

CREAFForest Ecology Research and Applications

Javier Retana Director



Main goals



CREAF has achieved leadership in the fields of terrestrial ecology and management of the natural environment based on two clearly distinct **complementary branches**:

- **Basic research** in the field of terrestrial ecology, territorial analysis and global change.
- Knowledge transfer from both applied research and the development of tools.

Governance

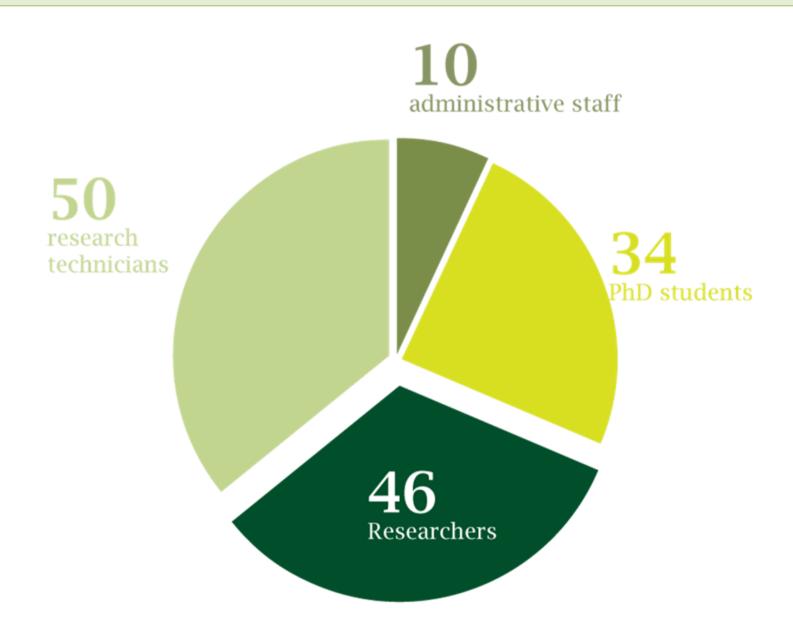


25 years old Consortium founded in 1988



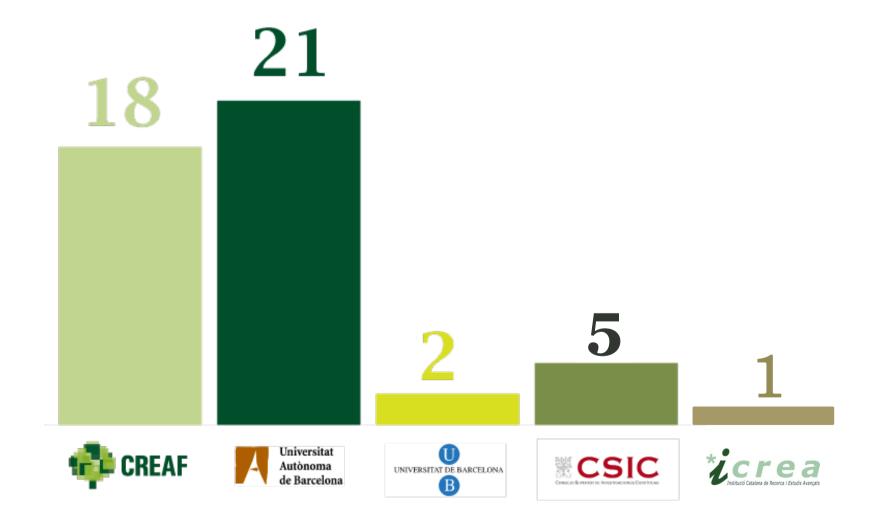
Personnel 2012











Ongoing projects



2013

3 Cooperation Projects 19
National
Projects

19 EU Projects



The project MONTES





Datos y Metadatos 🗎 Open Atrium



Calendario Contacta...



MONTES CONSOLIDER EL ESCENARIO

EL PROYECTO

INVESTIGADORES

RESULTADOS

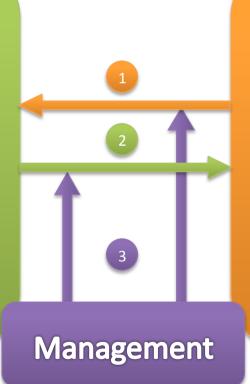




The project MONTES Main objectives

Woodlands
Forests /
Shrublands /
Grasslands

- * Carbon reserves and flows
- * Water resources
- * Biodiversity



Global change

- * Changes atmospheric comp.
- * Climate change
- * Fires
- * Land use changes
- * Introduction of species

Project Synergy Grant





Quantify the responses of ecosystems and society in a world increasingly rich in N and C but limited in Phosphorus



