

European Environmental Research Infrastructures Platform

EERIP

European policies on research infrastructures

- European Council: Making Europe competitive: more research. Research infrastructures essential for progress and innovation.
- 1994: ESFRI established: European Strategy Forum on Research Infrastructures.
- ESFRI facilitates decisions on European scale research infrastructures.
- This promoted more country policies on national infrastructures.
- We see in Europe increased attention for all such infrastructures.

Implications for our science?



ESFRI Projects for Env. Sciences

EURO-ARGO



SIOS

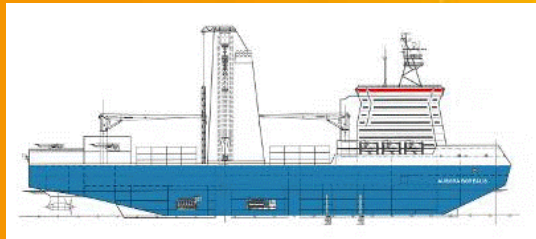


IAGOS-ERI



EUFAR-COPAL

Status
2009

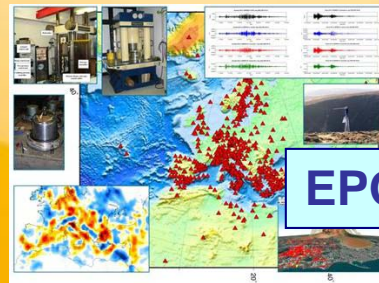
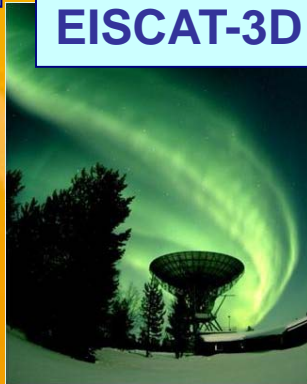


AURORA BOREALIS



LIFEWATCH

EISCAT-3D

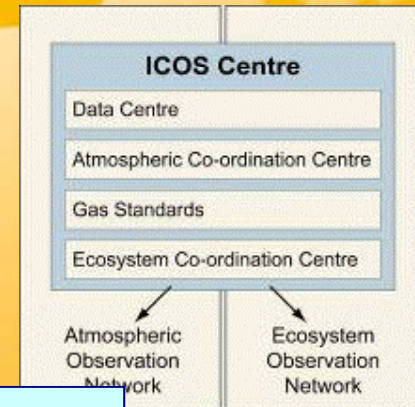


EPOS

EMSO



ICOS



Recommendations of the ESFRI working group on environmental research (2008)

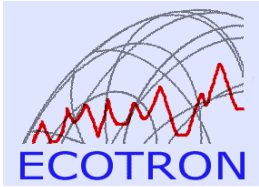
- There is a need to set up an international scientific European forum among researchers in environmental sciences, similar to those for the physical and biosciences, to propose a coherent strategy on Research Infrastructures, and identify the major scientific challenges in the field.
- A science community discussion on Research Infrastructure needs in environmental sciences would be greatly welcomed

