LTER-España, una iniciativa común en espacios naturales. Origen, presente y perspectivas de futuro

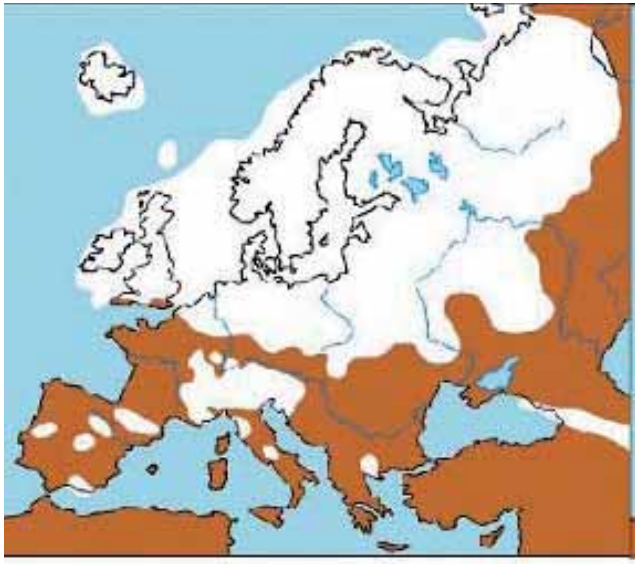
Una red de sitios y plataformas para el seguimiento y la investigación ecológica y sobre biodiversidad a largo plazo.

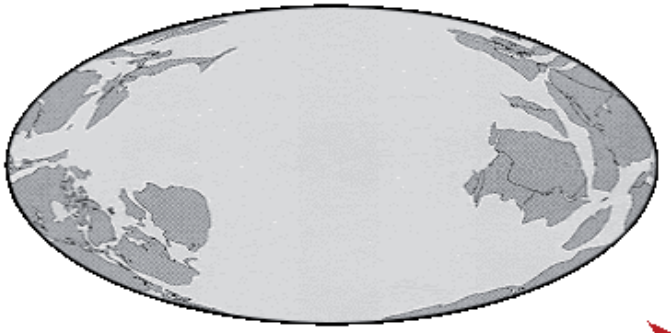
Estación Biológica Doñana CSIC | 50 Años (1964-2014)

Ricardo Díaz-Delgado
Plataforma LTSER Doñana

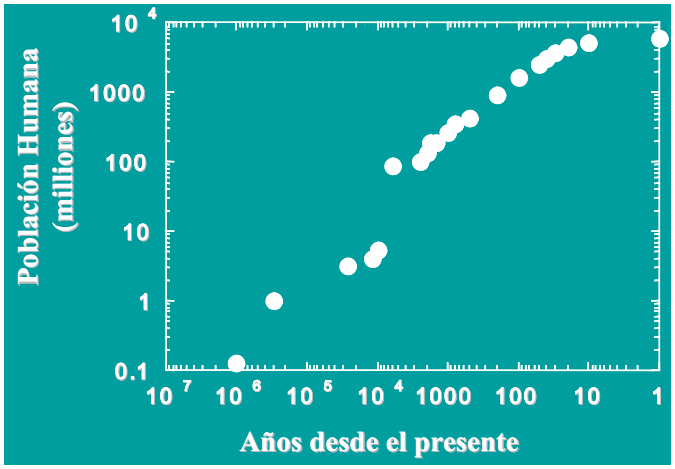
Motores de cambio ecológico a escala global

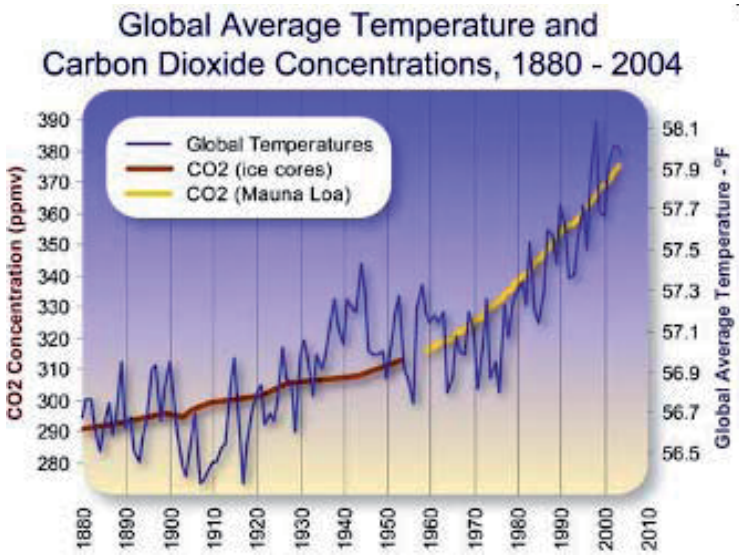
"*Change* *is one of the* *few things in life* *of which we can be* *certain*"

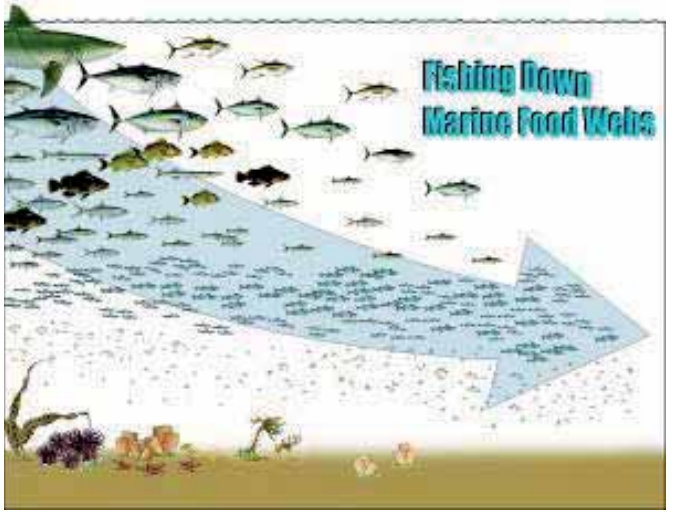




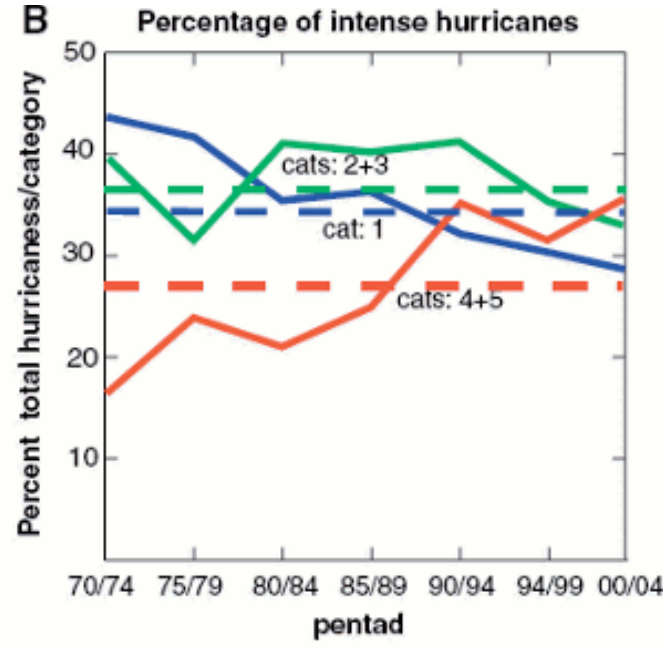
Motores actuales de cambio ecológico

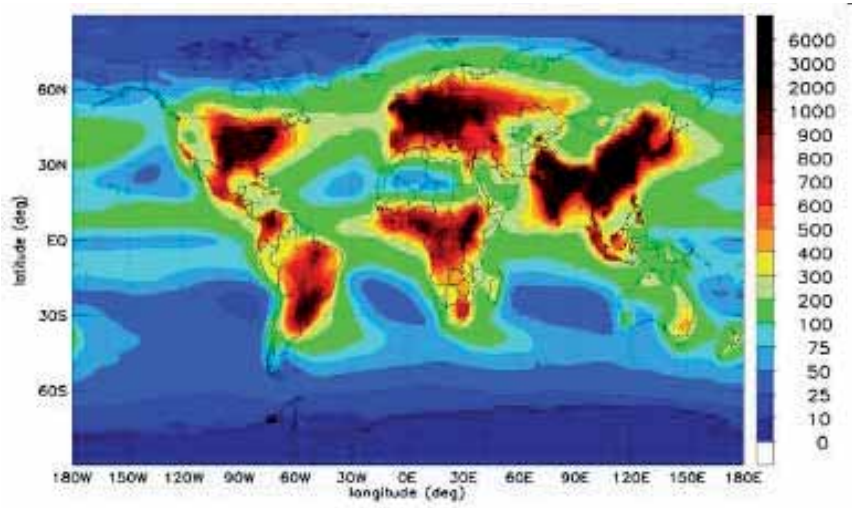






"Change** is one of the **few things in life** of which we can be **certain"

