EGIDA Project

National Use Cases Workshop
The EGIDA Methodology

P. Mazzetti (CNR)

Rome, Italy – April, 18-19, 2011

Rationale

- The GEO provides a general framework for the GEOSS implementation, e.g. through the GEO STC Roadmap. However, due to its voluntary-based approach, GEO does not directly fund its activities and must leverage members' efforts.

- There are on-going and planned initiatives funded in the context of national and regional projects which contribute or might contribute to the GEOSS implementation.

Egida Approach

GEO STC

Tasks

ST-09-01

ST-09-02

Promote GEO in S&T Communities

Engage S&T Communities in Developing GEOSS

WP2

WP3

WP4 *EGIDA Methodology & Use cases*

WP5 *Dissemination & Outreach*

SoS engineering process / Lower Entry Barriers

Exploitation

EU Programs

National Initiatives

Objective

- EGIDA activities aim to combine the top-down approach from GEO (GEO STC Roadmap support) and the bottom-up approach from national/regional initiatives.

- The EGIDA Methodology consolidates the EGIDA project experience for future use by defining a general methodological approach which can be adopted by national/regional S&T communities

Definition

- *The **EGIDA Methodology** is a general methodological approach, which can be adopted by **national/regional S&T communities**, for a **sustainable contribution to the GEOSS** through the mobilization of resources made available **from the participation in national, European and international initiatives and projects**.*

Structure

- The EGIDA Methodology is structured as a set of good practices and guidelines to align the on-going and planned national/regional actions with the GEOSS objectives, addressing:
  - Capacity building
  - Community engagement
  - Existing organizations role

Target

- The EGIDA Methodology is directed to:
  - National/regional S&T communities which would like to build a sustainable contribution to the GEOSS through resources available from on-going initiatives and projects.
  - European Programmes that aim to replicate or put in practice services related to the EO (e.g. GMES)
  - Funding agencies which would: a) provide guidelines for projects aiming to contribute to the GEOSS; b) assess results of funded projects;

Approach

- Collect successful experiences; (compelling examples)
- Leverage the outcomes of the EGIDA activities in supporting ST-09-01 and ST-09-02
- Derive principles and processes for a general methodology;
- Propose the draft methodology to the STC for discussion and advice;
- Assessment and evaluation through the application in use-cases

Use cases

1. "*Hot-spot pollution in the Mediterranean*" [CNR] – regional, developing countries, thematic;
2. "*Mediterranean region*" [ISPRA] – regional, developing countries, multi-thematic;
3. "*Air Quality for Health*" [NILU] – pan-European, thematic;
4. "*Slovenia*" [IJS] – Small country, multi-thematic;

Task 4.5.1 Use-case: “Hot-spot pollution in the Mediterranean”

Sergio Cinnirella, Nicola Pirrone, Francesco D’Amore

CNR - Inst. For Atmospheric Pollution Research

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Event, - Place, Dte

Aim of the Task 4.5.1

To experience the use of the EGIDA methodology within an on-going FP7 project: KnowSeas (www.knowseas.com)

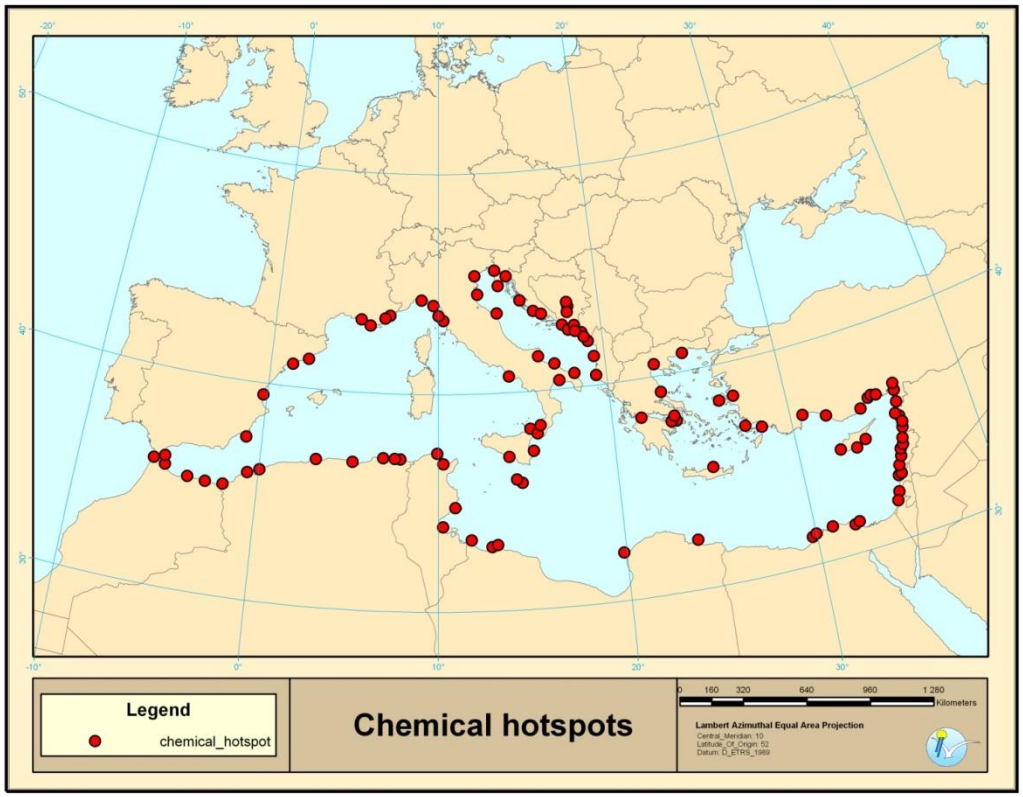
Scope of KnowSeas is to:

- Analyze temporal trends for key drivers for pollution
- Characterize pressures through available data;
- Study environmental pathways of main pollutants;
- Define the State of the Sea according to EU Directives (i.e. Marine Strategy framework Directive)

Road Map

Data Source Discover	Get contact with data providers
Data Acquisition	Get data on hot-spot pollution
Data Validation	Check data quality
SDI - Design	Design a SDI in order to manage Spatial Data
SDI – Implementation	Implementation phase
SDI – Insert data	Data entry
Metadata	Data description. Using metadata in order to describe SDI capability
SoS	Link to System of System (GEOSS)
Coordination	Coordination with the Use Case Mediterranean Region

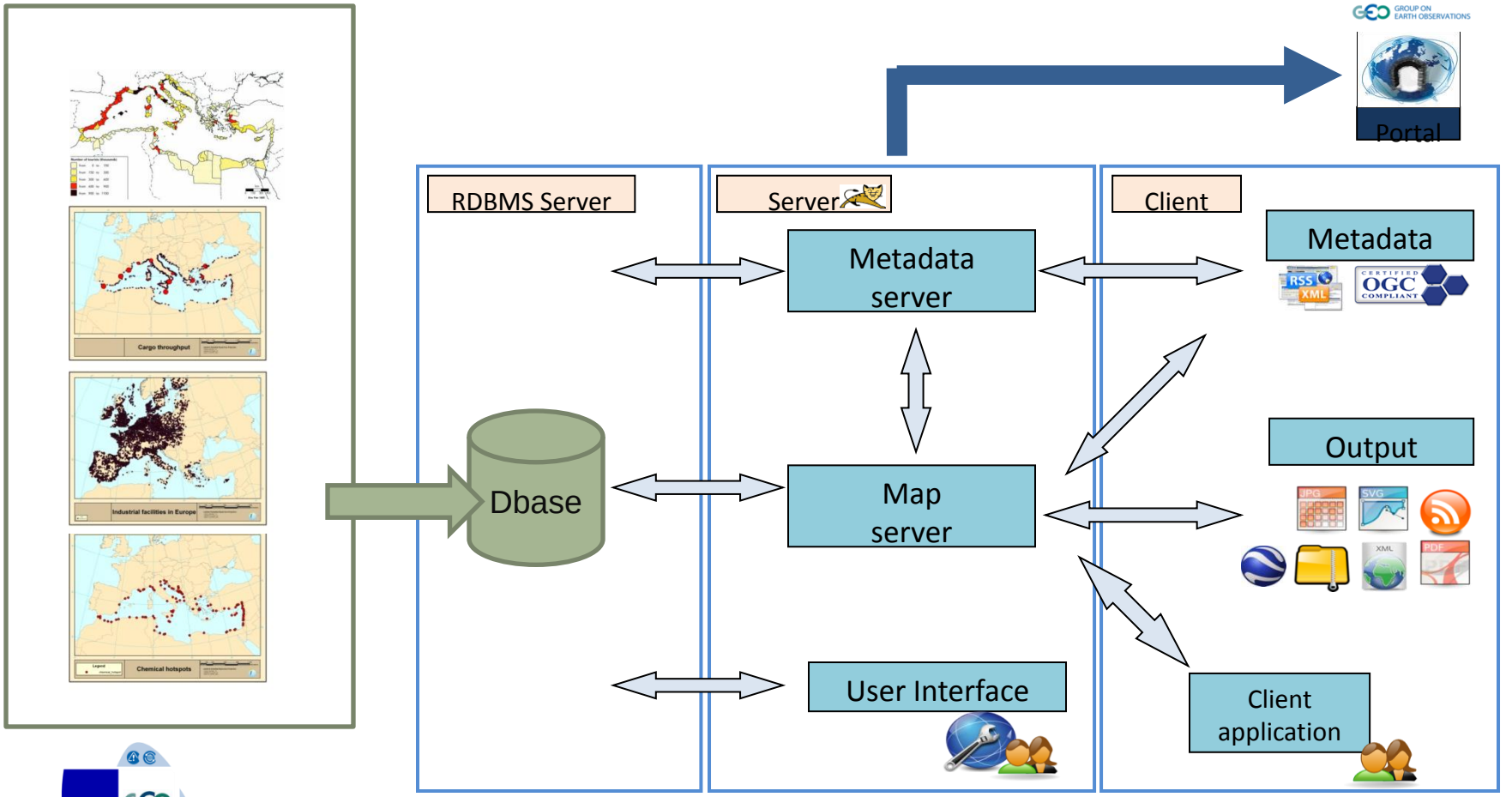
Data collection on chemical pollution



Characterize hot-spots

Industrial production & ports

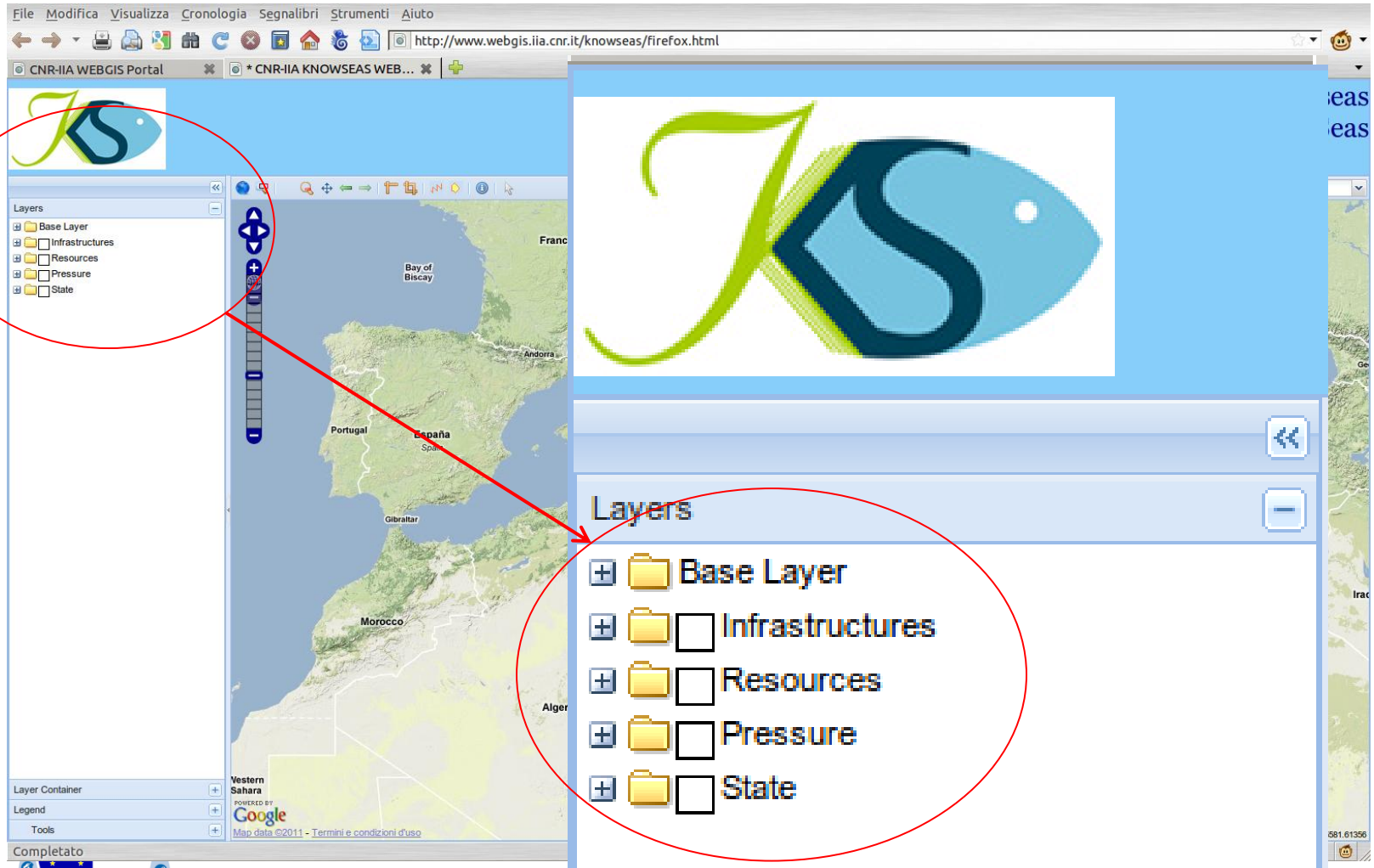
Design of the SDI architecture



Where we stand on the roadmap

Data Source Discover	√
Data Acquisition	√
Data Validation	X
SDI - Design	√
SDI - Implementation	√
SDI – Insert data	X
Metadata cration	X
SoS	X
Coordination	X

SDI implementation (http://www.webgis.iia.cnr.it/knowseas)



Task 4.5.2 Use-case: “Mediterranean region”

ISPRA, CNR, NILU, IVL, IJS, GKSS, MPI-C

Kick-Off meeting, Rome, Italy – September, 27 2010

This task aims at providing a **use-case for the EGIDA methodology transfer process**, focusing on partnership, **infrastructures, products and services involving southern Mediterranean Countries**, targeting four main goals:

1. data management and integration capabilities from data source to data delivery;