A number of (emerging) research infrastructures got together

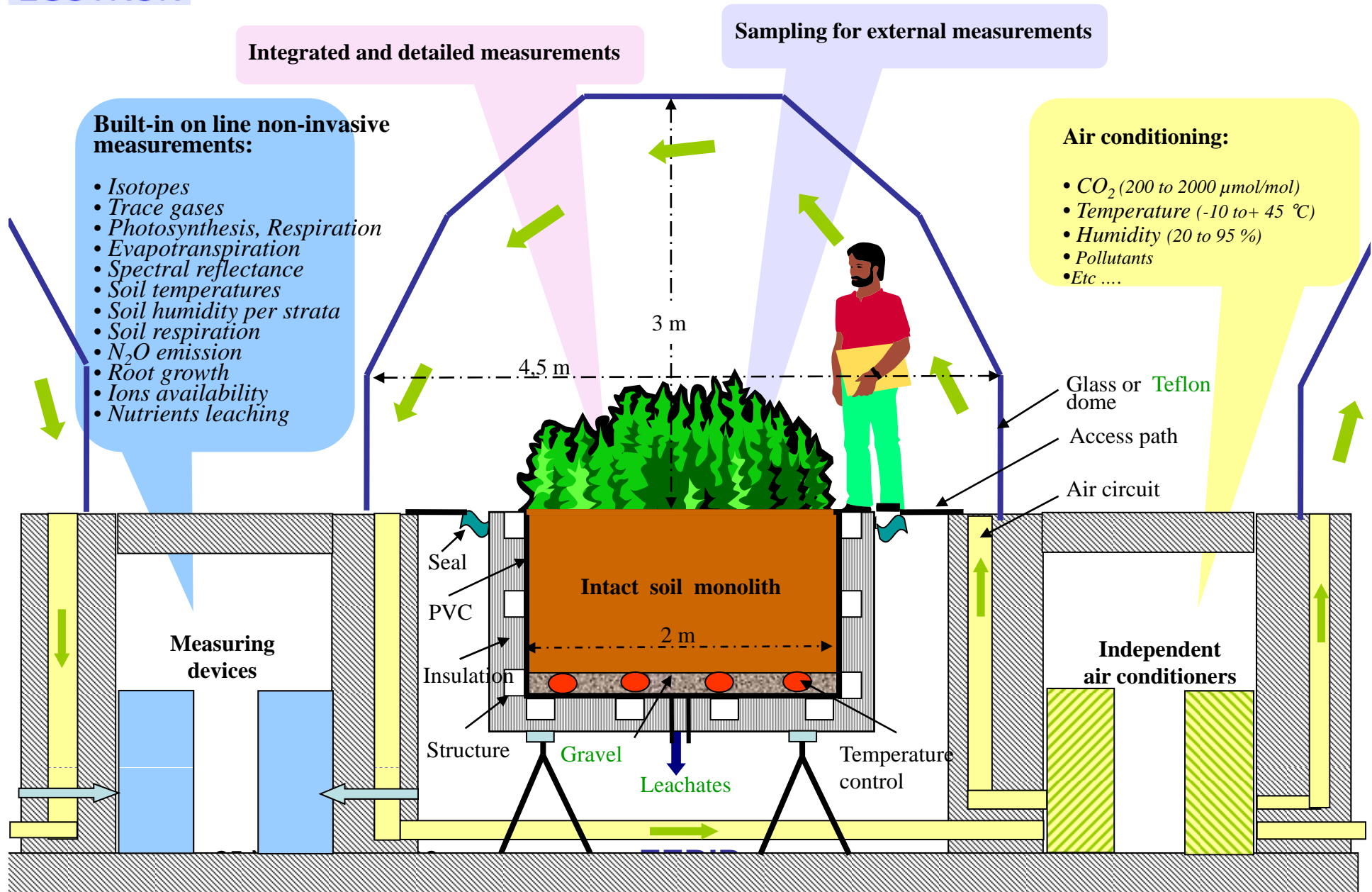
- **ANAEE**
- **ICOS**
- **NOHA**
- **LifeWatch**
- **LTER-Europe**

With the support of:

- **Aurora Borealis**
- **COPAL**
- **MARS - Virtual Institute of Marine Stations**
- **EDIT - Distributed Institute of Taxonomy**



High capacity ecosystem analysers



- Home
- Project Overview
- Project documents
- Carbon portal
- Progress and news
- ESFRI
- Image gallery and figures
- Partners
- Meetings
- National websites
- Contacts

Welcome to ICOS

A new research infrastructure to decipher the greenhouse gas balance of Europe and adjacent regions

















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ICOS National Focal Points:

- | | |
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|  Martin Heimann, MPI |  Anders Lindroth, ULUND |
|  Frank McGovern, EPA |  Nina Buchmann, ETH Zurich |
|  Riccardo Valentini, UNITUS |  John Grace, UEDIN |

Mission statement

To provide the long-term observations required to understand the present state and predict future behavior of the global carbon cycle and greenhouse gas emissions.

To monitor and assess the effectiveness of carbon sequestration and/or greenhouse gases emission reduction activities on global atmospheric composition levels, including attribution of sources and sinks by region and sector.

Please, select "Project Overview" in the left-side menu for more description of ICOS project.



