



Work Package 2



MAPPING OF MEDITERRANEAN FOREST RESEARCH



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Importance

- ❑ High **biological diversity**, 25,000 species of vascular plants
- ❑ Impact on the most strategic resources: **water and soil**
- ❑ Provide products for **timber and energy**
- ❑ High relative importance of **non-wood products and non-market services**



Threats

- ☐ Fires
- ☐ Deforestation
- ☐ Over-exploitation
- ☐ Urbanization

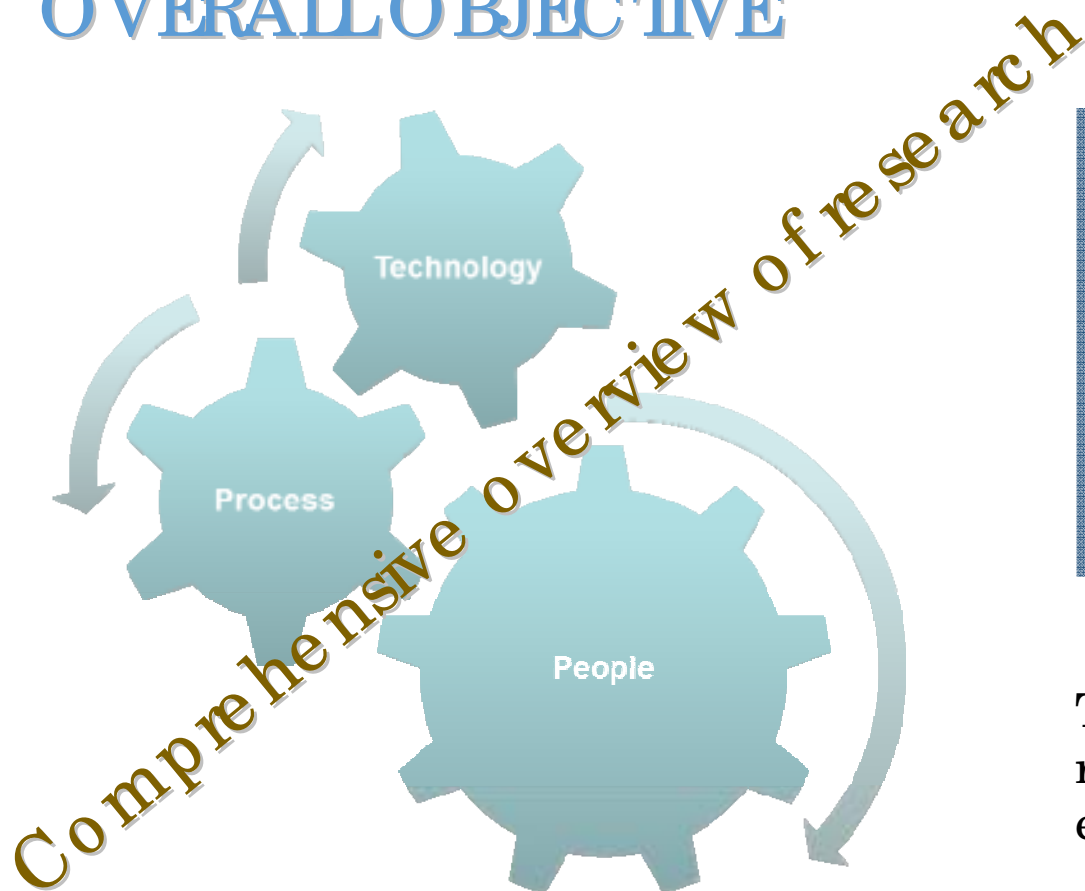


Research

Research capacity and activity

- ☐ To perform forest research
- ☐ To produce and disseminate results and innovations among actors concerned with forest issues

OVERALL OBJECTIVE

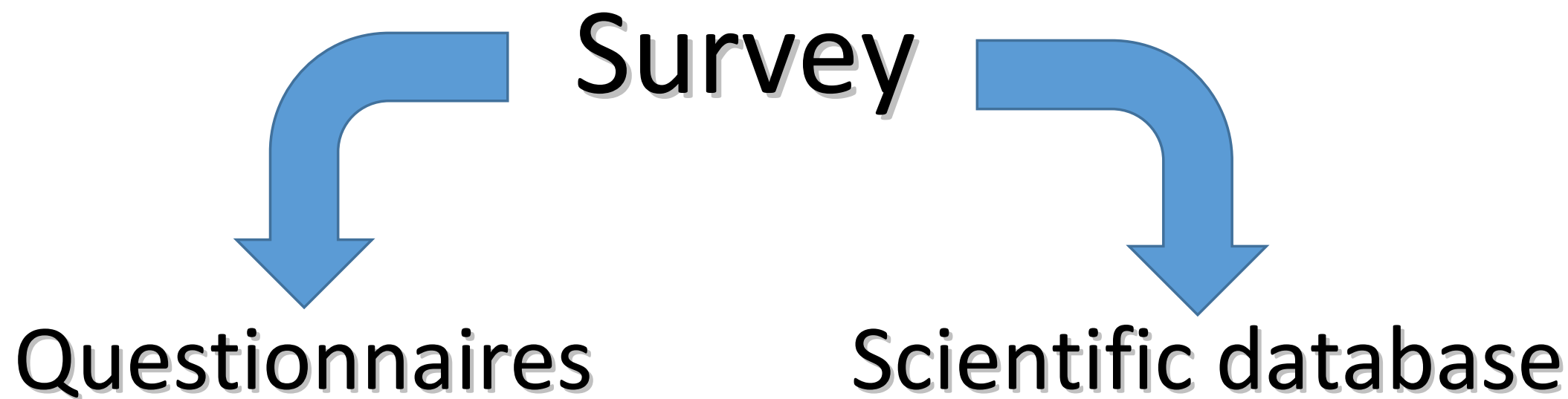


MAPPING MEDITERRANEAN FOREST RESEARCH CAPACITIES & ACTIVITIES

To obtain a comprehensive overview of research in the area of **MF** by mapping existing research activities and knowledge.

Core mapping objectives - questions

1. What is the current research capacity in terms of universities, research institutes, budget, research staff, experimental infrastructures?
2. Scientific production on Mediterranean forests
3. What is the level of collaboration?
4. What are the main areas in which research is being carried out?



Survey-Questionnaires



Two types of questionnaires:

- Research organizations
- Funding bodies

Survey-Questionnaires

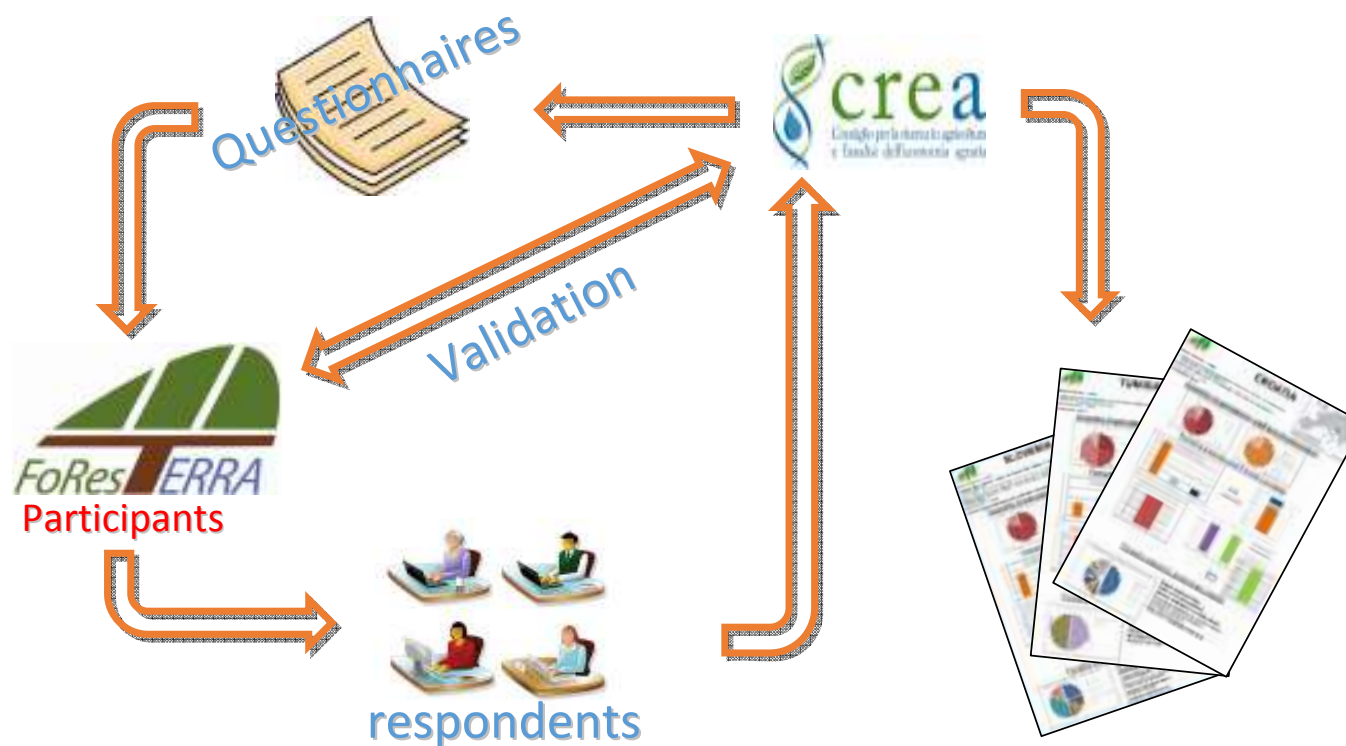


Two types of questionnaires:

Research
indicators

- ✓ Forest research structures (number, location)
- ✓ Research staff (permanent, non-permanent)
- ✓ ISI papers
- ✓ Budget for research (overall, for forestry)
- ✓ Research projects
- ✓ Research infrastructure...

