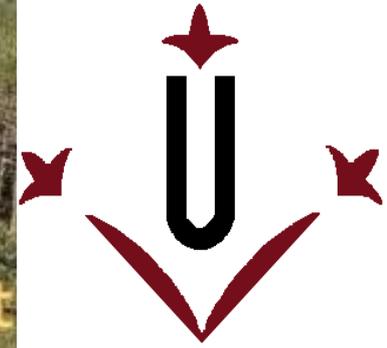




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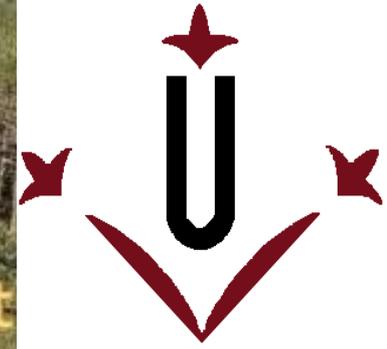
Addressing risks in Mediterranean forest management planning - The case of **forest fires**

Dr. Sergio de Miguel (Coord. of MEDFOR at University of Lleida)

Contact: sergio.demiguel@udl.cat

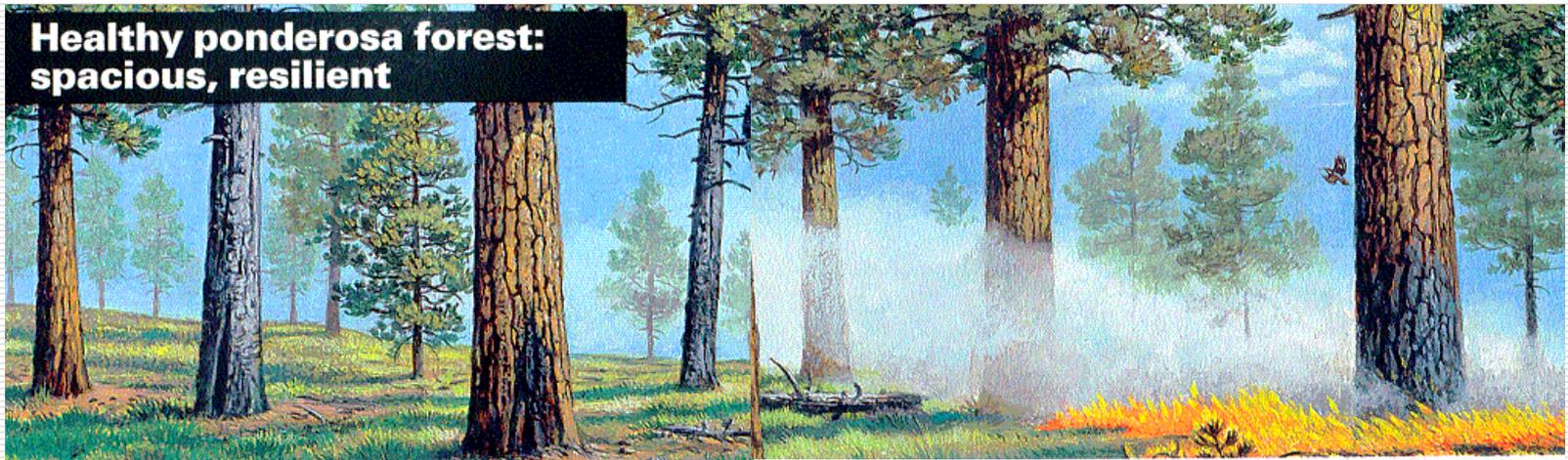
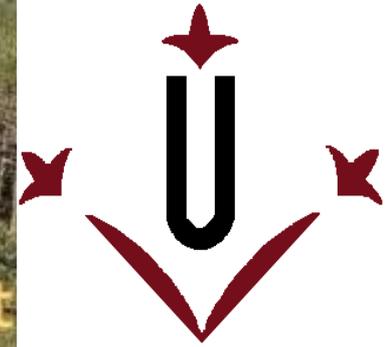