J.Peñuelas



I.Janssens



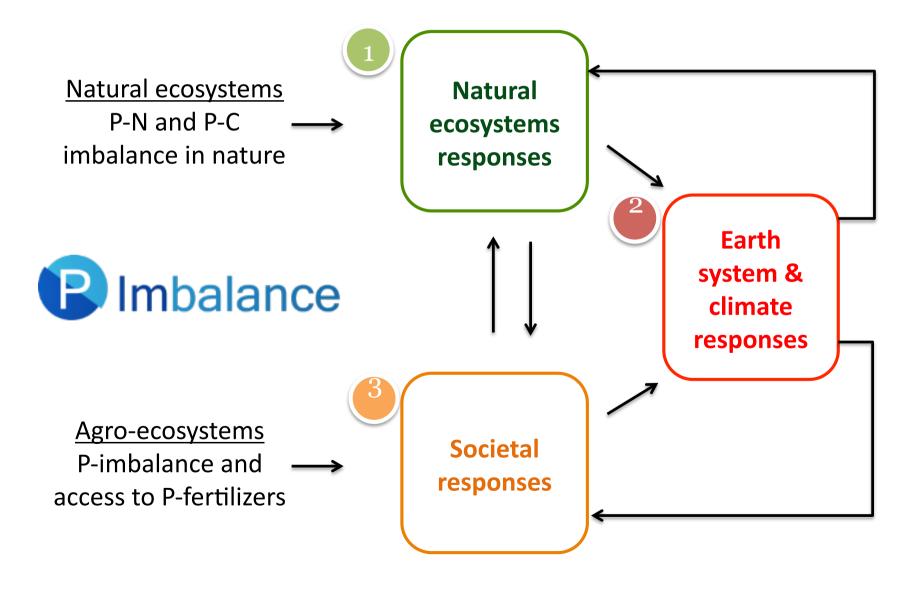
M.Obersteiner



P.Ciais



Project Synergy Grant Objectives



Research and Innovation





Biodiversity



Forest ecology and wildfires



Functional Ecology and Global Change



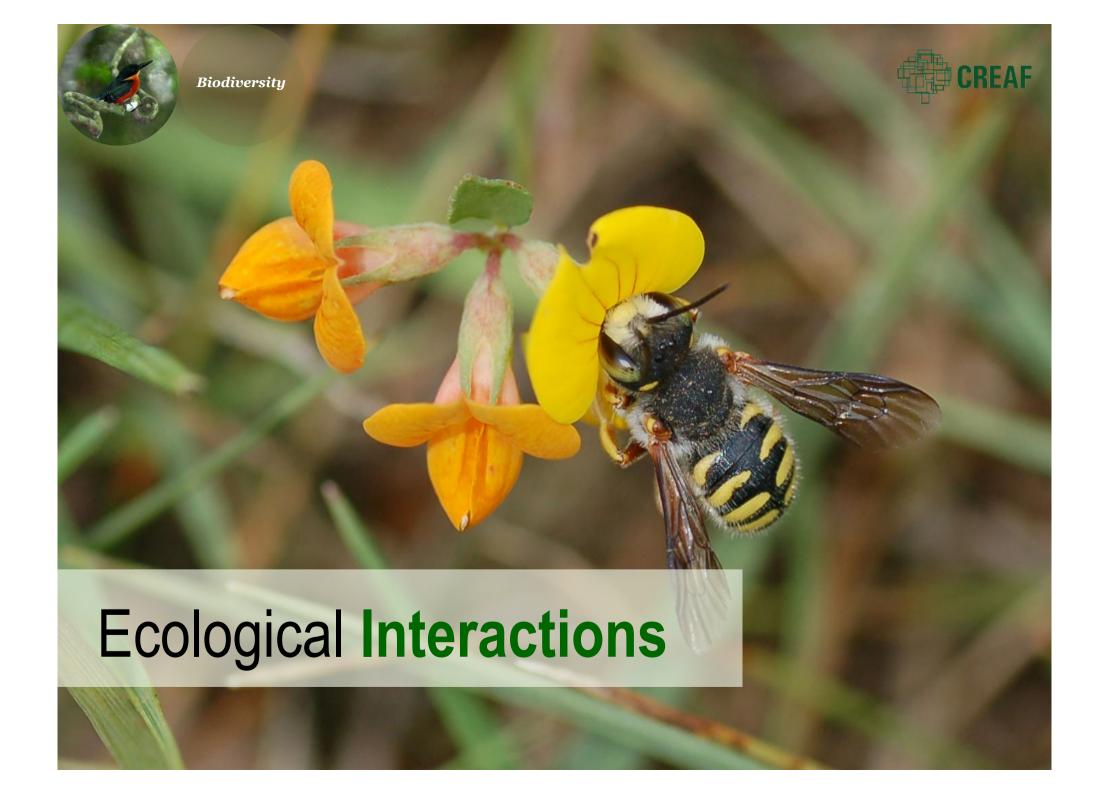
Landscape Environmental Analysis





Biodiversity

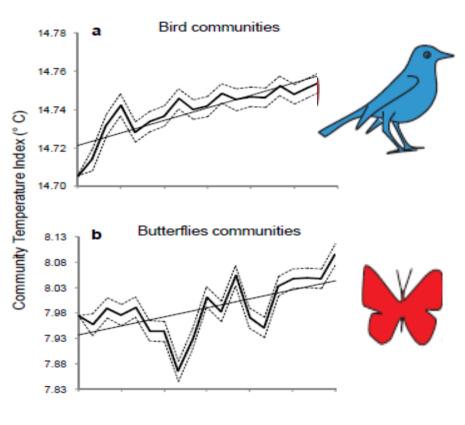


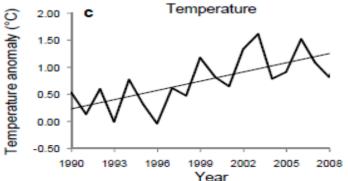




Biodiversity







Accumulated climatic debt in bird and butterfly communities

- Europe
- 1990 **2008**
- 9,500 bird communities
- 2,100 butterfly communities
- Communities are increasingly composed of thermophilous species
- Butterfly communities are changing faster