Survey-Questionnaires





METHODOLOGY

Survey- WEB OF SCIENCE™

Source selection: Publications (in English) from the Web of Science bibliographic database (**period 1990–2014**)

Representative keywords used:

mediterranean forest*; mediterranean AND forest* management; mediterranean AND silviculture; mediterranean AND agroforestry; mediterranean AND urban forest*; mediterranean forest* AND ecophysiology; mediterranean AND wood harvesting; mediterranean AND land use; mediterranean AND landscape ecology; mediterranean forest* AND aboveground biomass; mediterranean forest* AND climate; mediterranean forest* AND fire; mediterranean forest* AND atmosphere* change; mediterranean forest* AND emissions; mediterranean forest* AND trace gases; mediterranean forest* AND nitro* oxides; mediterranean forest* AND ozone; mediterranean forest* AND water; mediterranean forest* AND diversity; mediterranean forest* AND ecosystem processes; mediterranean forest* AND ecosystem function*; mediterranean forest* AND forest genetics; mediterranean forest* AND forest tree breeding; mediterranean forest* AND forest biotechnology...

Survey-

Source selection: Publications (in English) from the Web of Science bibliographic database (**period 1990–2014**)



Scientific production (how many, where, who)



Collaborations (Who works with whom)

- ☐ Meso-level
- ☐ Macro-level

Period
2010 - 2014

Main research areas/topics

1. What is the current research capacity in terms of universities, research institutes, budget, research staff, infrastructures...?

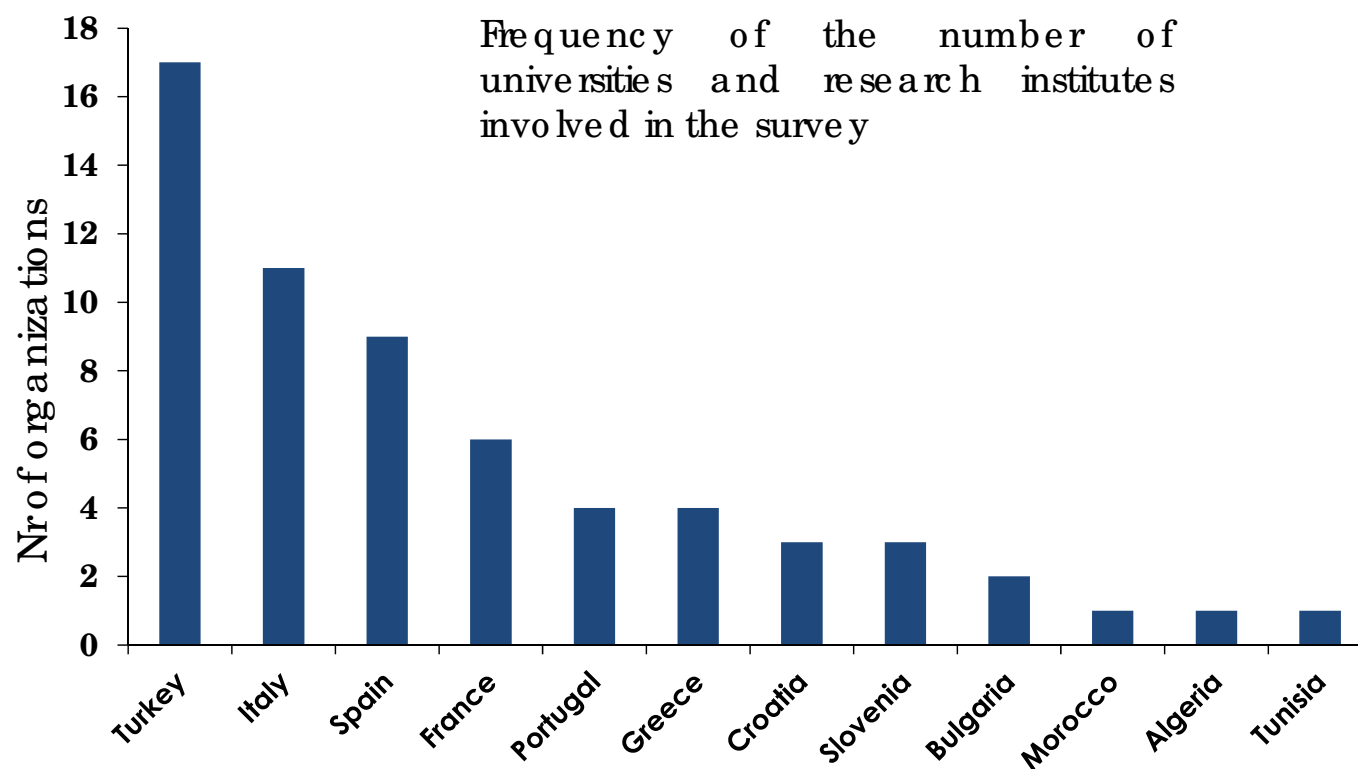
Countries participating in the
FORESTERRA Consortium.



