ONEforest

WP3 – Results on forest management impact on Mediterranean forest growth and ecosystem services and assessment of forest vulnerability to fires and droughts

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Forest growth simulations and indicators (CTFC)

OBJECTIVES

1- To simulate forest growth under different management strategies in the Mediterranean Case Study Region (CSR)
2- To evaluate simulations according to harmonised indicators on forest ecosystem services and biodiversity

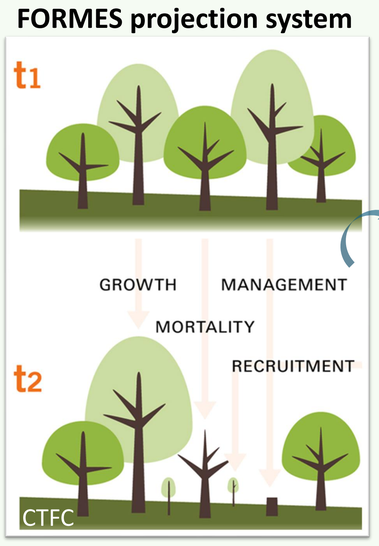
Management strategy
A- Low intensity
B- Protection function
C- Climate-adapted
D- Wood production

Wood assortments
Trituration / Poles / Roundwood / Fuelwood

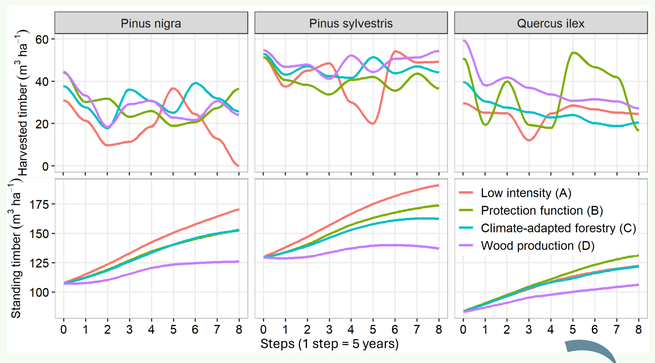
15 forest typologies
Tree species X
Site quality X Stand age

3rd Spanish Forest Inventory

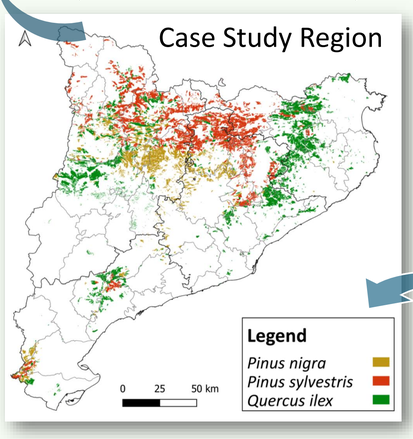
FORMES projection system



Simulations



Case Study Region

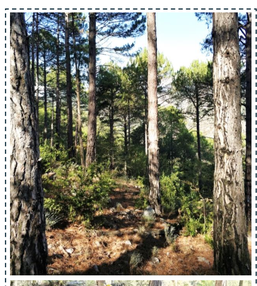


Further info. on FORMES

Evaluation (1=highest mean value, 4=lowest mean value)

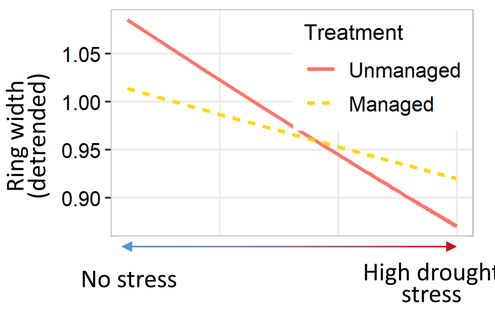
Some indicators (7/18)	*P. nigra*				*P. sylvestris*				*Q. ilex*			
	A	B	C	D	A	B	C	D	A	B	C	D
Standing timber	1	2	3	4	1	2	3	4	1	2	3	4
Harvested timber	4	3	1	2	3	4	2	1	4	2	3	1
Periodic anual increment	2	1	3	4	3	1	4	2	4	3	1	2
Number of large trees	2	1	3	4	2	1	3	4	2	1	4	3
Visual attractiveness	2	1	3	4	2	1	3	4	2	3	1	4
Deadwood	4	1	3	2	2	3	4	1	3	4	2	1
C sequestration	1	2	3	4	1	2	3	4	3	1	2	4

