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Specialization on
Adaptive forestry strategies to
provide good and services
while coping with global
change challenge

University of Valladolid, Spain

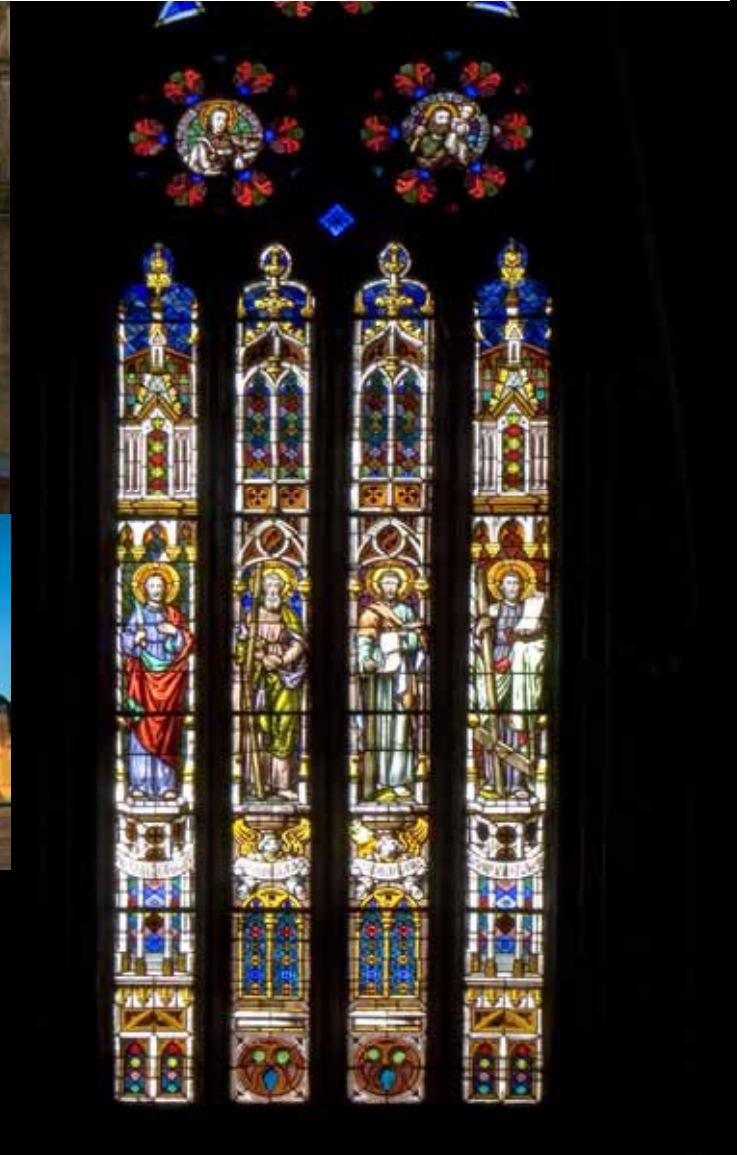


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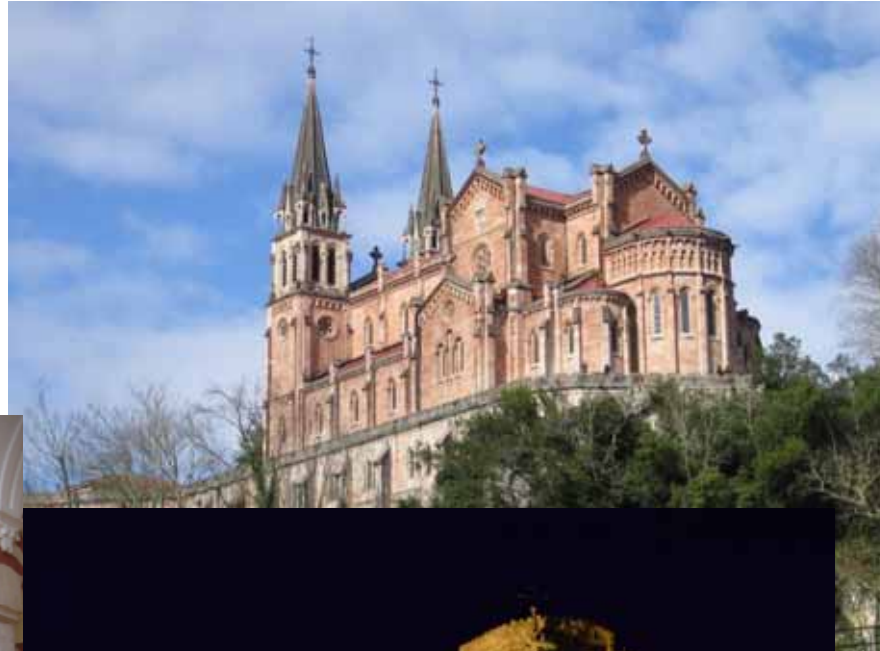
Heritage



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Heritage