2. interoperability among systems;

3. improving support to decision makers by data integration;

4. accomplish the system interoperability tests.

Initialial operation to:

- promoting data sharing and data harmonization in the Mediterranean;
- to promote SW reuse & international standard;
- to disseminate existing initiatives (Task 4.1) contributing to GEO (e.g. SINAnet, GIIDA, UK-EOF, DAEM)
- to promote national experience in EIONET on the basis of SEIS principles in the Mediterranean;

Within:

InfoMAP: the Barcelona Convention information system being developed and operated by INFO-RAC (Regional Activity Centre on Information & Communication) in the frame of the UNEP-MAP Five-Year Programme of Work (2010-2014);

ENPI/South - SEIS: the EC-EEA/UNEP-MAP initiative to promote the SEIS principles in the European Neighbour Mediterranean Countries (2010-2014).

Next event to promote EGIDA activity

Focal Point Meeting of UNEP-MAP by **INFO/RAC** (**May 2011**)

Considering 15/22 UNEP/MAP participants are GEO MS:

Presentation of the EGIDA 4.5.2 task to engage northern African partners to achieve interoperability (reuse of existing SW to exchange metadata).

Presentation of the Activity conduced in GEOSS about Data Sharing.

Info-MAP geoportal implementation

ISPRA, by the INFO-RAC Mandate, is developing the INFO-Map system.
It foresees a cartographic portal where data collected from RAC's (e.g. MEDPOL) will be integrated at Mediterranean level.
The tools to realize it are composed by the same SW adopted by Sinanet to achieve the maximum interoperability (ESRI ArcgisServer & Geoportal and GI-CAT as central catalogue to be connected to GEOSS).
