated assessments (physics to fish)
  - International cooperation – building mutual trust

1. Biodiversity
2. Introduced species
3. Fisheries
4. Food webs
5. **Eutrophication !**
6. Benthic communities
7. Hydrographical conditions
8. Contaminants
9. Human food fish
10. Marine litter
11. Introduced energy

"The marine environment is a precious heritage that must be protected, restored and treated as such with the ultimate aim of providing biologically diverse and dynamic oceans and seas that are safe, clean, healthy and productive."

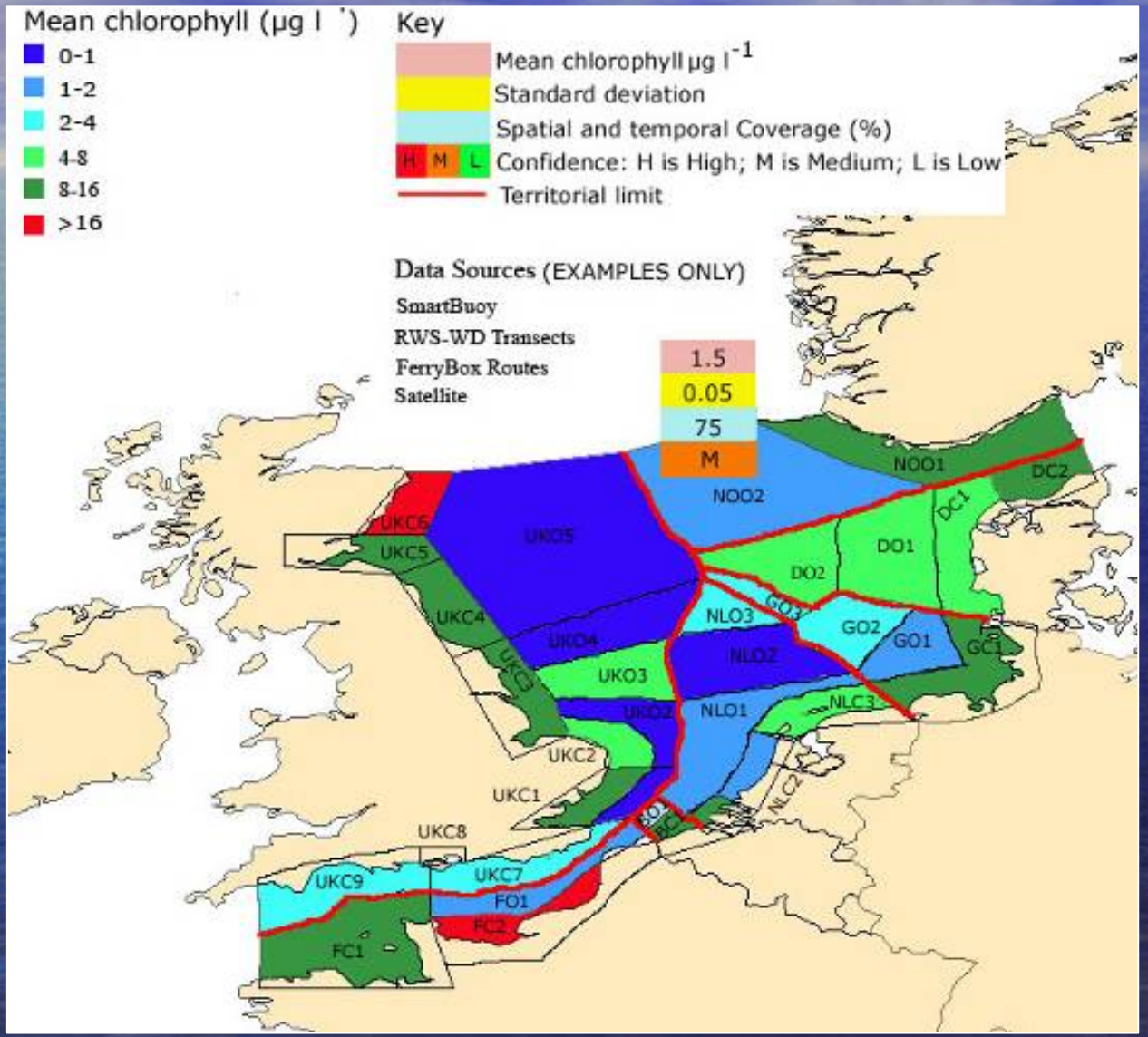
The Brief

"Develop a datatool that provides rapid integration and visualisation of multi-platform, multi-parameter and multi-national data to create policy relevant information products in an auditable and transparent manner, using an international map of chlorophyll of the OSPAR defined greater North Sea as an example"