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Great diversity of forest ecosystems and plantations



Experience on multiple functionality and risks



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**ERASMUS MUNDUS MSc *in*
Mediterranean Forestry and Natural Resources Management**



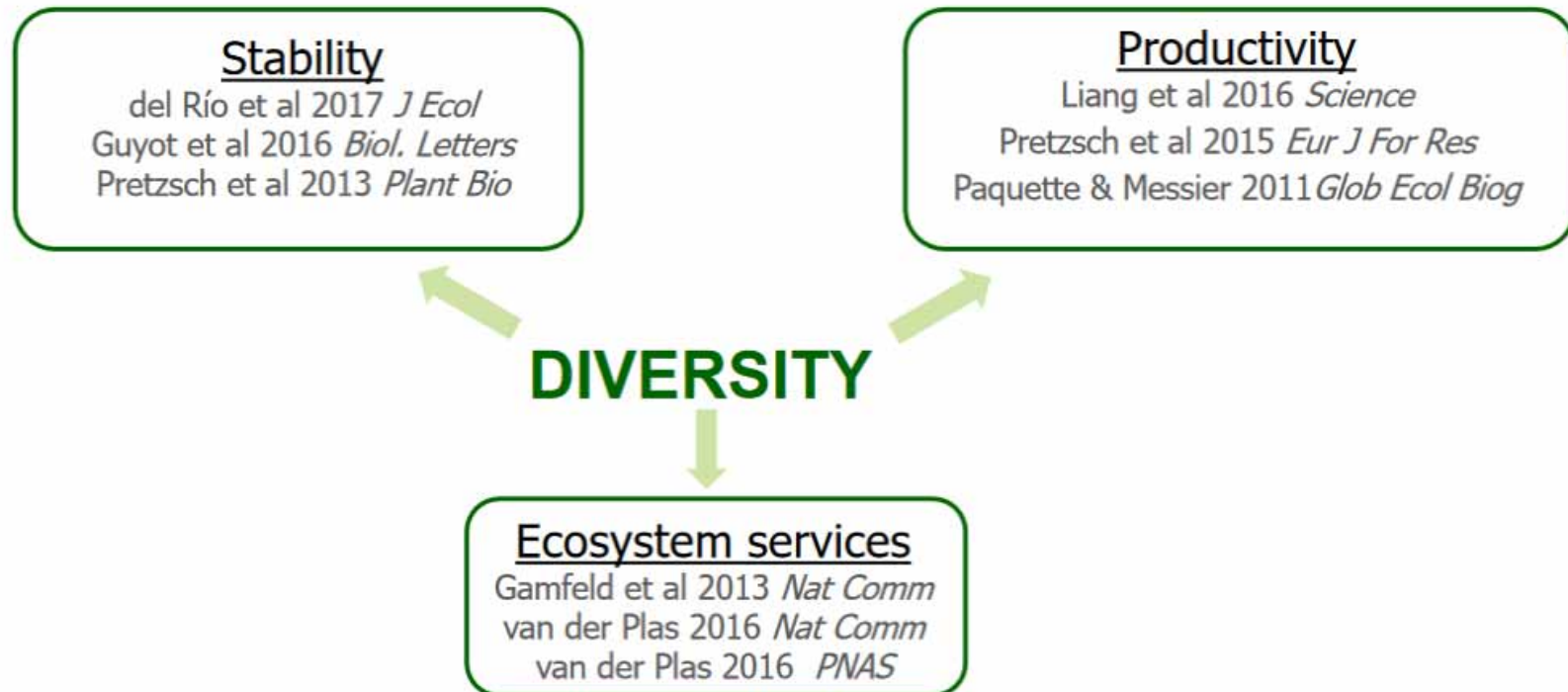
Adaptive forestry
strategies to provide
good and services while
coping with global
change challenge