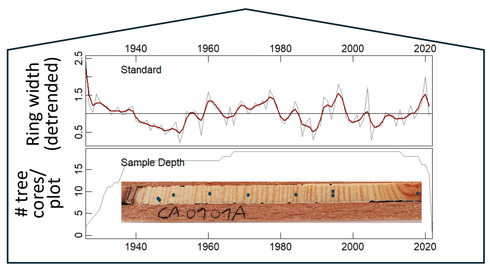
Further info.



OBJECTIVE
To study silvicultural effects under water-stress conditions on tree growth

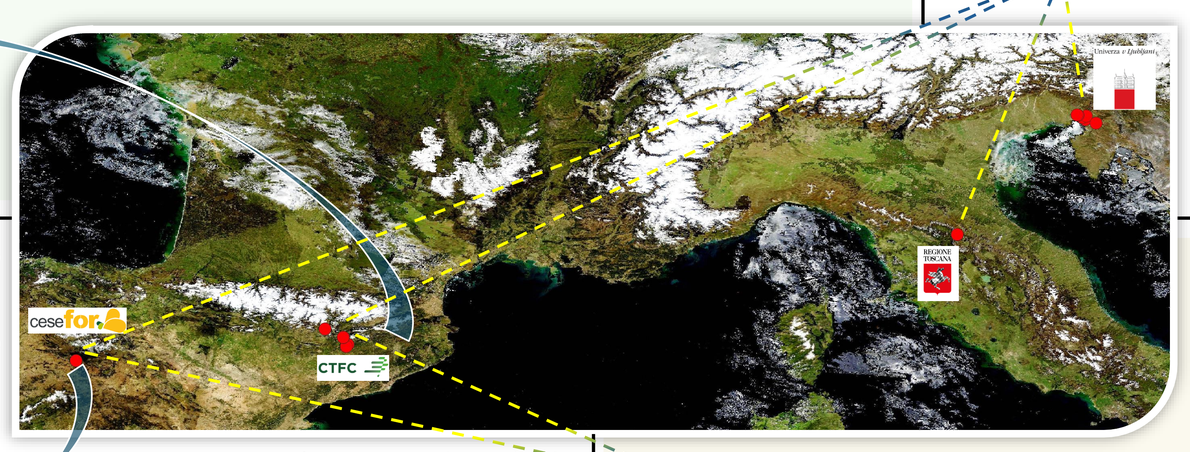
1- Tree/shrub data
2- Soil data
3- Climatic data
4- Topographic data
→ Daily water balance simulations (*MEDFATE*)





CONCLUSION
The forest management implemented in different black pine plots across three Mediterranean countries generally increased tree growth under water stress conditions

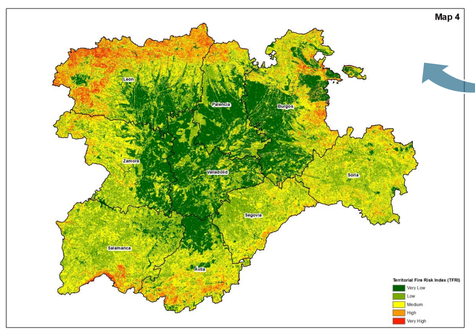
Management-drought interaction on black pine growth (WP3)



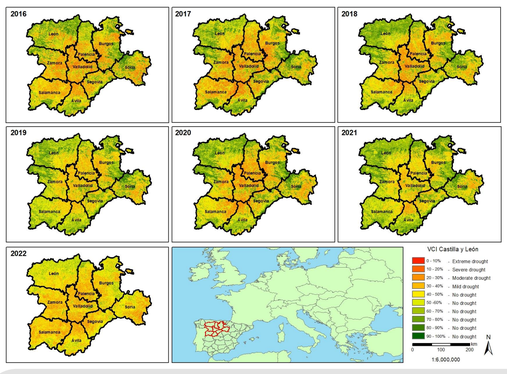
Assessment of forest vulnerability to fires & droughts (Cesefor)