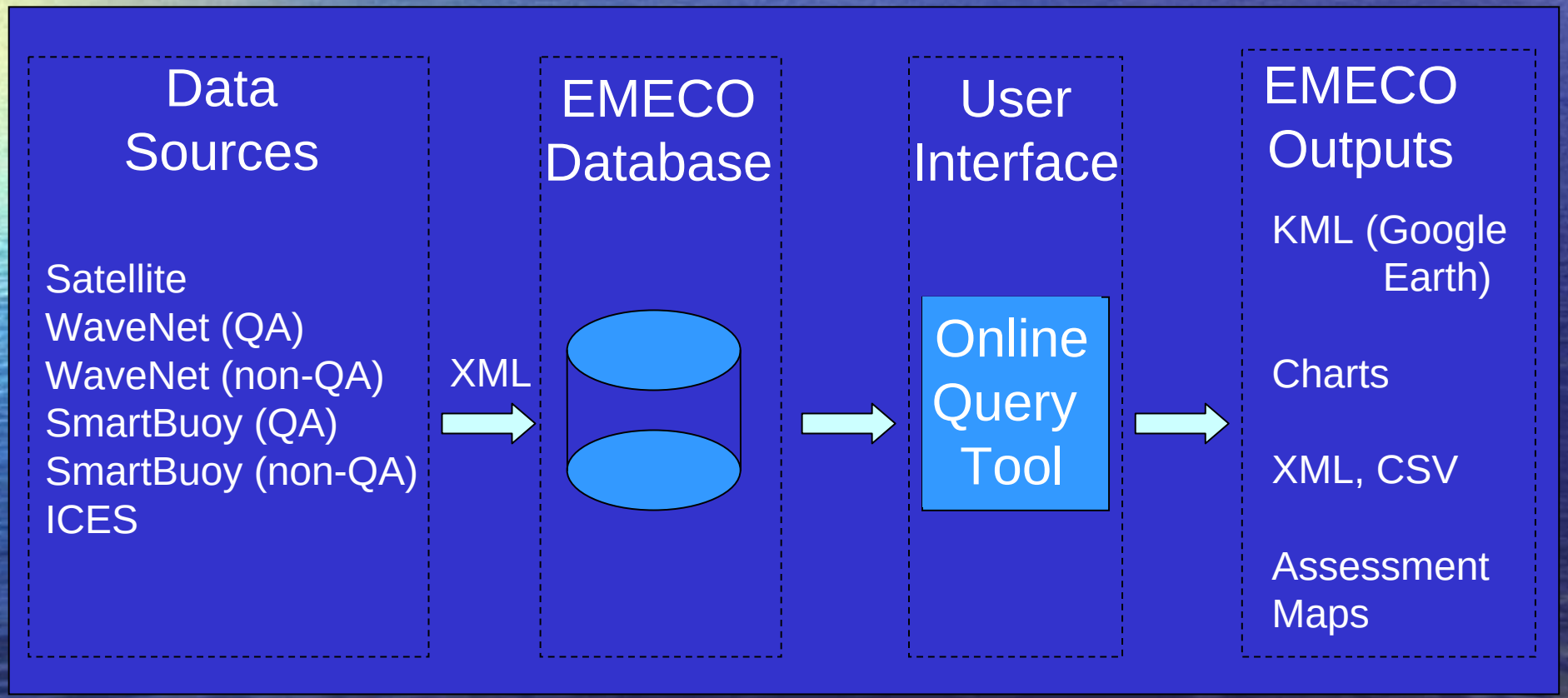
The Requirements

1. Speed up the environmental assessment process in a robust manner
2. Be transparent about its data sources and the treatment of its data
3. Display average chlorophyll concentration for the North Sea from a variety of sources