DeVictor et al. 2012. Nature Climate Change

Biodiversity



With few biological traits it is possible to predict species interactions

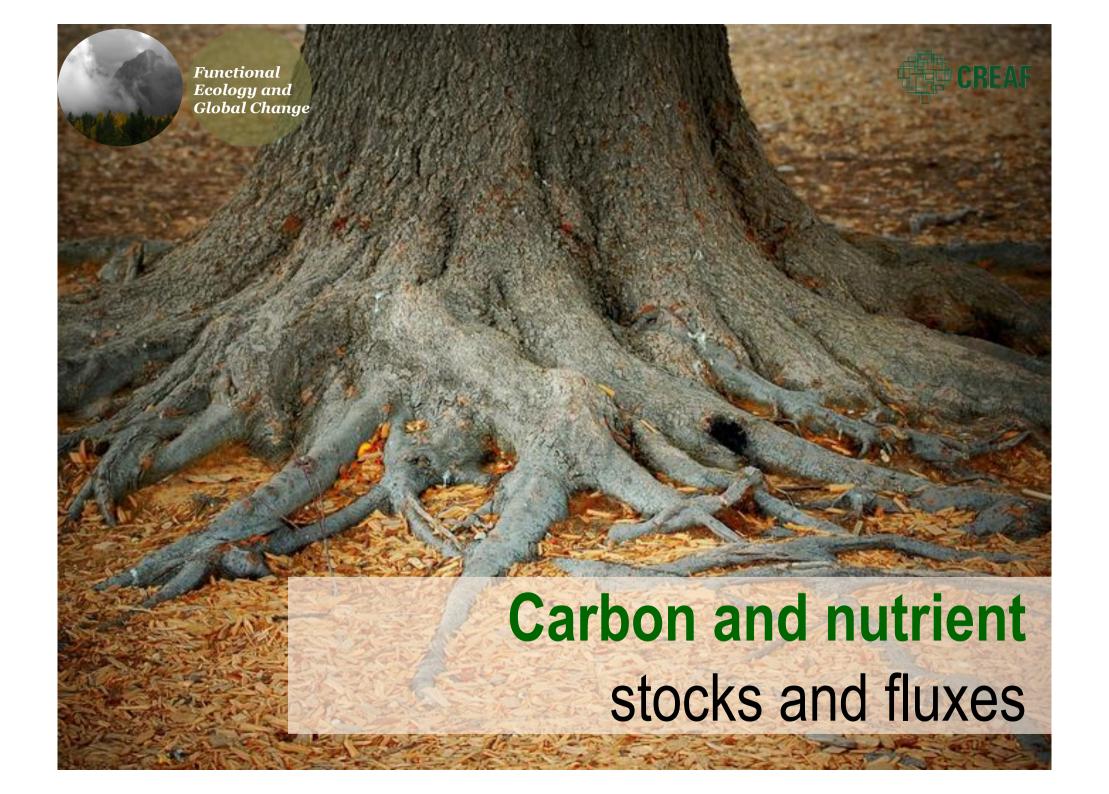
- The study analyzed 200 ecological networks around the world, to find the minimum number of features that explain the interactions between species.
- The important features are few, but different for different systems (plantpollinator, predator-prey, host-parasite, etc.)



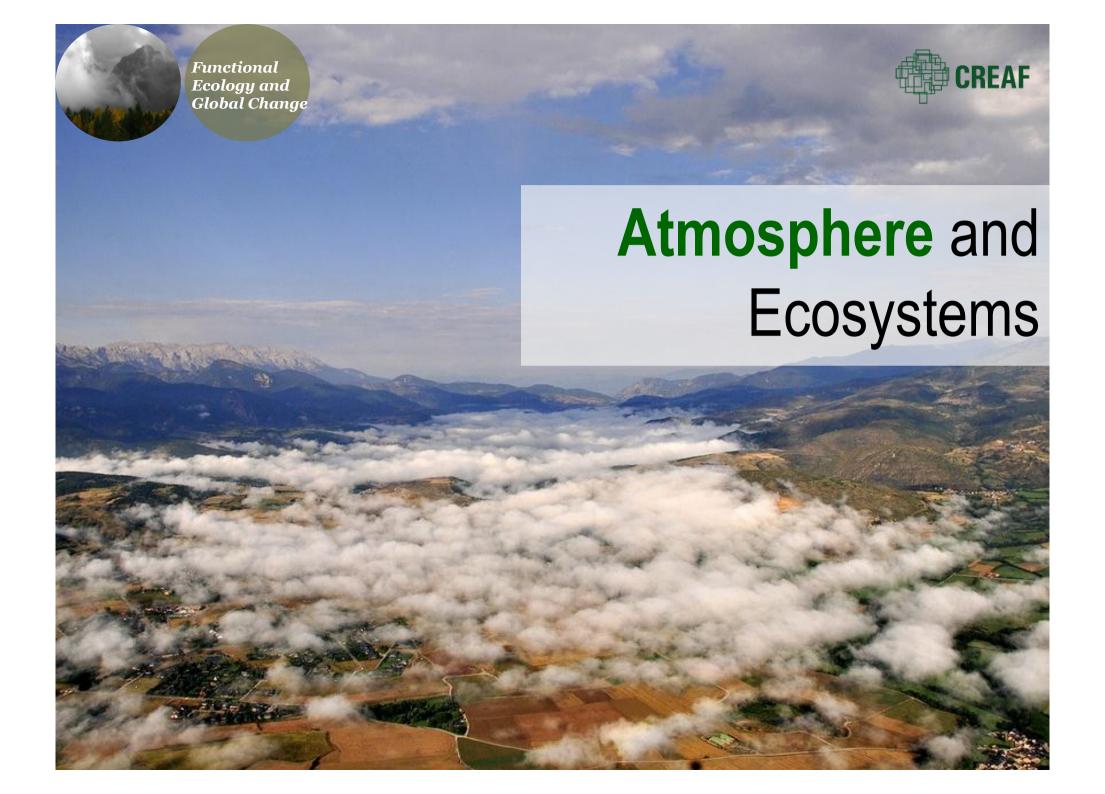
Eklöf A. (...), Bosch J. (...), Rodrigo A. et al. (2013) Ecology Letters