- **Four courses and a seminar**
practical examples and cases study approach.

Specialization: Adaptive forestry strategies

1. Silviculture under multifunctional objectives (6 ECTS)
2. Genetic resources conservation and Molecular Markers (6 ECTS)
3. Forest pest and diseases (6 ECTS)
4. Geo-Statistical Analysis (6 ECTS)
5. Learning by doing in forestry: New tools for new challenges (6 ECTS)

Specialization: Adaptive forestry strategies



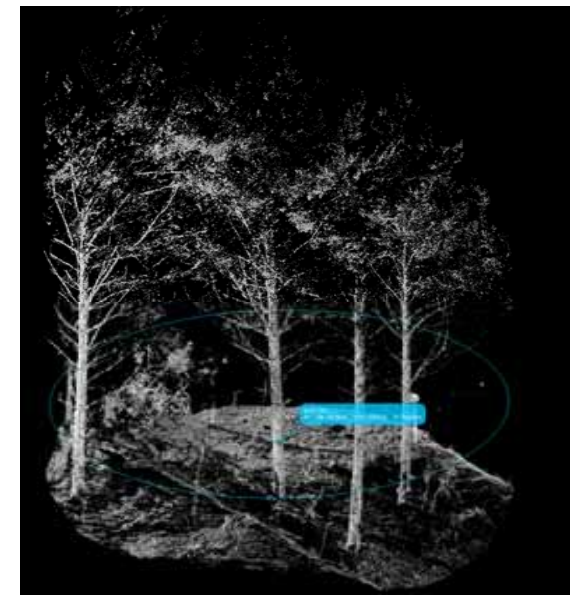
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Specialization: Adaptive forestry strategies



MASTER ON FOREST MANAGEMENT BASED ON DATA SCIENCE



Course: Silviculture under multifunctional objectives

Focused on *Bioecological scientific principles as basis for the management of Mediterranean forests.*

Special emphasis on *Non woody productions, Wildlife, Water, Risk prevention*



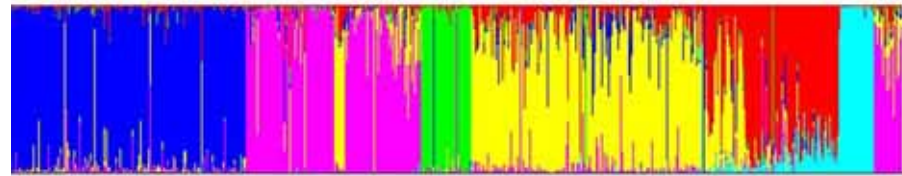
Subjects

- **Silvicultural diagnostic** of the forest ecosystem
- Tools for evaluate the **impacts and effects** of the silviculture on the forest ecosystem
- **Design silvicultural treatments** to attain specific objectives