4. Display a measurement of overall confidence
5. Have the flexibility to cope with changes in future assessment processes, and be useful for other policy and non-policy users.
6. Be agreed by the international EMECO partners and stakeholders.

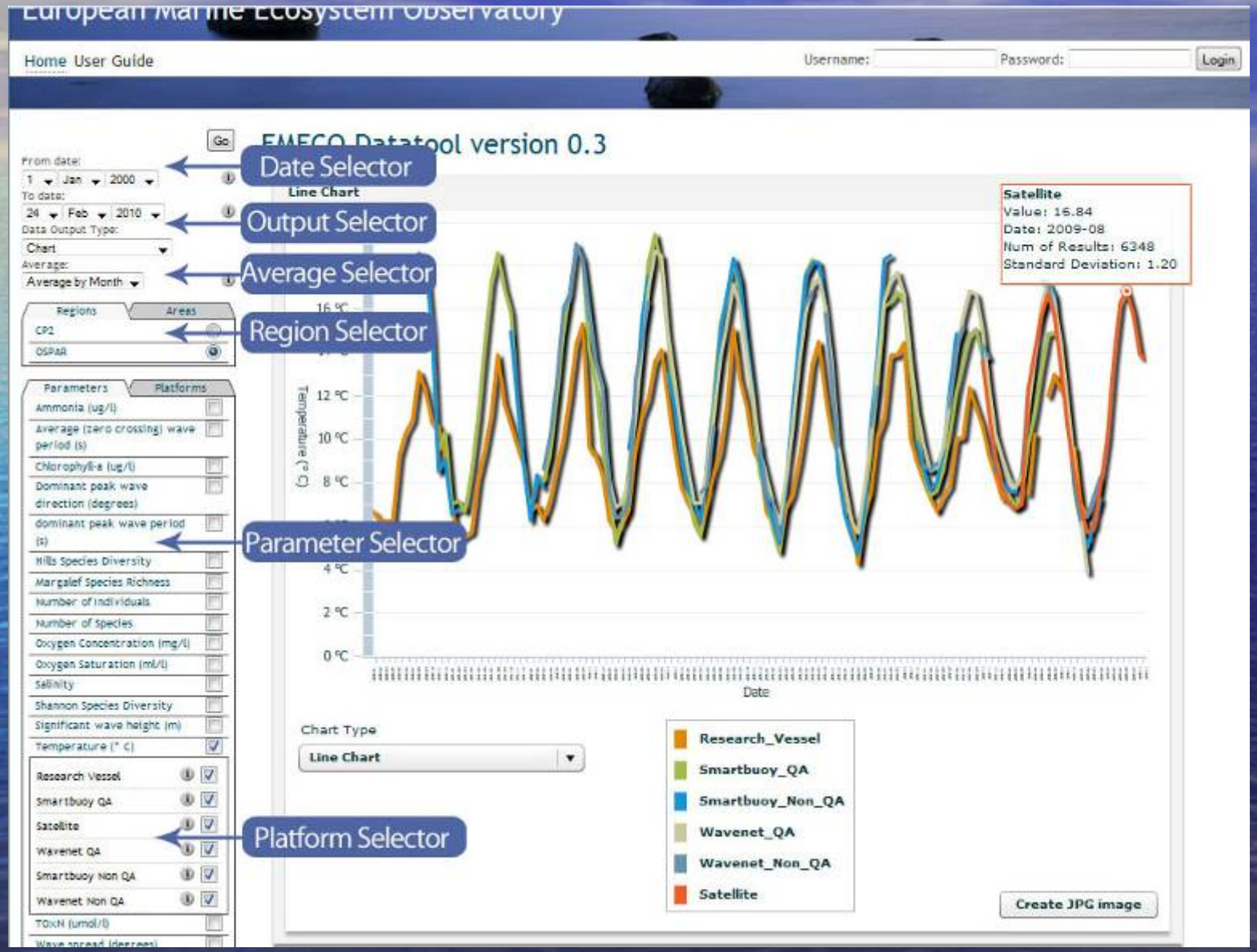
The “Mock-Up”