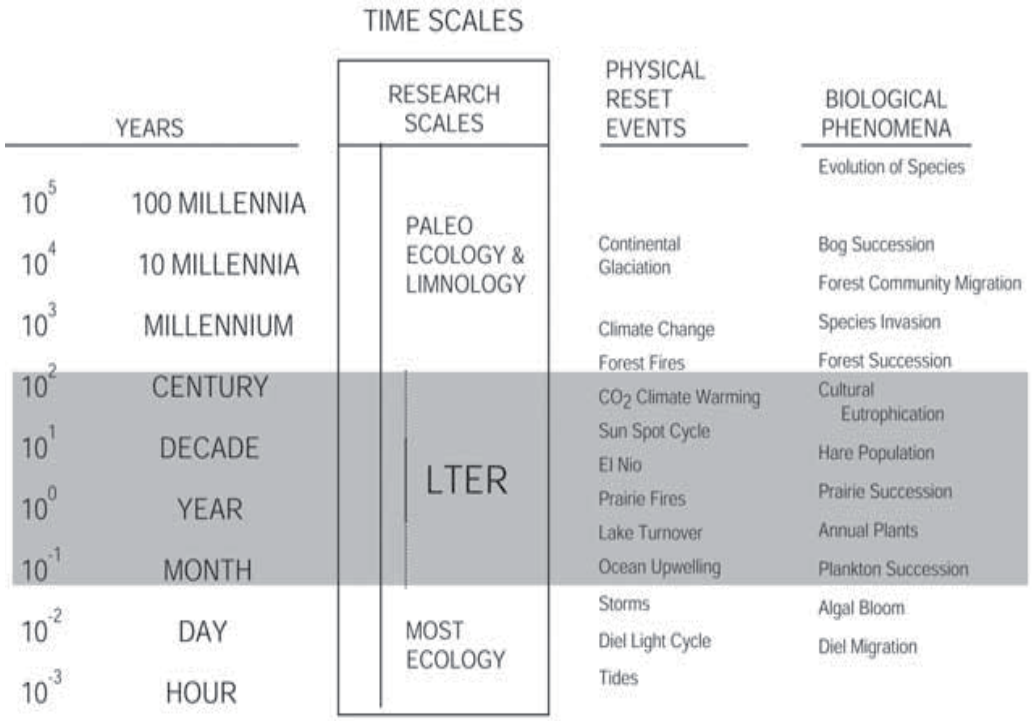




Implicaciones ecológicas

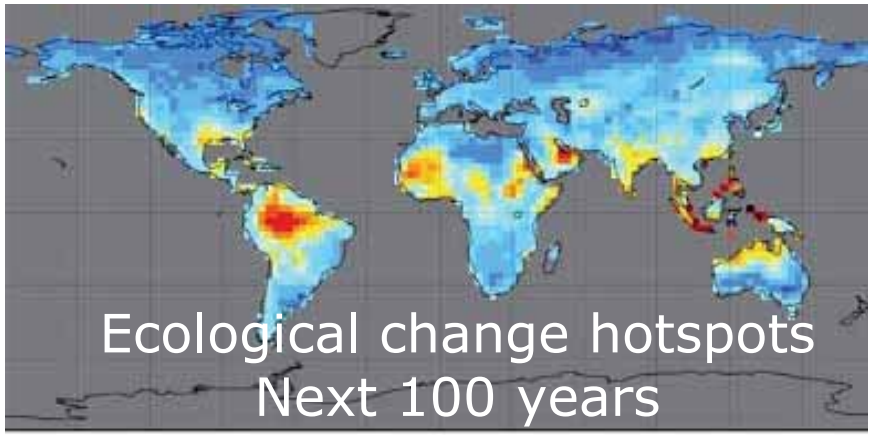
- Estado de *no-equilibrio* de los *ecosistemas*
- *No-linealidad* de los procesos ecológicos
- Procesos *sutiles*, de *baja frecuencia* y *complejos*
- Importancia de *las perturbaciones* en la configuración de las comunidades ecológicas

Necesidad de Investigación Ecológica a Largo Plazo (LTER)



Investigación del cambio ecológico a largo plazo

- *Aumentar el conocimiento* ecológico a múltiples escalas temporales y espaciales
- *Síntesis ecológica* por medio del contraste de hipótesis a largo plazo (diseño experimental)
- *Diseminación de la información*, accesible a la comunidad científica
- *Transferencia del legado* de observaciones y experimentos a largo plazo
- *Formación específica* de científicos en investigación a largo plazo, colaborativa sobre paradigmas ecológicos
- *Transferencia de conocimiento*, a la sociedad, gestores, políticos…
- *Capacidad predictiva* sobre cambios futuros



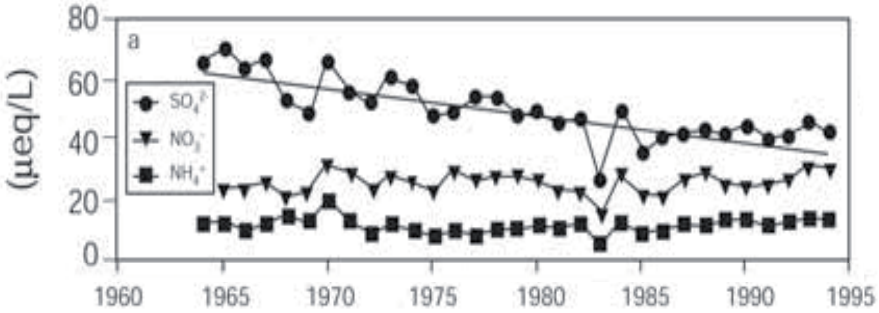
Historia LTER

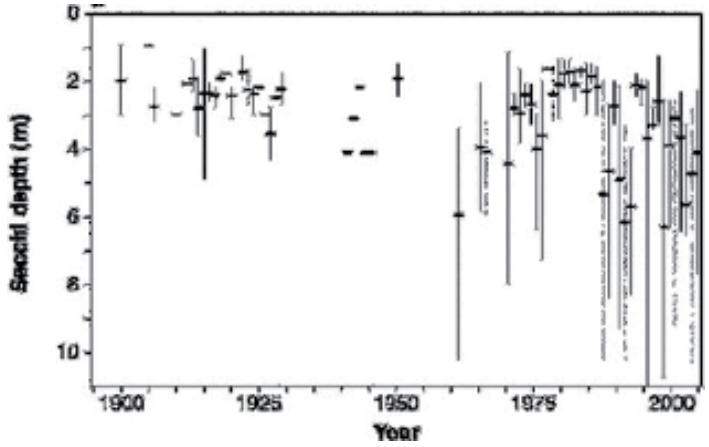
LTER

http://www.lternet.edu/

US-LTER

- Founded in 1980
- 24 sites (2 urban)
- $18 Millions annual budget
- 1100 scientists
- Generate $44 Mi. in LTER-related research





Historia LTER

ILTER (International LTER)

- Founded in 1993
- 40 countries
- 5 continents

http://www.ilternet.edu/

ILTER'S MISSION:

ILTER consists of networks of scientists engaged in long-term, site-based ecological and socioeconomic research. Our mission is to improve understanding of global ecological systems and inform solutions to known and unknown environmental problems.

GOAL 1:
Foster collaboration and coordination among ecological researchers and research networks at local, regional and global scales

GOAL 2:
Improve comparability of long-term ecological data from sites around the world, and facilitate exchange and preservation of this data.

GOAL 3:
Deliver scientific information to scientists, policymakers, and the public to meet the needs of decision-makers at multiple levels.

GOAL 4:
Facilitate education of the next generation of long-term scientists.

Historia LTER

Global Networking of Ecosystem research sites

LTER Sites

National Networks

Regional Networks

local

global

Global ILTER

www.ilternet.edu

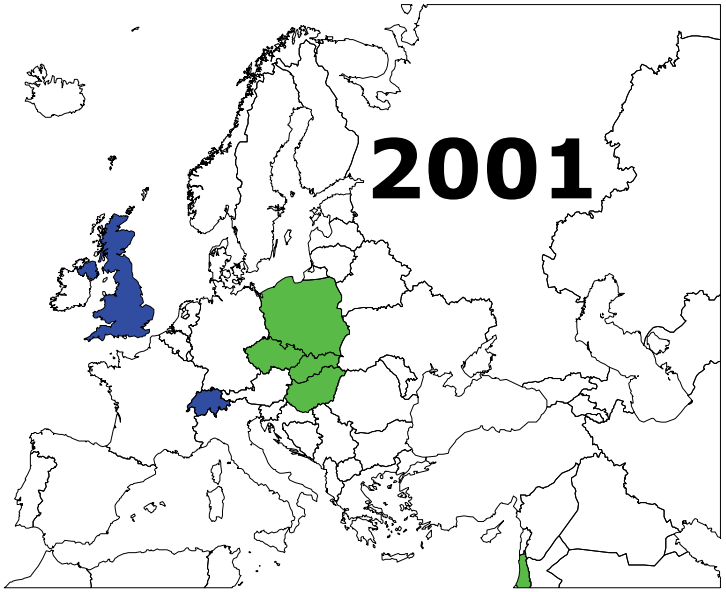
ILTER – Unique Capability on a Global Scale

	Site-based	Network of sites	Network of people/groups	Long-term research	Long-term monitoring	Scientific collaboration	Measurement and data standardization	Data sharing	Data integration	Long-term data preservation/access	Global trend detection	Country or regional trend detection	Teach/train next generation	Inform scientists, policymakers, public
ILTER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ICSU			✓			✓	✓	✓	✓				✓	✓
IGBP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
GOSIC						✓	✓	✓		✓				✓
GBIF						✓	✓	✓	✓	✓				✓
GEOSS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
START		✓	✓			✓		✓	✓			✓	✓	✓
CEISIN						✓		✓	✓	✓			✓	✓
MA			✓			✓		✓	✓	✓	✓	✓		✓