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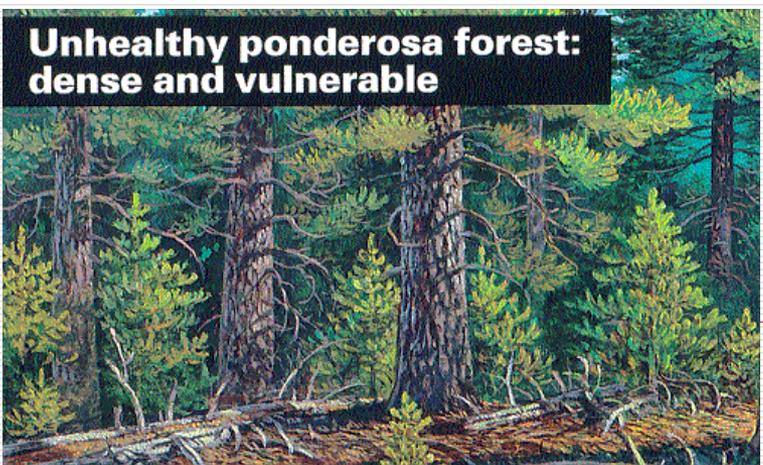
Forest Hazards

Simultaneous fires in Greece (summer 2007)

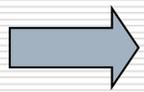


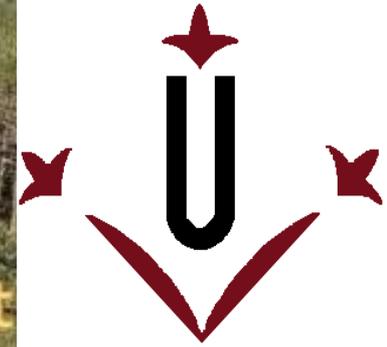
**Healthy ponderosa forest:
spacious, resilient**

With Fire Exclusion:



**Unhealthy ponderosa forest:
dense and vulnerable**





Lost or burned: which is more important?

FAO

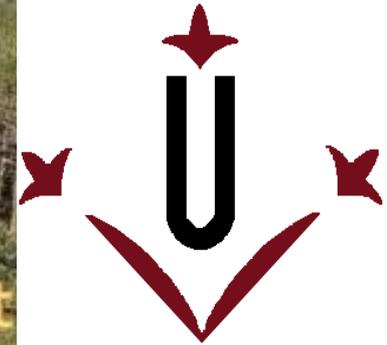


Nearly 7 million ha of
natural forest lost
per year from 2010-2015.

compared to

An average of over 50
million ha of forest land
burned every year.





Environmental Research Letters

PERSPECTIVE

Recent deforestation drove the spike in Amazonian fires

Adrián Cardil^{1,2,3} , Sergio de-Miguel^{1,2} , Carlos A Silva^{4,5} , Peter B Reich^{6,7}, David Calkin⁸,

Deforestation increases fire occurrence driven by land-use changes and uncoupled vegetation-hydrologic cycle giving rise to drier conditions

Deforestation



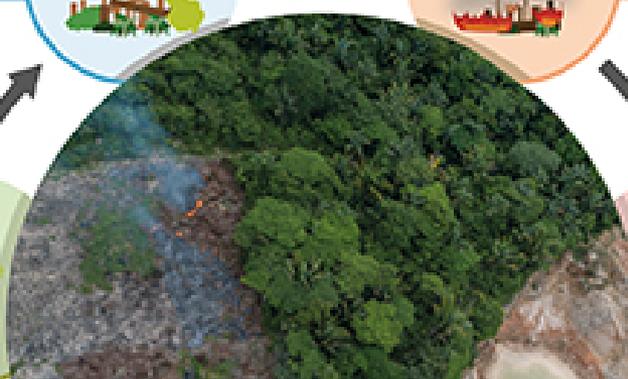
Increased greenhouse gas emissions and human and livestock loss. Immense property damage.