Mean chlorophyll (µg l ⁻¹)
0-1
1-2
2-4
4-8
8-16
>16
Key
Mean chlorophyll µg l-1
Standard deviation
Spatial and temporal Coverage (%)
H M L
Confidence: H is High; M is Medium; L is Low
Territorial limit
Data Sources (EXAMPLES ONLY)
SmartBuoy
RWS-WD Transects
FerryBox Routes
Satellite
1.5
0.05
75
M
NOO1
DC2
NOO2
DC1
UKC6
UKC5
UKC5
DO1
DO2
UKC4
NLO3
GO3
GO2
GO1
UKC4
UKO3
NLO2
UKO3
NLO1
NLC3
UKC2
UKC1
UKC8
UKC9
UKC7
FO1
FC2
FC1

The Tools

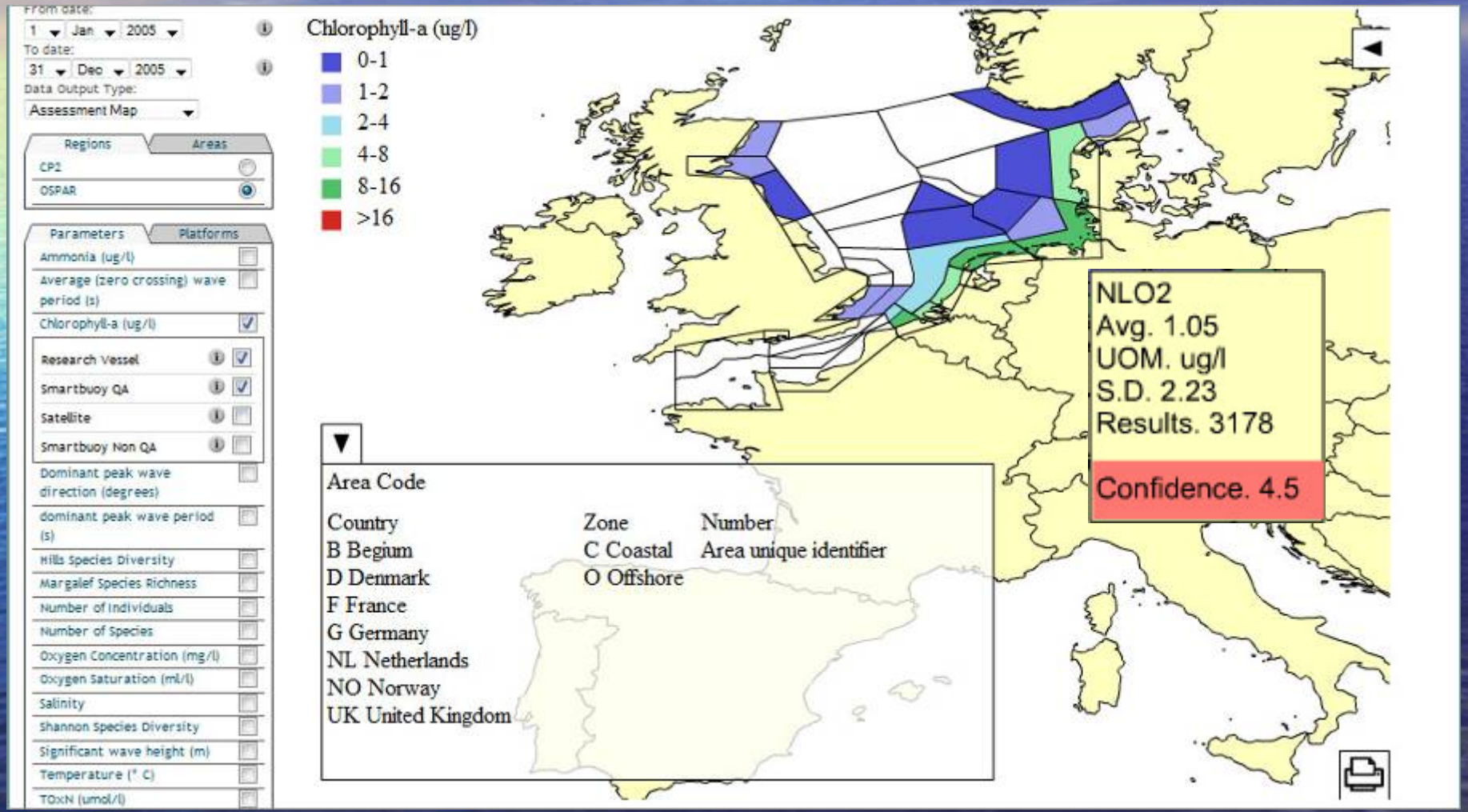

Data Sources
Satellite
WaveNet (QA)
WaveNet (non-QA)
SmartBuoy (QA)
SmartBuoy (non-QA)
ICES
XML
EMECO Database
User Interface
Online Query Tool
EMECO Outputs
KML (Google Earth)
Charts
XML, CSV
Assessment Maps