The catalog will be based on GI-CAT SW developed by CNR-ESSI lab.
Successively It is intended to extend the geoportal implementation to the Mediterranean Countries involved in the MAP.

Task 4.5.3 Use-case: Pan-European “Air Quality for Health”

NILU, IVL, IJS, HZG, MPI-C, ISPRA, CNR

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Aim of the Task 4.5.3

Promote awareness and stimulate engagement of the GEO principles in the Air Quality and Health communities

- Identification and analysis of key stakeholders and initiatives (ongoing)
  - Previous involvement in GEOSS (leassons learned)
  - Potential for increased involvements
- Using EGIDA methodology
  - Arrange meetings with relevant stakeholders and communities
  - Increase involvement and contributions to GEOSS

Currently identified AQ and Health relevant initiatives/projects/programmes (preliminary)

- Air Quality monitoring

EMEP	European Monitoring and Evaluation Programme
Eionet	European Environment Information and Observation Network
AMAP	Arctic Monitoring and Assessment Programme
PASODOBLE	Promote Air Quality Services integrating Observations – Development Of Basic Localised Information for Europe
MACC	Monitoring atmospheric composition and climate
TF-HTAP	Task Force on Hemispheric Transport of Air Pollution
EEA AQ web	Data service of the EEA (including Eye on Earth)

Currently identified AQ and Health relevant initiatives/projects/programmes (preliminary)

- Atmospheric composition monitoring (not Air Quality focus)