Wildfire occurrence



Tightly coupled moist tropical forest-hydrologic cycle

Tropical moist forest



Warmer arid climate scrub vegetation and loss of biodiversity

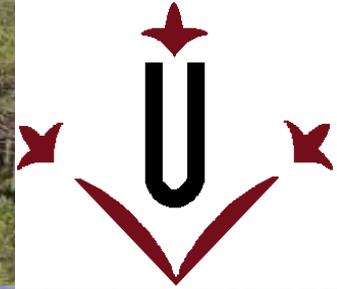
Fire-prone savanna



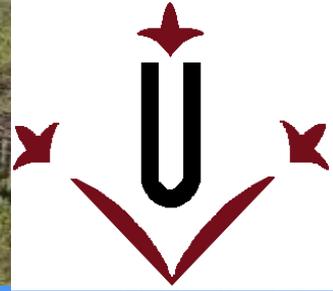
Photo: (André Dib)



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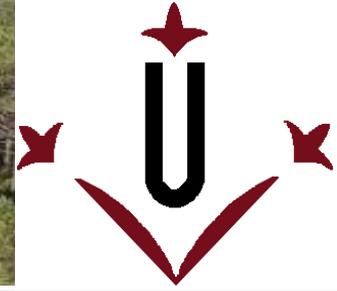
Large fire (30,000 ha) in central Catalonia in summer 1994



