Observing and Prediction Systems in the Mediterranean Region: Transitional Waters and Land

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First point!

Much is already going on in the Mediterranean.



Coordination, supplementation & Integration are needed more than initiation

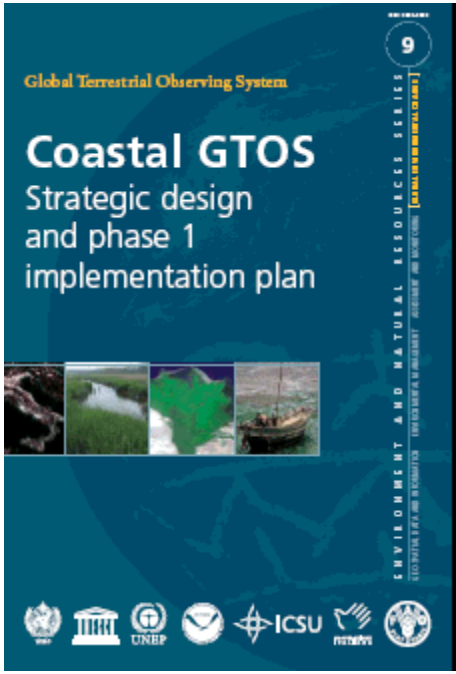
Outline

- Coastal GTOS priorities
- Tools for Remote Sensing and Geospatial Information
- Sentinel System Approach



Coastal GTOS Priorities

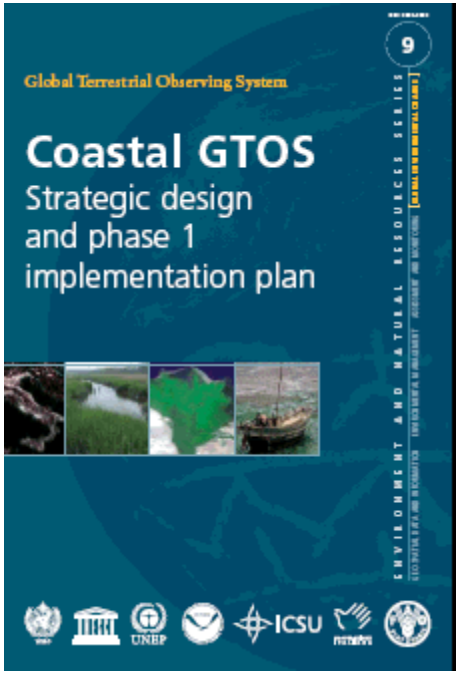
To detect, assess and predict global and large-scale regional change associated with *land-based, wetland and freshwater (and when appropriate transitional waters) ecosystems* along coasts.



Strategic design and phase 1 implementation plan
http://www.fao.org/gtos/pubs.html

Coastal GTOS Priorities

To detect, assess and predict global and large-scale regional change associated with *land-based, wetland and freshwater (and when appropriate transitional waters) ecosystems* along coasts.



Includes Human Dominated Ecosystems

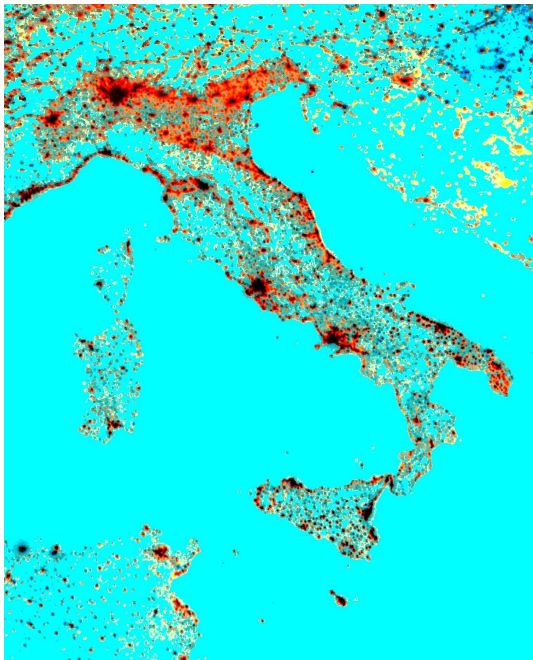
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Observing Systems