GMOS	Global Mercury Observation System
ACTRIS	Aerosols, Clouds, and Trace gases Research InfraStructure Network
CARIBIC	Civil Aircraft for the Regular Investigation of the artmosphere Based on an Instrument Container (we could also mention IAGOS here)
EARLINET	European Aerosol Research Lidar Network to Establish an Aerosol Climatology
ICOS/InGOS	Integrated Carbon Observation System / Integrated non-CO2 Greenhouse Gas Observing System

Currently identified AQ and Health relevant initiatives/projects/programmes (preliminary)

- Health issues

HENVINET	Health and Environment network
EO2HEAVEN	Earth Observation and Environmental Modelling for the Mitigation of Health Risks
TRANSPHORM	Transport related Air Pollution and Health impacts

Currently identified AQ and Health relevant initiatives/projects/programmes (preliminary)

- IT and communication

PANGAEA	Publishing Network for Geoscientific and Environmental Data
LENVIS	Localised environmental and health information services for all: User-centric collaborative decision support network for water and air quality management
ICT-ENSURE	European ICT environmental sustainability research
HUMBOLDT	Development of a framework for data harmonisation and service integration
SEIS	Shared Environmental Information System
GENESIS (* = SEIS related project)	Generic European sustainable information space for environment
GIGAS	GEOSS INSPIRE and GMES an action in support

Task 4.5.4 Use-case: “Slovenia”

Jožef Stefan Institute (lead), participating: all

Sonja Lojen, Jože Kotnik, David Kocman

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Aim of the Task

To explore the potential of EGIDA methodology on a use case experiencing specificities of small countries

Based upon several completed and on-going projects, providing input data and methodology:

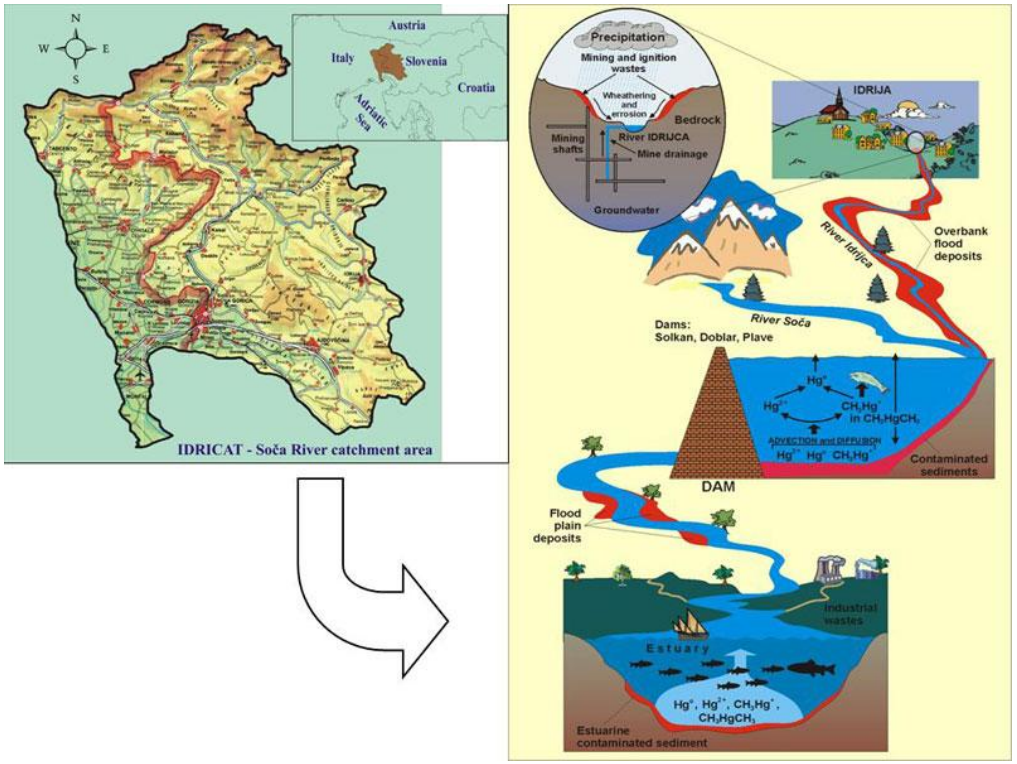
- **EUROCAT** - European Catchments - Catchments Changes and their Impact on the Coast - IdriCat: Soča Catchments and the Gulf of Trieste. EVK1-CT-2000-000444
- **MERCYMS -** An Integrated Approach to Assess the Mercury Cycle Into the Mediterranean Basin, EVK3-CT-2002-00070
- **EMECAP -** European Mercury Emission from Chlor-Alkali Plant. 5.FP EU, Quality of life and management of living resources, QLK4-CT-2000-00489
- **HYDRONET** - Floating Sensorised Networked Robots for Water Monitoring, FP7-ENV-2007
- **PHIME -** Public health impact of long-term, low-level mixed element exposure in susceptible population strata, FOOD-CT-2006-016253

several **national** basic and applied **research projects**

Aim of the Task

Related to other use cases (Mediterranean region, Hot-spot pollution in the Mediterranean, Pan-European Air-Quality and Health