The Query Tool



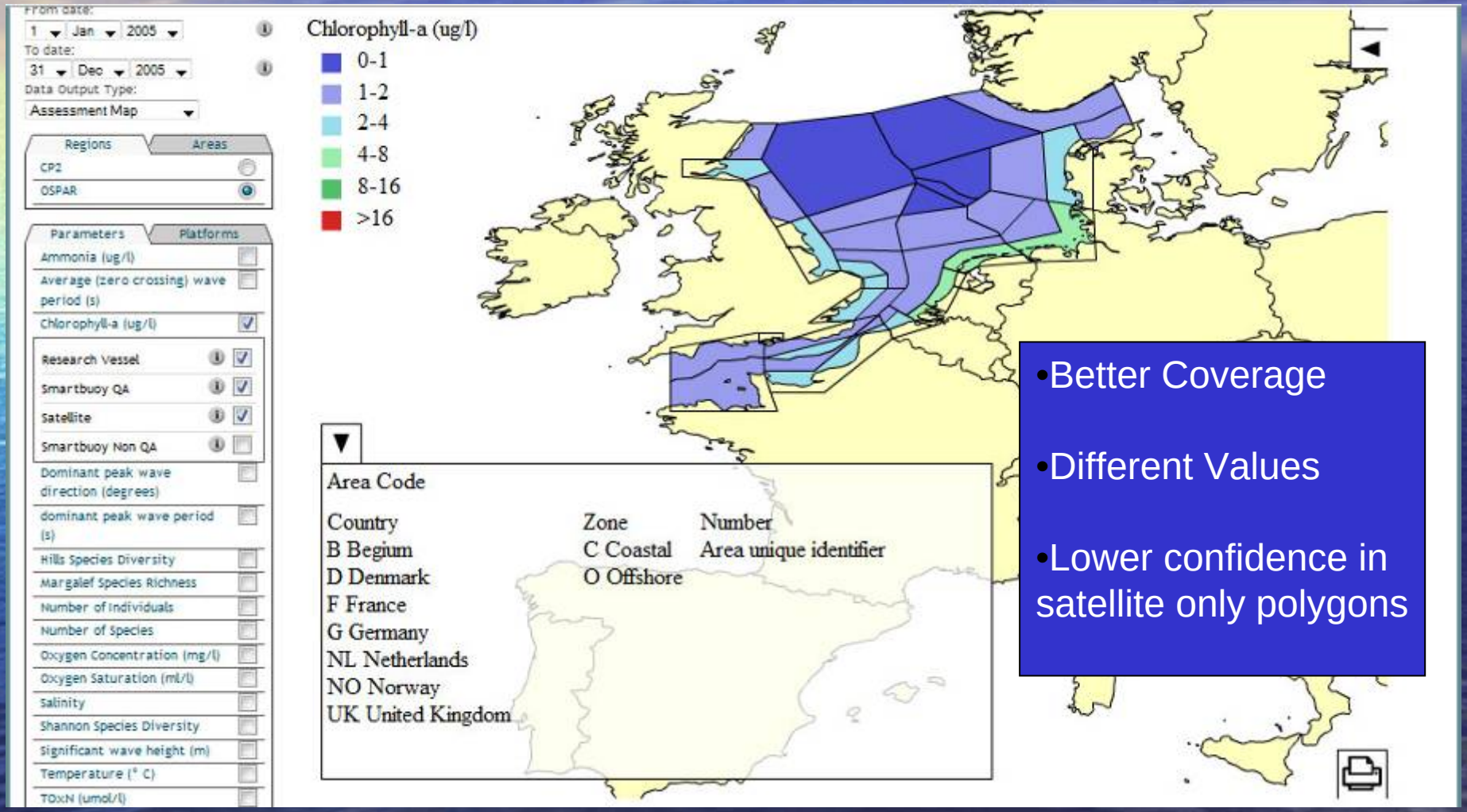
The Outputs

Chlorophyll 2005 Traditional Monitoring



The Outputs

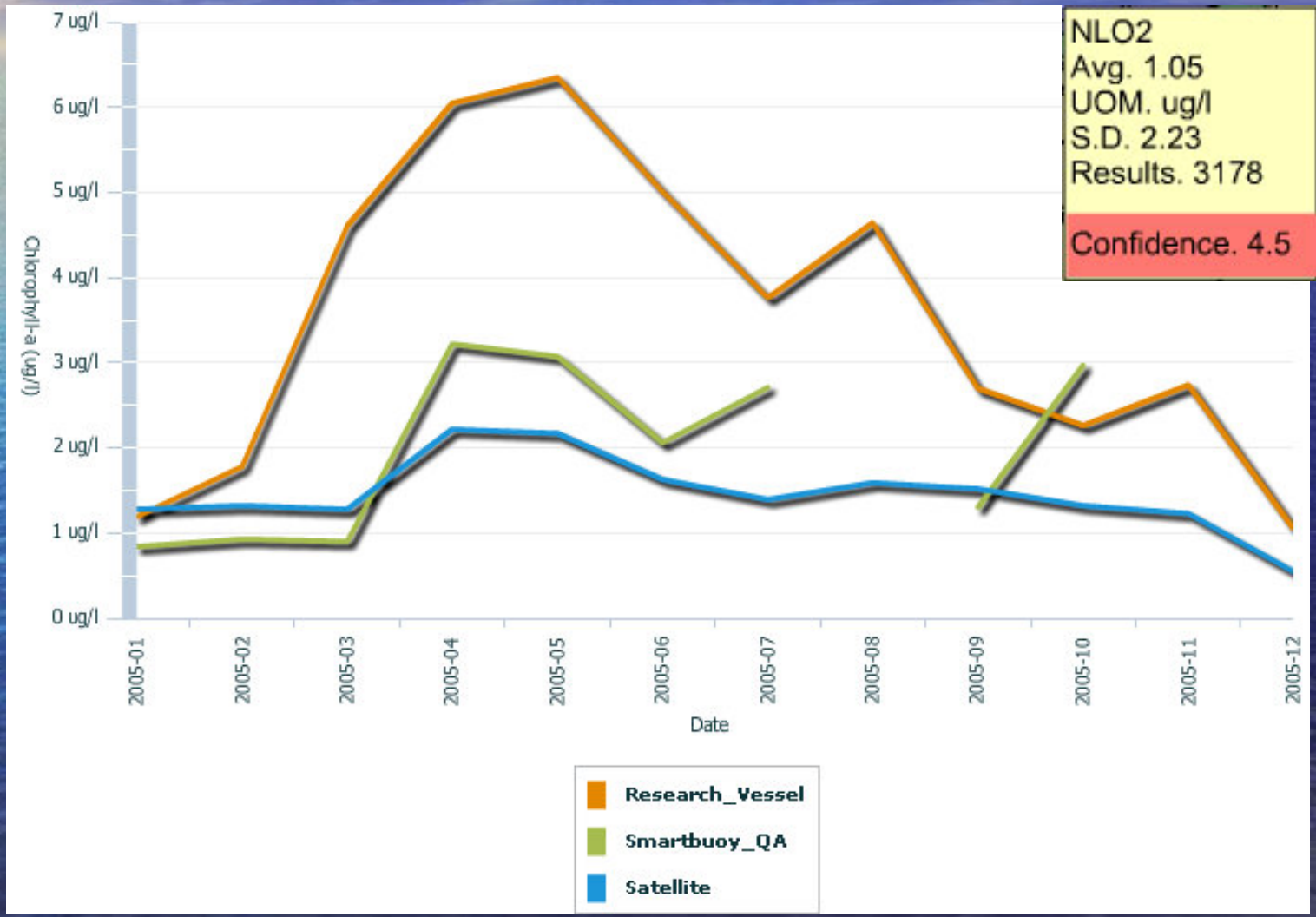
Chlorophyll 2005 Novel and Traditional



- Better Coverage
- Different Values
- Lower confidence in satellite only polygons

The Outputs

Chlorophyll 2005 Novel and Traditional



The Outputs

Chlorophyll 2005 Traditional Monitoring

An end to end system

Near-Real time

Delayed mode

Near-Real time

Delayed mode

Near Real time

Delayed mode

Raw data holding

QA

Non-QA

ICES

MERMAN

EMODNET

Other European /

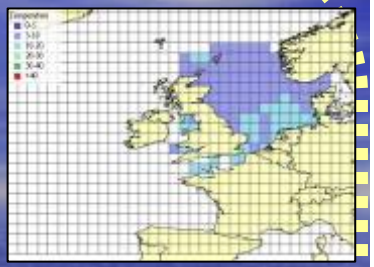
National Initiatives e.g.