Two stages of implementation for CGTOS

- Mature system to interface with Coastal GOOS
  - Four key issues of concern
  - >70 variables
  - Including socio-economic variables
- Five immediate, priority products to
  - Initiate system
  - Establish improved capability
  - Provide proofs of concept
  - Advertise the program



Mature System
(to interface with CGOOS)

Issues of Concern

- Population dimensions, land use/land cover and critical habitat alteration;
- Sediment delivery;
- Water cycle/water quality;
- Effects of sea level change, storms and flooding.



Proposed Initial Products of C-GTOS

- Distribution and rate of change of population, urbanization and land use
- Vulnerability of ecosystem services in deltaic systems
- Management of conservation and cultural sites in the coastal zone
- Distribution of sites appropriate for analyses of delivery systems
- Enhancement of TEMS database



Tools for Remote Sensing and Geospatial Information



Nighttime lights in the Nile delta
Color composite from:
1992 (blue); 1998 (green);
2003 (red);
Bright throughout (white)

From Chris Elvidge
(NGDC/NEDIS/NOAA)

GROUP ON EARTH OBSERVATIONS

GEO launches the GEO Portal!

- What is the GEO Portal?
- The GEO Portal will provide a web-based interface for searching and accessing the data, information, imagery, services and applications available through the Global Earth Observation System of Systems (GEOSS). The GEO Portal will connect users to data bases, services and portals that provide reliable, up-to-date, integrated and user-friendly information – vital for the work of decision-makers, managers and other users of Earth observations.

The Compusult GEO Portal: http://www.geowebportal.org
The ESA/FAO GEO Portal: http://www.geoportal.org
The ESRI GEO Portal: http://keel.esri.com/Portal

FAO //GeoNetwork

[Find and analyze geo-spatial data]

United Nations Spatial Data Infrastructure

GeoNetwork opensource Community website

GeoNetwork opensource is a standards based, Free and Open Source catalog application to manage spatially referenced resources through the web. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer. This website contains information related to the use of the software.



2nd CEN/TC 287 MEDITERRANEAN WORK SHOP

SPATIAL DATA INFRASTRUCTURE LAND COVER CLIMATE CHANGE ONTOLOGY

UN FAO - Rome 10-11 JUNE 2008

- UNSDI initiative to integrate spatial data information
- In the context of a number of ongoing **United Nations** and **European Commission** developments in the area of enhanced sharing and exchange of both space-based and in situ observations of geographic data and information
- Series of workshops on **land cover classification**, **spatial data infrastructure** (SDI) development and related **standardization** and **interoperability** aspects, with a focus on but not limited to the countries of the **Mediterranean basin**.
- www.gistandards.eu.

SEDAC
socioeconomic data and applications center

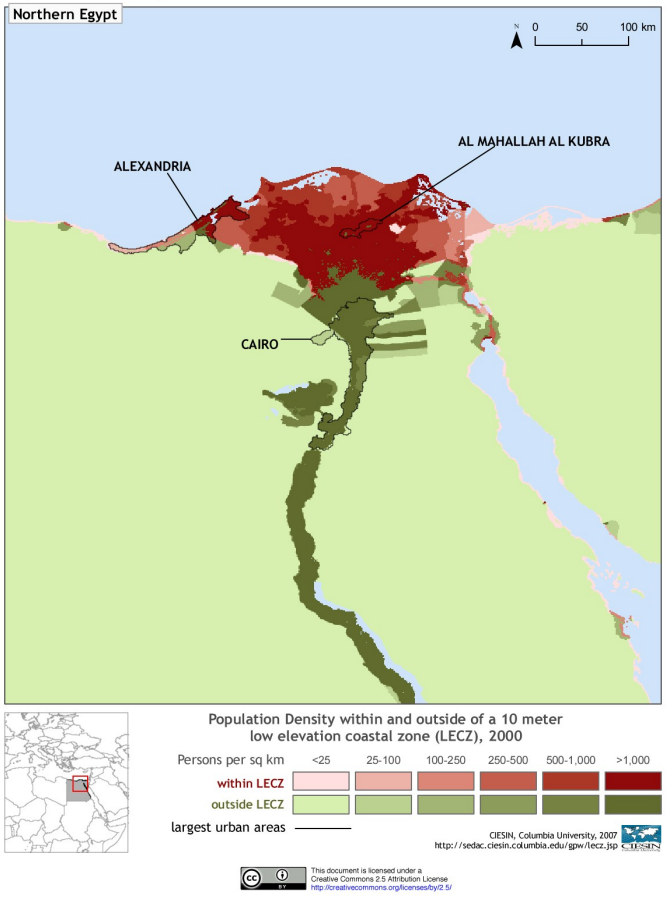
Gridded Population of the World and the Global Rural - Urban Mapping Project