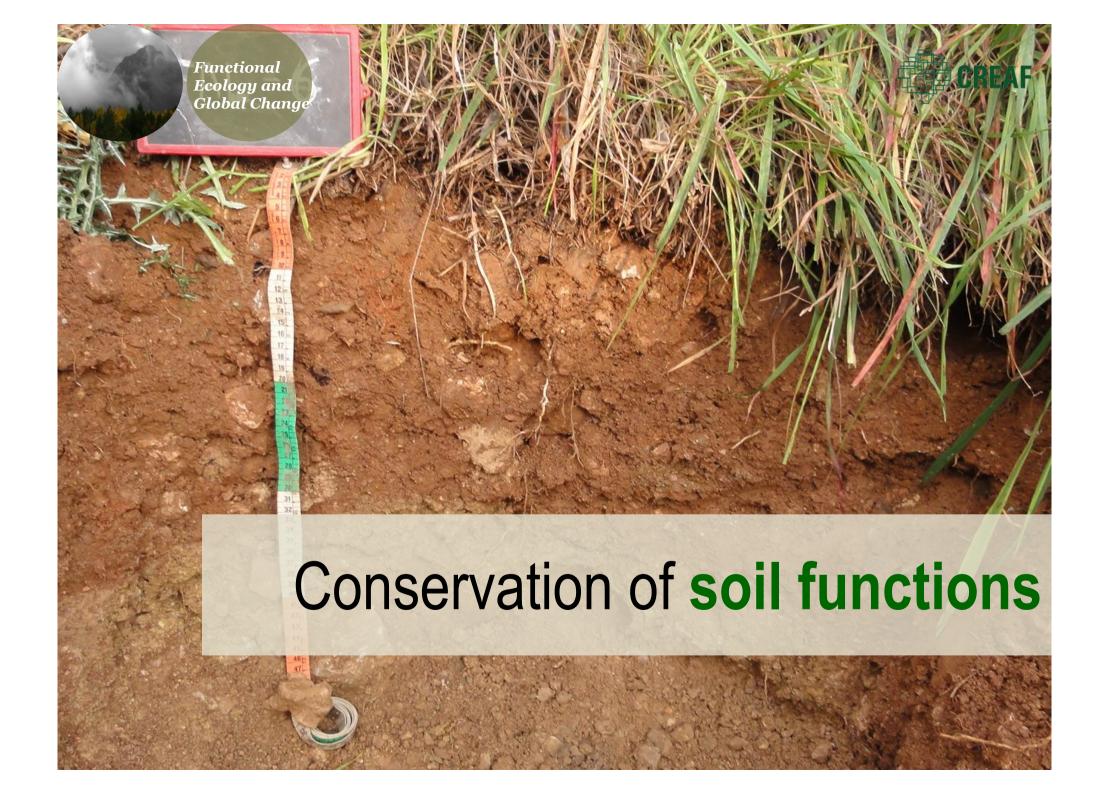










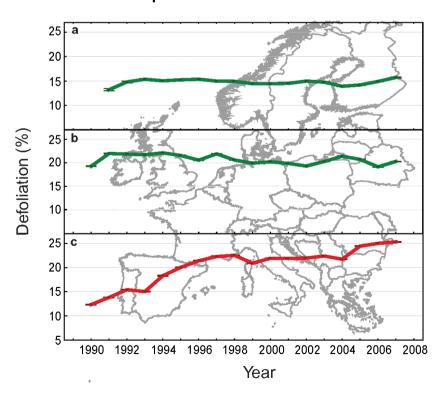


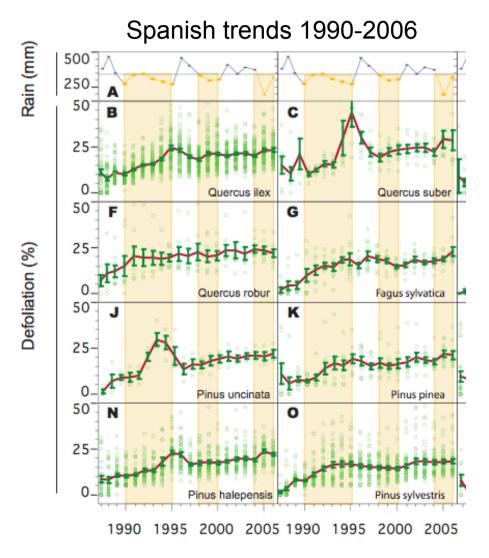


Functional Ecology and Global Change

Crown defoliation in Spanish forests

European trends 1990-2008





Carnicer et al. 2011 PNAS

Functional Ecology and Global Change

CREAF \$25

Overnight global warming limits CO2 uptake from the boreal flora

- Nighttime temperatures have increased 1.4 times faster than the daytime ones on the planet.
- This asymmetry alters carbon flows and plant growth in the northern hemisphere.
- In boreal regions, night-time respiration has grown more than daily photosynthesis.