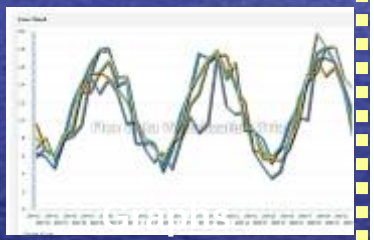
EMECO Datatools

EMECO Datatool Interface

EMECO database

EMECO User Query





Information products

KML –Google Earth

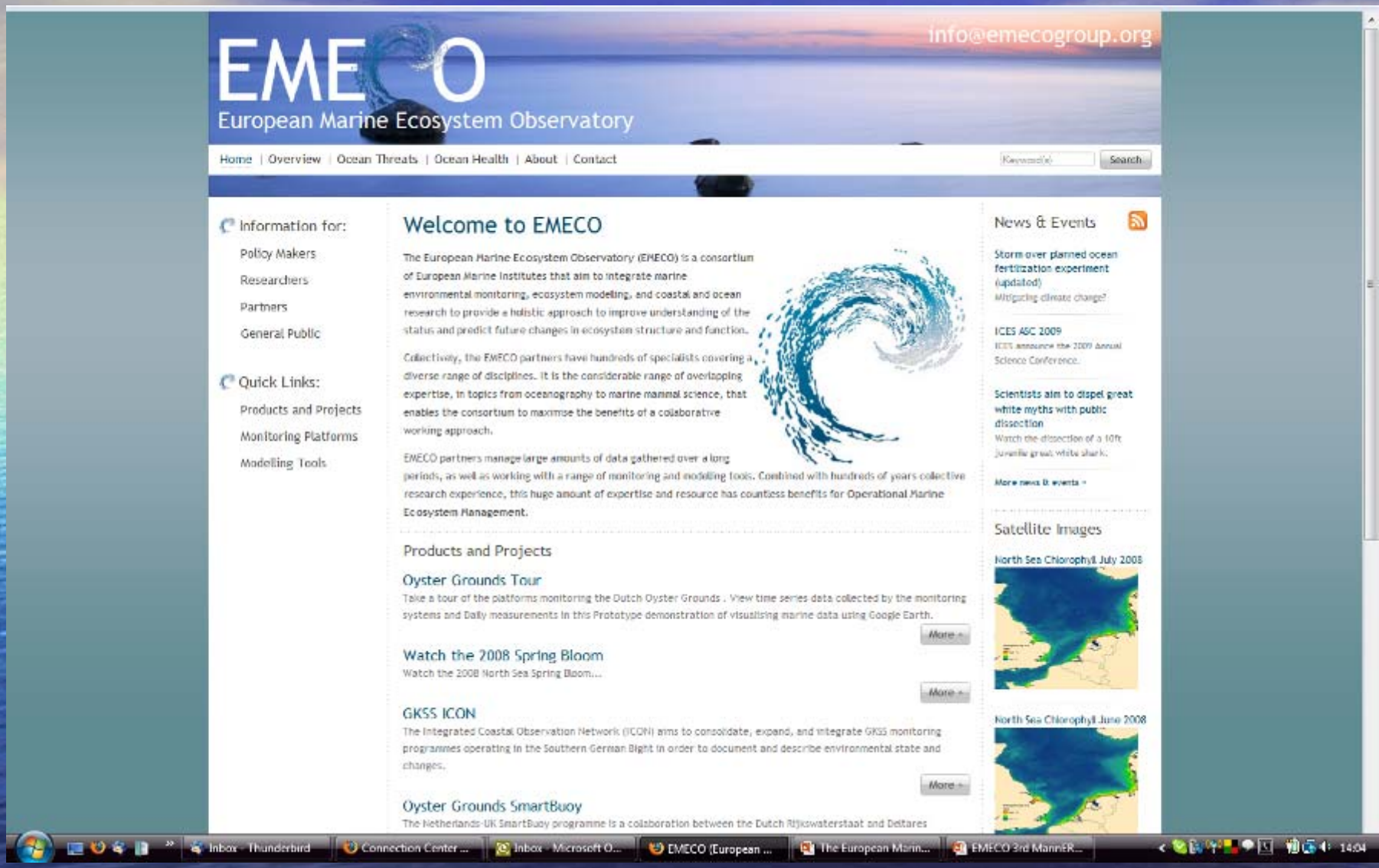
Data

XML, CSV

What's Next?

- Datatool going live in March 2010
- Now also have CP2 polygons and a 100km2 grid
- Currently importing model, benthic, fisheries and pressure data into the tool
- Extending the geographic domain to the tools to the Celtic seas
- On the live application some of the data will be near real-time
- Further development of the tools interface and functionality
- Provides the building blocks for meeting existing and future challenges set by National and European Directives.

Thanks



www.emecogroup.org