LOW ELEVATION COASTAL ZONE (LECZ) URBAN-RURAL ESTIMATES

Country-level estimates of urban, rural and total population and land area in a low elevation coastal zone (LECZ) were generated globally using Global Rural-Urban Mapping Project (GRUMP) alpha population and land area data products and a Digital Elevation Model (DEM) derived from Shuttle Radar Topographic Mission (SRTM) remote sensing data.

The zone was derived from the DEM by selecting all land contiguous with the coast that was 10 meters or less in elevation. Zonal statistics were generated for urban, rural and total population and land area for the country as a whole and within the LECZ.

Population Density within and outside of a 10m Low Elevation Coastal Zone



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World Deltas Network & WDD

WORLD DELTAS DATABASE

OBJECTIVE

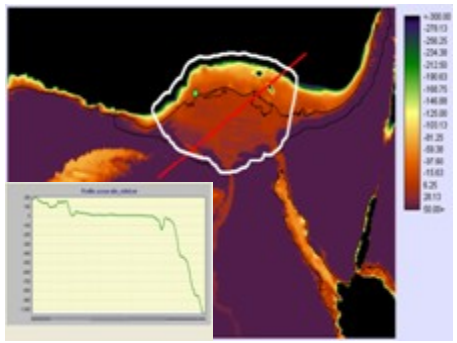
The purpose of the WDD is to facilitate the development and use of a public domain **distributed** knowledge base on modern global deltaic systems. It is hoped that this knowledge will be of value to teachers, research scientists, government and state agencies, and policy developers at all levels of administration.