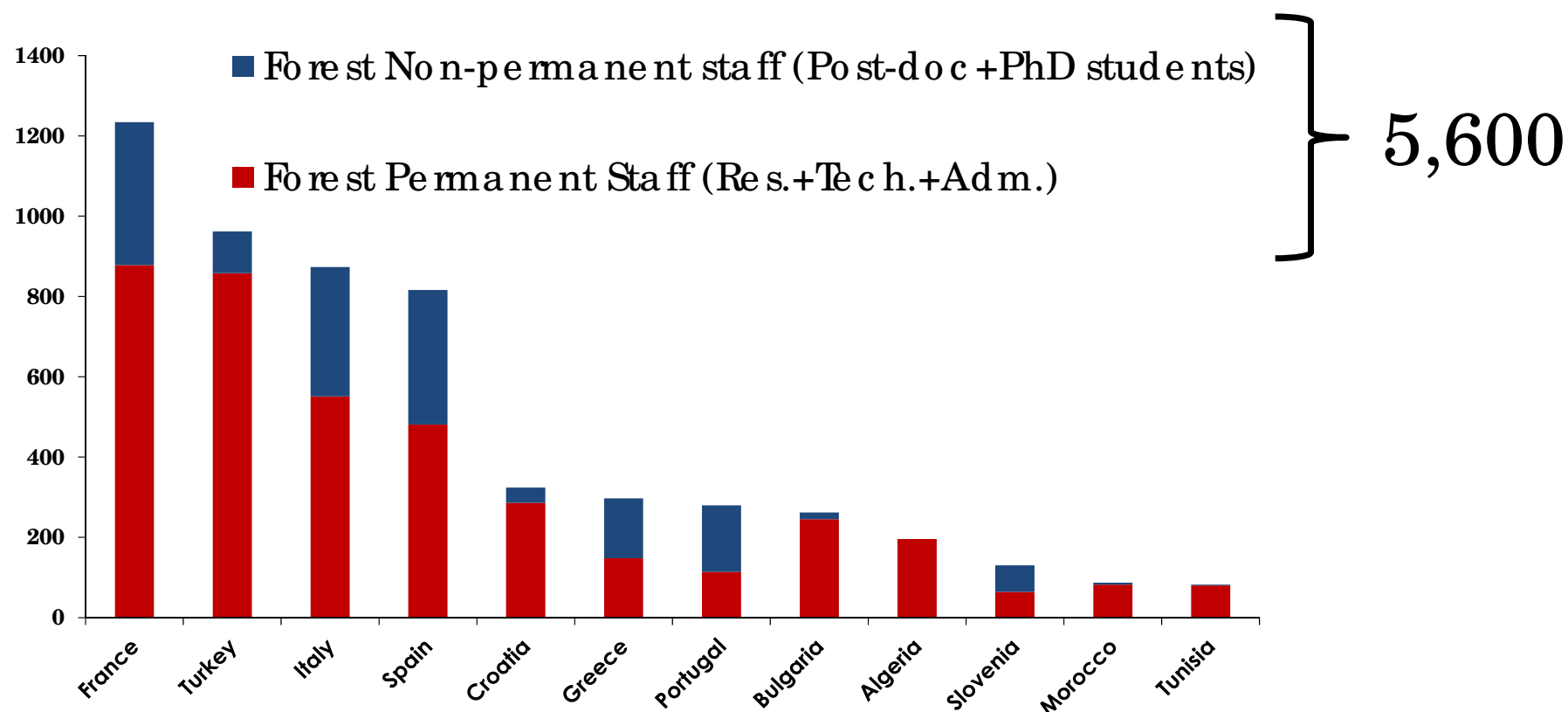
Seventy-five
questionnaires

62 Research organizations
13 Funding bodies

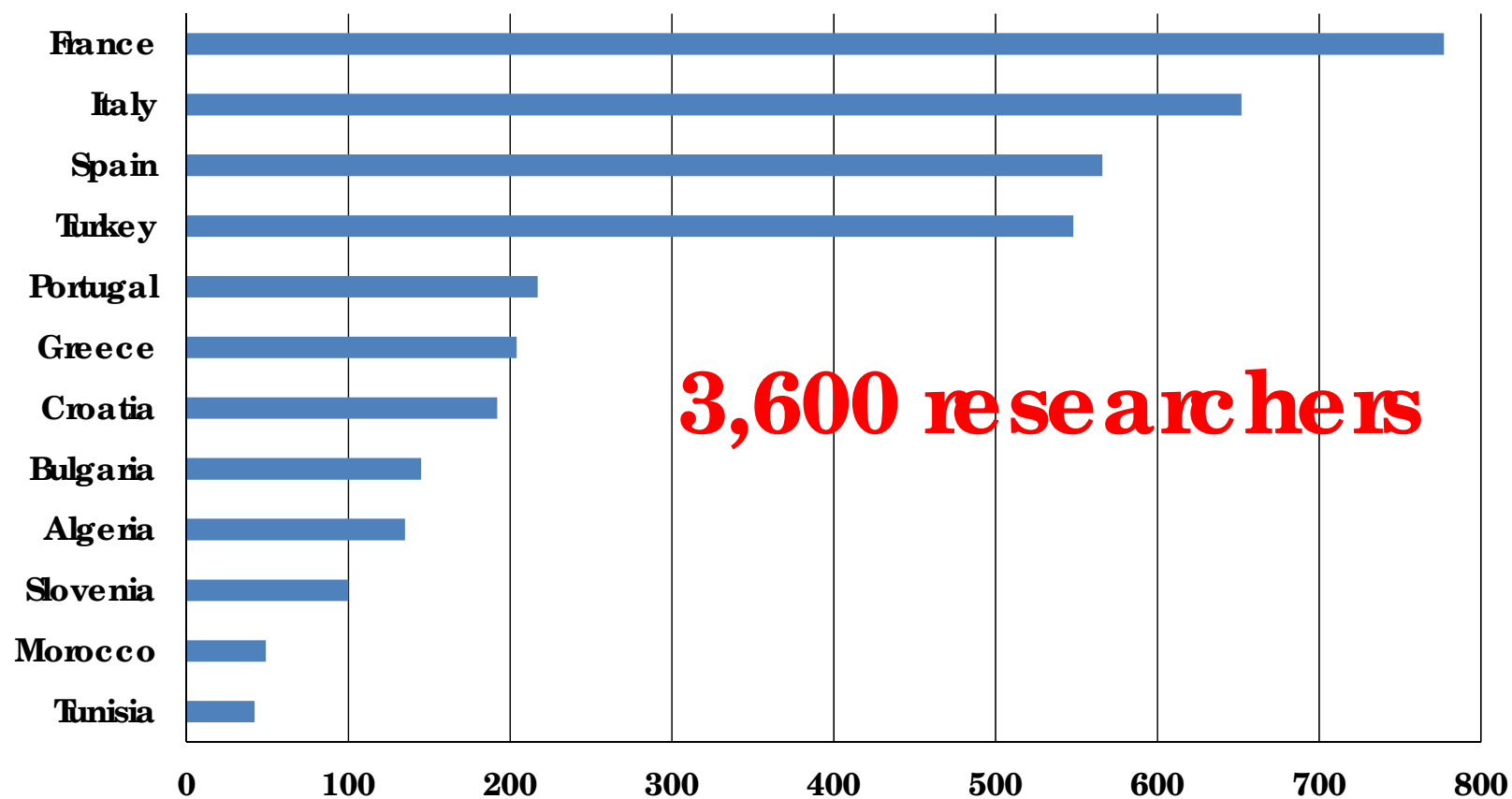
Universities (26%) and research institutes (74%)



Research staff



Research staff

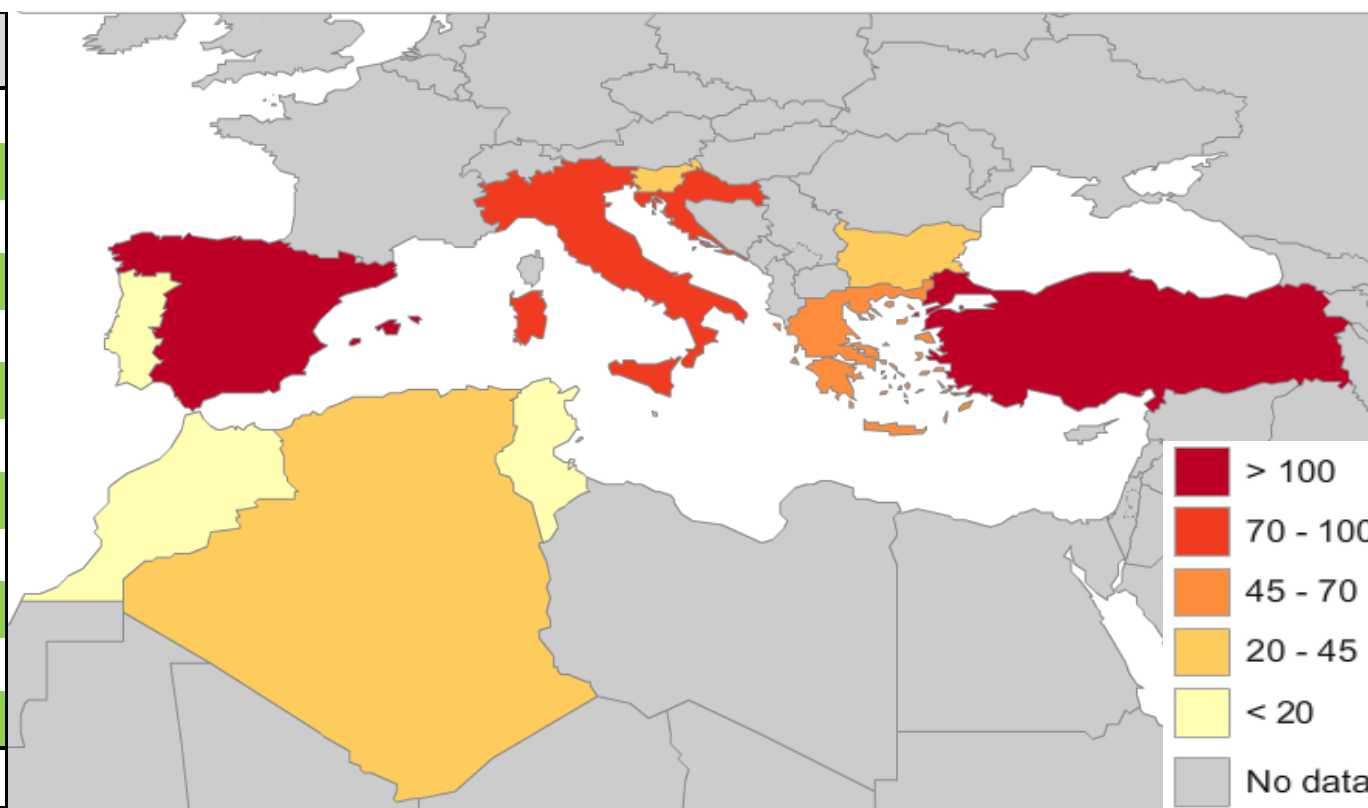


Budget (M€ Y⁻¹)

Country	Overall Budget	Budget Forest projects
France	87.4	21.2
Spain	54.1	17.0
Italy	50.8	16.4
Turkey	27.7	5.1
Croatia	10.1	3.0
Portugal	8.0	2.2
Greece	6.7	2.1
Slovenia	6.6	3.3
Bulgaria	1.8	0.7
Algeria	5.0	0.6
Tunisia	0.8	0.2
Morocco	0.6	0.2
Total	259.5	72.0