Historia LTER

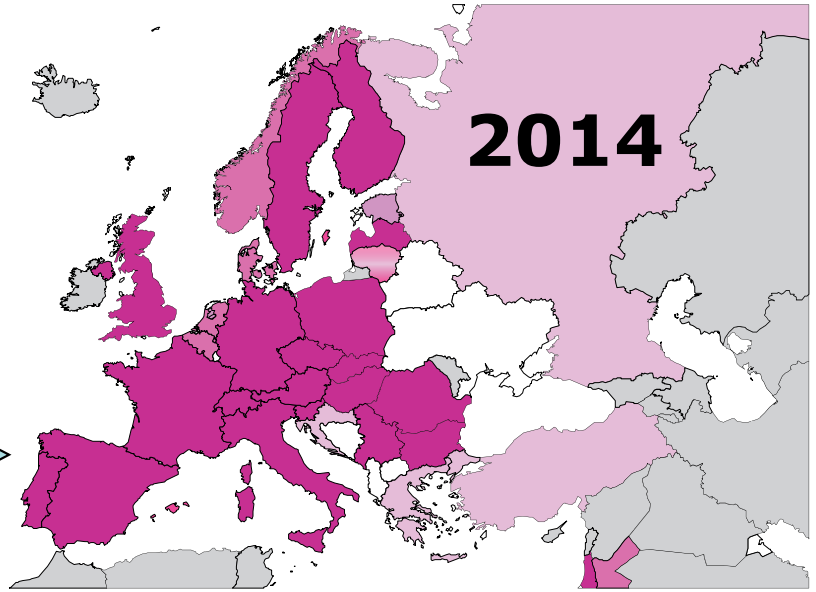
The ILTER regional network for Europe

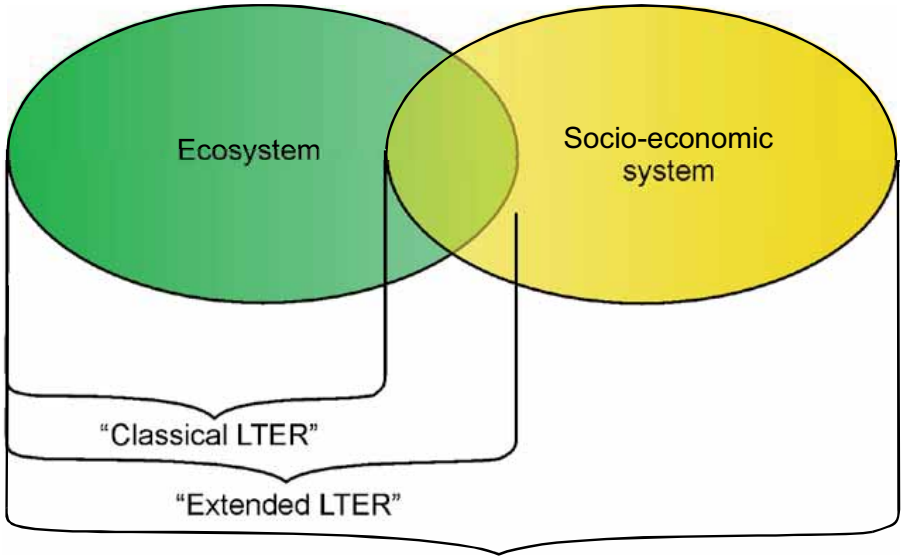
http://www.lter-europe.net/



6th EU FP

ALTERNet

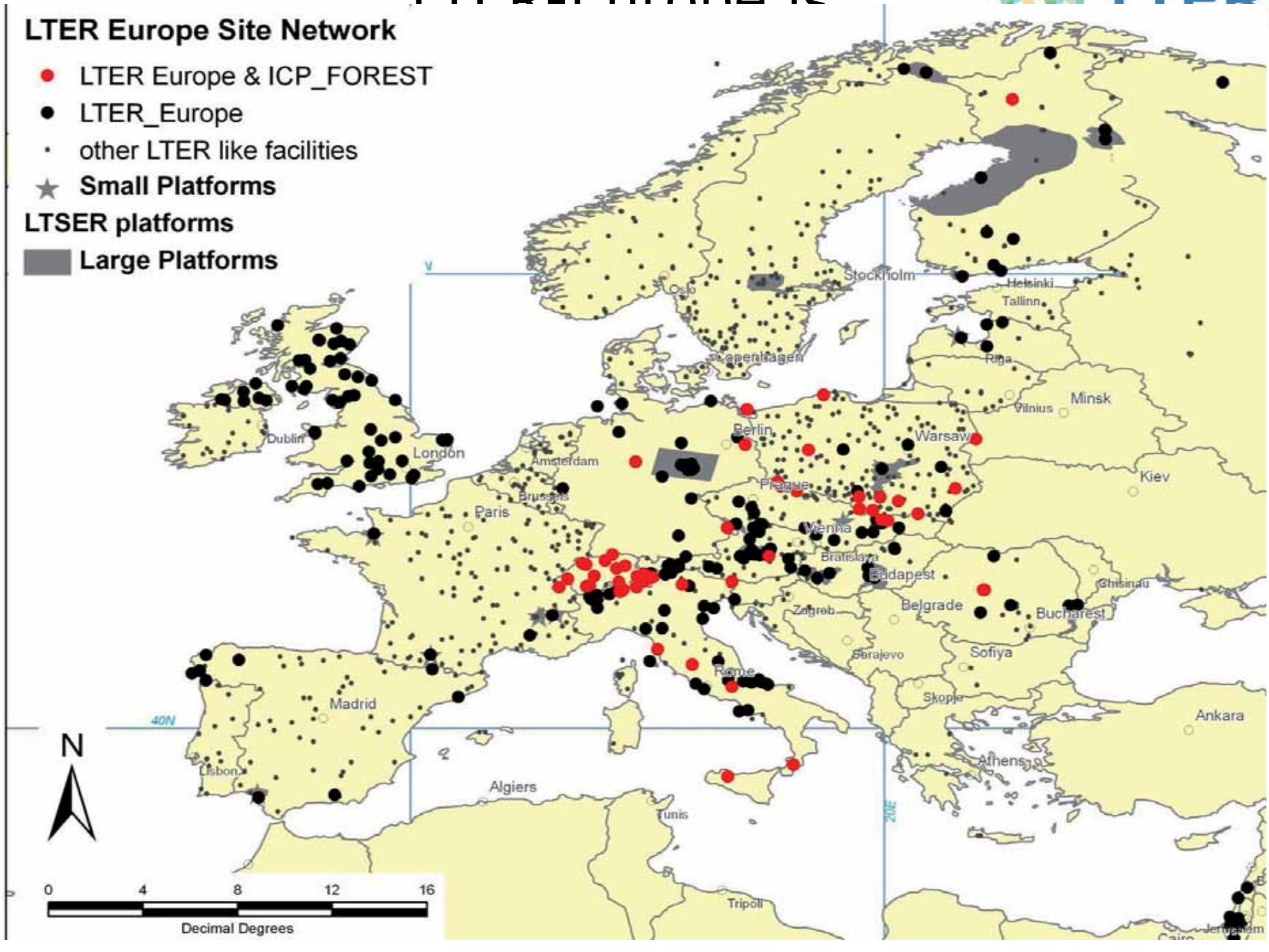




Long-term social ecological research, LTSER

400 sitios
35 plataformas LTSER

LTER-Europe is



LTER-Europe projects: EnvEurope

- ENVironmental quality and pressure assessment across EUROPE: the LTER network as an integrated and shared system for ecosystem monitoring
- 11 countries, 67 sites
- LIFE+ program

DEMANDS FROM LTER EUROPE
How to harmonize the LTER parameters?
How to make parameters and methods available?
How to manage LTER datasets?
How to share and make accessible LTER datasets?
Is LTER-Europe prepared to catch ecosystem change?
Which link of LTER-Europe with Remote Sensing (Copernicus)?

LTER-Europe projects: EnvEurope

The framework: Ecological Integrity

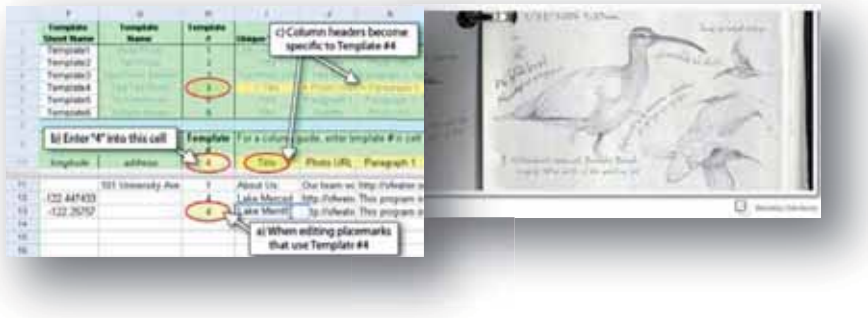
	Elements of Ecological Integrity	**Indicators of Ecological integrity**	**Examples for parameters (measurables)**
Structures	Biotic Diversity	Flora Diversity	*Species list and abundance of vascular plants*
		Fauna Diversity	*Species list and abundance of breeding birds*
		Within Habitat Structure	*Vegetation structure within habitats*
Structures	Abiotic Heterogeneity	Soil	*Bulk density*
		Atmosphere	*Air temperature*
		Habitat	*Land cover*
Processes	Energy Budget	Input	*Photoshynthetic active radiation*
		Storage	*Above-ground Net Primary Production*
		Output	*Respiration (production of CO2 by living organisms)*
		Efficiency measures	*Respiration per biomass*
Processes	Matter Budget	Input	*Wet and dry deposition of atmospheric nitrogen*
		Storage	*Nitrogen fixation*
		Output	*Nitrate leaching*
		Efficiency measures	*Litter decomposition*
Processes	Water Budget	Input	*Precipitation*
		Storage	*Soil moisture*
		Output	*Surface runoff*
		Efficiency measures	*Ratio transpiration / evaporation*

LTER-Europe projects: EnvEurope

Information management

1. MetaData

2. Thesaurus

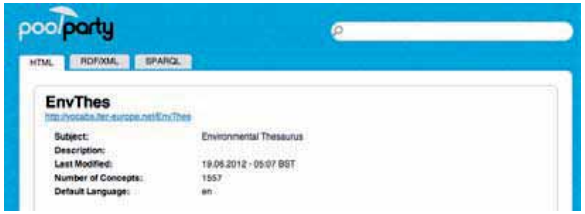


3. Datasets

DEIMS

MD harmonization

http://data.lter-europe.net/deims



EnvThes

terms harmonization

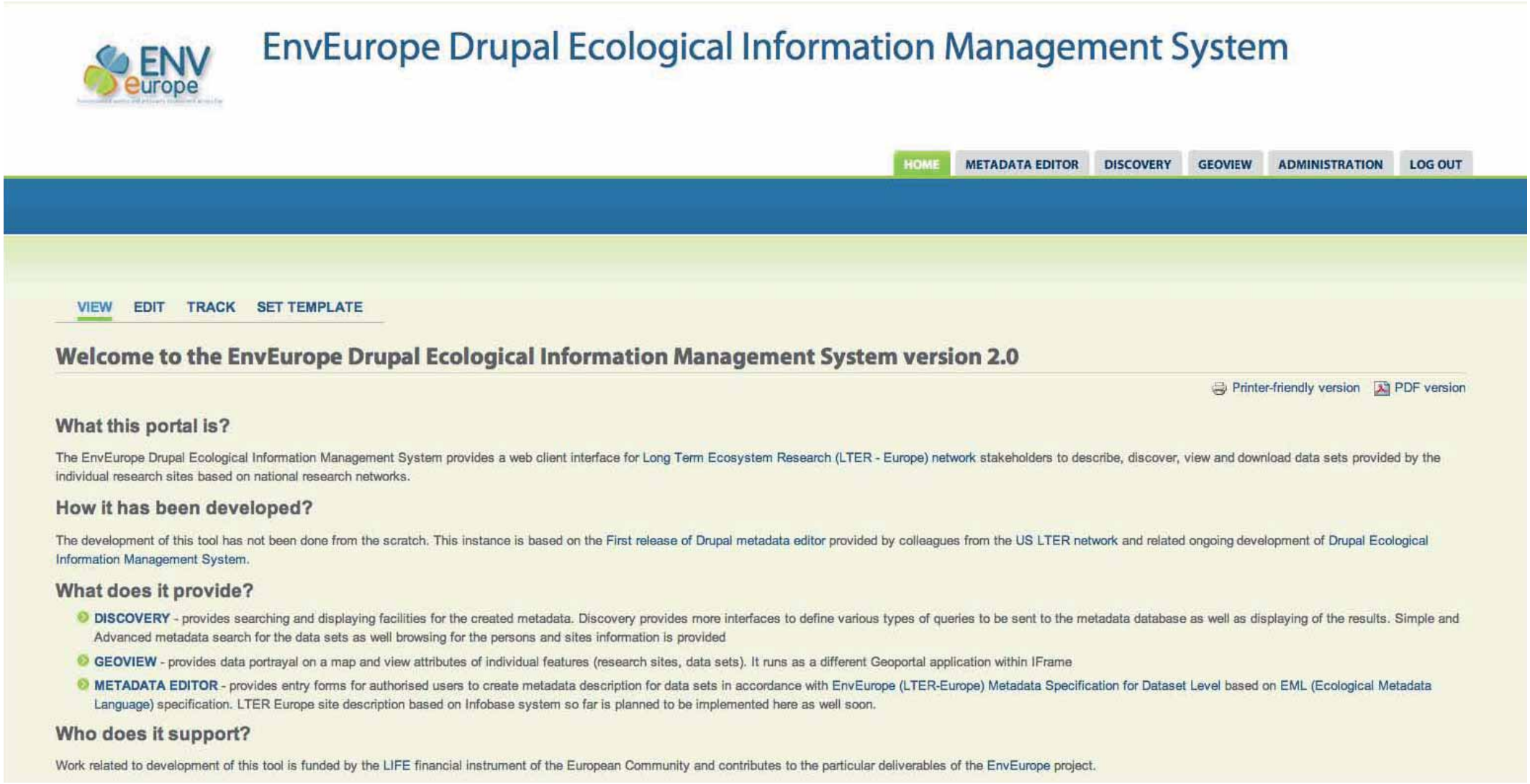
http://vocabs.lter-europe.net/EnvThes.html