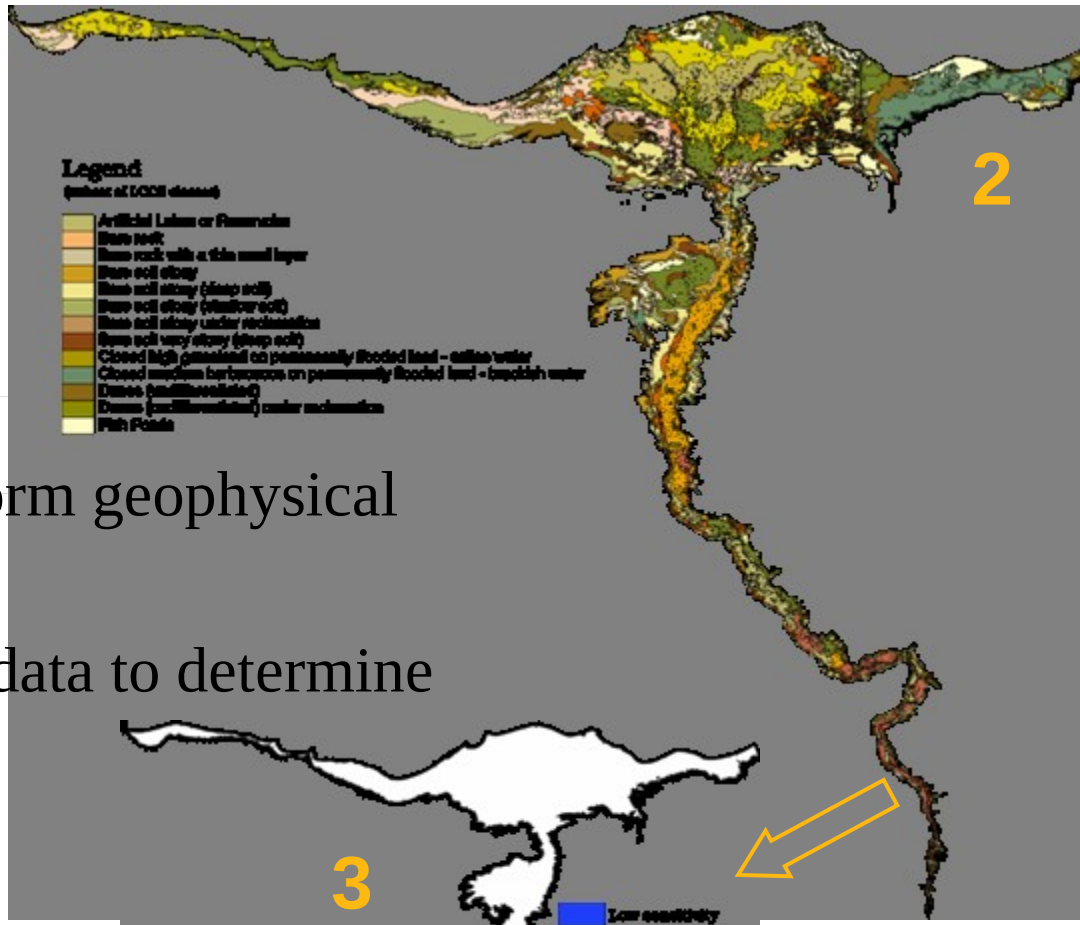
The World Deltas Database Framework, by George F. Hart, and James Coleman, Louisiana State University:
www.geol.lsu.edu/WDD



Ebro River, WDD

Proposed Initial Products of C-GTOS through GLCN







1) digital elevation data to perform geophysical analysis of the delta

2) use of land cover and *in situ* data to determine ecosystem extent and function

3) analysis of threats and vulnerability of ecosystem services.

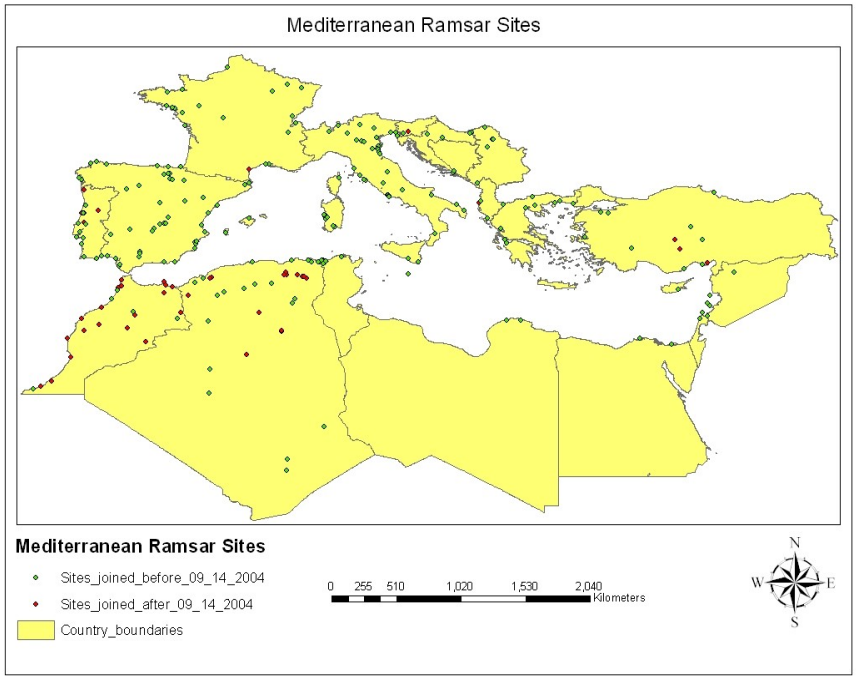
Sentinel System Approach

- Approaches to limited observations
  - Build capacity for all nations to make observations (requires significant commitment and time)
  - Develop models that interpolate and extrapolate to areas with little to no data.
  - Observe and build upon sentinel ecosystems



Sentinel Systems in Observing Systems

- Selected and limited number of ecosystems to assess response to global and large-scale regional change and promote programme.