PROBLEM:
land-based point source of transboundary contamination of Soča/Isonzo river catchment, atmosphere and Adriatic Sea



Task description

DPSIR (drivers, pressures, state, impacts, responses) analysis by examination of existing sources using spatial data

HOW?

- Contruct mass balance of contaminant from the source to the target environmnet (water, soil, air biosphere)
- Evaluate temporal trends
- Analyse environmental and human health

Identify critical points for compliance wiht environmetnal and health regulation and need for action

Data base

- to collect and assess information on sources, fluxes and concentration levels of multiagents in question within the past and on-going projects
- status and availability of different ancillary data, needed mostly for the modeling of the transport and transformation of pollutants

Figure 1: Case study A - Soča/Isonzo River and the Gulf of Trieste

Soča/Isonzo River and the Gulf of Trieste

Figure 1: Case study A - Soča/Isonzo River and the Gulf of Trieste

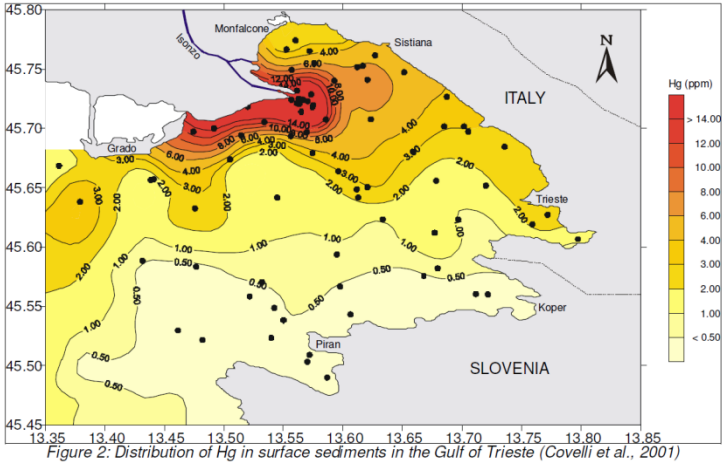
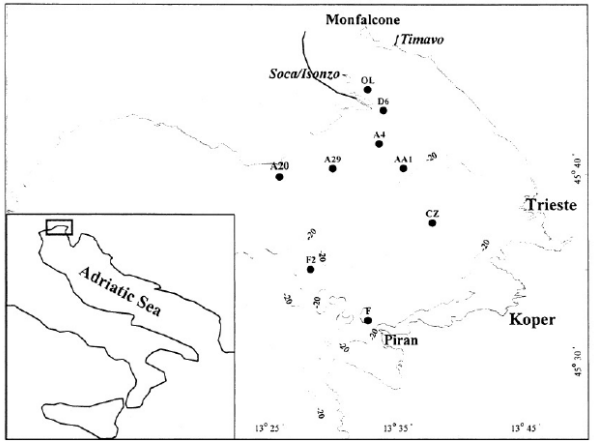


Figure 2: Distribution of Hg in surface sediments in the Gulf of Trieste (Covelli et al., 2001)



-Problem identification

-Multiagents in question **(Hg and hydrocarbons)**

-Ancillary data

Table 1: Summary of concentrations (in ng/L) of total Hg (THg), total dissolved Hg (T Hgdiss.), total (MeHg) and dissolved methylmercury (MeHgdiss.), and reactive Hg in surface and bottom water layers of the Gulf of Trieste (Horvat et al, 1999; Faganeli et al., 2003)