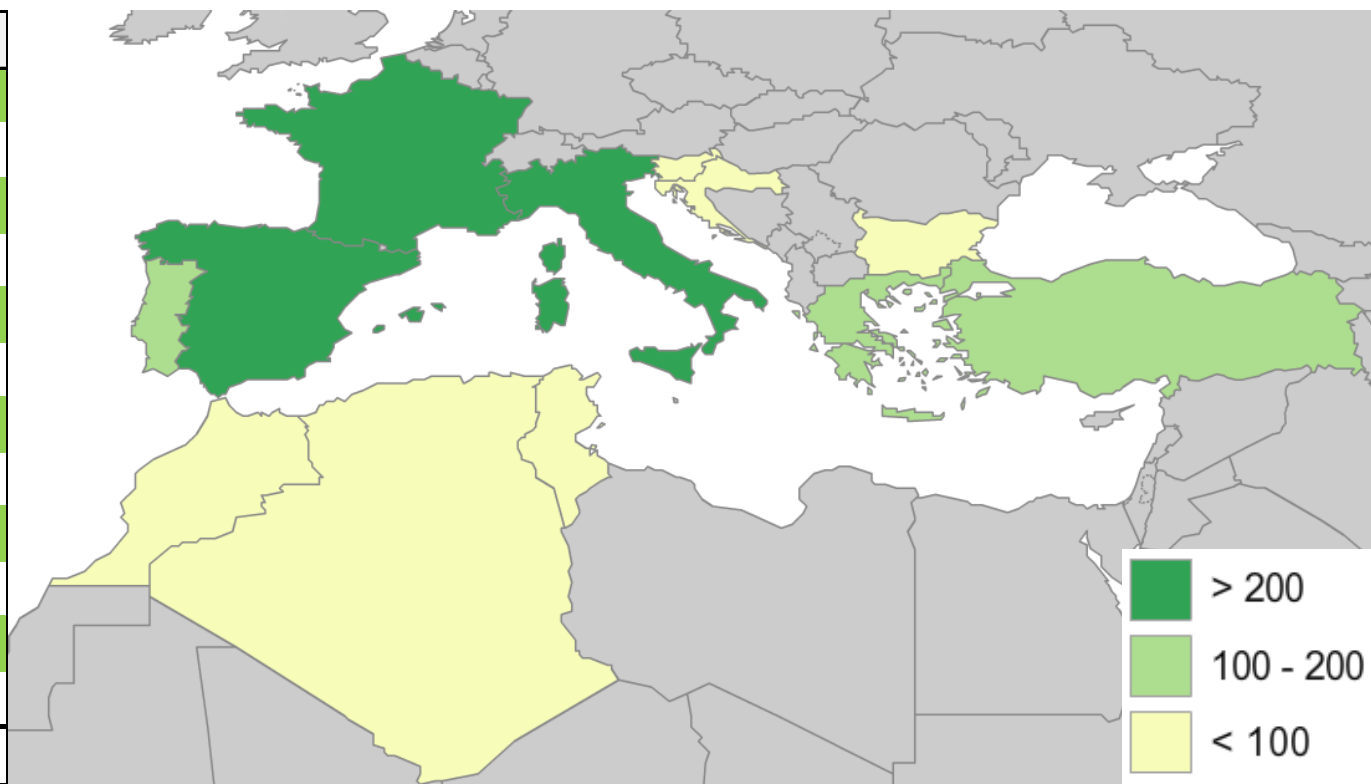
Number of Forest projects

Country	Forest projects (NY ¹)
France	na
Spain	111
Italy	87
Turkey	128
Croatia	73
Portugal	11
Greece	46
Slovenia	35
Bulgaria	34
Algeria	24
Tunisia	5
Morocco	11
Total	565

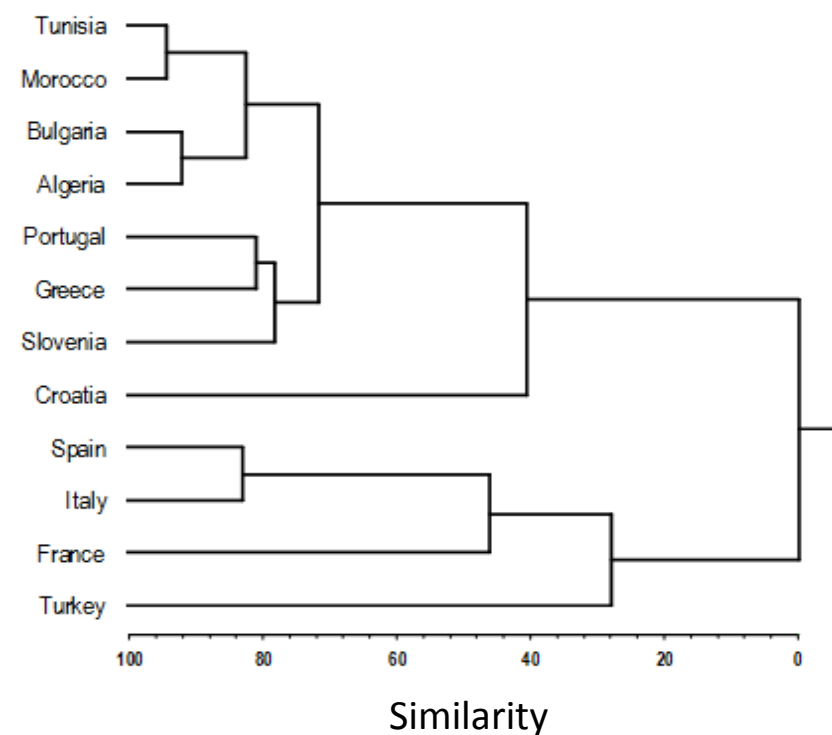
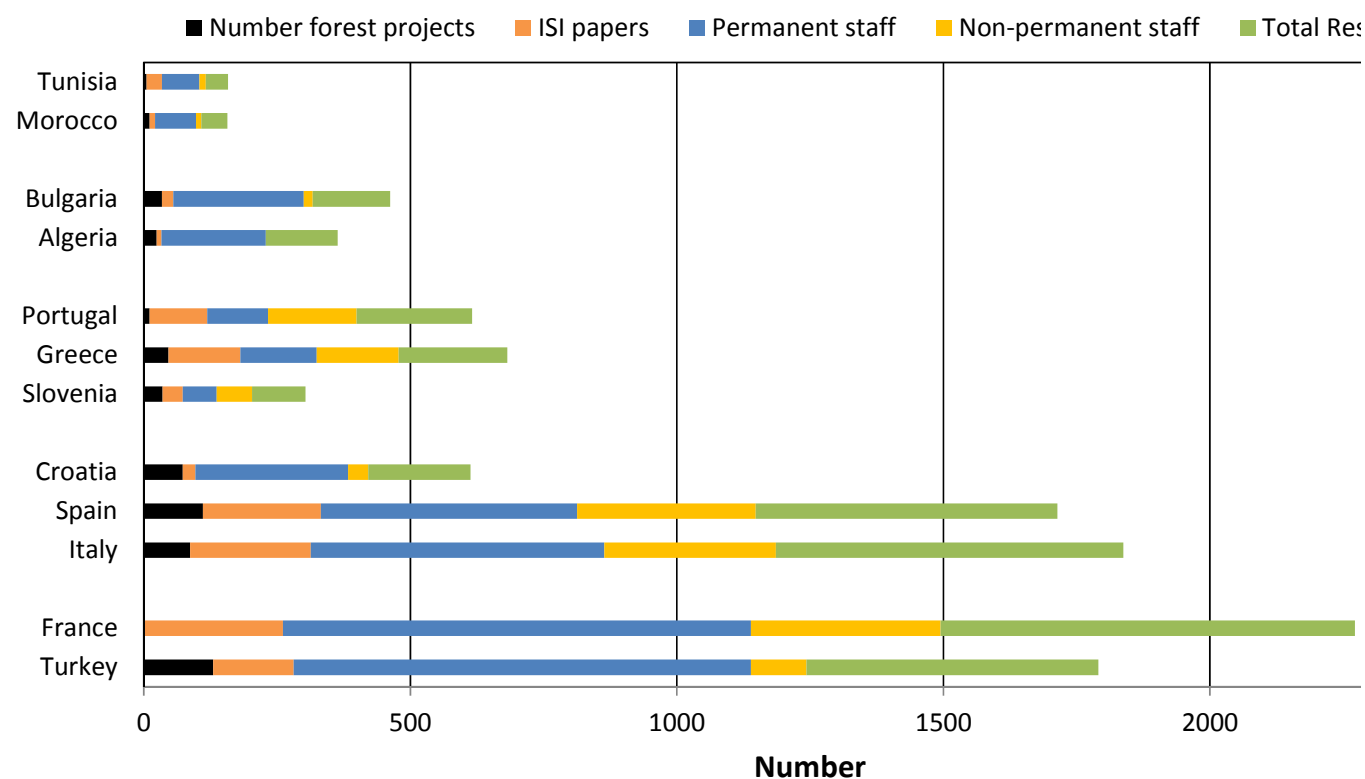