Mediterranean ecosystem



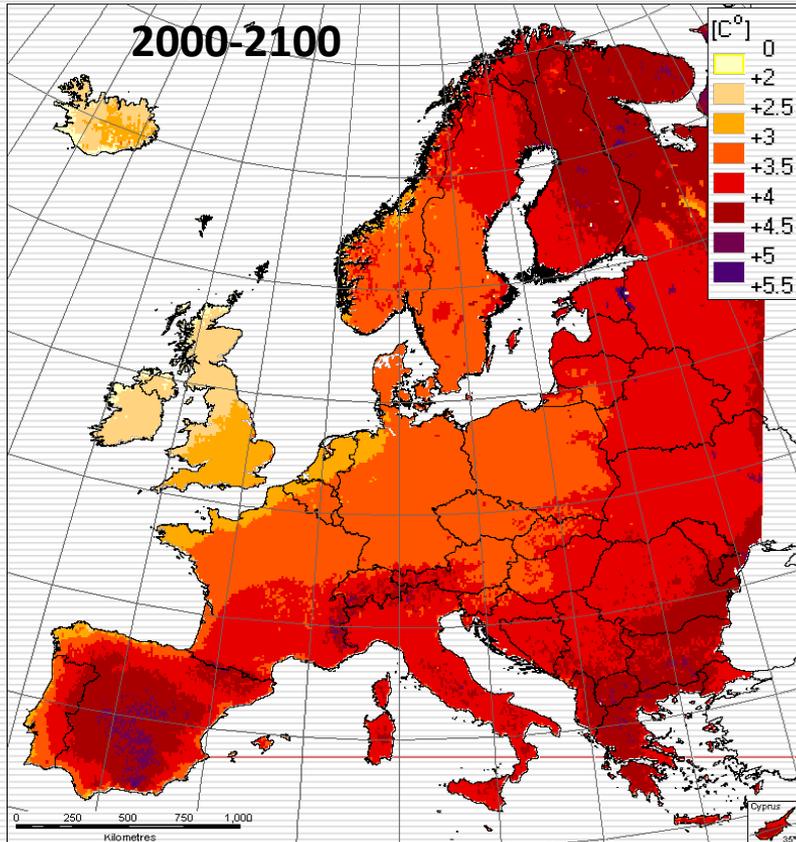
After three fires in 12 years



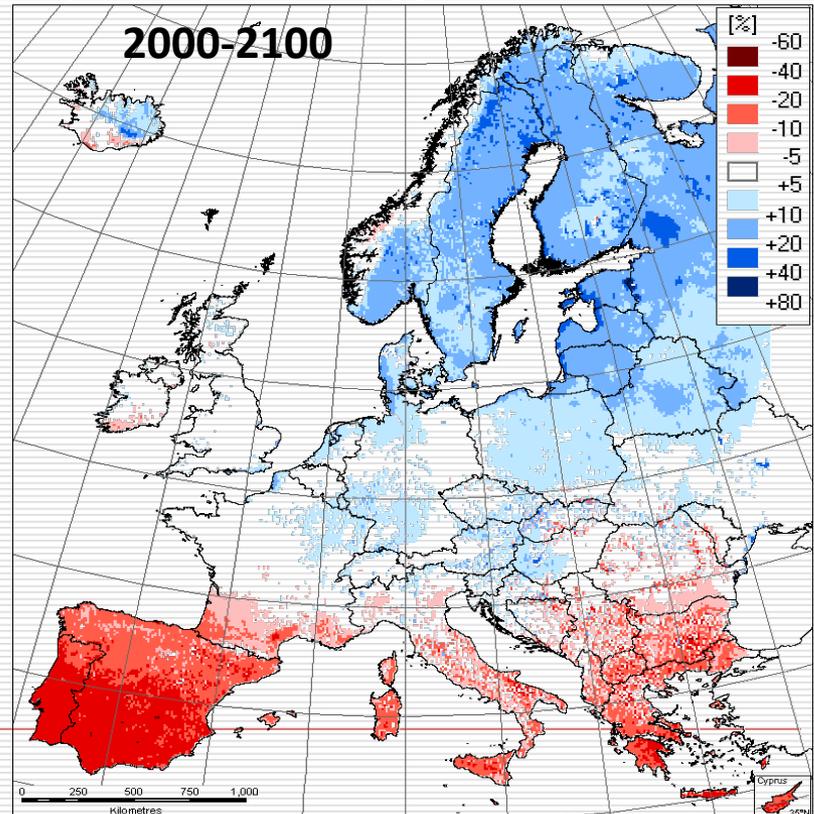
The Mediterranean Basin is particularly sensitive to Climate change

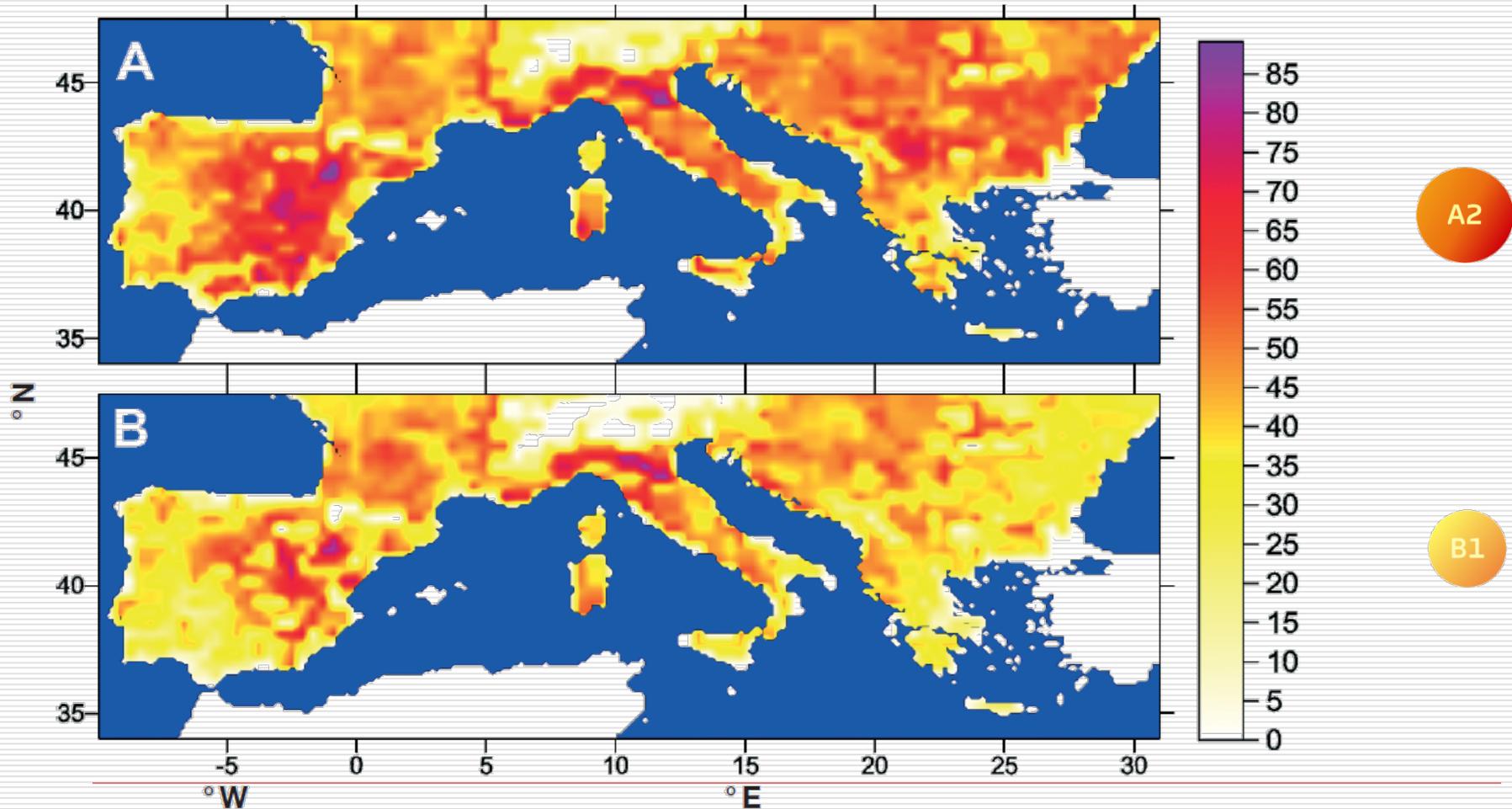
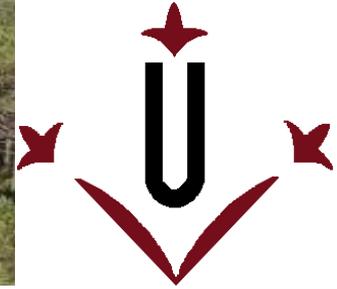
Changes in annual temperature^o C) Changes in annual rainfall (%)