Station / Period	THg diss. Surface	THg diss. Bottom	THg Surface	THg Bottom	MeHg diss. Surface	MeHg diss. Bottom	MeHg Surface	MeHg Bottom	Reactive Hg Surface	Reactive Hg Bottom
D6										
Dec.90			13.7	35.7						
June95	4.9	1.31	12.6	4.51	<0.005	<0.025	<0.005	<0.025	1.2	5.1
Sep95	4.73	0.89	11.5	12.7	<0.005	<0.025	<0.005	<0.025	1.4	0.98
Jun98	1.73	0.98	1.26	64.5	0.007	0.026	0.029	0.06		
Mar98	1.26	0.77	20.1	18.1	0.015	0.015	0.045	0.03		
Aug99	1.04	2.69	6.37	25.4	0.047	0.062	0.08	0.071		
AA										
Dec90			4.8	24.4						
Jun95	1.56	1.17	2.03	4.25	0.028	0.07	0.046	0.078		
Mar98	1.17	0.87	13.6	21.4	0.15	0.012	0.031	0.024		
Aug99	<0.20	2.69	0.22	24.9	0.032	0.096	0.062	0.126		
CZ										
June95	0.97	1.18	1.25	1.31	<0.005	<0.025	<0.005	<0.025	0.97	1.02
Sep95	0.52	0.83	1.32	2.37	<0.005	<0.025	<0.005	<0.025	0.78	0.66
Jun98	0.59	2	1.37	33.4	0.006	0.033	0.035			
Mar98	<LOD	0.32	4.41	19.1	0.005	0.015	0.035			
Aug99	<0.20	2.69	0.22	24.9	0.032	0.096	0.062			
A4										
Dec90	1.4	1.2	8.5	7.1						
Jun95	3.47	1.08	10.1	2.4	<0.005	<0.025	<0.005	<0.025	3.92	0.96
Sep95	3.74	1.08	11.2	9.7	<0.005	<0.025	<0.005	<0.025	3.92	0.96
A29										
Jun95	1.53	1.28	4.1	3.45	<0.005	<0.025	<0.005	<0.025	1.02	0.75
Sep95					<0.005	<0.025	<0.005	<0.025		
A20										
Jun95	2.31	1.34	9.42	2.73	<0.005	<0.025	<0.005	<0.025	2	0.84
Sep95	2.65	1.28	7.99	4.93	<0.005	<0.025	<0.005	<0.025	3.72	0.86
F2										
Jun95	0.95	1.23	2.47	1.66	<0.005	<0.025	<0.005	<0.025	0.4	0.64
Sep95	0.54	0.18	1.71	0.77	<0.005	<0.025	<0.005	<0.025	0.28	0.33
F										
Jun95	0.68	1.09	1.93	2.38	<0.005	<0.025	<0.005	<0.025	0.64	0.85
Sep95	0.18	0.78	0.51	1.35	<0.005	<0.025	<0.005	<0.025	0.29	0.47
OL										
Dec90	1.5	1.4	6.2	9.2						

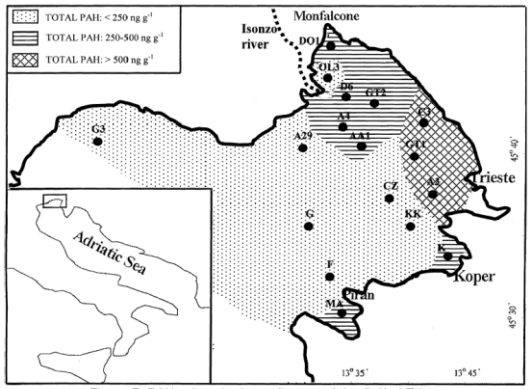
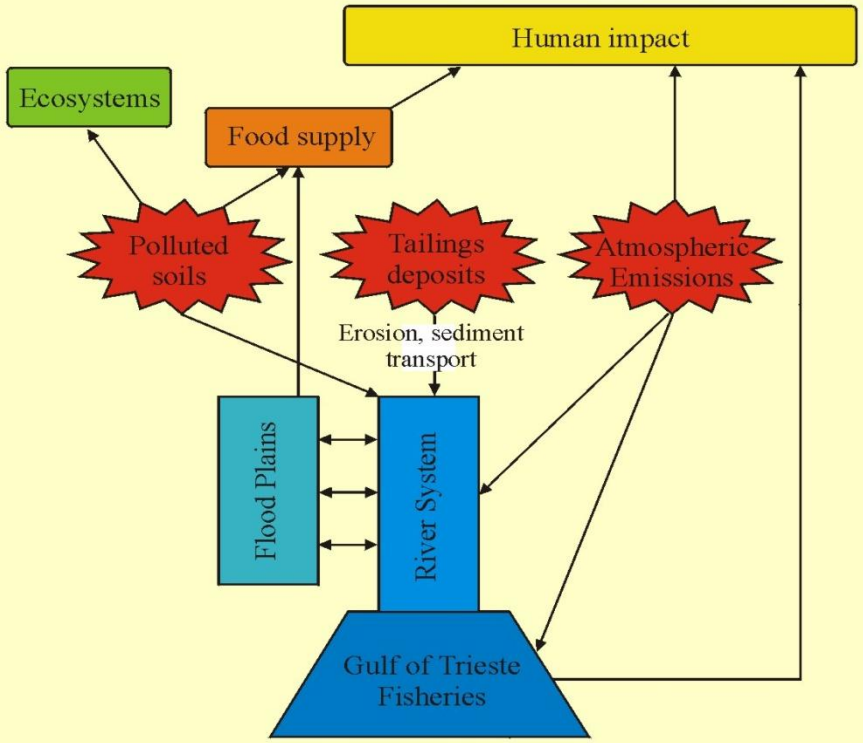