Course: Genetic Resources Conservation and Molecular markers

Focused on

- i) Main problems and strategies for conservation and use of FGR*
- ii) Molecular tools to measure diversity and support decisions*



Subjects

- ✓ Evaluate the **need of conservation** of particular GR
- ✓ Decide the **strategy of conservation and use**
- ✓ Choose the **molecular tools** suitable to identify genotypes and measure diversity in forest species



Course: Forest Pest and Diseases

Focused on

identification, diagnostic and sustainable management of most relevant Forest Pest and Diseases in Mediterranean ecosystems

Subjects

- ✓ **Biology and dynamics** of main native and invasive insects
- ✓ **Sustainable management** of forests pest by semiochemicals
- ✓ **Biological control** of forest pests
- ✓ **Diagnostic of abiotic and biotic pathogens**
- ✓ **Management** the main forest pathogens from the Mediterranean forest



Course: Geo-Statistical Analysis

Focused on

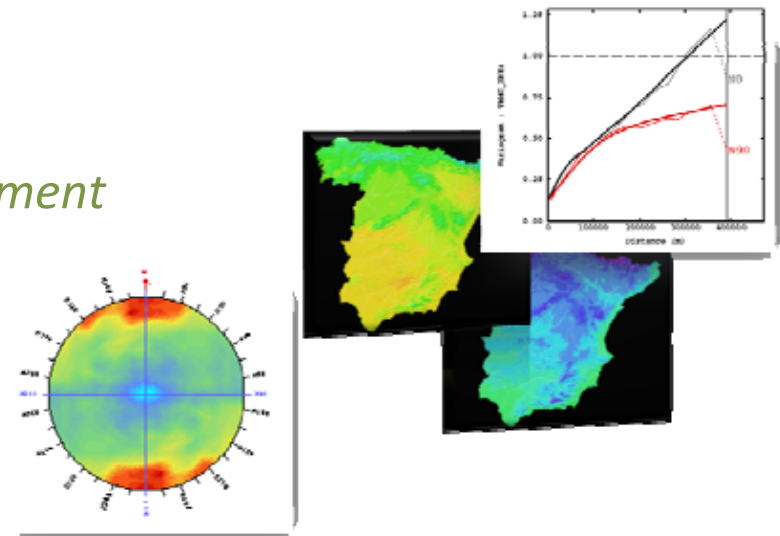
Geo-statistical analyses applied to forest management

Data gathering (LiDAR, UAVs, Copernicus)

Q-GIS & R packages

Subjects

- ✓ **Visualizing and exploring spatial data**
- ✓ **Point pattern analysis with “R”**
- ✓ **Unmarked, Multitype and marked point patterns**
- ✓ **Geostatistics: Univariate structural analysis and spatial prediction**
- ✓ **Geostatistics: Bivariate structural analysis and spatial prediction**
- ✓ **Spatial regression**
- ✓ **Data gathering: LiDAR (ALS, TLS), UAVs (Drones) and Copernicus**