Data ***Reporting***

Data harmonization

LTER-Europe projects: EnvEurope

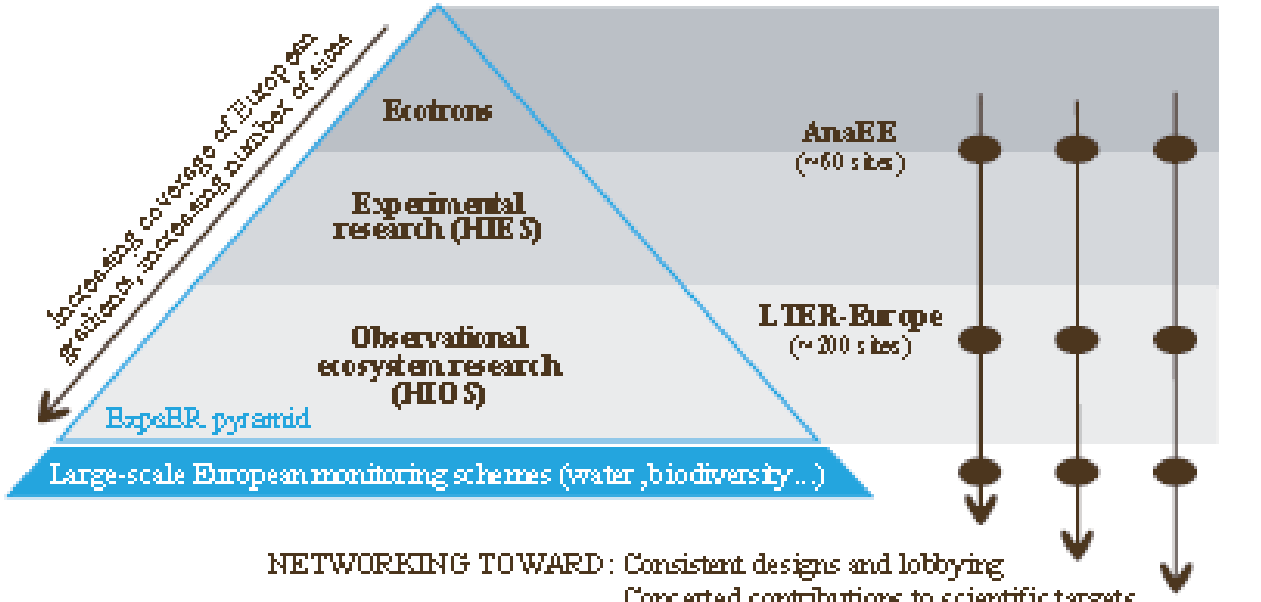
Information management



http://data.lter-europe.net/deims/

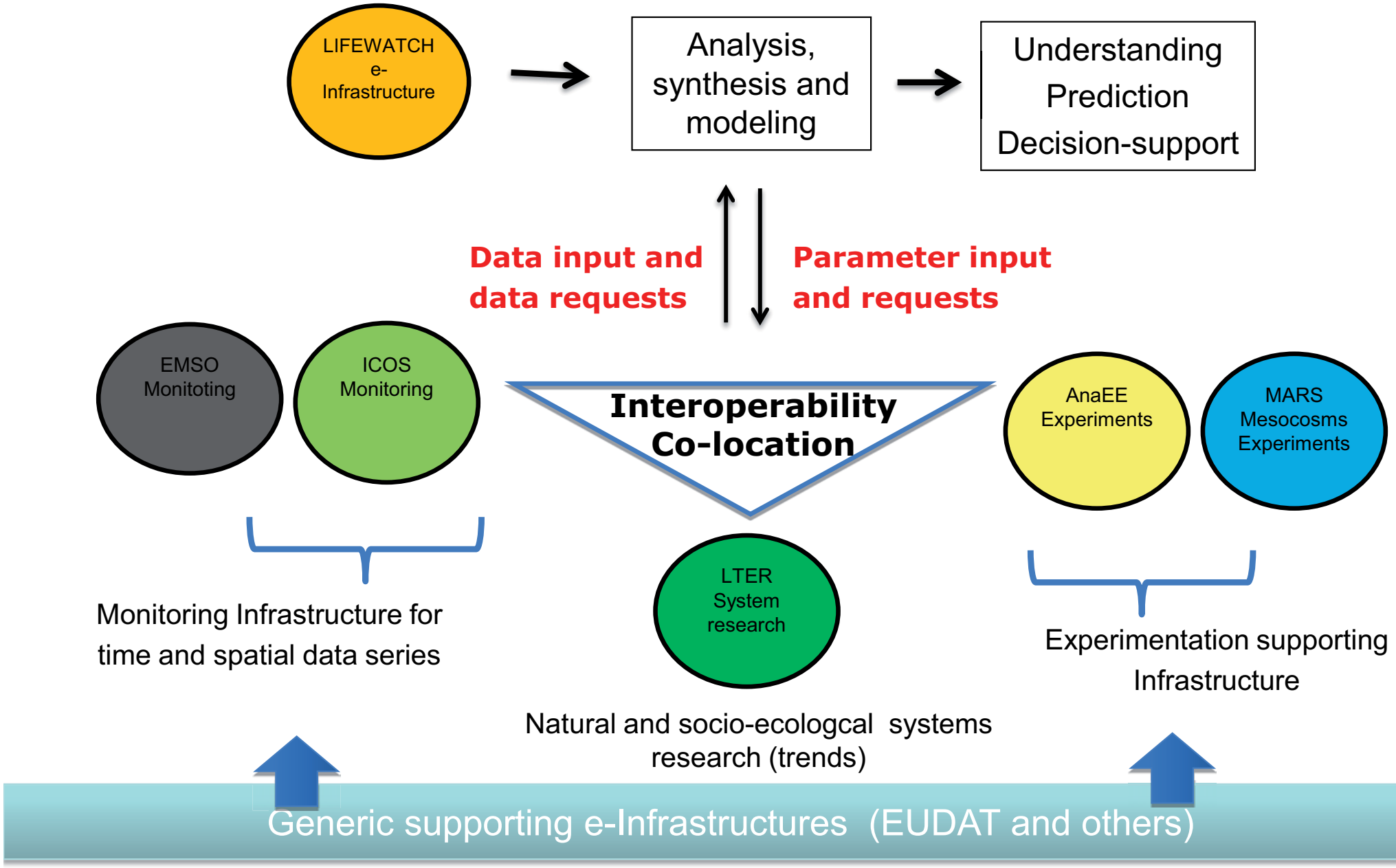
LTER-Europe projects: EXPEER

- 19 countries
- FPVII funded (Infrastructures)
- Transnational access



Bridge to ESFRI ANAEE

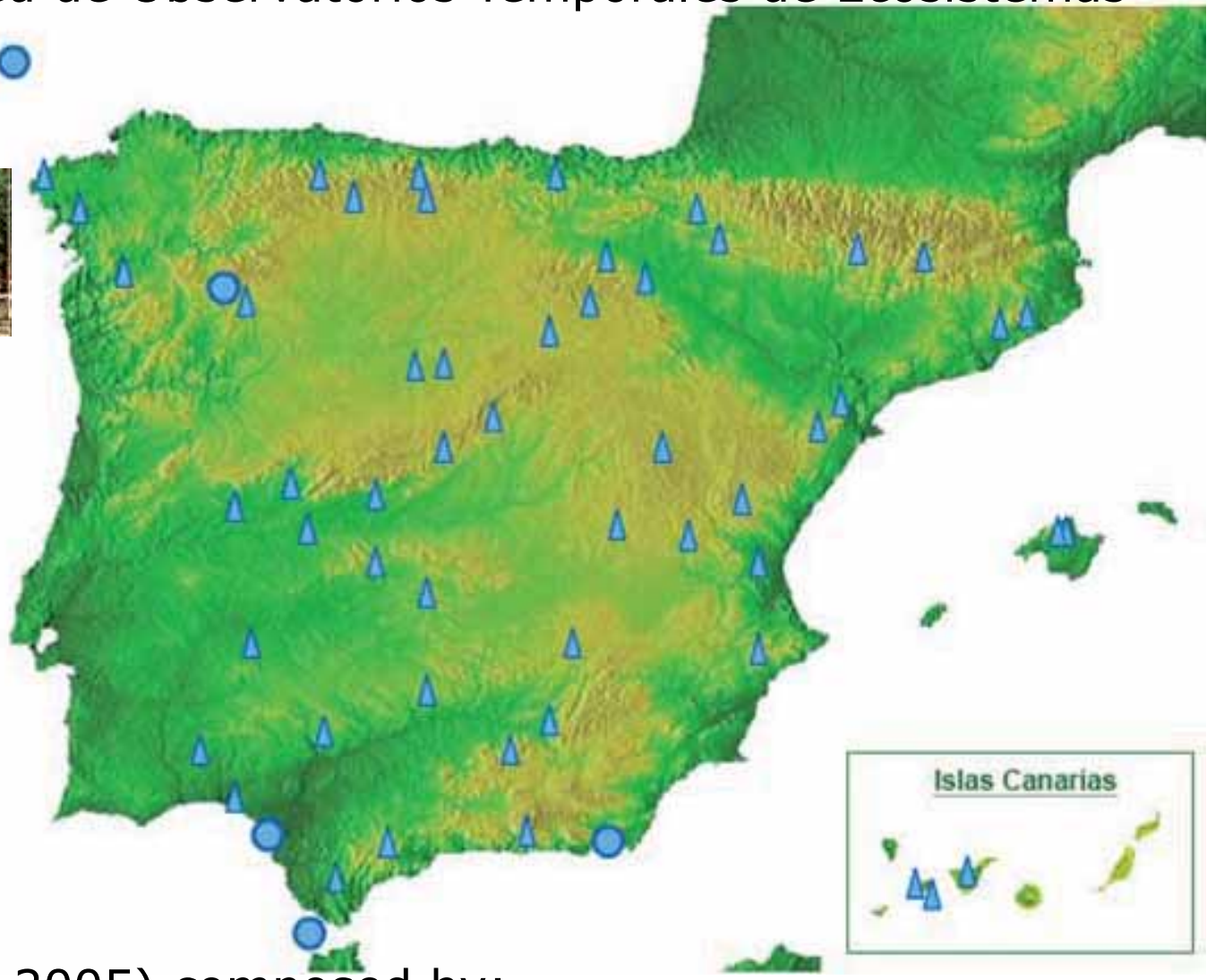
LTER-Europe at the ESFRI context




¿Y en España?...
...solo faltaba el vehículo
Mediterranean Coniferous Forests and Woodlands
Mediterranean Sclerophyllous Forests and Woodlands
Mediterranean Shrubland
Temperate Broadleaf Forests
Temperate Deciduous Forests
Temperate and Alpine Coniferous Forests and Woodlands
Wetlands