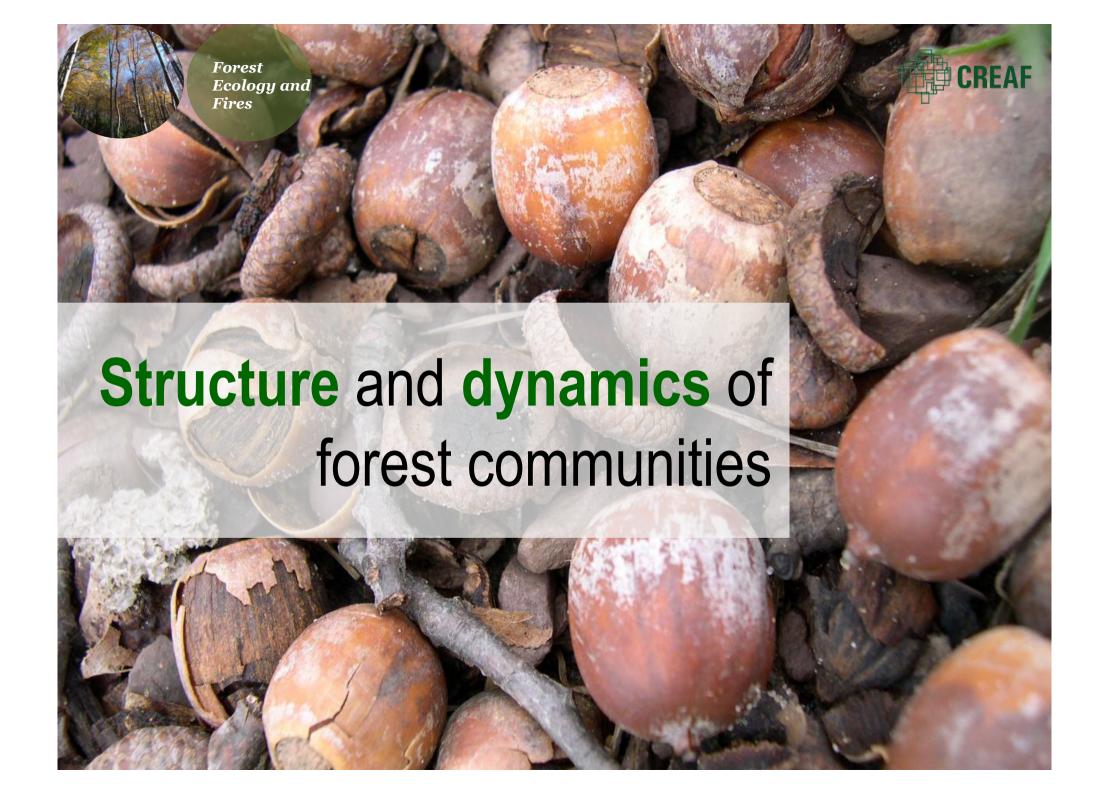




Peng S. (...), Peñuelas J. et al. (2013) Nature

















Forest Ecology and Fires



How the episodes of forest decay affect to the dynamics of plant communities

- Analyses of the changes in the composition of dominant species in different types of forest.
- Forest dynamics models in *Pinus* sylvestris forests.
- role of functional traits of species in the assembly of Mediterranean plant communities.



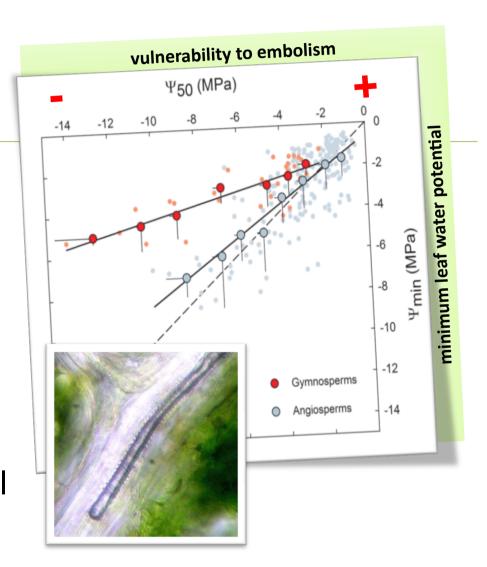
Lloret F., Martínez-Vilalta J. et al. (2013) Climatic Change

Forest Ecology and Fires



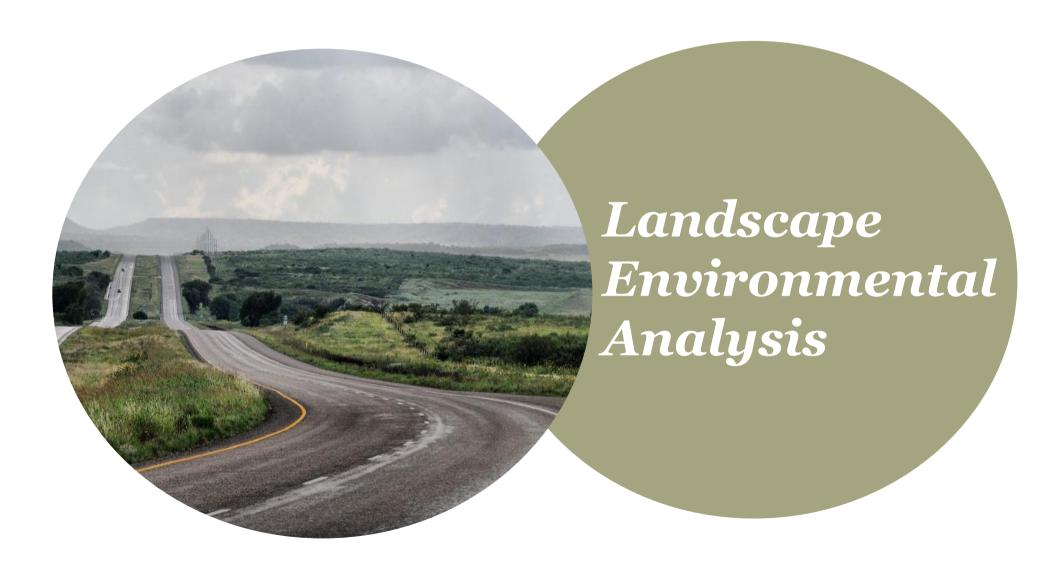
Drought leads to limit the hydraulic system of the planet's forests.