Temperature: change in mean annual temperature [C°]



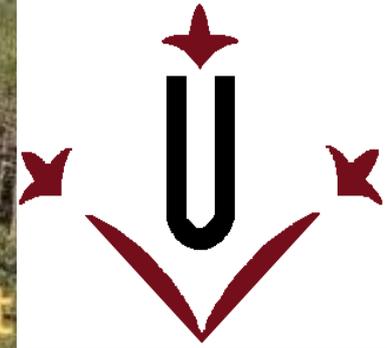
Precipitation: change in annual amount [%]





Increment of the risk of fires in the future

Moriondo et al, 2006,
Climate Research 31



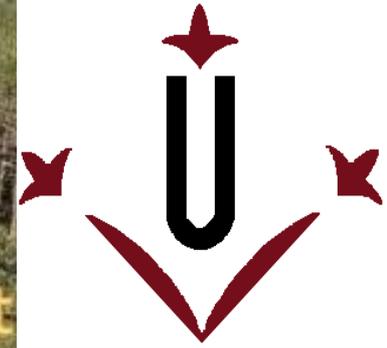
Addressing risks in Mediterranean forest management planning- the case of fire

COURSE	TEACHER/S	Nº ECTS
1. Forest fires in Spain	Dr. J.A. Bonet & D. Molina	5
2. Pastoral uses of Mediterranean forests: A control fire tool	Dr. R. Fanlo / Dr. P. Casals	3
3. Special topics in effects of fire on soils	Dr. J.R. Olarieta	3
4. Prescribed fire laboratory	Dr. D. Molina	6
5. Remote sensing of Forest Fires	Dr. C. Vega	3
6. Principles of Wildland Fire Science and Management	Dr. Victor Resco de Dios	5
7. Writing and publishing a scientific paper	DR. G. Slafer	5
	TOTAL	30