Number of ISI papers

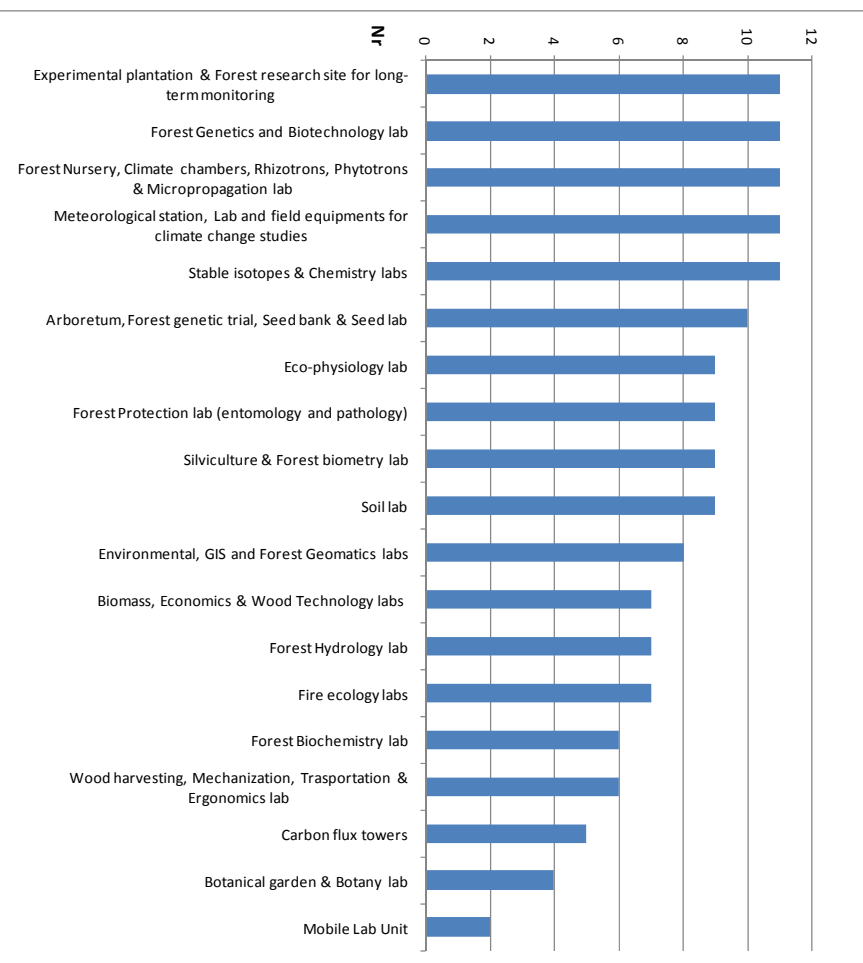
Country	ISI Papers (Nr Y ¹)
France	261
Italy	226
Spain	221
Turkey	151
Greece	135
Portugal	108
Slovenia	38
Tunisia	29
Croatia	24
Bulgaria	21
Morocco	10
Algeria	9
Total	1233



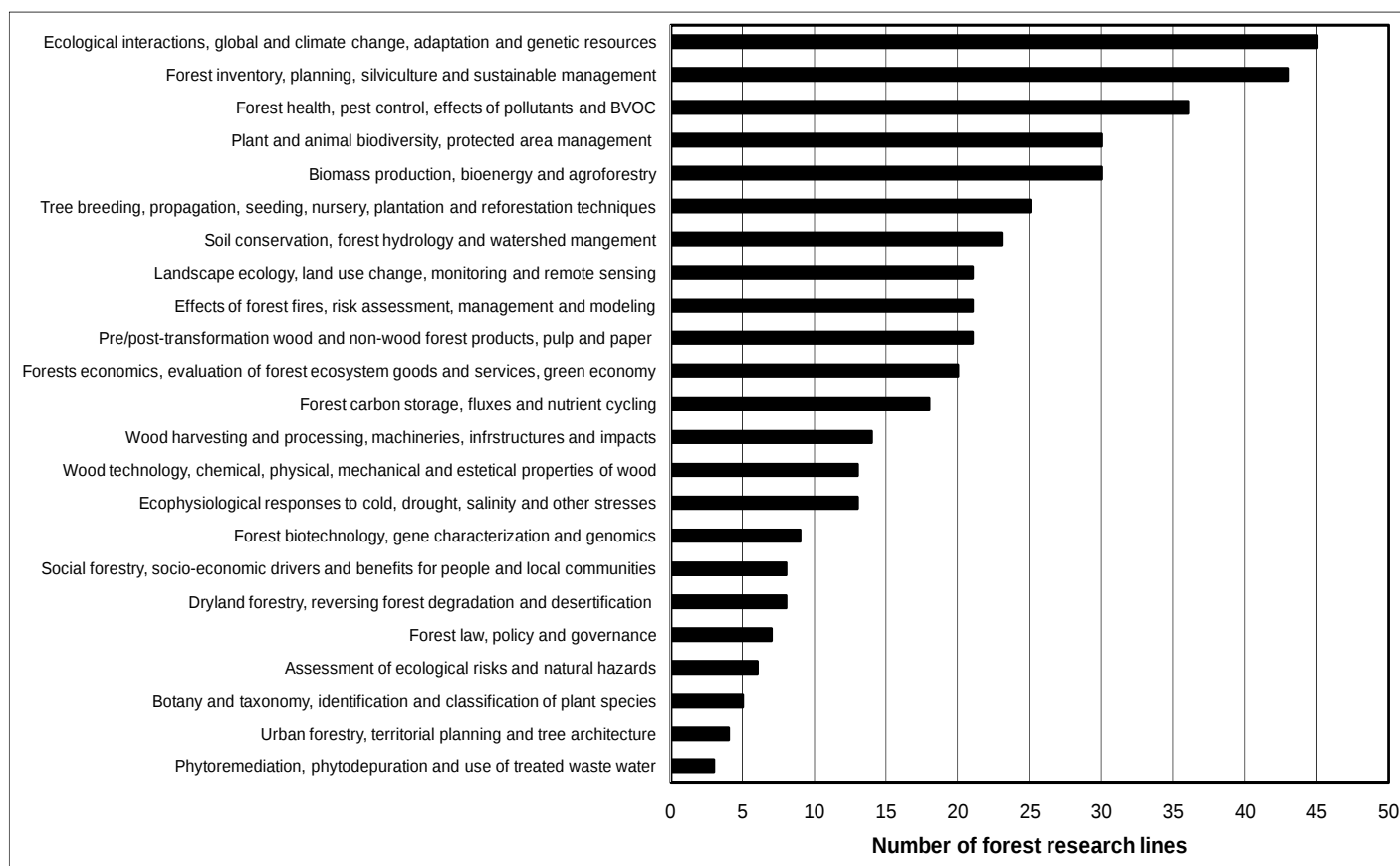
Performances in forest research capacity



Research infrastructures distribution



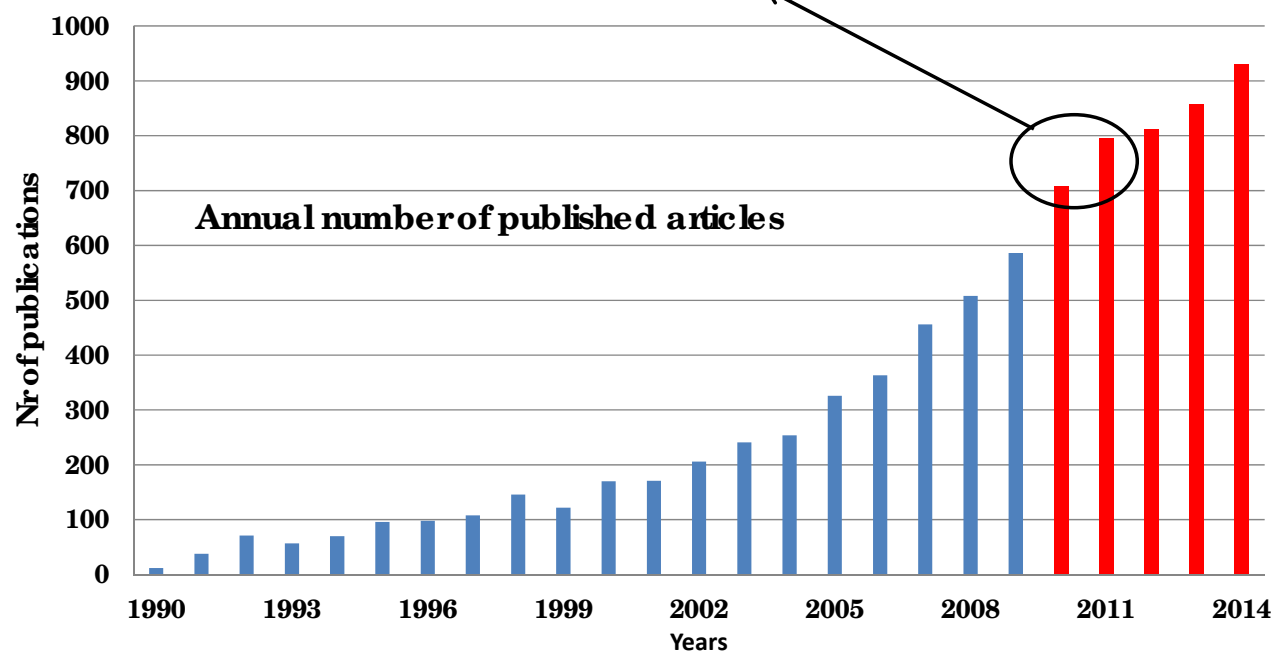
Research lines





Scientific production: number of publications (1990-2014)