El chasis: REDOTE

2003. Red de Observatorios Temporales de Ecosistemas



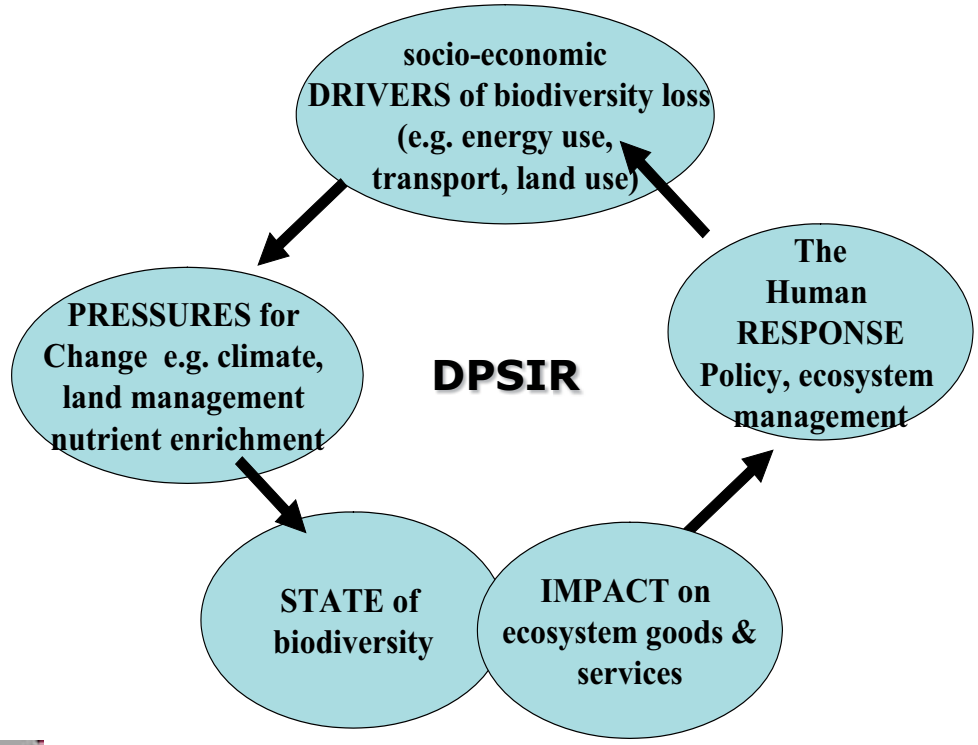
Pilot network (June 2005) composed by:

- Level II Network Forest Damage (54 sites)
- Monitoring sites (6 sites)

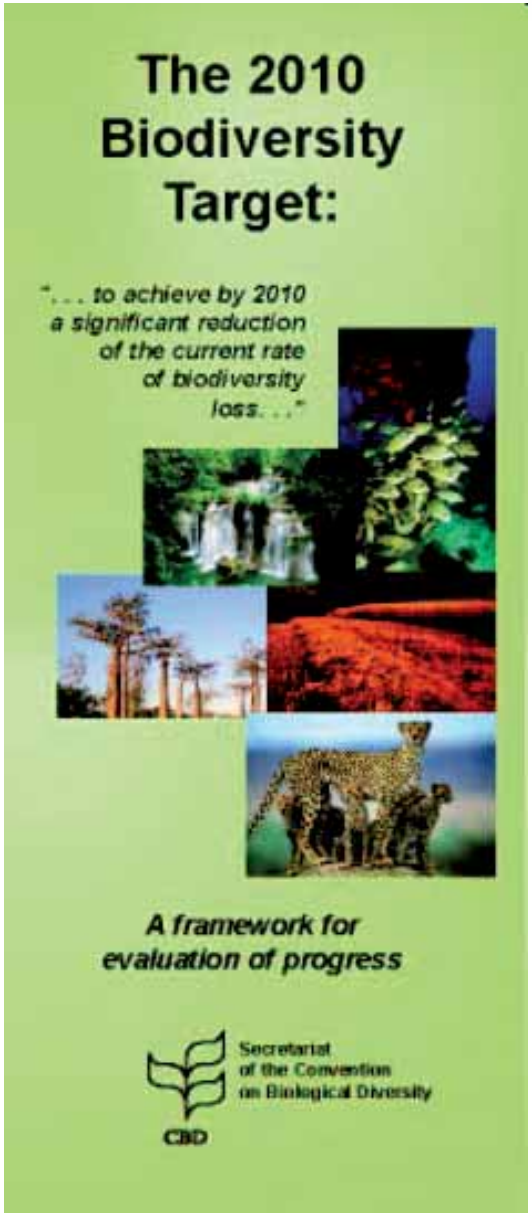
Las Bujías: ALTER-Net

2005-2009. Red de Excelencia Europea

Drivers:Pressure:State:Impact:Response (DPSIR)

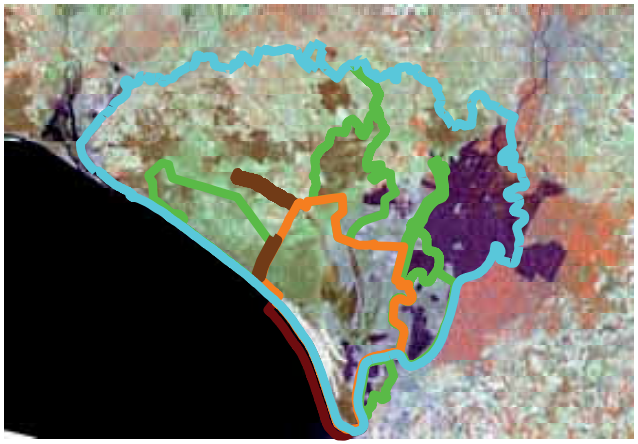


EEA, 1999



El motor: Doñana LTSER

European LTSER platforms

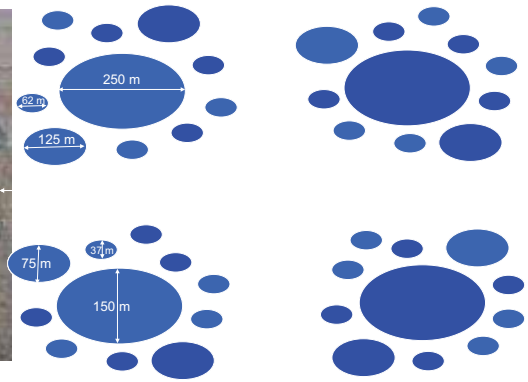


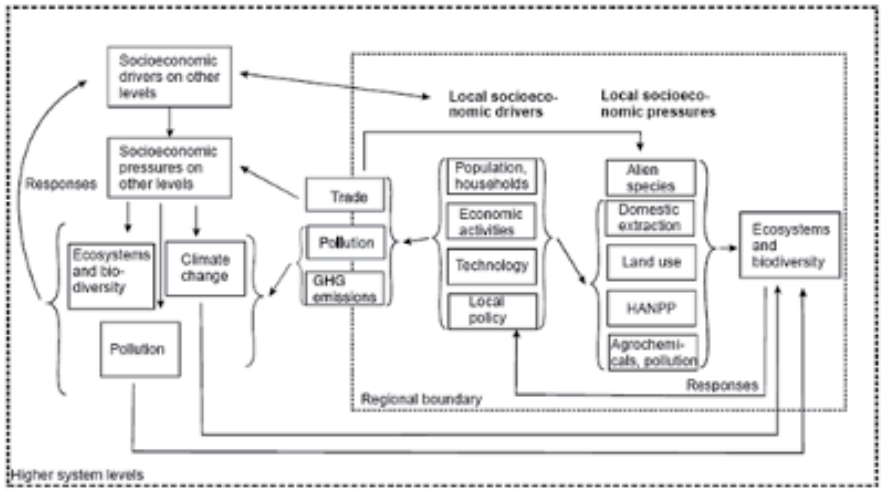
National Park (537 km²)
Natural Park (523 km²)
Protection area (70 km²)
LTSER platform (2736 km²)

EU CAP transposition

effects on LTSER biodiversity

Adaptive management experiment





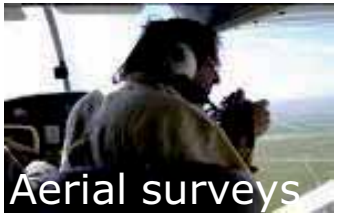
Implementation of a conceptual socio-ecological model (Haberl et al. 2009)