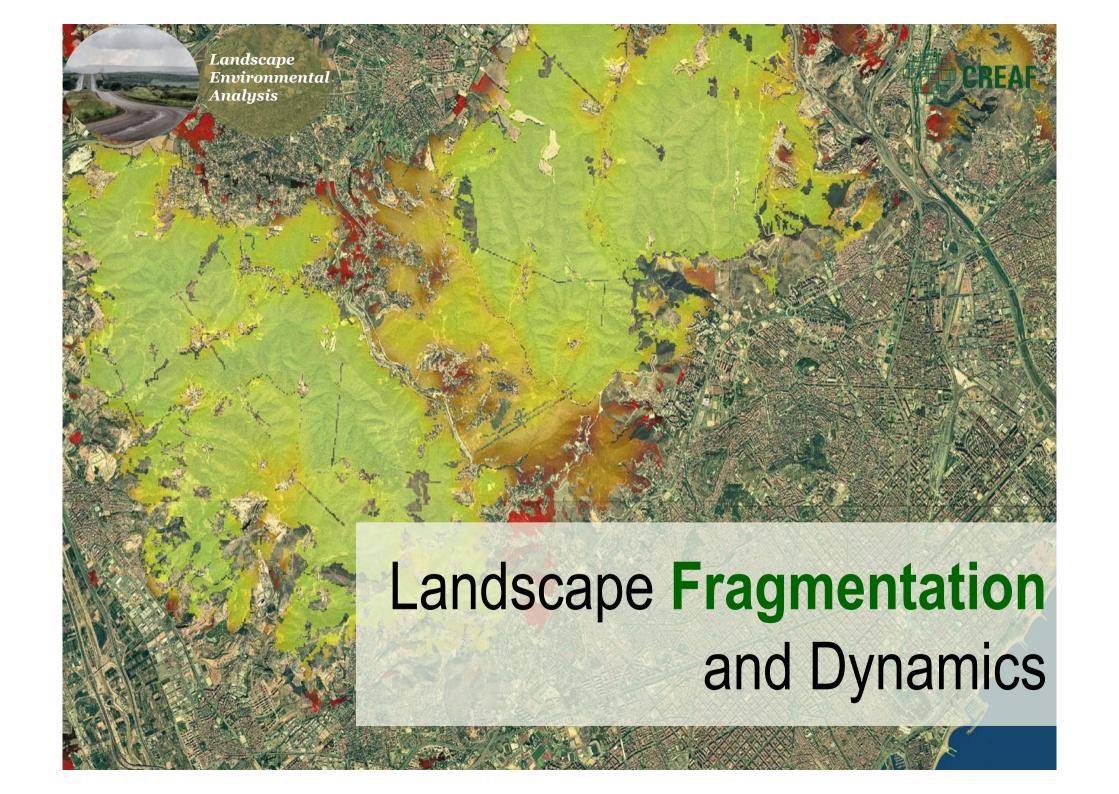
- Climate change causes the vascular system of the majority of the trees on the planet to work close to its safety threshold.
- Angiosperms are the group that will be most affected in all biomes.