Learning by doing in forestry: New tools for new challenges

*Focused on
Adaptive forest management*

Subjects

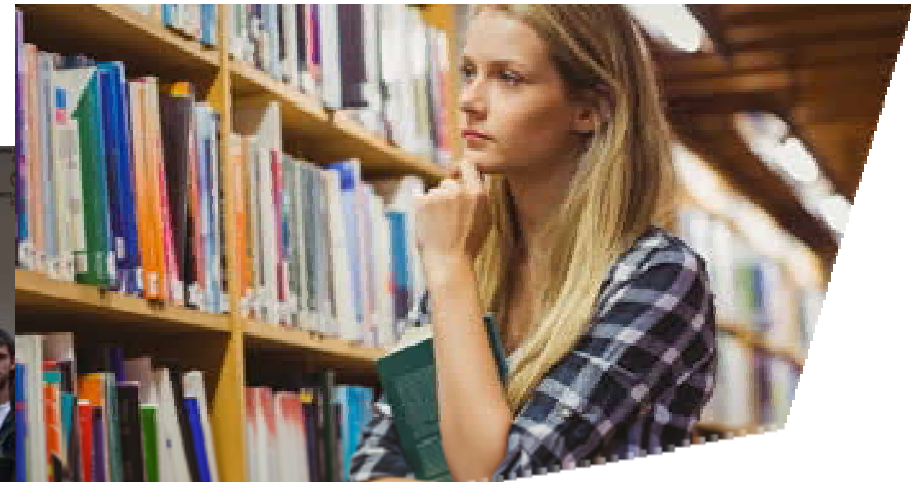


- ✓ **Identify the main impacts of global change** on forestry and its opportunity to **mitigate** the Global Change effects
- ✓ Use different **quantitative approaches** to evaluate, monitor and design silvicultural methods
- ✓ Elaborate **models** to project silvicultural paths
- ✓ **Design experiments** to obtain useful information to operational forestry

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Spanish language course



Curso académico
PRIMAVERA/OTOÑO

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Field trip jointly with other Masters #DataForest, Montes...

Les Landes (France)

EFI Forest
plantations
facility, INRA,
Bordeaux
Agriculture and
Forestry School...



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Field trip jointly with Oregon State University

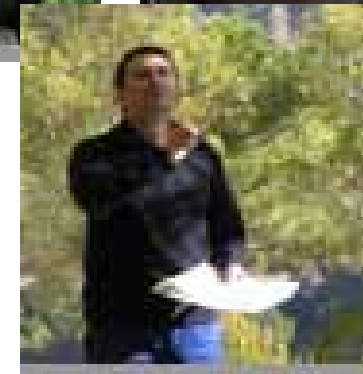
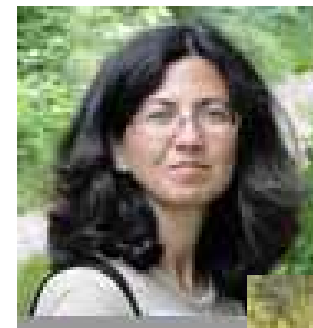
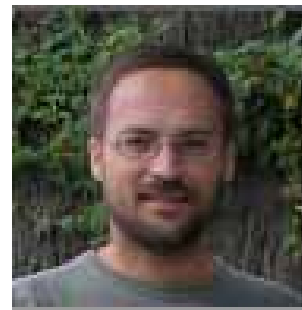
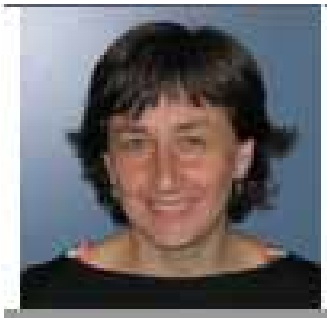


Forest Resources Management in Spain

Cultural, Political and Biophysical Contexts



A highly qualified and motivated
Research & Education Staff: UVa-
INIA



<http://sostenible.palencia.uva.es/content/miembros>

Internships on different forest situations (ecosystems and social dimensions)



Intershops on different forest situations (ecosystems and social dimensions)



**International
Model Forest
Network**

Internships on different forest situations (ecosystems and social dimensions)