Las válvulas: Seguimiento ecológico Doñana y Sierra Nevada

Traditional manual


Ssp abundance


Lab analysis


Aerial surveys


Bird banding


Sampling trial


Fish trapping


Band reading

Observatorio Cambio Global Sierra Nevada

Automatic & near real-time

Doñana ICTS


Water quality probes


Water level & temperature


Dendrometers

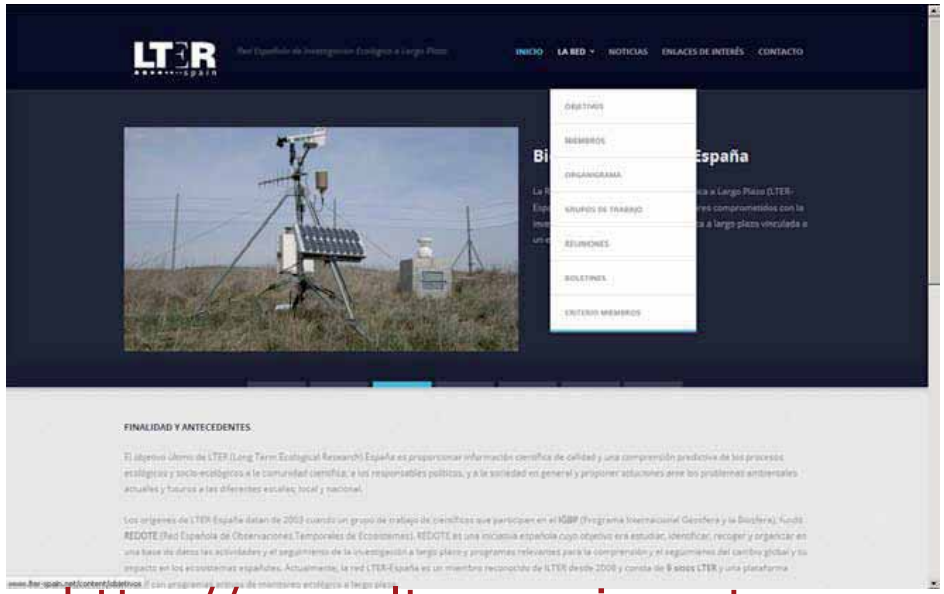

Flux tower

El rendimiento: Acceso público a datos

http://icts.ebd.csic.es

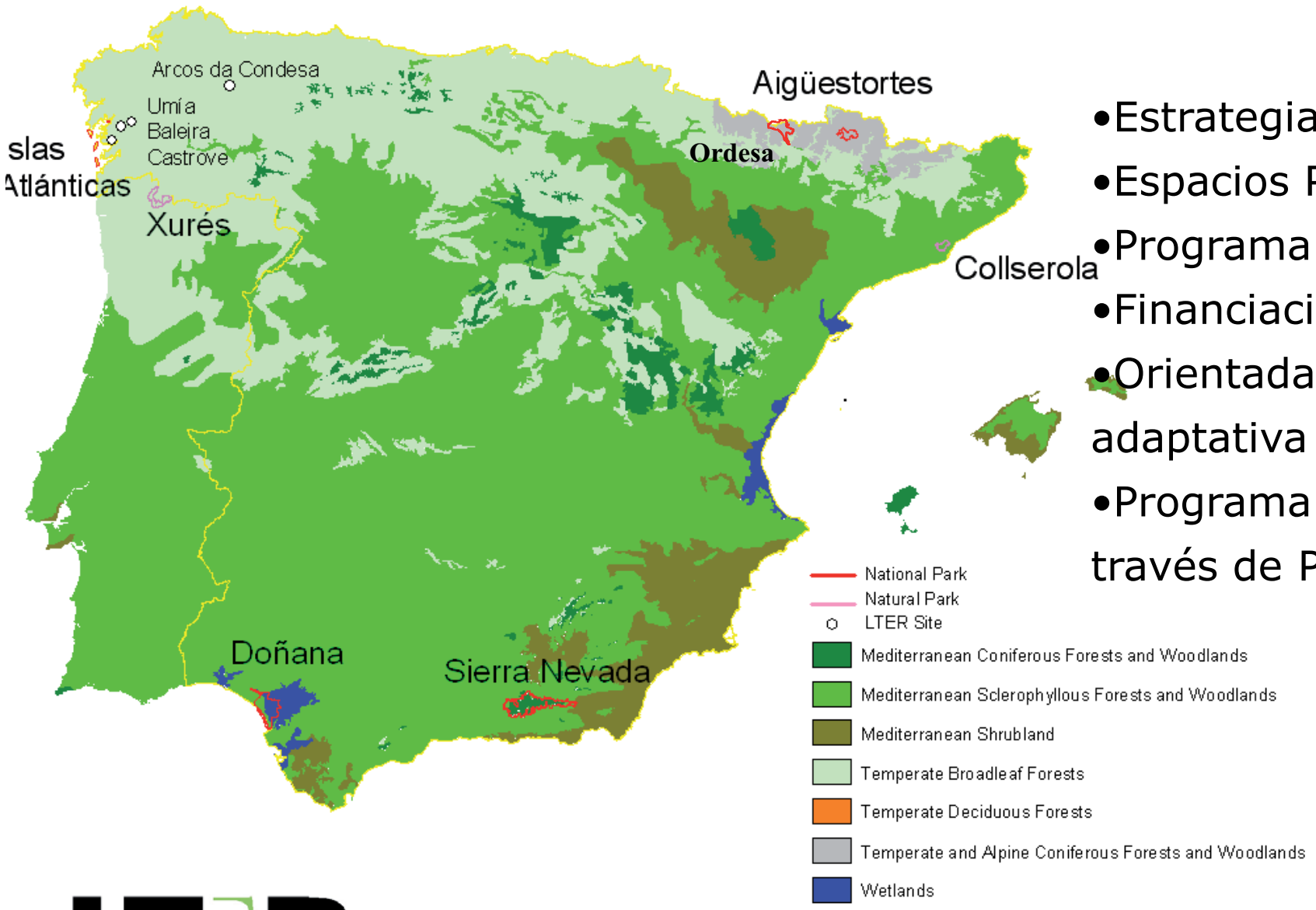
http://linaria.obsnev.es/

http://mercurio.ebd.csic.es/seguimiento



http://www.lter-spain.net

El diseño: Propuesta pragmática de sitios LTER



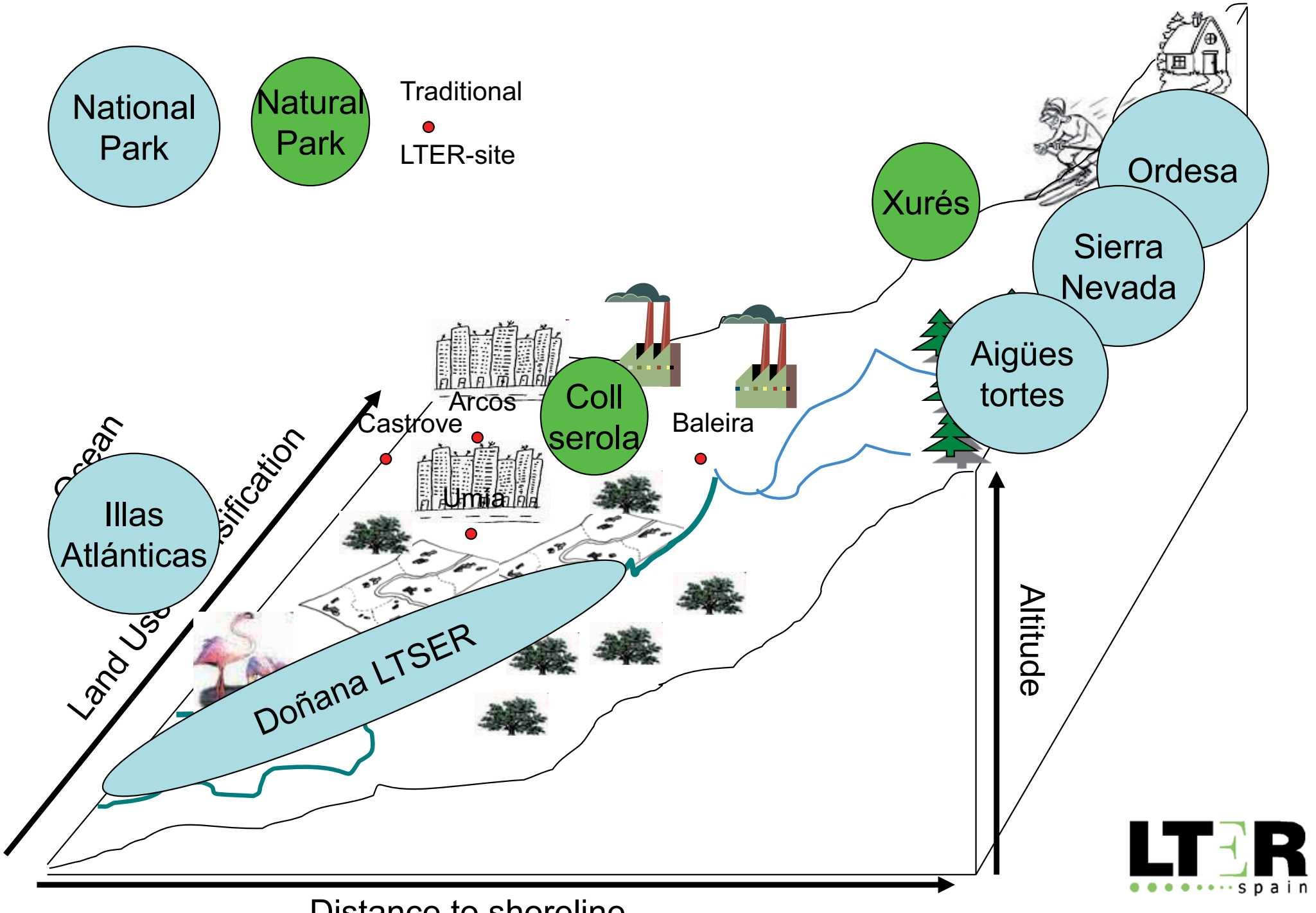
- Estrategia 'Bottom-Up'
- Espacios Protegidos
- Programa de Seguimiento
- Financiación continuada
- Orientada a gestión adaptativa
- Programa científico a través de PPNN y CSIC