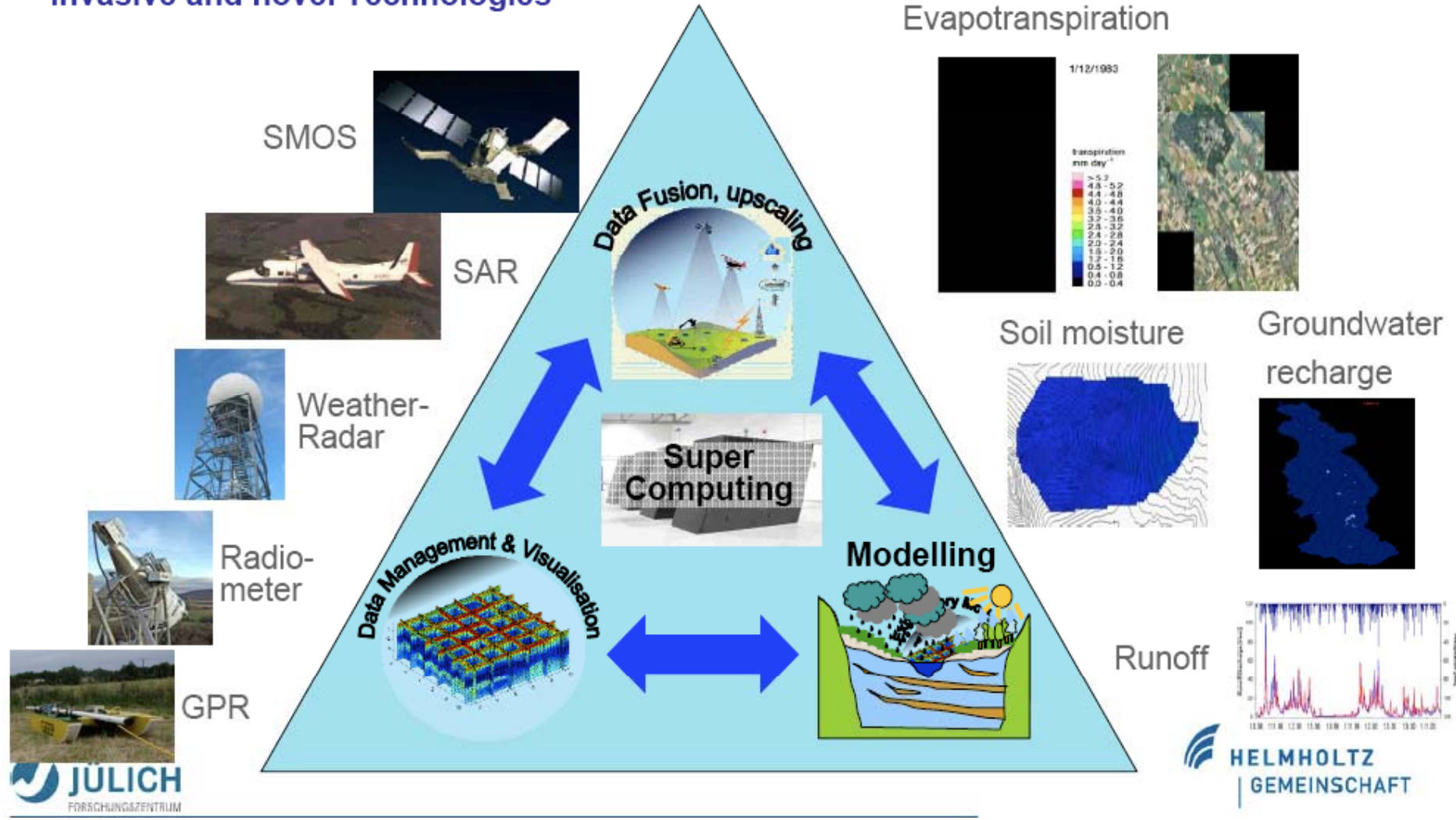


A Vision: Predicting hydrology from sensing information

Multi-scale observations using non-invasive and novel Technologies

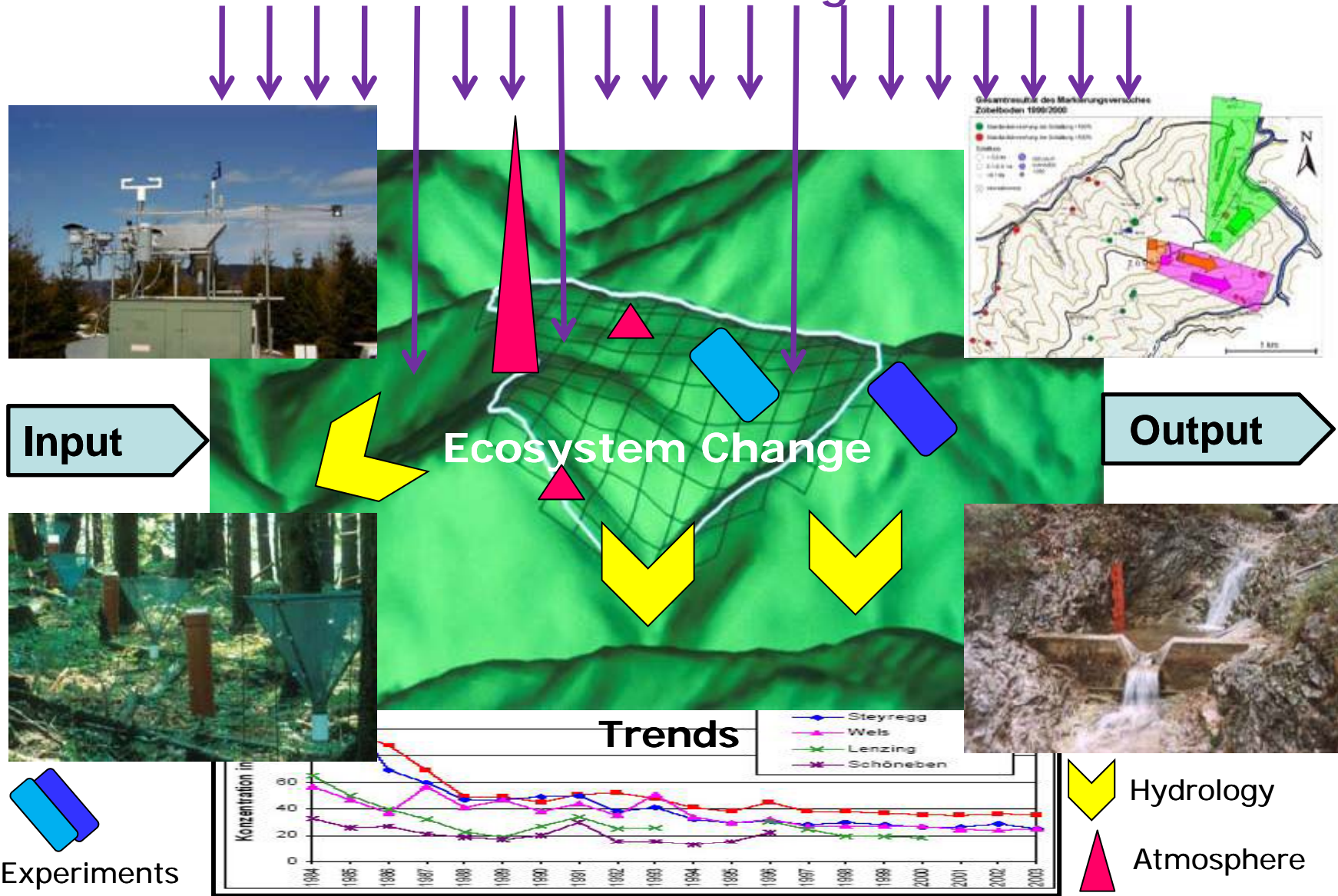


Hydrological Processes
Evapotranspiration

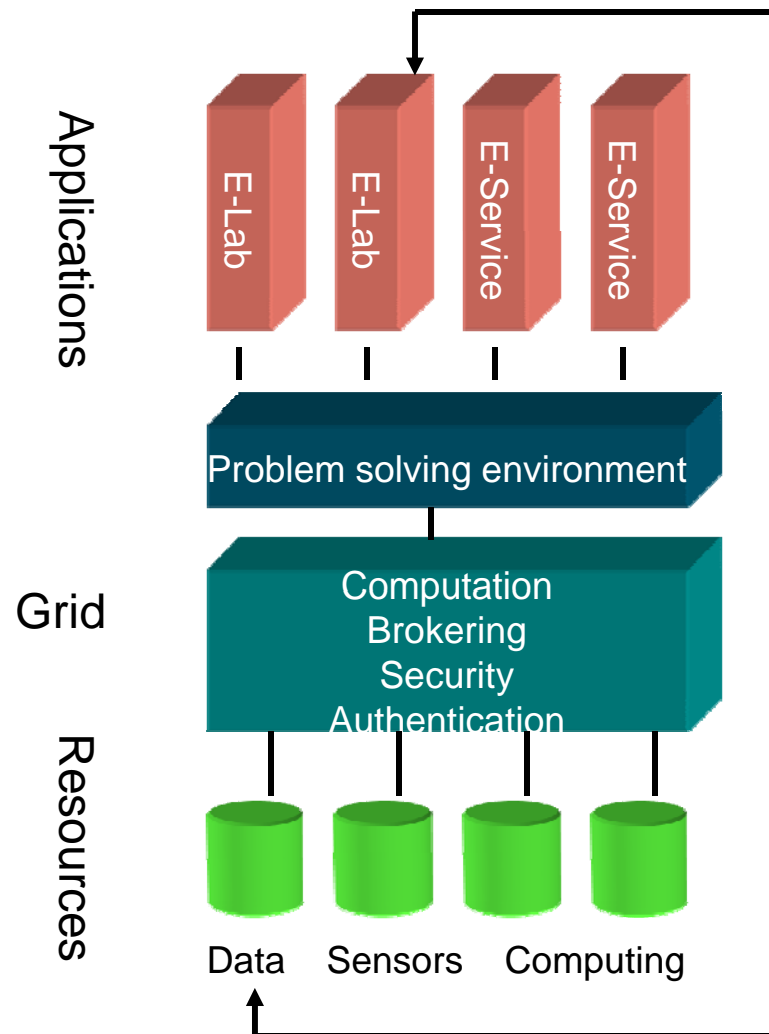


ILTER-Europe

Environmental monitoring schemes



A community driven e-infrastructure