Food and Agriculture Organization
of the United Nations

Earth Observation Experts



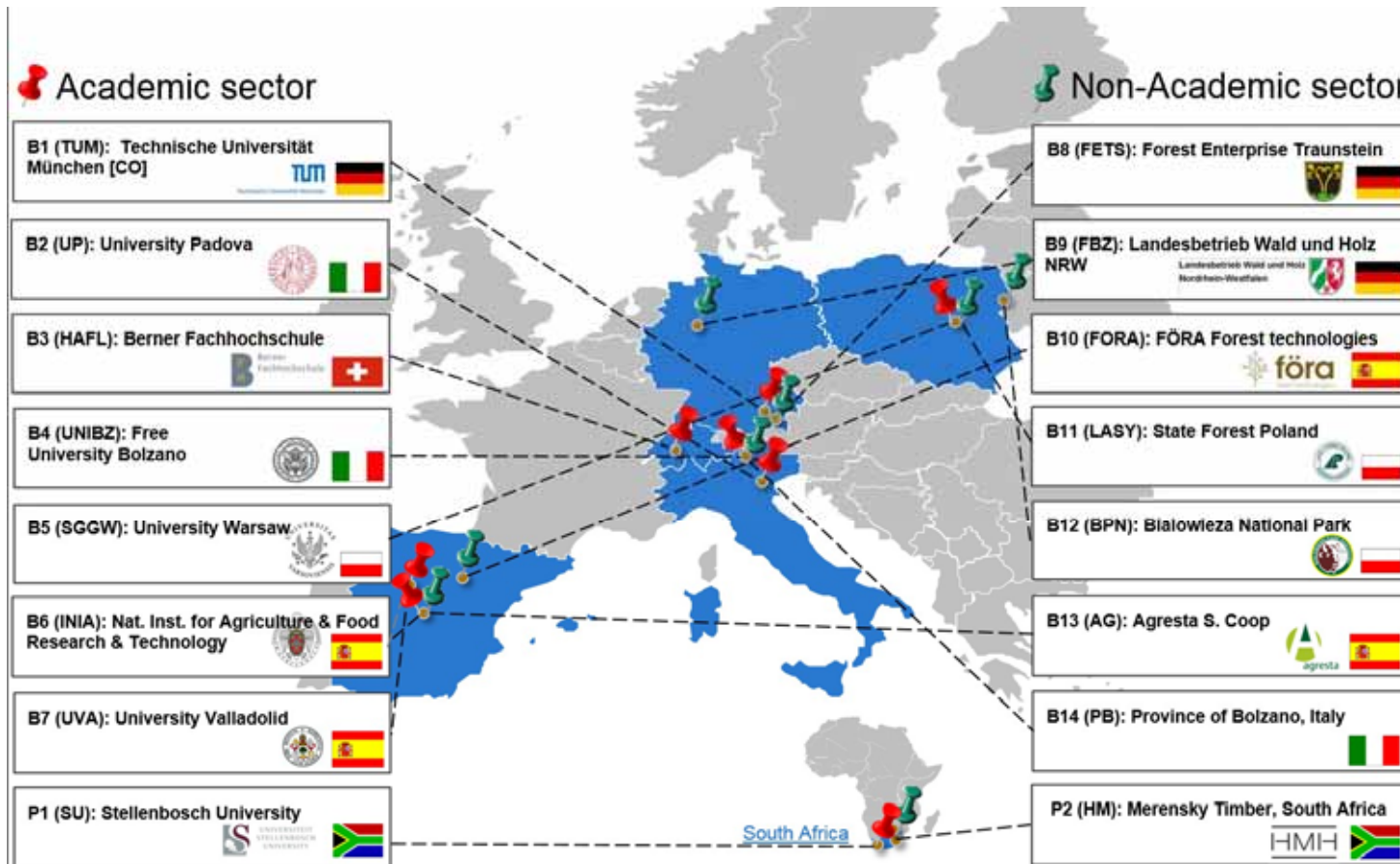
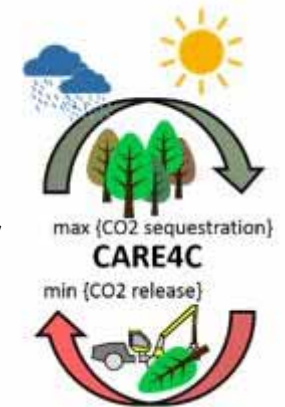
EFI

Connecting knowledge to action

The European Forest Institute is an international organisation established by European States. We conduct research and provide policy support on forest-related issues, connecting knowledge to action.