OBJECTIVE
To evaluate the vulnerability to fires and drought in Castilla y León

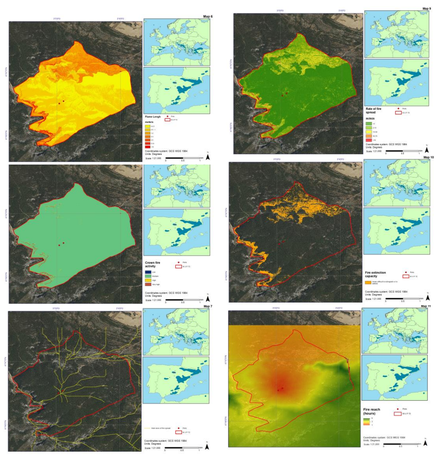
Territorial Fire Risk Index (TFRI)



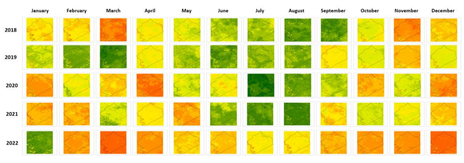
Vegetation Condition Index (VCI) Castilla y León



Fire propagation Index. MUP72 (Soria)



VCI. MUP72 (Soria)



CONCLUSIONS
1. TFRI is useful to identify priority management areas.
2. VCI detects droughts and determines their onset.
3. Risk maps and fire simulations can help planning forest fire prevention, control and emergency plans.

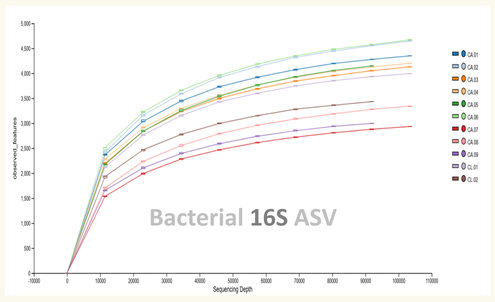
Further info. vulnerability maps

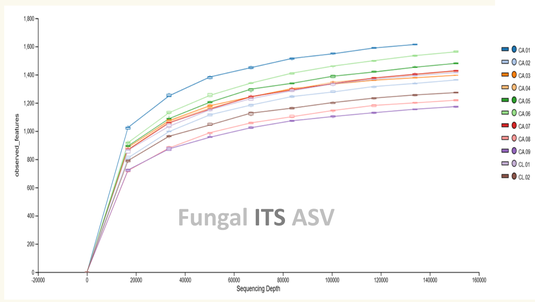
OBJECTIVE
To study thinning effects on soil microbiota composition

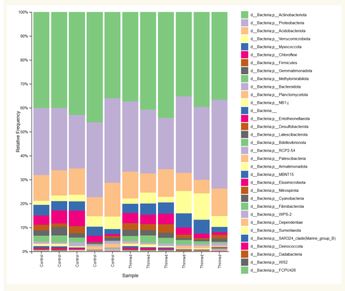
Further info. soil microbial community

A.- 5 sites (1 Soria, 4 Catalonia), 11 *Pinus nigra* plots
B.- Unthinned *vs.* thinned plots
C.- 8 bulk soil subsamples per plot
D.- 3 technical replicates per plot (DNA extraction → sequencing)
E.- Bacterial 16S and fungal ITS amplicons

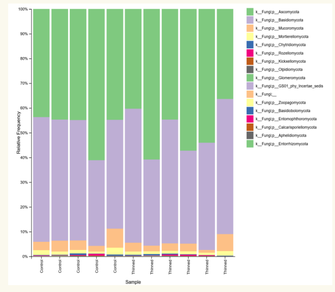
Illumina 250 PE
→ BBDuk, dada2
→ Silva (16S), ASV table, Unite (ITS)
→ QIIME2







Alpha & beta diversity
Differential abundance



CONCLUSION
No observed effects of thinning on soil fungal and bacterial community and diversity.

Microbial community in black pine forests (Cesefor-CTFC)

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