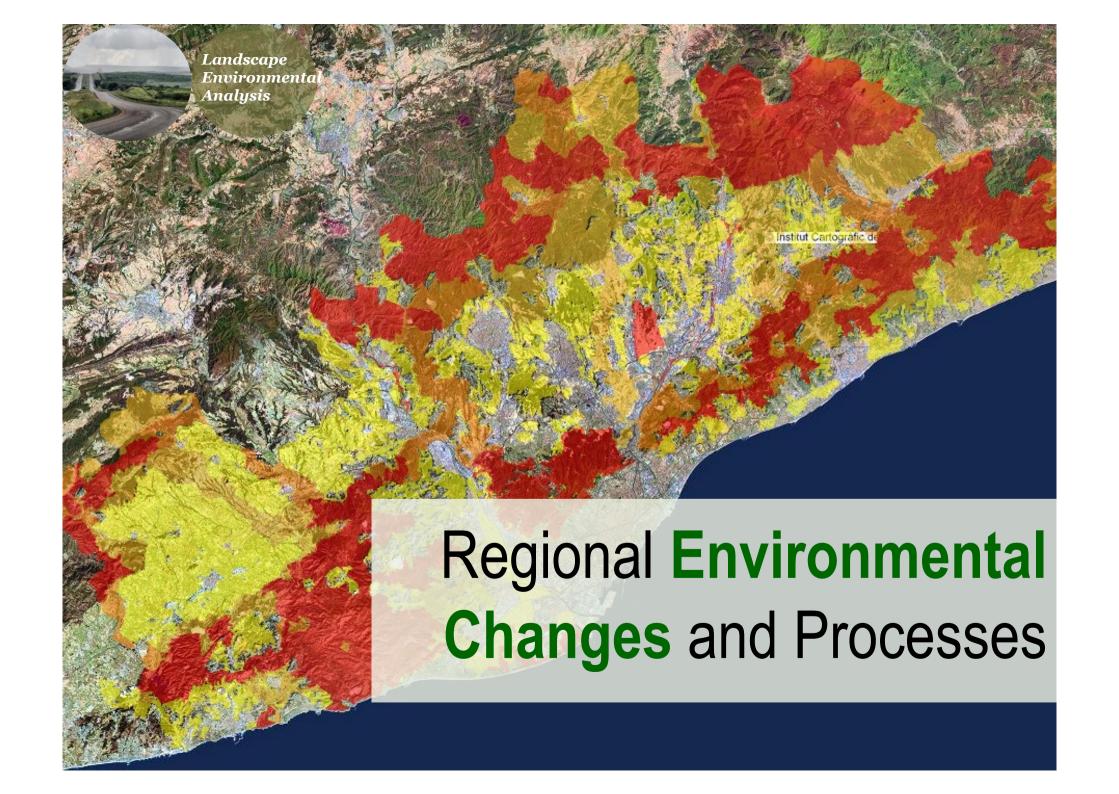


Choat B. et al. 2012. Nature







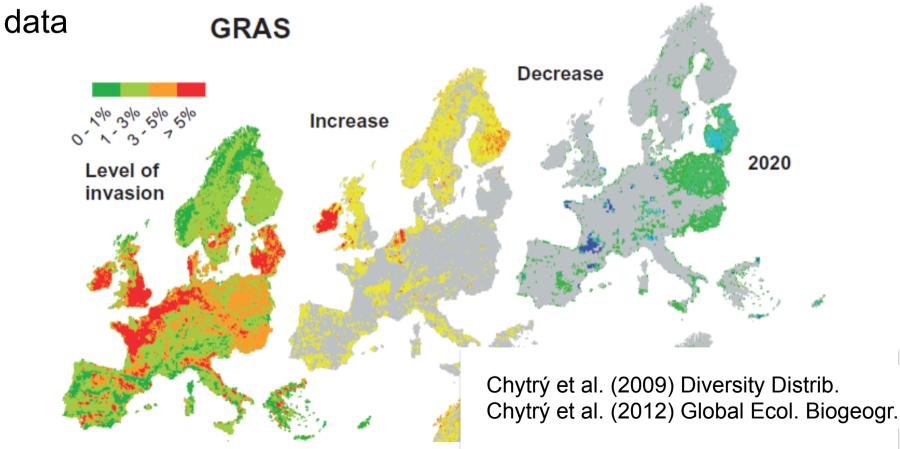


Landscape Environmental Analysis



Spatio-temporal forecasts of alien plant invasion

European map of plant invasions based on habitat invasion

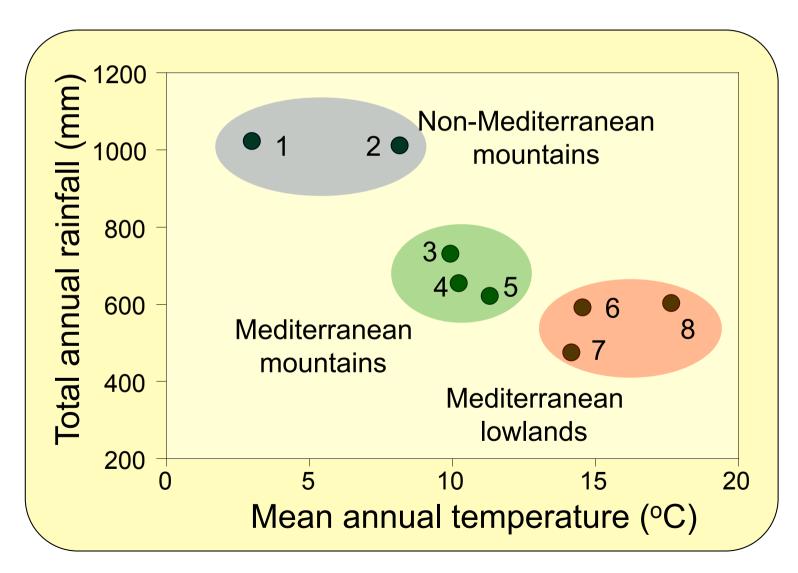


Facilities and field stations



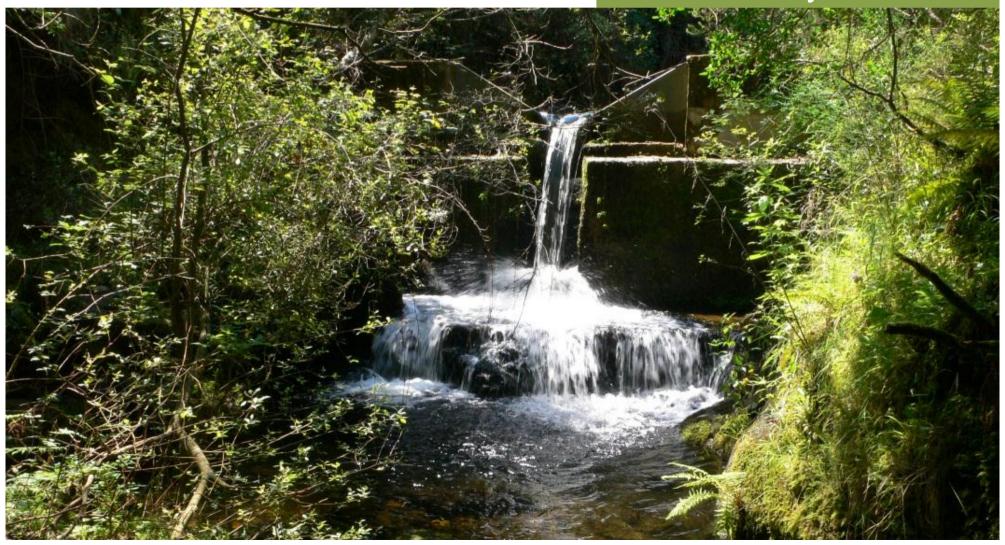








Montseny 1980-2012





Garraf 1999-2012 CONTROL **DROUGHT WARMING**





Castelltallat 2004-2012

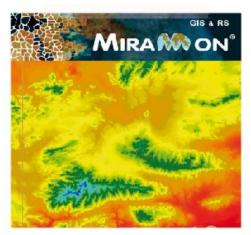






Products and services





MiraMon GIS development



Environmental monitoring networks



Thematic cartography for decision-making



Laboratory protocols and techniques



Environmental risk analysis



Field protocols and techniques

Knowledge transfer



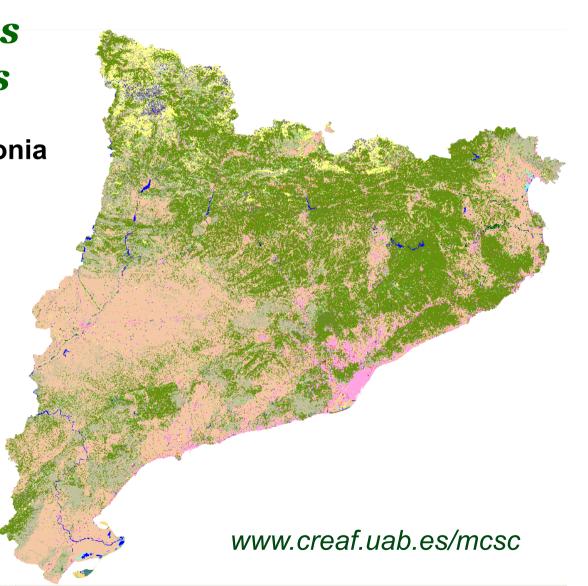
Land cover maps and map servers

Land Cover Map of Catalonia (2005, 2009)

Information System of Land Cover in Spain (2005, 2009)

CORINE Land Cover Map (2006)