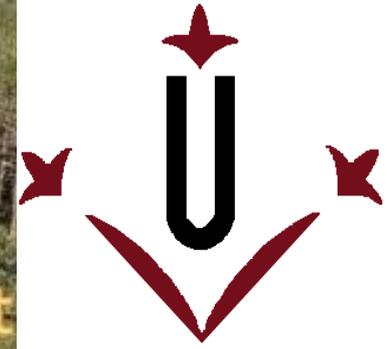
Special topics in effects of fire on soils





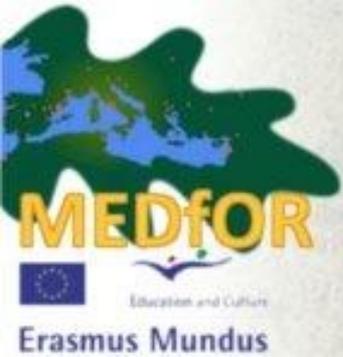






Pastoral uses of Mediterranean forests: A control fire tool





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in Mediterranean Forests
and Natural Resources

Prescribed fire laboratory

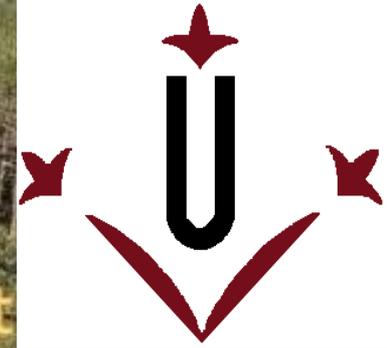




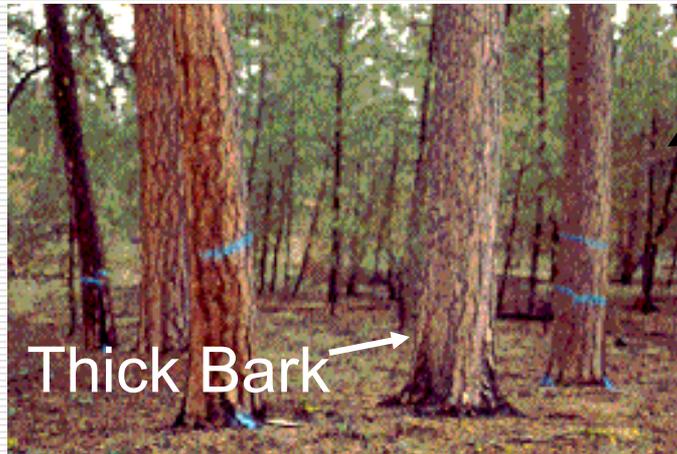








Principles of Wildland Fire Science and Management



Thick Bark →

Small trees are a
result of fire exclusion



Wide Spacing



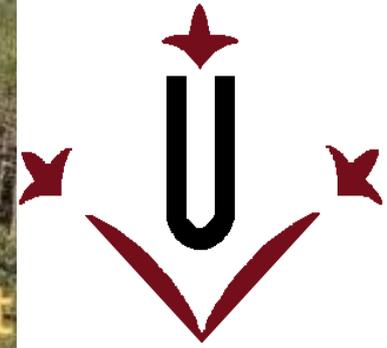
Tall Crowns







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Remote sensing of forest fires

GLCF: Earth Science Data Interface - Windows Internet Explorer

http://glcfapp.umiacs.umd.edu:8080/esd/index.jsp

Global Land Cover Facility
Earth Science Data Interface

Home Map Search Product Search Path/Row Search Workspace Login Help Contact Us GLCF

TM
WRS-2, Path 128, Row 034
1991-08-23
EarthSat
Ortho, GeoCover
China

Online: 013-502
Compressed Size: 171 MB; Actual Size: 399 MB

Info Download

China, Ningxia, Shaanxi, Taiyuan, Zhengzhou, Gansu, Hubei

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<< First < Previous Page 1 of 1 Next > Last >> show/hide columns

[ID]	Status	[WRS: P/R]	[Acq. Date]	Dataset	Producer	Attr.	Type	Location
013-502	Online	2: 128/034	1991-08-23	TM	EarthSat	Ortho, GeoCover	GeoTIFF	China
010-357	Online	2: 126/033	1990-08-22	TM	EarthSat	Ortho, GeoCover	GeoTIFF	China