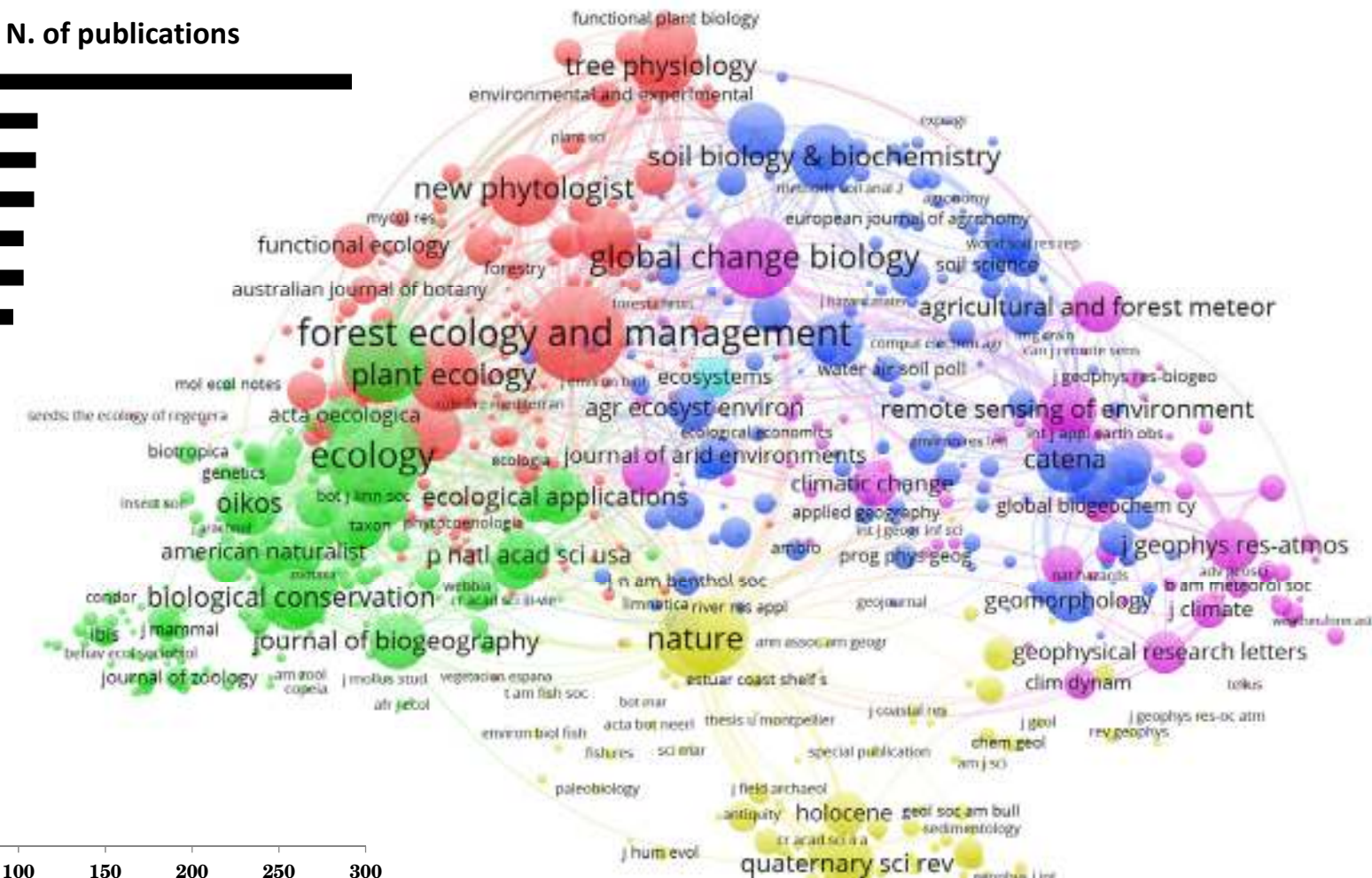
Questionnaire Survey (ISI papers=1,200)



**65,000 forestry
publications (1990-2014)**

**MedF/TotF = 13% (1990-
2014)**

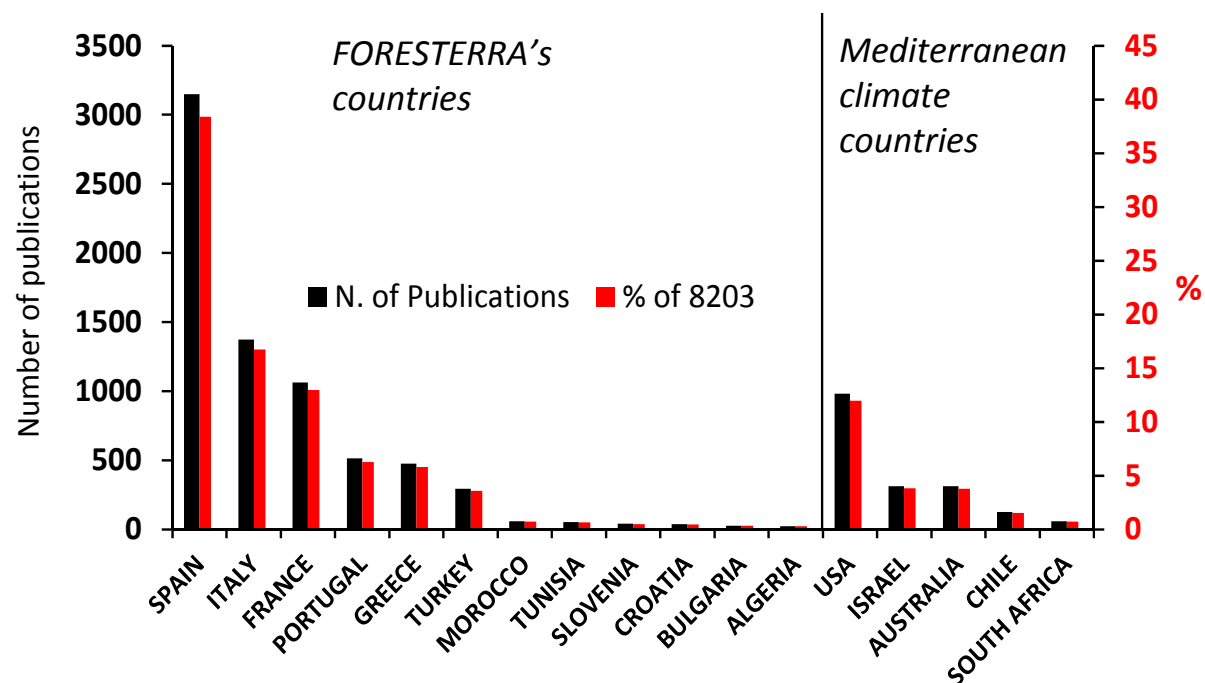
MedF/TotF = 18% (2010-2014)



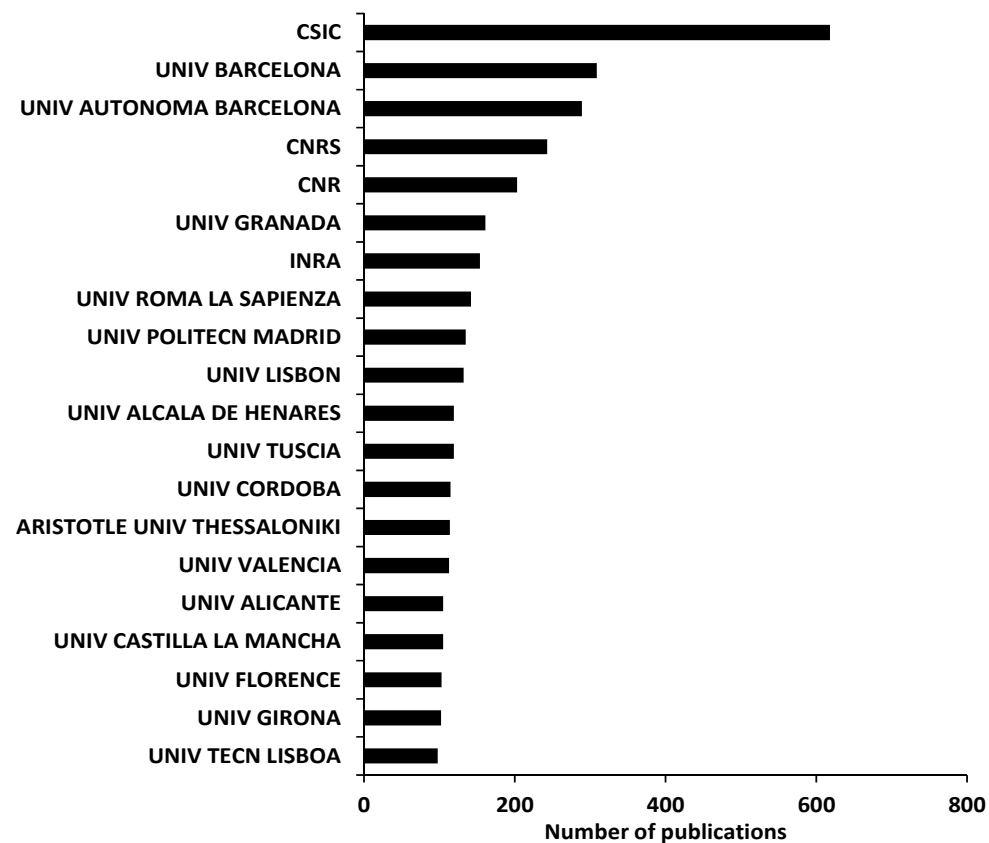


Scientific production: who?