Christian, R. R., and S. Mazzilli. 2007. Defining the coast and sentinel ecosystems for coastal observations of global change. Hydrobiologia 577: 55-70. (see Hydrobiologia 583:385 for erratum on order of authorship from original. It should read Mazzilli and Christian)

Characteristics for Finding Sentinel Ecosystems for Observing Systems

- Representative of class of ecosystem (including human dominated)
- Important enough for society to support long term study
- Site of historic and ongoing study
- Site for R&D and observations
- Part of a network of sites



Potential networks of sites

- ILTER
- MAB
- MedWet
- TNC
- Ramsar
- World heritage
- Etc.

The Nature Conservancy
Protecting nature. Preserving life.™

UNEP

Ramsar

ILTER
International Long Term Ecological Resea

MedWet

UNESCO
United Nations Educational, Scientific and Cultural Organization

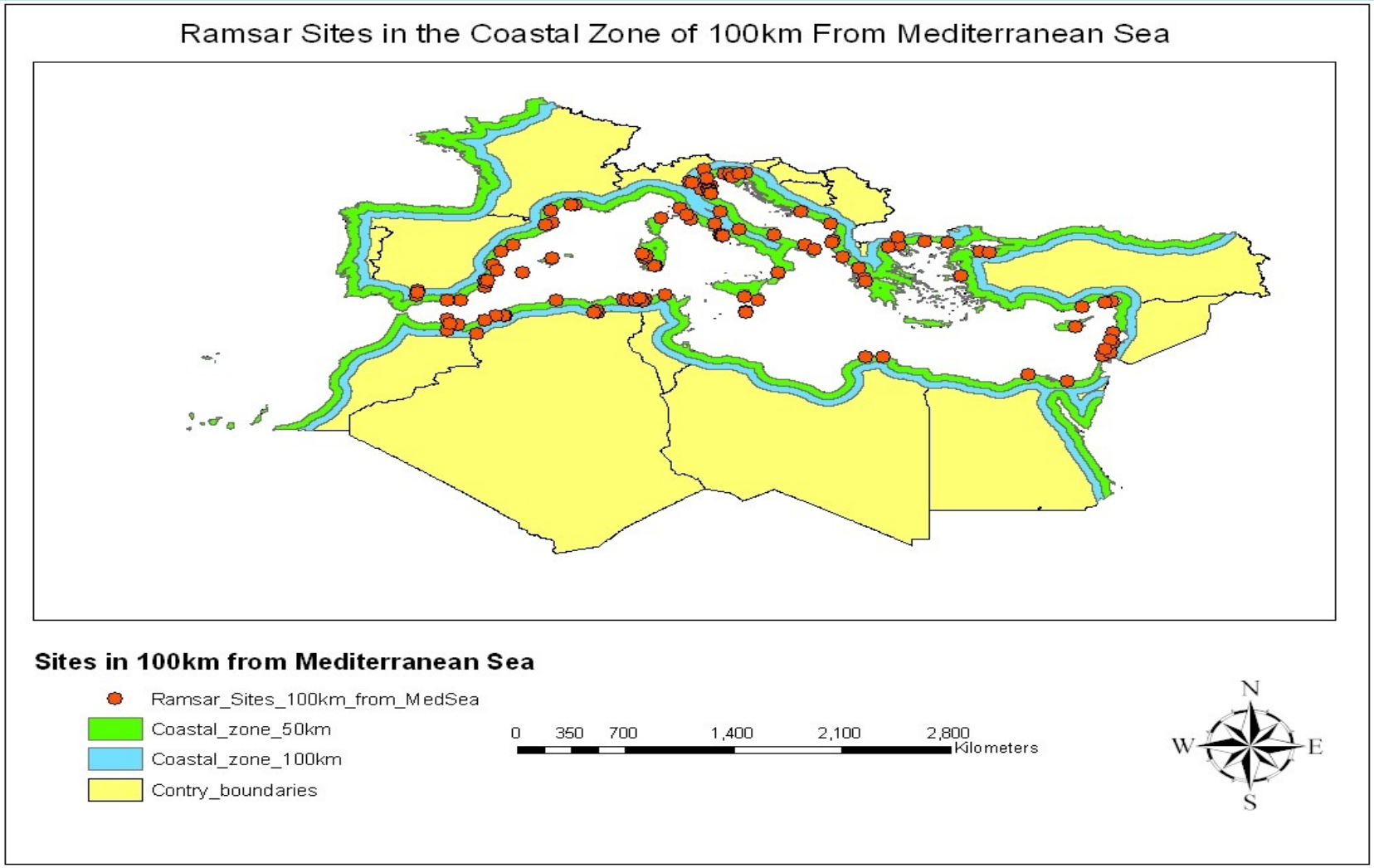
Value of sentinel ecosystems to observing systems