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Spectral Graph

Intensity Value vs. Channel Number

Displayed Spectra

1	Image 654,1063	9
2	Image 703,1093	10
3		11
4		12
5		13
6		14
7		15
8		16

Hyperspectral Image
Channel First: 15 Last: 20
Plotting Ranges







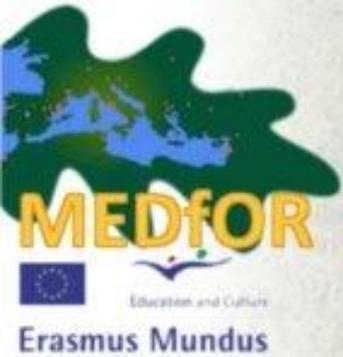
Our methodological approach:

Regular classes

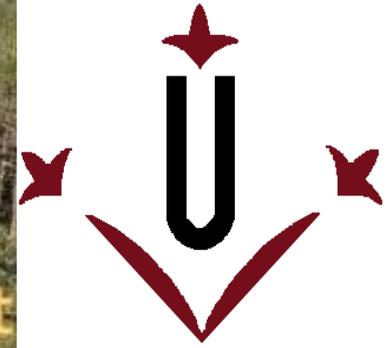
Conferences by invited speakers

Field trips



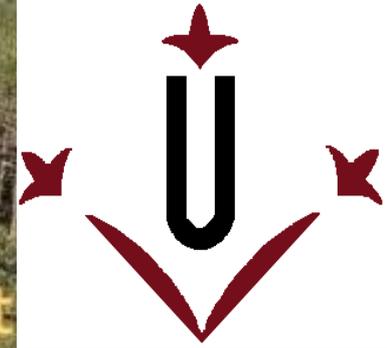


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Addressing risks in Mediterranean forest management planning-
the case of fire

... **AND** the possibility to **stay**
further (or **come back**) to conduct
your **Master's Thesis** covering a
broad array of topics on forest
science.



Some examples of topics offered for Master's thesis at UdL:

- ❑ **IMPACT OF FOREST MANAGEMENT & CLIMATE ON THE REGENERATION OF MEDITERRANEAN PINE FORESTS AND NON-TIMBER FOREST PRODUCTS**
- ❑ **FOREST PATHOGENS DRIVING PLANT AND SOIL FEEDBACKS IN MEDITERRANEAN FORESTS**
- ❑ **LANDSCAPE AND BIODIVERSITY CHANGES: EVALUATION OF THE EFFECTS OF HABITAT FRAGMENTATION AND GLOBAL CHANGE**
- ❑ **FOREST GOVERNANCE AND THE ROLE OF CIVIL SOCIETY ORGANIZATIONS (CSO)**
- ❑ **ECONOMIC COORDINATION BENEFITS OF JOINT FOREST MANAGEMENT**
- ❑ **LINKING PLANT FUNCTIONAL TRAITS WITH POST-FIRE RESPROUTING VIGOR OF UNDERSTORY SPECIES**
- ❑ **TOP-DOWN vs BOTOM-UP CONTROLS OF FIRE ACTIVITY ACROSS THE MEDITERRANEAN BASIN**

