SIGPesca. An interoperable GIS tool for coastal knowledge and management

Generalitat de Catalunya
Departament d'Agricultura, Alimentació i Acció Rural

CREAF

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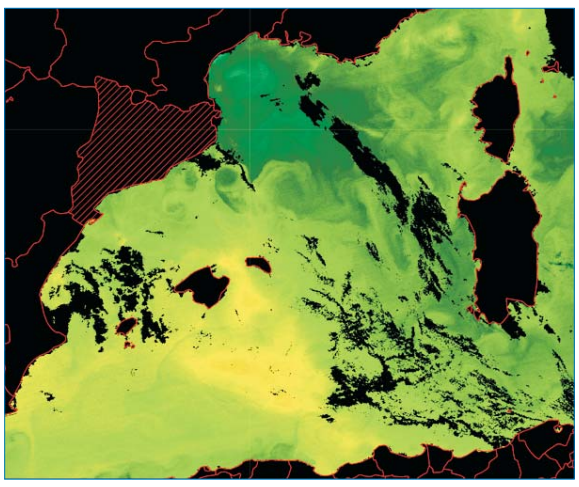
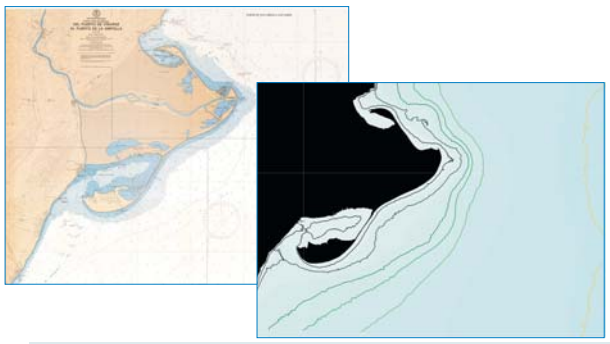
Study Area

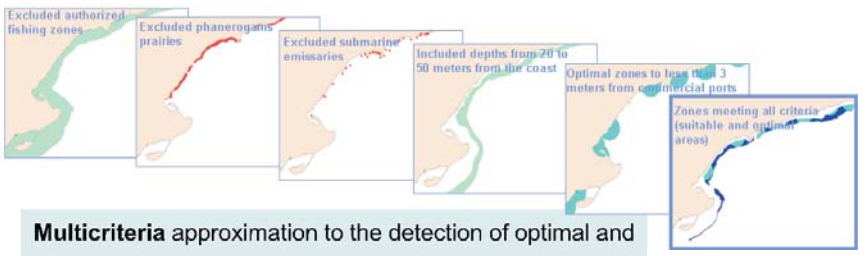


Catalonia, northeast region of Iberian Peninsula, situated at the western Mediterranean coast between the Gulf of Lion and Ebro's Delta. Catalan coastal zone extends 200 miles into the sea. Nearby Mediterranean extent is been taking into account as well.

Gathering of Information



Digital Bathymetric Model derived from bathymetric lines extracted from Nautical Charts



Multicriteria approximation to the detection of optimal and suitable areas for aquiculture

Aquiculture information

Tabular information concerning fishery and fleet management

Technology

GIS implementation with **MiraMon**, a UAB GIS software specialised in **GIS and Remote Sensing** solutions and in **geospatial interoperability** technologies.
http://www.creaf.uab.cat/miramon/index.htm

The project has been designed with two levels of privacy:
- GIS for the **internal DGPAM use**
- The external GIS consisting on different ways of data distribution and **accessible to everyone**.

Information organised in several modules

GIS organization

- Carto: Cartography of reference: Nautical Charts, administrative boundaries, orthophotographies, Digital Bathymetric Models,…
- Aigues: Water quality control points,…
- Ambient: Marine phanerogams prairies, artificial reefs, boundaries of protected areas,…
- Flota: Fleet census database
- Inspec: Maritime inspections
- Legis: Legal specifications and boundaries
- Pesca: Marine water quality monitoring, areas of mussels and other marine invertebrates production, areas suitable and optimal to marine aquiculture, etc.

Technical Developments

Mercator implications

Any area drawn on **Mercator** projection differ in a certain measure, from the real area of the ellipsoid depending on the reference parallel and the scale of work.

Choosing a specific parallel for each zone one can get very good adjustments between the projection area and the ellipsoid for that zone. So a different reference parallel is needed for each nautical chart.

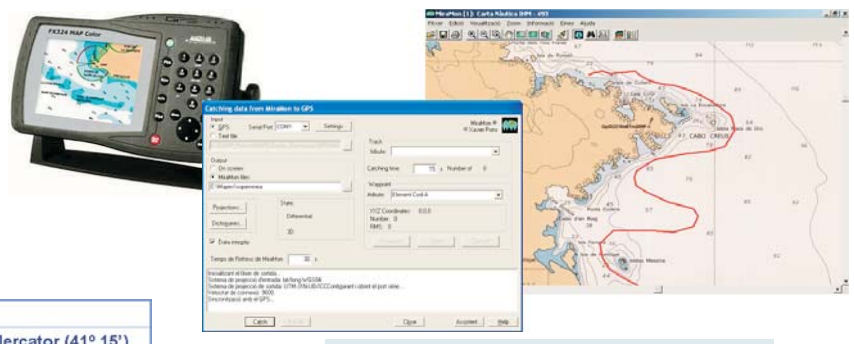
As each chart has a specific projection system they can not be mixed up and combined automatically, which may represent an inconvenience in larger areas unless one uses a general parallel that fits more or less well in the zone of interest.