- Directly useful for long-term observations of the location
- Representative for assessment of broader grouping
- Builds capacity for providing sustained and quality assured information
- Useful in developing & validating models
- Useful for uncertainty evaluation.



Wetland Inventory of Ramsar Sites

(Overlap with MedWet)



Of the 250 sites 69% are within 100 km of the coastline and 36% are within 5 km of the coastline.

Delivery System Networks from Mediterranean & Black Sea Region

MELMARINA

مشروع رصد ونمذجة البحيرات الساحليه

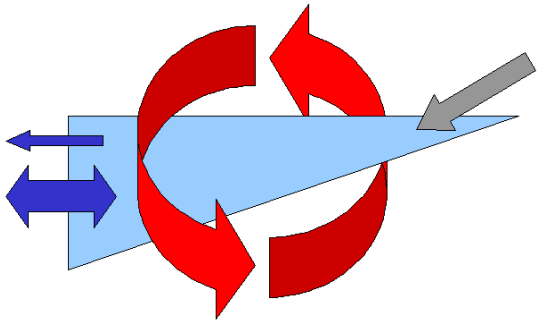
Monitoring and modelling coastal lagoons:
Making management tools for aquatic resources in North Africa

GTOS

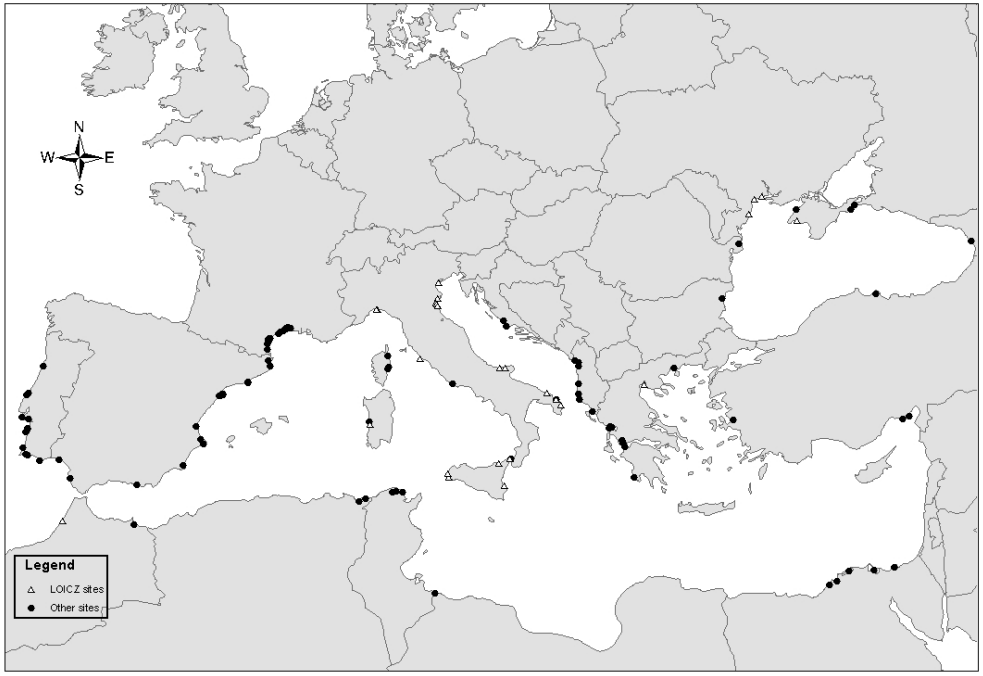
GLOBAL TERRESTRIAL OBSERVING SYSTEM

Terrestrial Carbon Observations
Terrestrial Networks
Climate Observations (TOPC)
Central and Eastern Europe