LTER spain

Representatividad de la red

LTER spain

Gradiente ambiental cubierto



Altas y “bajas” en la red

Nuevos miembros

P.N. de las Tablas de Daimiel

Plataforma LTSER
Sureste Árido

P.N. del Montseny

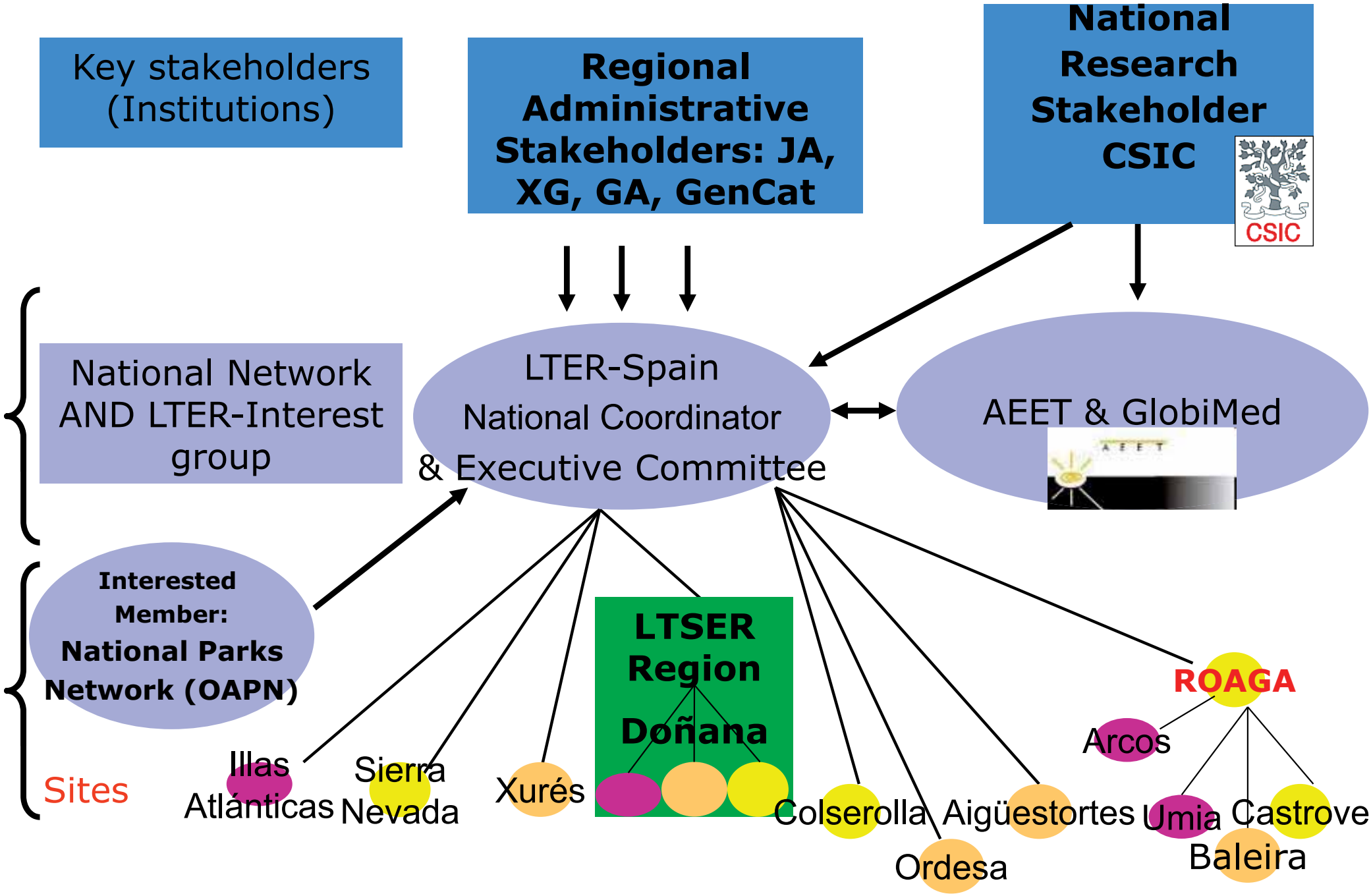
En Estado de inactivos:

- ROAGA
- Xurés

En disposición:

- P. N. Cabrera
- P. N. Delta del Ebro
- P. N. de Guadarrama
- P. N. de Picos de Europa

Estructura de la red



LTER-España: Estructura ejecutiva

Comité Ejecutivo Nacional conformado por:

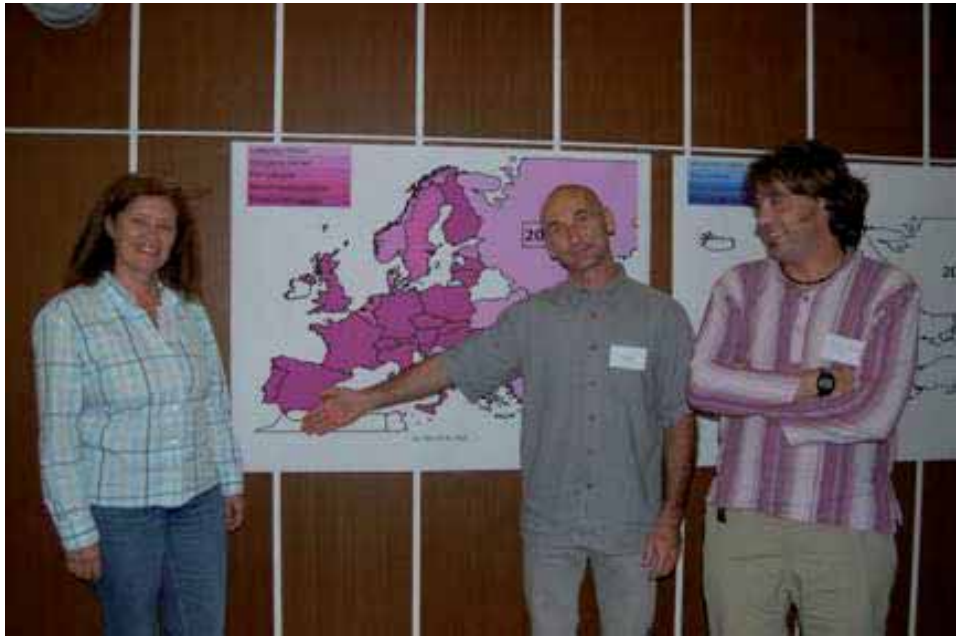
- Coordinador nacional de la red
- Secretaría técnica
- Asesor/es académico/s
- Representantes científicos y de gestión de sitio/plataforma (mínimo 2 personas, i.e. representante y suplente)
- Comité Científico Asesor (conformado por los grupos de investigación de cada sitio)
- Cargos renovables cada 2 años
- Creación de estatutos (a medio plazo)
- Constituirse como asociación o fundación (a medio plazo)

Líneas prioritarias de investigación

LTER-Spain Executive and Scientific Committee have agreed to promote long-term research at LTER-Spain sites into the next core areas:

1. Role of biodiversity on ecosystem functioning (resilience) and structure.
2. Disturbance patterns and frequencies.
3. Effects of Global Change on ecosystem functioning and structure (ecosystem thresholds).
4. Definition of adaptive management criteria and decision-making for conservation and their effects on ecosystems.
5. Long-term socio-ecological modeling.

LTER-España aceptada en ILTER (Eslovaquia 2008)



LTER spain

Acceso nuevos candidatos

http://www.lter-spain.net/content/criterio-para-miembros

2.1 Formal criteria

- Basic commitment of hosting institution(s) for at least 5 years (signed paper) including
  - Financing
  - Staff
  - Infrastructure (field work, lab work etc.)
- Principal agreement on data exchange
- Availability of information in English
- Maximum response time to questions/requests of 10 days (email)
- Site/Platform Scientific & Management Representatives

2.2 Data criteria

- Language: English
- Up-to-date/current documentation in the LTER-Spain database
- Storage (ad hoc solution -> Excel, Access; future perspective -> shared database, at least for metadata)
- Availability (bylaws for sharing)
- Time series (depend on topics; at least two data sets with a sufficient time interval)
- Frequency of measurements (thresholds for discontinuity?)

Evaluados por comité nacional y comité científico asesor

BENEFICIOS DE LA INTEGRACIÓN EN REDES: ILTER Y LTER-EUROPA

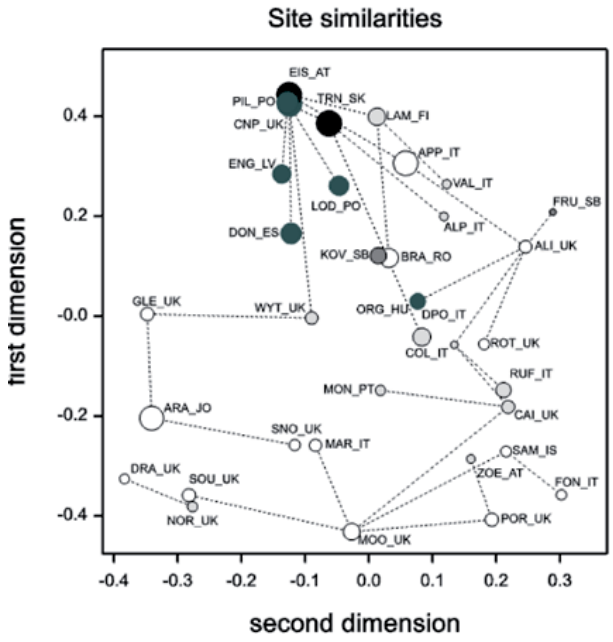
Beneficios Científicos

DE GRUYTER OPEN

Ekológia (Bratislava) Vol. 33, No. 3, p. 217–231, 2014
doi:10.2478/eko-2014-0021

ECOSYTEM SERVICES: A RAPID ASSESSMENT METHOD TESTED AT 35 SITES OF THE LTER-EUROPE NETWORK

JAN DICK[1*], AMANI AL-ASSAF[2], CHRIS ANDREWS[1], RICARDO DÍAZ-DELGADO[3], ELLI GRONER[4], ĽUBOŠ HALADA[5], ZITA IZAKOVIČOVÁ[5], MIKLÓS KERTÉSZ[6], FARES KHOURY[7], DUŠANKA KRASIĆ[8], KINGA KRAUZE[9], GIORGIO MATTEUCCI[10], VIESTURS MELECIS[11], MICHAEL MIRTL[12], DANIEL E. ORENSTEIN[13], ELENA PREDA[14], MARGARIDA SANTOS-REIS[15], ROGNVALD I. SMITH[1], ANGHELUTA VADINEANU[14], SANJA VESELIĆ[8], PETTERI VIHERVAARA[16]



Ecological Modelling xxx (2014) xxx–xxx

Contents lists available at ScienceDirect

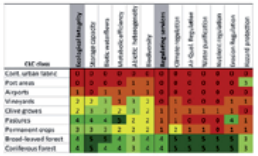
Ecological Modelling

journal homepage: www.elsevier.com/locate/ecolmodel

Assessment of ecosystem integrity and service gradients across Europe using the LTER Europe network

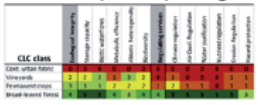
Stefan Stoll[a,b,*], Mark Frenzel[c], Benjamin Burkhard[d,e], Mihai Adamescu[f], Algirdas Augustaitis[g], Cornelia Baeßler[c], Francisco J. Bonet[h], Maria Laura Carranza[i], Constantin Cazacu[f], Georgia L. Cosor[f], Ricardo Díaz-Delgado[j], Ulf Grandin[k], Peter Haase[a,b], Heikki Hämäläinen[l], Rob Loke[m], Jörg Müller[n,o], Angela Stanisci[i], Tomasz Staszewski[p], Felix Müller[d]

Original assessment matrix from Burkhard et al. (2009, 2012)

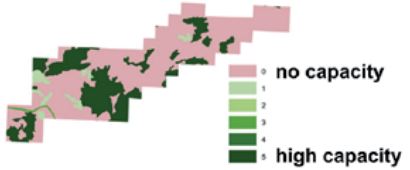


One matrix for entire Europe

(2) creation of local subsets of the assessment matrix for each participating site