Welcome to Lleida

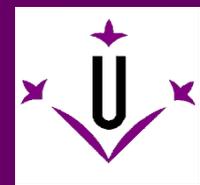


Catalonia

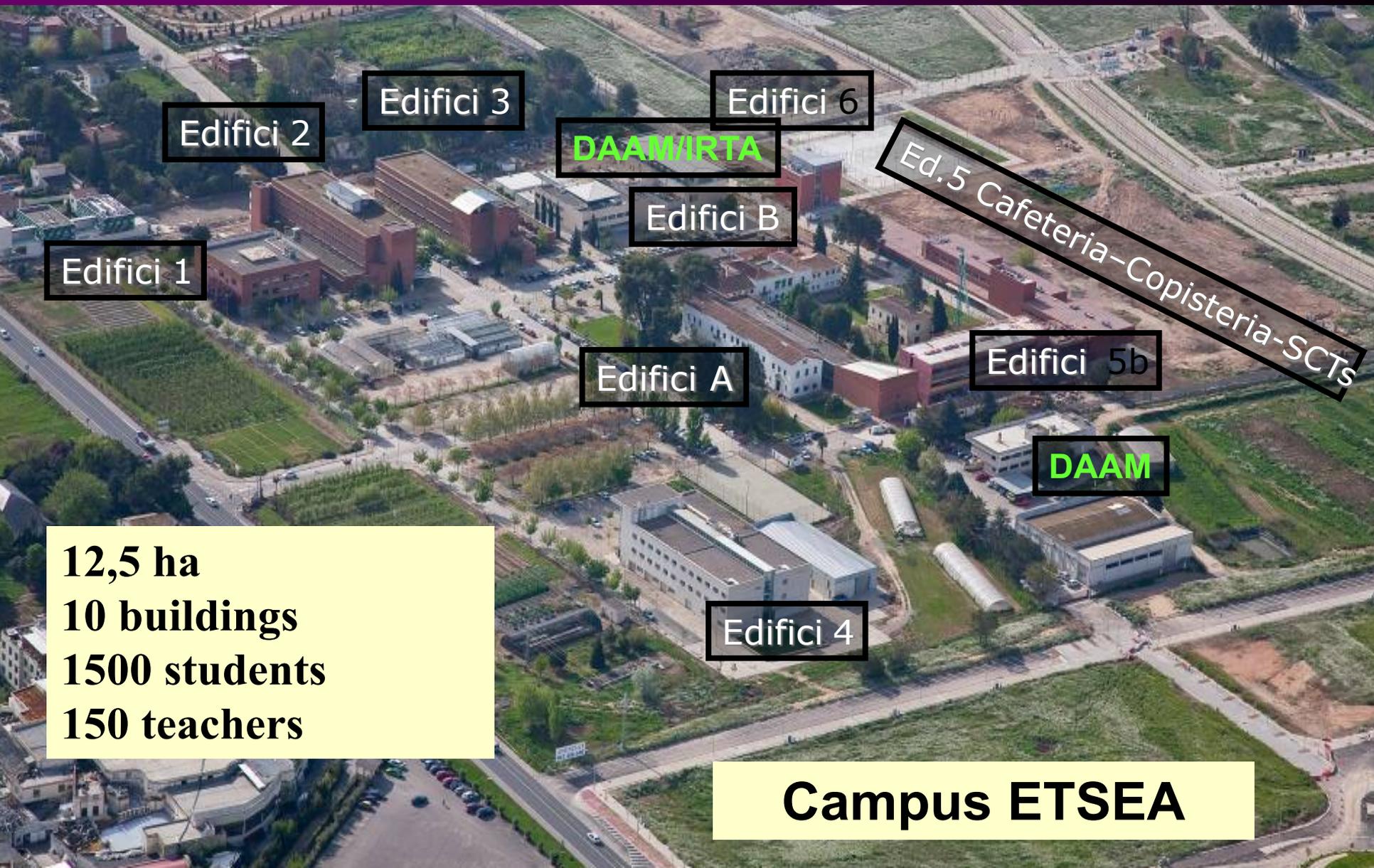
3.209.204 ha

- 63,8% forest land
- 26,8 % agricultural land
- 9,6% other uses





Escola Tècnica Superior d'Enginyeria Agrària

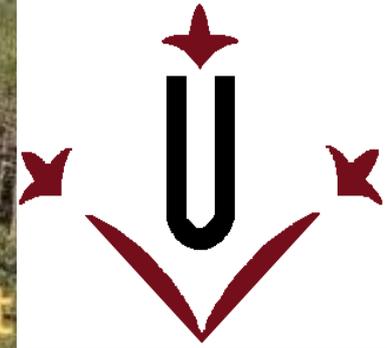


12,5 ha
10 buildings
1500 students
150 teachers

Campus ETSEA



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Thank you for your attention!. Questions may be addressed at:

sergio.demiguel@udl.cat