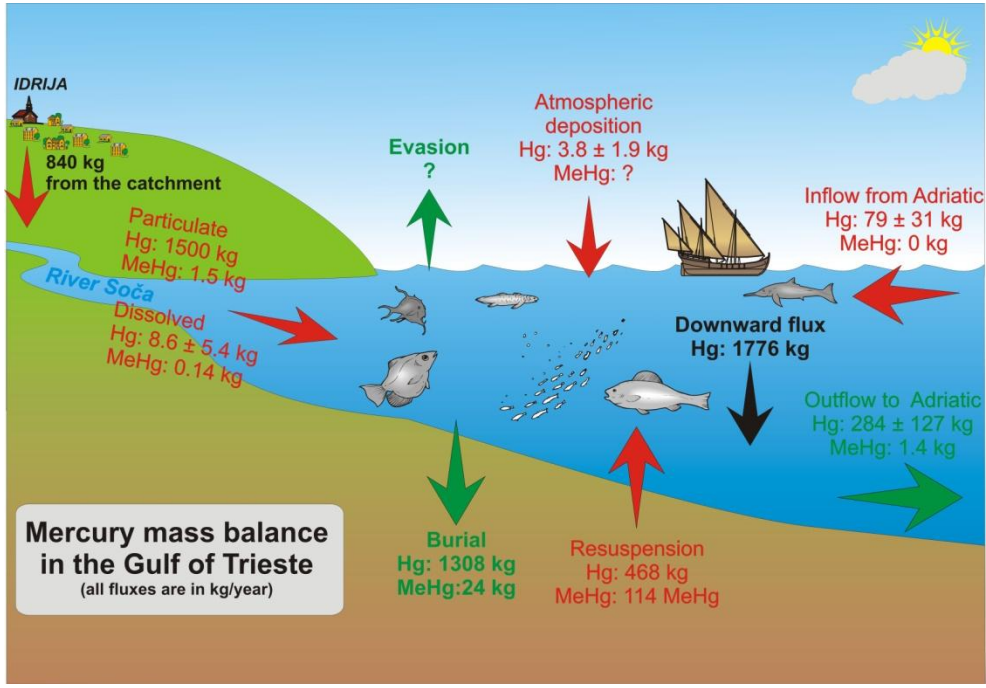
Figure 7: PAH values in the sediments of the Gulf of Trieste

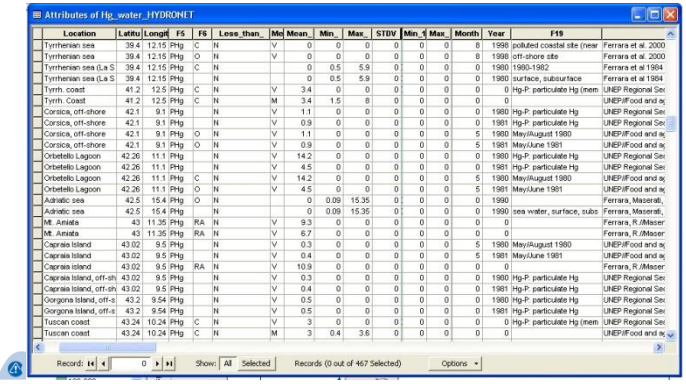


SDI Implementation

-**Budget analysis**

-**Modelling fluxes from existing metadata and spatial data bases**





What we do – EGIDA Methodology

Define relevant stakeholders from research, industry, policy & decision making and funding bodies; metadata and spatial data providers at national and international level (CESM, EIONET, EoE, national projects), evaluate national GEO role

Explore the level of compatibility of databases and data infrastructures

Explore the level of awarenes of stakeholders of SDI, role of GEO at national level

Create a network of stakeholders, supporting a common information network potentially contributing to GEOSS

Explore the level of awarenes of stakeholders of SDI, role of GEO at national level

COORDINATE WITH OTHER USE CASES

EGIDA Project