Project contract no. 036851
ESONET European Seas Observatory Network

Instrument: Network of Excellence (NoE)
Thematic Priority: 1.1.6.3 – Climate Change and Ecosystems
Sub Priority: III – Global Change and Ecosystems

Project Deliverable D14
Report on workshops to facilitate and broker partnership, tutorials/meetings on implementation plans and replies to infrastructure proposals; on site assessment, legal model, environmental constraints and their associated ethical issues.

Due date of deliverable: month 30

Start of project: March 2007
Project Coordinator: Roland PERSON Coordinator
Organisation name: IFREMER, France

Work Package 5
Organization name of lead contractor for this deliverable: IMI
Lead Authors for this deliverable: Fiona Grant (IMI), Michel Andre (UPC), Gael Andre & Laurent Richier (Altran),

[Revision 28th February 2010]

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Introduction

The following report is a description of the online database which was developed for Legal, Ethical and Environmental (LEE) Issues as part of WP5. The inputs for the database were collated as part of a data mining questionnaire (done in conjunction with WP1); with information from individual partners for particular sites, e.g., from the MI for the Porcupine/Celtnet site; and with cetacean species information collated by UPC. The database can be accessed at: http://recette101.ago.fr/

The database was placed online in March 2009 and was subsequently updated and revised in 2010. The main changes in the new version are:
- increased reliability,
- portability (for installation on Ifremer server),

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- ability for authorized people to edit content,
- several technical and usability improvements (treaties ordered by origin, paginate).

The following sections will give an overview of the types of information updated for each site. Interested persons are advised to access the database directly for detailed information. The database will undergo continuous improvement over the course of the project, with additional material being entered when available.

**Arctic**

There are a number of common elements in the site descriptions on the database and these will be described once for the Arctic site but equally apply for all sites.

On the *Information* page for the Arctic site, you can see two links in the top right hand corner which give access to:

1. the data mining questionnaire completed for the Arctic:
   [http://recette101.ago.fr/content/observatories/1/questionnaire_Arctic.xls](http://recette101.ago.fr/content/observatories/1/questionnaire_Arctic.xls).

2. the Arctic observatory Google map:
   [http://recette101.ago.fr/content/observatories/1/ESONET_Arctic.kmz](http://recette101.ago.fr/content/observatories/1/ESONET_Arctic.kmz).
The front information page for each ESONET site give the lead institution, lat-long coordinates, bathymetric maps and general information about the proposed network.

A number of tabs can be accessed from this screen, namely:
- Infos
- Atlas
- Treaties/Regulations
- Cetaceans

On the Atlas page, this relates to GIS environmental data currently available at each site. The categories of information available are:
- General Map
- Bathymetry
- Seafloor
- Boundaries
- Marine Protected Areas (MPAs)
- Exploitation Permits
- Existing Cables
- Wrecks location
- Geohazards
- Military Zones

In the case of the Arctic, the currently available GIS maps available are for bathymetry, boundaries and Marine Protected Areas (MPAs).

By clicking the Treaties/Regulations tab, information on national and international legislation can be accessed for each site. An example for the Arctic is shown below:
Details for each piece of legislation can be accessed by double clicking on each individual element and a document relating to each item can be downloaded by clicking on the web symbol on the right-hand-side of each line.

The final tab on each ESONET site is the *Cetaceans* tab. By clicking on it for the Arctic, you will see the following:

The following descriptors are given for each cetacean likely to be observed at each site:
- Name
- Gender
- Suborder
- Family
- Migration
- IUCN Status (International Union for the Conservation of Nature and Natural Resources)
- CMS Status (Convention on Migratory Species)

Clicking on the name of individual cetacean species links to another page, where *General Information* on the habitat, distribution, migration patterns, relevant ESONET sites, common names and an image are located. On the top, right hand corner, two links allow users to download data for use in Google Earth. These are:
- Download Global Distribution in Cells (Google Earth)
- Download Global Distribution in Marks (Google Earth)
A number of additional tabs are located on this webpage which link to further information for the species in question. The relevant tabs are:

- General information
- Conservation Status
- Audiogramme (if available)
- Sound

Clicking the Conservation Status page gives more information on the status of species using two different descriptors. The first relates to the International Union for the Conservation of Nature and Natural Resources (IUCN) and the second relates to the Convention on Migratory Species (CMS)

1) IUCN : International Union for the Conservation of Nature and Natural Resources [http://www.iucn.org/](http://www.iucn.org/) is the world's main authority on the conservation status of species. A series of Regional Red Lists are produced by countries or organizations, which assess the risk of extinction to species within a political management unit.

Species are classified in nine groups, set through criteria such as rate of decline, population size, area of geographic distribution, and degree of population and
distribution fragmentation. IUCN Red List categories of version 3.1 (2006) are:

- Extinct (EX) - No individuals remaining.
- Extinct in the Wild (EW) - Known only to survive in captivity, or as a naturalized population outside its historic range.
- Critically Endangered (CR) - Extremely high risk of extinction in the wild.
- Endangered (EN) - Very high risk of extinction in the wild.
- Vulnerable (VU) - High risk of extinction in the wild.
- Near Threatened (NT) - Likely to become endangered in the near future.
- Least Concern (LC) - Lowest risk. Does not qualify for a more at risk category. Widespread and abundant taxa are included in this category.
- Data Deficient (DD) - Not enough data to make an assessment of its risk of extinction.
- Not Evaluated (NE) - Has not yet been evaluated against the criteria.

The older version 2.3 (1994) has only a single Lower Risk (LR) category which contained three subcategories:

- Conservation Dependent (LR/cd).
- Near Threatened (LR/nt).
- Least Concern (LR/lc).

(2) CMS : Convention on Migratory Species (http://www.cms.int/):

- Appendix I - Endangered migratory species
- Appendix II - Migratory species conserved through Agreements

In the case described here of Orcinus Orca, the conservation status is described as IUCN Red List Status¹: (LR/cd) Lower Risk (Conservation dependent), ver 2.3 (1994)

CMS Status²: Appendix II - Migratory species conserved through Agreements.

The Audiogramme tab relates to cetacean audio patterns with the following descriptors:

- Maximum sensibility
- Frequency range
- Species
- Method
- Second Peak
- Reference

In the case of Orcinus Orca, the following screen capture illustrates the information returned for the Audiogramme.
The final tab relates to the **Sound**. The relevant screen capture for Orcinus Orca is shown below which outlines the source level, conditions of measurement, References, duration, second peak and frequency peak.

The same information is available for over eighty five separate species observed across all twelve ESONET sites. This information can be most directly accessed using the following link: [http://recette101.ago.fr/cetaceans/](http://recette101.ago.fr/cetaceans/)
Norwegian Margin (HMMV – Haakon Mosby Mud Volcano)

For the Norwegian margin, the site information can be accessed directly by clicking on the following link: [http://recette101.ago.fr/observatory/2](http://recette101.ago.fr/observatory/2)

Both the data-mining questionnaire and Google map are available for download on the RHS of the screen.

In the case of the Norwegian margin *Atlas*, the only information entered relates to micro bathymetry for the HMMV (HMMV Bathymetry. Edy, C., H. Bisquay. 2004). This is possibly due to the fact that a final configuration for the Norwegian ESONET site has not yet been chosen.

For the *Treaties/Regulations* tab, a number of pieces of legislation relating to national, European and International legislation are listed and are downloadable individually.
The *Cetacean* information for the HMMV is also available for review.