Land Dynamics (GOFC/GOLD)
Southern Africa
Terrestrial Coastal Environments (C-GTOS)
Net Primary Productivity





LaguNet
www.dsa.unipr.it/lagunet

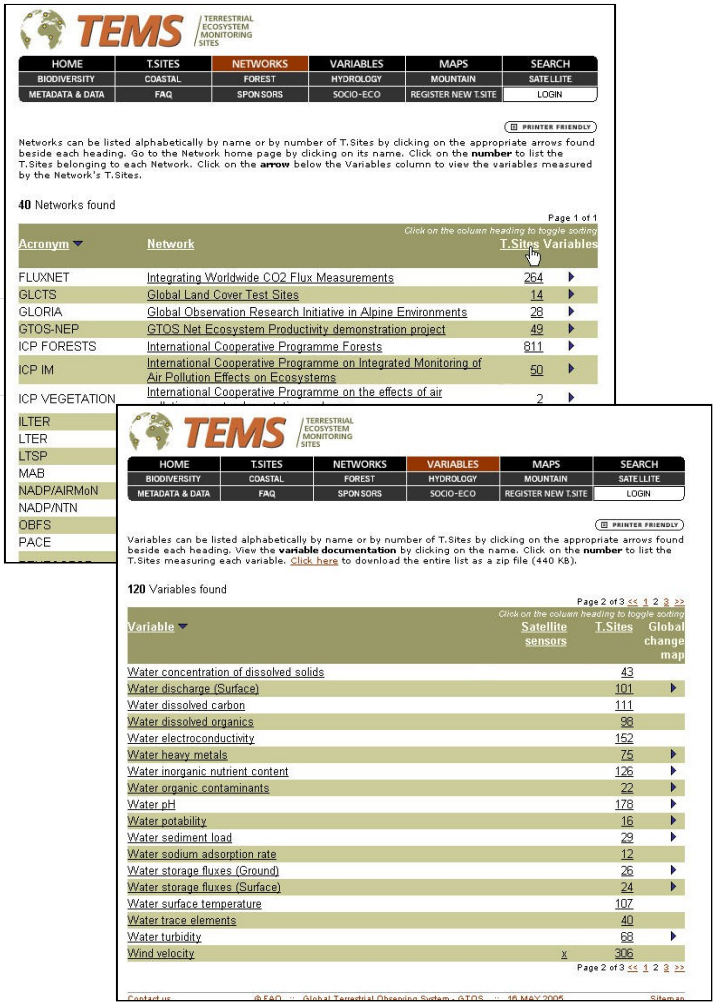


Information collected on about 130 sites

GTOS database

Coastal variables

The list of coastal variables below is the result of efforts by the Coastal GTOS scientific panel, through the development of the C-GTOS Plan, identifying variables that best describe monitoring activities taking place at TEMS sites dealing with coastal issues. Variables are grouped according to the four priority coastal issues addressed by C-GTOS:



Summary

- Numerous potential resources
- Some completed products for Mediterranean region
- Time lags are often long, rarely operational or near real time
- Goal of workshop to focus resources on workshop issues
- More in gap analysis