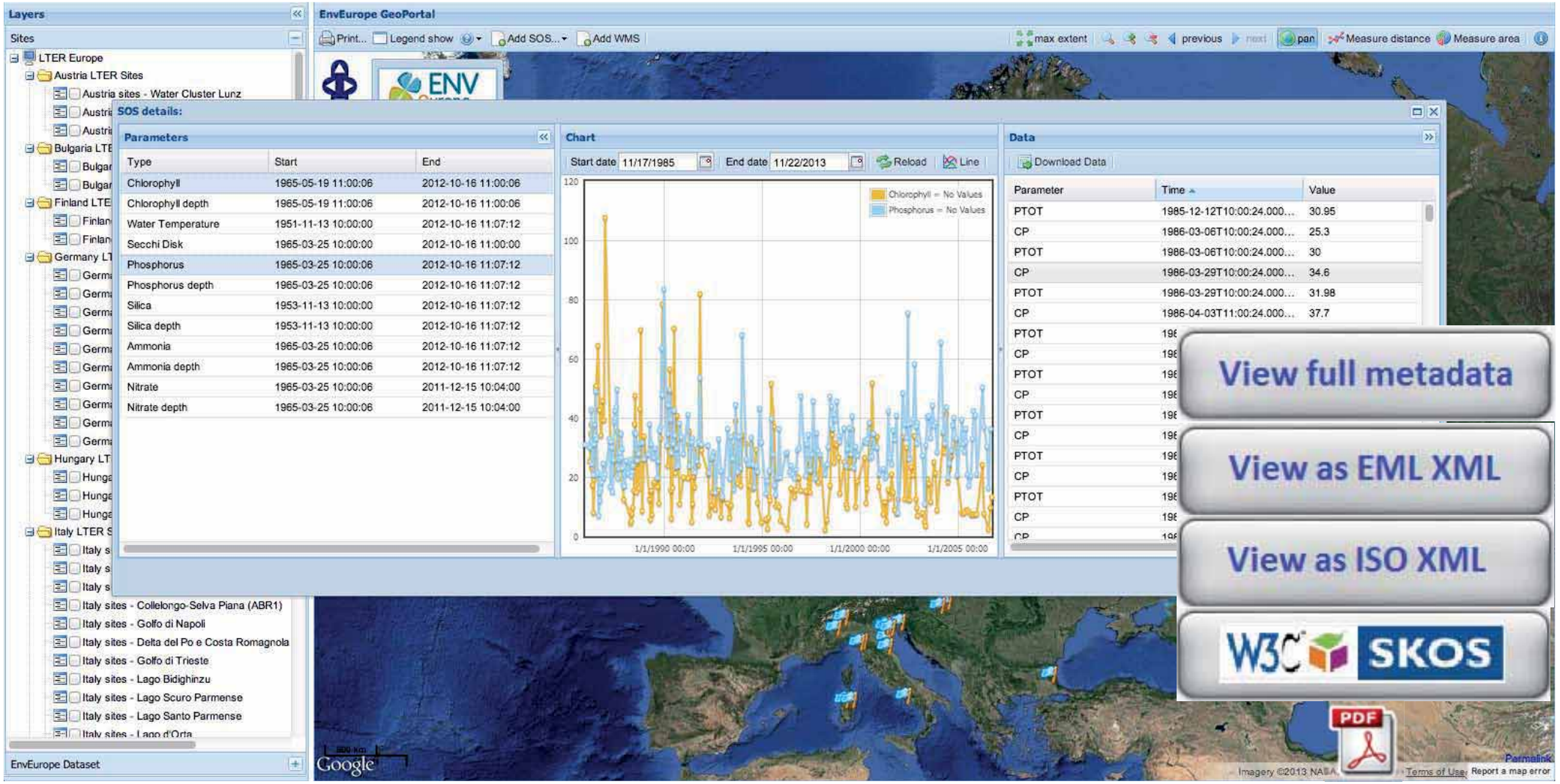
+



visualisations of all EI and ES for each local sites using CLC data

Beneficios en la Gestión de datos

Iniciativa LTER-Europa: DEIMS
Política de datos

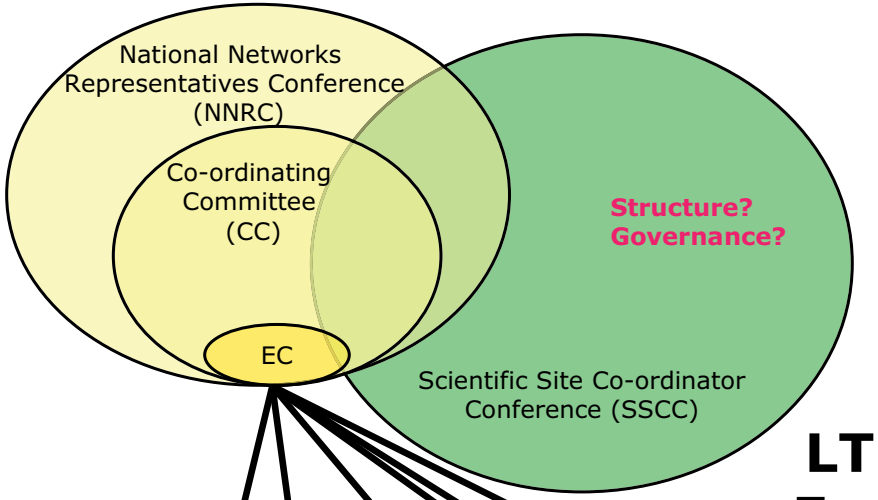


Catálogos, repositorios, servicios, visores, tesauros…

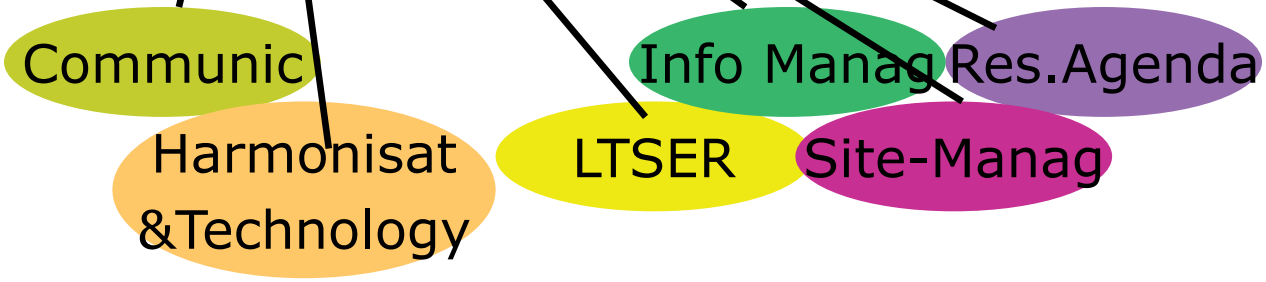
Beneficios en formación y métodos: Expert Pannels

Paneles de expertos: Dar soporte a la comunidad y continuidad a la actividad de la red.
Mantener "networking"
Promover proyectos

9th LTER-Europe Conference
Roma, 2013

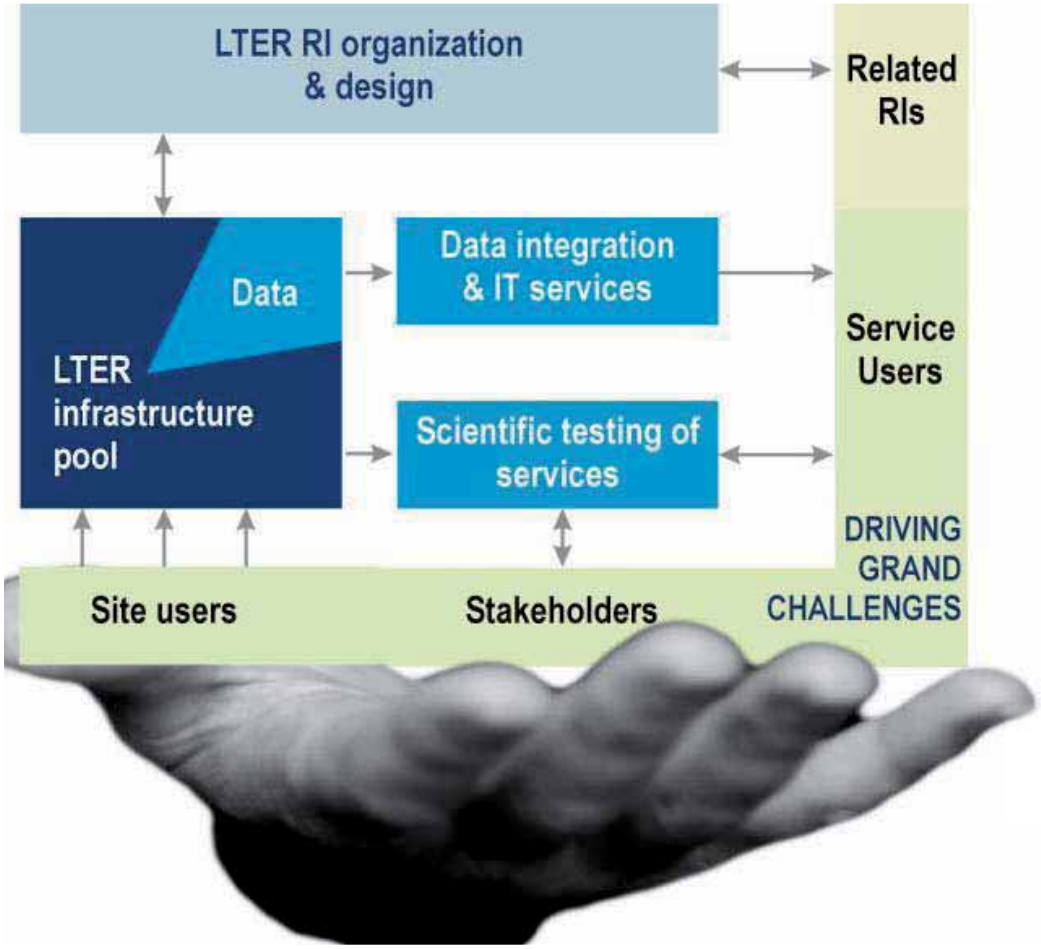


LTER-Europe Expert panels
(including ALTER WPs and other expert groups)



Beneficios para financiación de actividades

Participación en proyectos europeos: eLTER (INFRAIA-H2020);COST Actions



BIOECOST-Europe
Cost proposal

Biodiversity, Ecosystems, Society: reinforcing harmonized Trend studies in Europe

Beneficios para los gestores: sumario

- Sistemas de apoyo a la toma de decisiones
- Supervisión y asesoría en programas de seguimiento
- Supervisión y asesoría en sistemas automáticos de medición y experimentación
- Beneficios derivados del trabajo en red (repercusión, atracción, etc.)
- Herramientas de gestión de la información
- Talleres de difusión y formación
- Aproximación socio-ecológica
- Políticas de acceso a datos
- Participación en proyectos inter-disciplinares
-
- Cenas divertidas
- Viajes
- Estancias…

LTER spain

Gracias