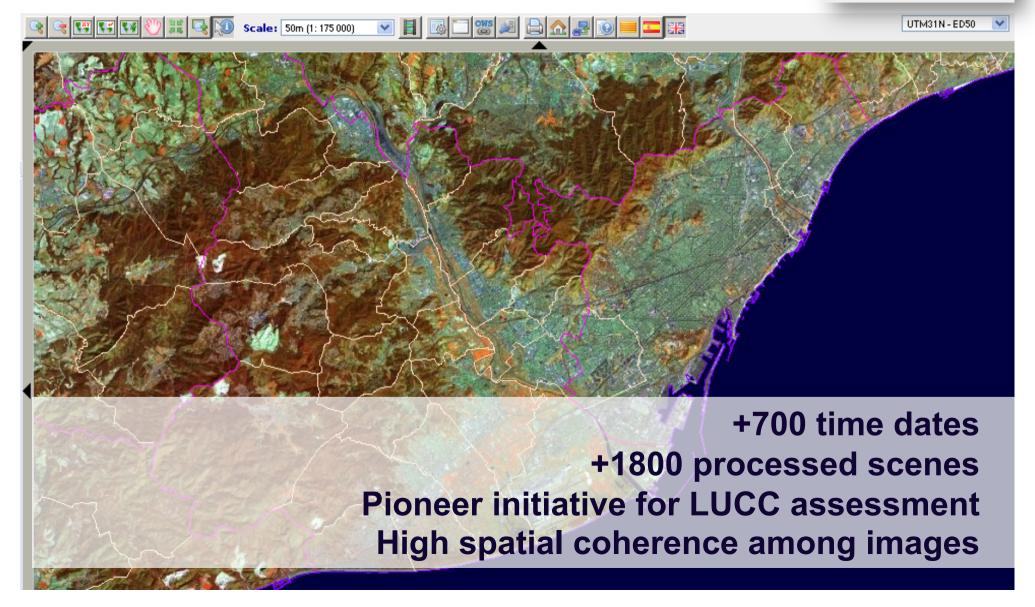
Land Cover Map of the Barcelona Province (1956)



SatCat: Catalonia Satellite Image Server



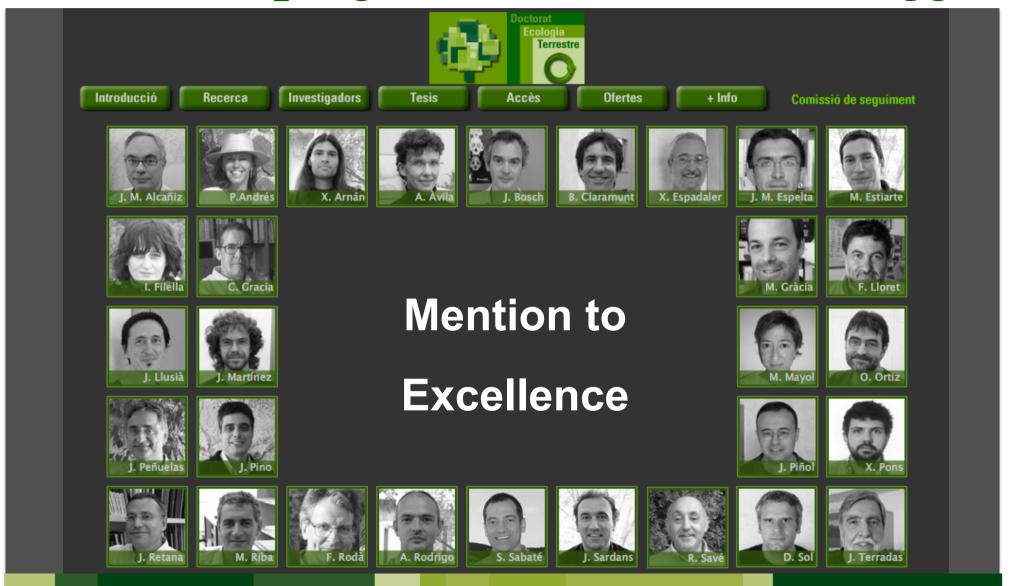




Training



Doctorate program in Terrestrial Ecology



Communication - Press office





L'informe aconsella una gestió més intensa davant de períodes cada com més llargs de

des cada vegada més Previsió de períodes tan com-nual del severs de sequera ió d'algunes espècies les sequeres severes al cen pel pi blanc es podria tre d'Europa i a la regió med



Plantar arbres no ens salvarà

Més i més i més Són un 51% de la superfície del país mentre que fa trenta anys

Catalunya atresora uns 300 boscos d''elit'









ELCELAL'ESTIU/1

El cel i les estacions de l'any

El canvi climàtic reduirà la població de papallones a la Mediterrània



Las arbustos esteparios sor claves para que las abejas mediterráneas sobrevivan

La floración de ciertas plantas explica una parte important de la distribución y de la abundancia de los enjambres, según un estudio del Centro de Investigación Ecológica



Ocells

Viuen en terrats, balcons i places. Són aus de ciutat amb personalitat pròpia



Un inventari detalla els 292 millors boscos de Catalunva

■ El projecte pioner a escala europea pretén facilitar la gestió ad equada de les àrees arbrades més valuoses del país 🛮 Les comarques gironines, l'alt Pirineu i l'Aran, les zones amb més riquesa

Un avet de 509 anys d'edat a la falda dels Encantats

Communication – Press office CREAF 25











Anna Ramon – La fragmentació (0) 19/11/11 🗐

La biòloga i comunicadora científica Anna Ramon ens presenta els resultats de l'inventari de boscos singulars de Catalunya. En relació amb aquests ecosistemes descobrirem què és i què suposa la fragmentació per la biodiversitat de la zona que pateix el paisatge quan s'instal·la una carretera o una via de tren. A més, l'investigador del Centre de Recerca

Ecològica i Aplicacions Forestals (CREAF) i professor de la Universitat Autònoma de Barcelona (UAB), l'expert en ecologia del paisatge Joan Pino, aprofundeix en el mateix tema.



Podcast: Download



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CREAF's Blog



Now we get more than 3000 visits per month



Research, development and innovation