Internships on different forest situations (ecosystems and social dimensions)

<http://www.care4c.eu/>



Carbon matters in Forests – Participants of the CMF consortium

Internships on different forest situations (ecosystems and social dimensions)



<http://bioecon.eu/>



Sustainability
effective and long-lasting

Caring for the future



Internationalization
diverse and multi-cultural

Capacity for students and staff



Investment in Sustainable
Forestry
organic and sustainable

Bridging economy and ecology

Internships on different forest situations (ecosystems and social dimensions)



Ethiopian Environment and Forest Research Institute
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Internships on different forest situations (ecosystems and social dimensions)

TROPICAL Forests



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MASTER THESIS (30 ECTS)

Forest risks & protection:

Fires, pests, diseases

Silviculture: Biodiversity, REDD+,
Mushrooms,..

Modelling:

Growth, Spatial analysis, Cloud computing

Genetics

Social forestry



<http://www.reform-mixing.eu/>



<http://www.care4c.eu/>

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MASTER THESIS (30 ECTS)

Forest risks & protection:
Fires, pests, diseases

Silviculture:
Biodiversity, REDD+,
Mushrooms,..

Modelling:
Growth, Spatial analysis,
Cloud computing

Genetics

Social forestry



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MASTER THESIS (30 ECTS)

Forest risks & protection:
Fires, pests, diseases

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Genetics

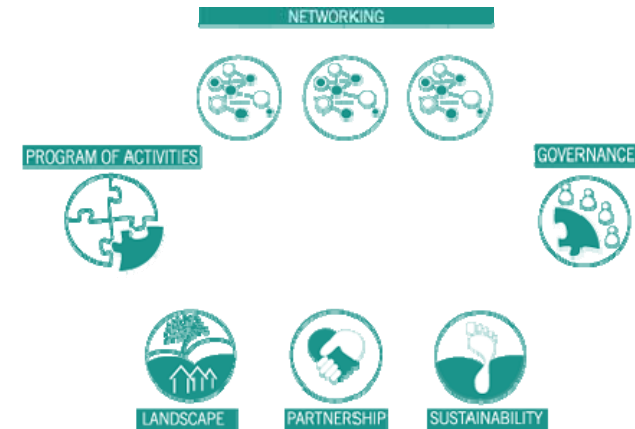
Social forestry

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MODEL FOREST

Landscape level approach process

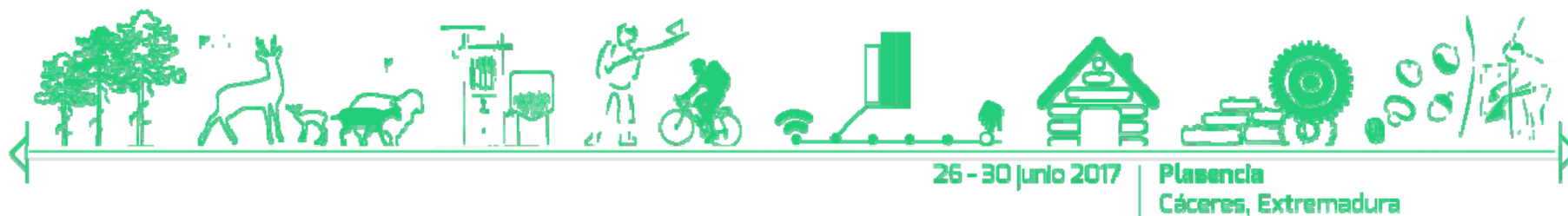


International
Model Forest
Network





Gestión del monte: servicios ambientales y bioeconomía



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And beyond the Master Thesis...



INTERNATIONAL UNION
OF FOREST RESEARCH
ORGANIZATIONS



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Thanks

**See you back in
Palencia!!**

fbravo@pvs.uva.es

<https://www.linkedin.com/in/>