- User groups can create their own e-laboratories or e-services within a common architecture of the infrastructure.
- They share their data and algorithms with others, while controlling access.
- A community driven infrastructure promotes innovation.

Characteristics of the European landscape of ecosystem infrastructures

- The scientific communities are well networked at the European level, but interlinkages of domain specific facilities and with national policies are generally poor.
- Research infrastructures increasingly depend on each other
- Ecosystem research infrastructures are mostly distributed.
- Countries (and research councils) prefer to invest nationally.

A more coordinated approach is indispensable.

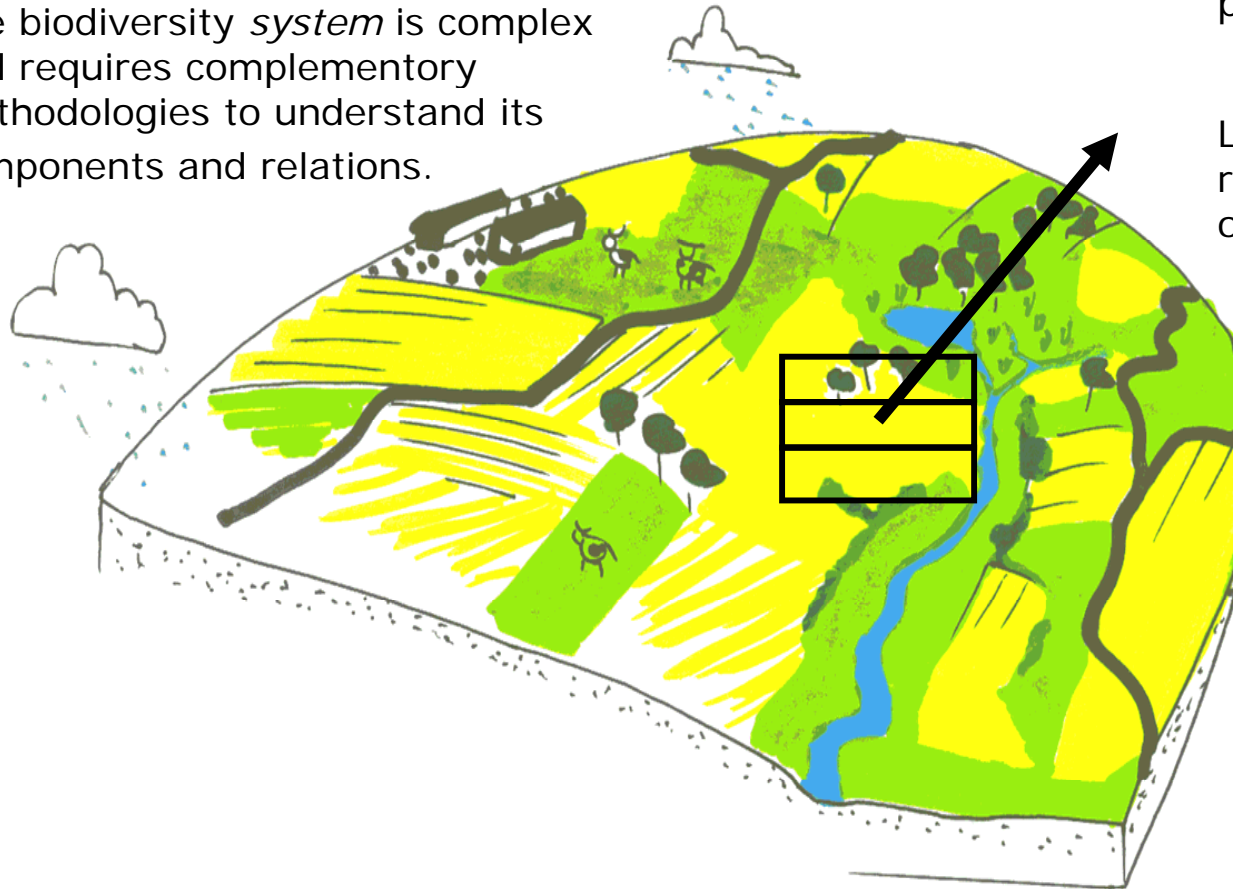
How to build a strong unified infrastructure landscape?