Countries



Top 20 research organizations





Collaborations (Who works with whom)

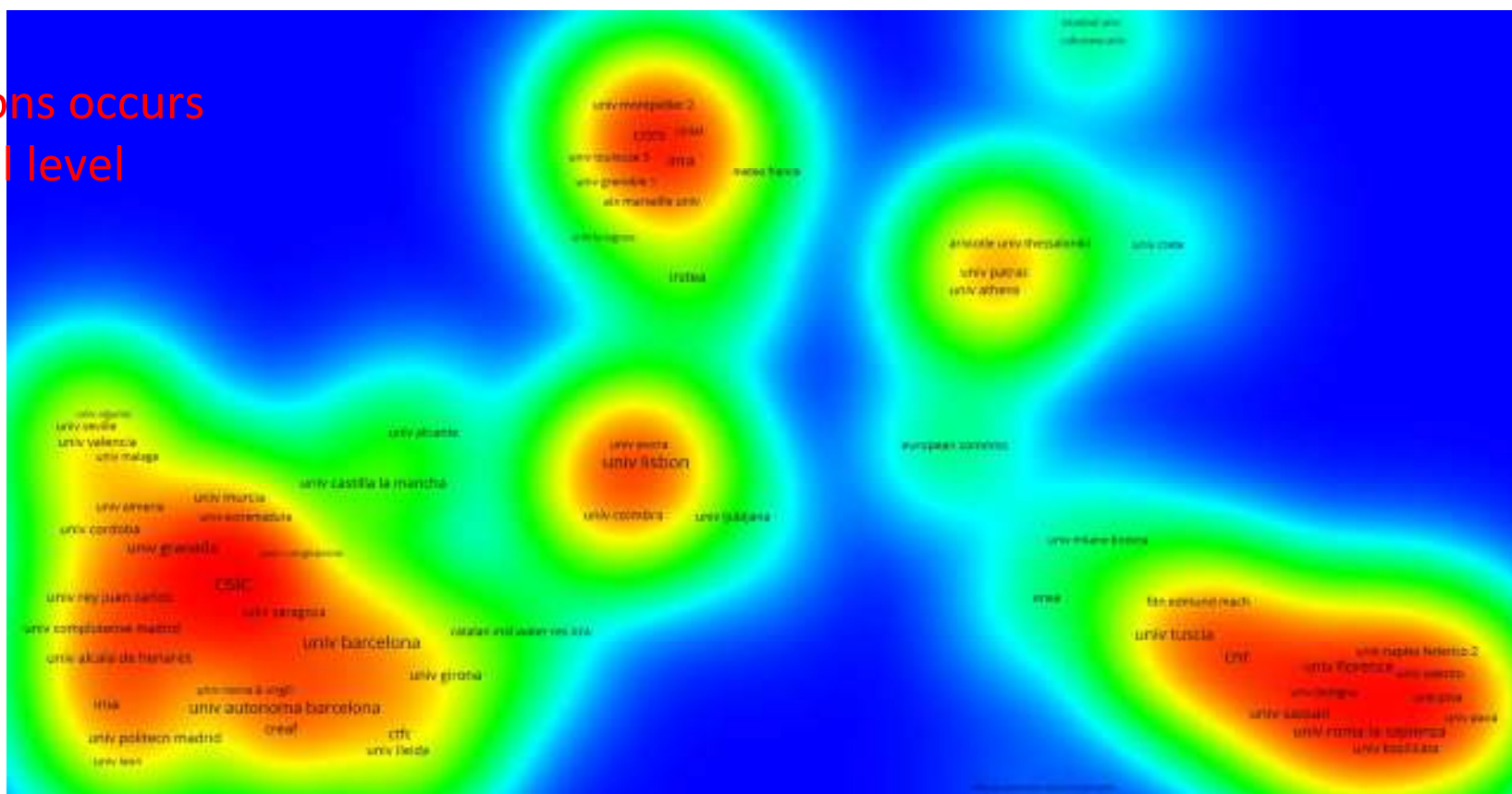


- ☐ **Meso-level:** universities and research institutes
- ☐ **Macro-level:** countries



Collaborative network among **research organizations** in FORESTERRA's countries

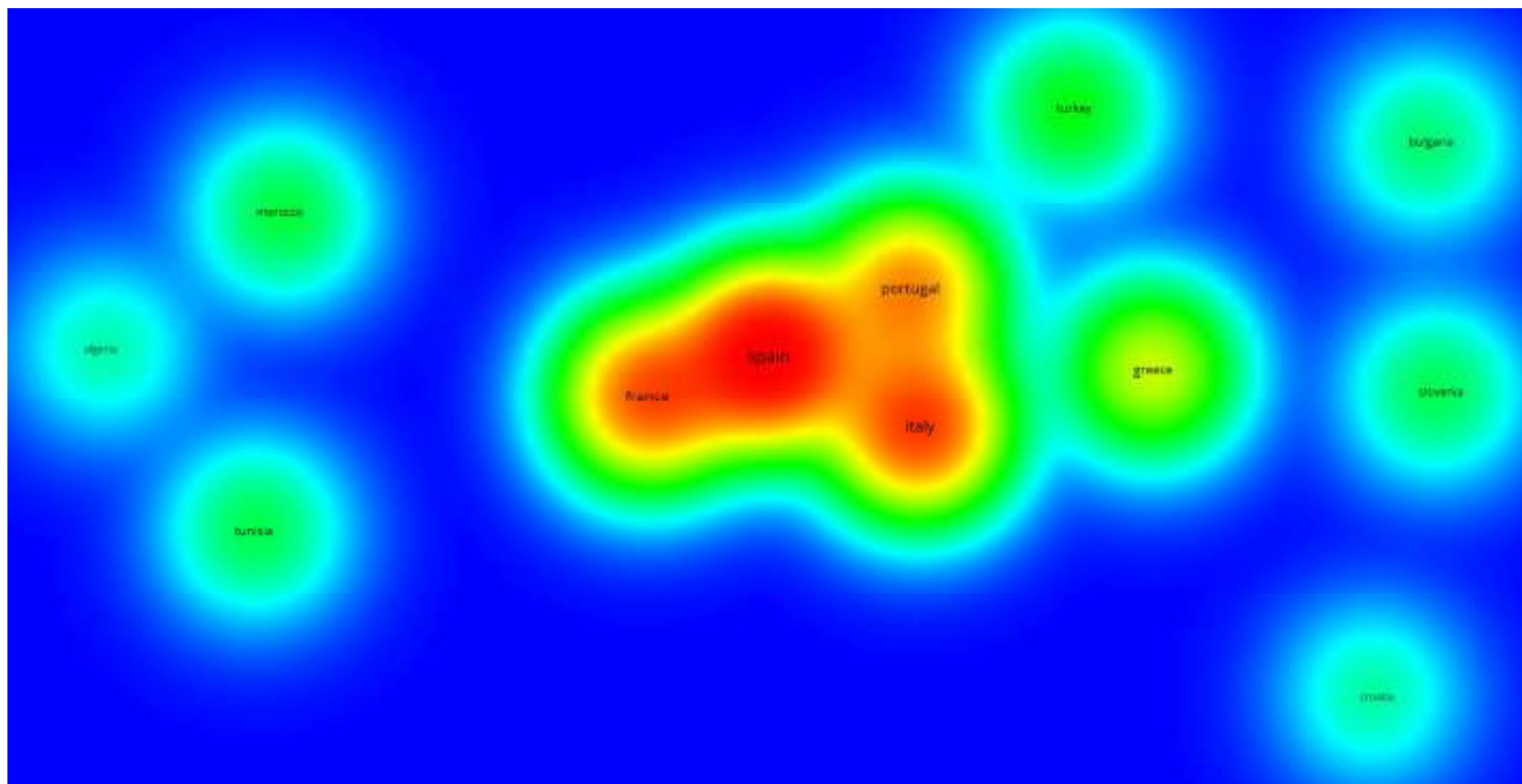
Majority of collaborations occurs at the intra-national level