Relatives Errors respect to the Ellipsoid

	UTM 31N	Mercator Equator	Mercator (41° 25') Catalan Central Parallel	Mercator (41° 15') Nautical Chart Specific Parallel
Area (m^2/m^2)	0.001	0.820	0.027	0.003
Perimeter (m/m)	0.000	0.349	0.013	0.001

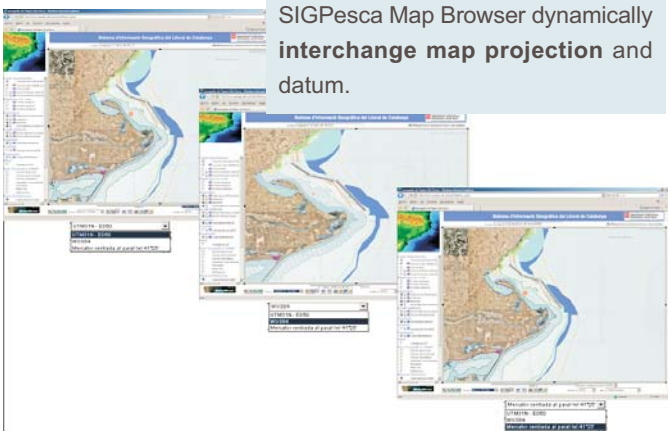
MiraMon informs of distances, perimeters and areas in the chosen **projection** as well as the **real values of the ellipsoid**

GPS and real time navigation. NMEA



Rigorous transformation from **GPS** coordinates to any map projection and datum in real time.

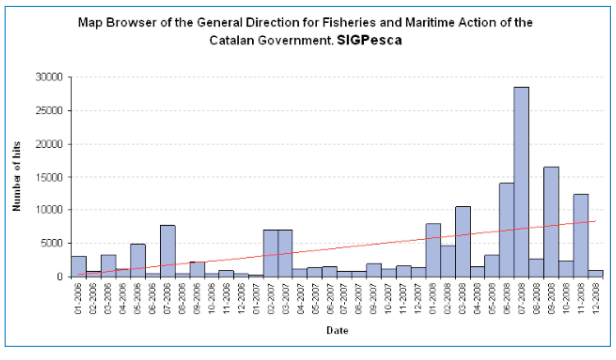
Cartographic Distribution

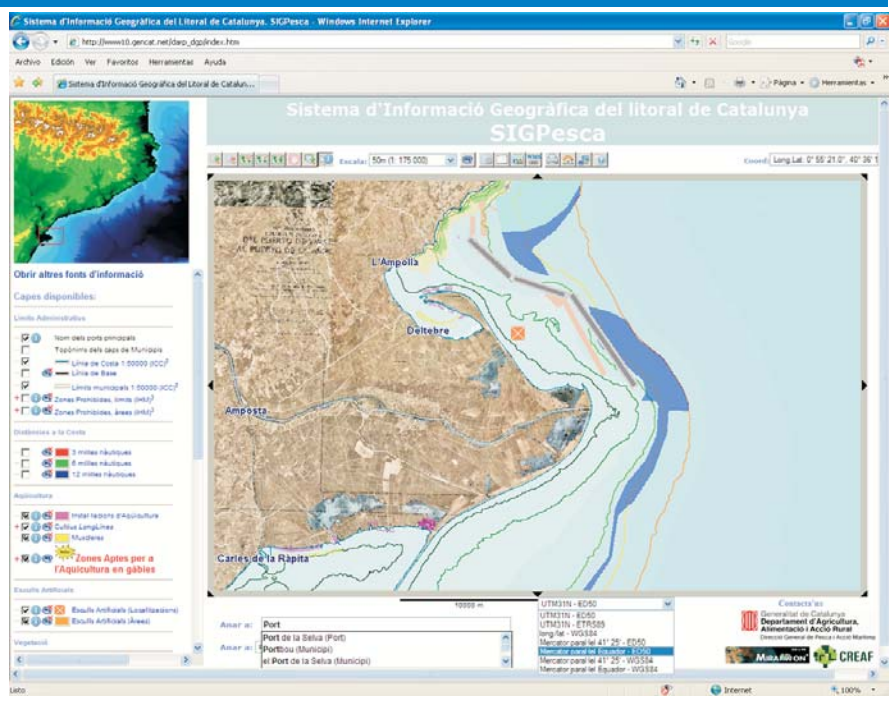


SIGPesca Map Browser dynamically **interchange map projection** and datum.

Free cartographic distribution using SIGPesca Map Browser:
- Works under **OGC** international standards of interoperability: **WMS, WFS**, etc.
- Follows **Directive INSPIRE** and **SDI**'s specifications.
- Uses information from other entities.

Available at
http://www10.gencat.net/darp_dgp/index.htm





Other Maritime Map Browsers developed using MiraMon technologies:
- **Thalassa Map Browser** (SST and chlorophyll MODIS images): http://opengis.uab.cat/WMS/thalassa/index.htm
- **CetCat 2.0 Map Browser** (collaborative cetacean sighting): http://opengis.uab.cat/WMS/cetcat/index.htm

Bibliography available on the full paper