How to act?

- **Challenges and urgent needs**
 - Providing common answers to common problems with common approaches
 - Achieving critical mass
 - Speaking with one voice
- **Identify target area and infrastructures**
 - Which are the domain specific facilities/infrastructures?
 - Define opportunities
 - Present common plans to policy and funding agencies.
- **Clarify objectives**
 - Common policies
 - Organisational solutions
 - Data interoperability for analysis and modeling
 - Users access
- **Improve support and access for users**
 - Science and innovation

A common vision

The biodiversity *system* is complex and requires complementary methodologies to understand its components and relations.



Experimentation on a few parameters.

Limitations to scaling up results for understanding of *system* properties.

Modelling in a system biology approach.
Generation and analysis of large-scale data-sets on biodiversity.
Find patterns and its underlying processes as a basis for experimentation.

EERIP identified collaborative activities

1. Optimizing user services
2. Promoting joint programming
3. Technology and software development
4. Cost-effective operations
5. Management of collaborative activities

1. Optimizing user services

- Analysis of user needs and integration of user support
 - Avoid that users have to shop and negotiate with various facilities
 - Provide access and services from more than a single facility
 - Explore the requirements to offer integrated services
 - Promote that users can enter any infrastructure through each separate facility
- Education and training
 - Support the vision of multi-compartment analysis of continental ecosystems
 - Sharing of education and training activities and software support
 - Also targeting public audiences

2. Promoting joint programming

- The big environmental questions require more integrated and multi-disciplinary approaches.
- Promote that users enter in large joint programmes,
- . . . aiming at tackling the big scientific and societal issues.
- Explore how joint research programming can be supported by targeted infrastructure services.
- This has to translate in joint infrastructure programming.

3. Technology and software development

- **Cross-platform data and tools interoperability**
 - Interoperability of ecosystem related data and of software components for analysis and modeling
 - Allow developers to improve software components for data mining and other analytical capabilities
 - Explore how to integrate efforts for common crucial challenges
- **Technological sensor development**
 - Development of new methodologies and technologies
 - Cooperate in partnering with industry
 - Coordinate efforts and investments
- **Access to distributed high performance computing**
 - Joint programming of computational capacity at the European scale
 - Provide focus for GEANT, PRACE and EGI

4. Cost-effective operations

- Share the platforms and their facilities where appropriate
- Explore the establishment of a structured network of hierarchically organised multi-compartments measurement and observation platforms,
 - . . . that use state of the art observation and measurement technologies
- Optimise service front offices for users
- Coordinate efforts and investments

5. Management of collaborative activities

- A coordinators platform is established to identify, select and start the joint work of specific pilot projects.
- A decision of each pilot project includes who will contribute from project partners with a specified budget and time line, and which infrastructure project is in the lead.
- Cooperate in this spirit together in EU projects where appropriate.

Answering EC calls for proposals

- **INFRA-2010-1.1.3: Sites and experimental platforms for long-term ecosystem research.**
- **INFRA-2010-3.1: ERA-NET supporting cooperation for research infrastructures in all S&T fields.**

ERA-NET Research infrastructures and supporting facilities for biodiversity and ecosystem research

EcoBioEra

- ✓ Partnership of funding organizations, capable to initiate and administrate truly pan- European research infrastructures for biodiversity and ecosystem studies.
- ✓ To promote a common approach at the EU, national and regional level, to identify areas of collective strategic interest and to develop common and cost-effective financial plans to secure the sustained operations of the concerned research infrastructures.

- WP1: The landscape of infrastructures and facilities

- WP2: Support of research

- WP3: Coordinating the landscape

- WP4: Options for permanent funding

- WP5: Outreach and the international dimension

- WP6: Coordination and management

Thank you