It shows that a number of species are endangered at this site and could require special arrangements if construction were to proceed.
Norwegian Margin (Storegga Slide)

The second element of the proposed Norwegian Margin observatory (Storegga Slide) can be accessed at the following link: [http://recette101.ago.fr/observatory/3](http://recette101.ago.fr/observatory/3)

The Atlas information for the Storegga slide available are bathymetry, boundaries (EEZ), MPAs and existing cables from Kingfisher cable awareness charts.

A combination of national, European and international legislation is relevant for this site with a equal number of endangered species to the HMMV site:
**STOREGGA - NORWEGIAN MARGIN OBSERVATORY**

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Family</th>
<th>Migration</th>
<th>IUCS Status</th>
<th>DPS Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globicephala netos</td>
<td>Lower Risk (Least concern)</td>
<td>Delphinidae</td>
<td>Partial</td>
<td>Lower Risk (Least concern)</td>
<td>Appendix F - Migratory s.</td>
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<tr>
<td>Orcinus Orca</td>
<td>Lower Risk (Least concern)</td>
<td>Delphinidae</td>
<td>Partial</td>
<td>Lower Risk (Least concern)</td>
<td>Appendix F - Migratory s.</td>
</tr>
<tr>
<td>Balaenoptera musculus</td>
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<td>Balaenopteridae</td>
<td>Interoscean</td>
<td>Endangered</td>
<td>Appendix F - Migratory s.</td>
</tr>
<tr>
<td>Narwhal</td>
<td>Data deficient</td>
<td>Ophiodontidae</td>
<td>Data deficient</td>
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<td></td>
</tr>
<tr>
<td>Physeter macrocephalus</td>
<td>Endangered</td>
<td>Physetidae</td>
<td>Interoscean</td>
<td>Endangered</td>
<td>Appendix F - Migratory s.</td>
</tr>
<tr>
<td>Balaenoptera physalus</td>
<td>Endangered</td>
<td>Balaenopteridae</td>
<td>Interoscean</td>
<td>Endangered</td>
<td>Appendix F - Migratory s.</td>
</tr>
<tr>
<td>Balaenoptera borealis</td>
<td>Endangered</td>
<td>Balaenopteridae</td>
<td>Interoscean</td>
<td>Endangered</td>
<td>Appendix F - Migratory s.</td>
</tr>
<tr>
<td>Physeter macrocephalus</td>
<td>Endangered</td>
<td>Physetidae</td>
<td>Interoscean</td>
<td>Endangered</td>
<td>Appendix F - Migratory s.</td>
</tr>
</tbody>
</table>

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Nordic Site

The Nordic LEE atlas and information can be accessed at the following link: http://recette101.ago.fr/observatory/4

Bathymetric, boundary (EEZ) and existing cable information is currently available for the Nordic site through the LEE database.

National, European and international legislation is also accessible for the site.
Porcupine Site

As the LEE database was developed as part of WP5 and the IMI are WP leaders for this work package, considerable effort was put in by the IMI to provide GIS data for the Porcupine site as an example of best practice for the remaining ESONET sites. The LEE database for the Porcupine can be accessed at the following link: http://recette101.ago.fr/observatory/6

Bathymetry, seafloor type, boundaries (EEZ), MPAs (Offshore SACs), exploitation permits and existing cable routes are all available for this margin. No shipwrecks are currently registered in deep waters offshore Ireland. Geohazards are not recorded for this site and no military zones are relevant for this site.

National, European and international legislation were collated as part of the ESONIM project. A considerable body of additional information on Marine Resource Law in Ireland can be referenced in a volume published by Ronan Long of NUIG.

A considerable number of cetacean species are recorded as having a range in the vicinity of the Porcupine site (approximately 28 species). IUCN conservation status records show returns from being data deficient, right through to endangered.
Azores Site

The LEE database for the Azores site can be accessed by clicking on the following link: [http://recette101.ago.fr/observatory/7](http://recette101.ago.fr/observatory/7)

The environmental atlas contains the following information for the Azores site: Bathymetry, seafloor type, boundaries (EEZ) and MPAs.
A range of national (Portuguese), European and international legislation are all accessible from the LEE database.

As at the Porcupine site, a relatively large number of cetacean species are potentially in range of the Azores site:
Iberian Margin

The Iberian Margin LEE information is available at: http://recette101.ago.fr/observatory/8

In terms of the environmental atlas, bathymetry (Sibuet et al., 2004), EEZ, MPAs and existing cable routes (from France Telecom) are available for review.

As with the Azores site, Portuguese, European and international convention applies.

A wide range of cetacean species are also observed at this site.
Ligurian Margin

The Ligurian Margin LEE database information is accessible at: http://recette101.ago.fr/observatory/12

The environmental database contains the following GIS maps: Bathymetry, seafloor (Barrier E., N. Chamot-Rooke & G. Giordano, 2004), EEZ boundaries, MPAs, exiting cable routes (France Telecom) and military zones.
National (France), European and international regulations apply.

Cetaceans are also recorded, with some endangered species relevant to the site according to IUCN status.
East Sicily Margin

The LEE database for the East Sicily margin is available at: http://recette101.ago.fr/observatory/13

From the data mining questionnaire, the following GIS maps are available for the east Sicily site: bathymetry, seafloor (Barrier E., N. Chamot-Rooke & G. Giordano, 2004) and MPAs.
A substantial amount of national legislation for this site is available, in conjunction with European and international legislation.

As with the Ligurian site, the number of cetacean species is more limited.
Hellenic Site

The Hellenic site is one of the ESONET sites of common interest to both ESONET and KM3NET (as are the Ligurian and East Sicily site). Information relating to this site can be accessed here: [http://recette101.ago.fr/observatory/15](http://recette101.ago.fr/observatory/15)

The following GIS maps are available as part of the environmental atlas suite: bathymetry, seafloor (tectonic elements Barrier E., N. Chamot-Rooke & G. Giordano, 2004), boundaries (EEZ), MPAs, and existing telecom cable routes (France Telecom).

LEE legislation is available for the site, again covering Greek, European and international legal requirements.
Eight cetacean species are recorded for the Hellenic site, two of which are endangered: *Balaenoptera physalus* and *Balaenoptera borealis*.
**Black Sea Site**

The Black Sea observatory has probably the least number of advocates for the site, although this is beginning to change with the momentum around the HYPOX project.

The LEE database for this site can be accessed at: [http://recette101.ago.fr/observatory/16](http://recette101.ago.fr/observatory/16)

Bathymetry, EEZ boundaries and MPAs are all available as GIS maps on the LEE database.

As an indication of the legal complexity surrounding the site, a wide variety of national legislation from the Ukraine, Romania, Russia, Georgia, Turkey and Bulgaria are all registered on the LEE database. This is in addition to European and international conventions.
A number of cetacean species are also recorded for the Black Sea:
Marmara Sea site

The Marmara Sea LEE database is available at: http://recette101.ago.fr/observatory/17

This site is of enormous importance given its risk as a geohazard location. The environmental atlas has GIS maps of bathymetry (http://www.ifremer.fr/drogm/marmara/asea.htm) and seafloor type (morphotectonic).
National (Turkish) and international legislation is listed for this site:

As was recorded for the Hellenic and Black Sea sites, Balaenoptera physalus and Balaenoptera borealis are listed as being endangered according to the IUCN status.
Conclusions

Significant progress was made over the course of Period 3 of ESONET NoE to collate and to provide in an accessible and user-friendly format LEE issues associated with the development of the ESONET sites.

This has been achieved in the provision of an online LEE resource, as described in this report.

The database has been set up in such a way as to facilitate the entry of additional information as it becomes available.

Further work on Best Practices and LEE issues relating to the ESONET sites can be found in the report D48 (Final report on Best Practices, guidelines for LEE issues and implementation plans). This work was led by Michel Andre in UPC and by colleagues Laurent Richier and Gael Andre in Altran.