FORESTERRA Final Conference, Lisbon, Portugal 24-26 November 2015



Collaborative network among FORESTERRA's countries



FORESTERRA Final Conference, Lisbon, Portugal 24-26 November 2015



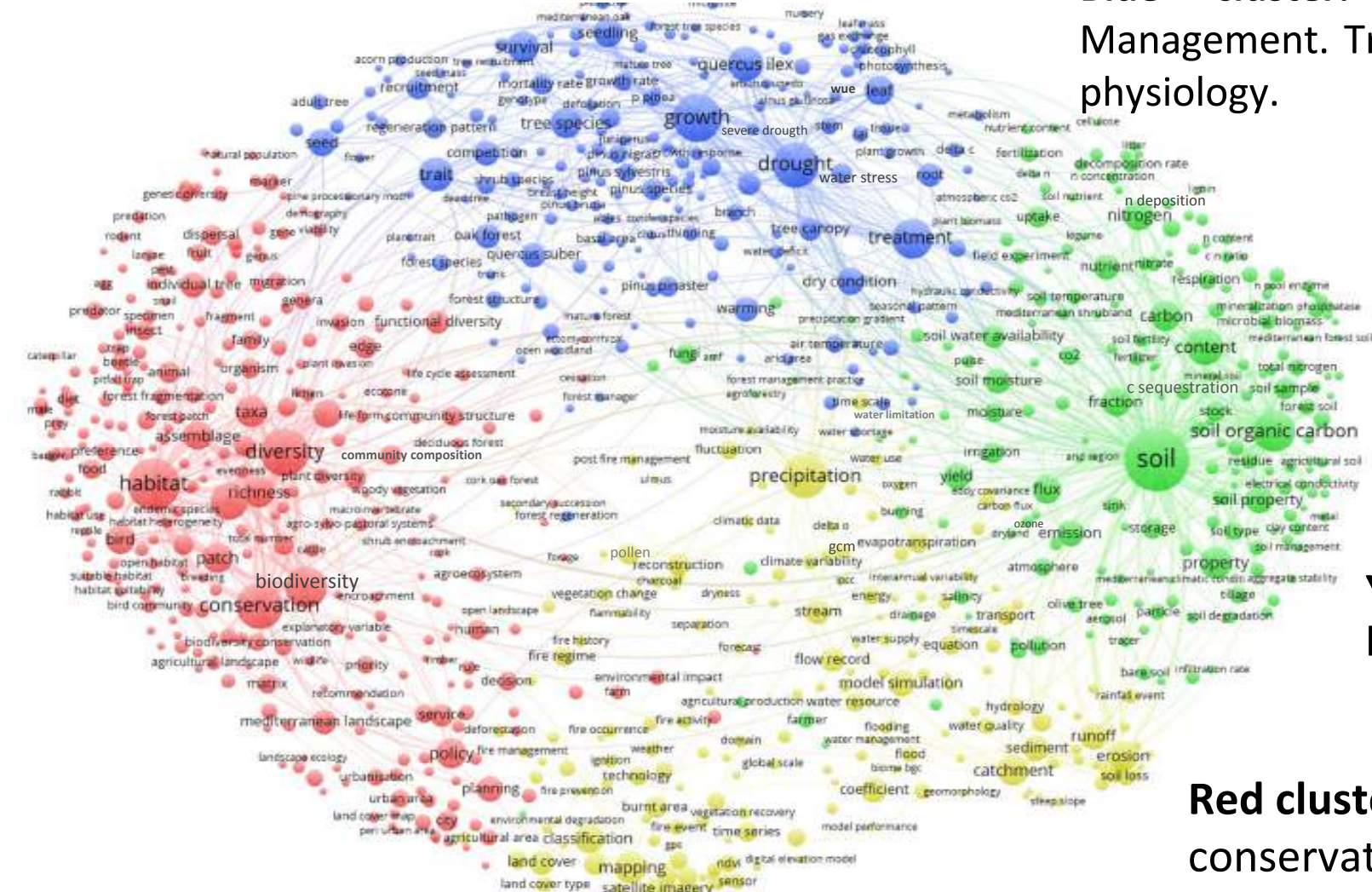
Most relevant research areas?

Blue cluster: Silviculture and Forest Management. Tree biometrics and tree eco-physiology.

Green cluster: soil, nutrient cycling, carbon

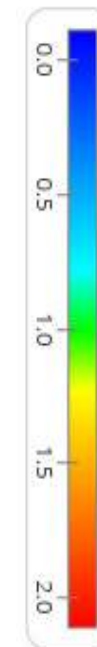
Yellow cluster: fire, water-hydrology, chemistry

Red cluster: Ecology and Biodiversity conservation, policy





Color reflects the average citation impact of a term

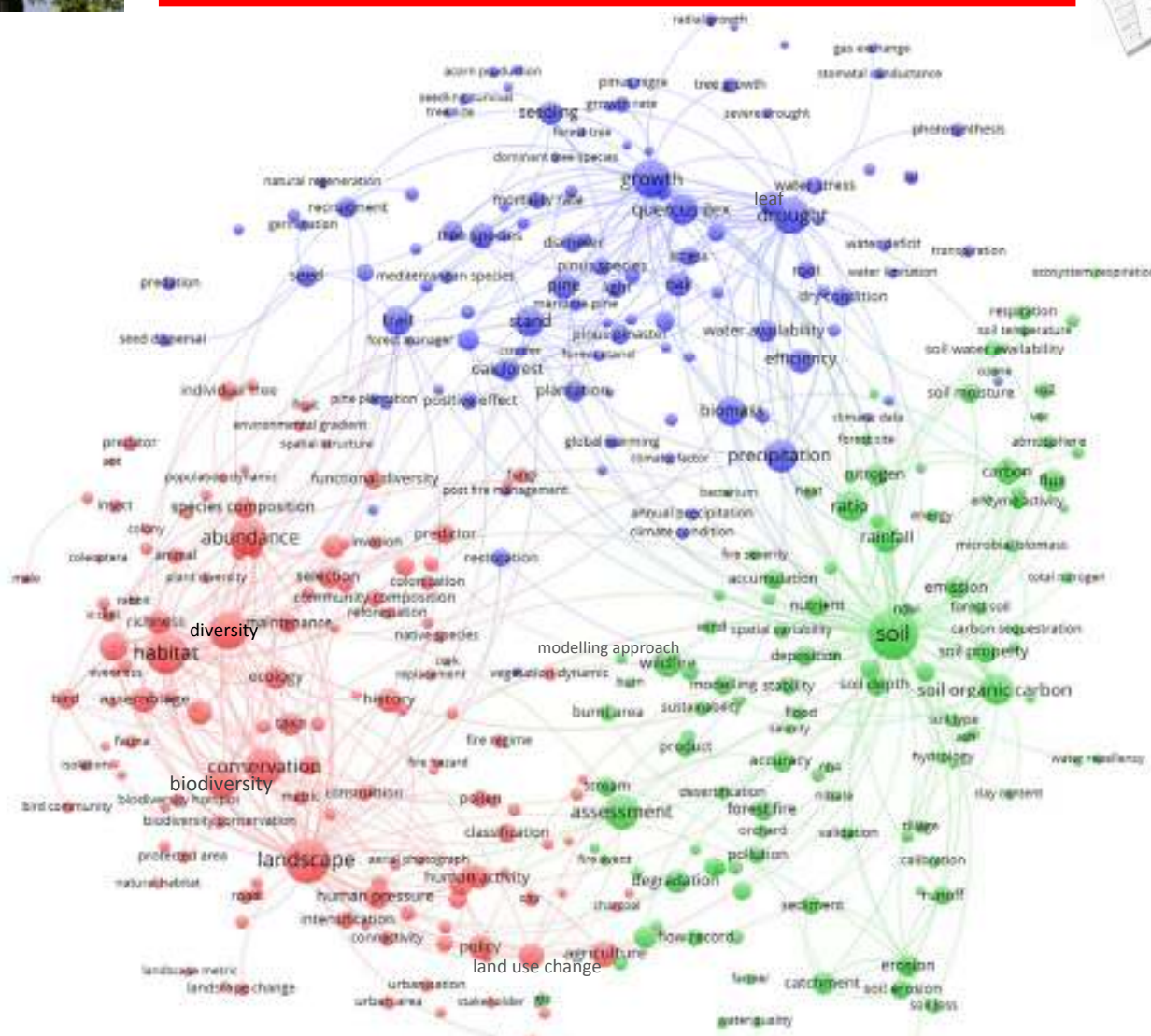


High (hot topic)



Western-Central Med. countries France-Italy-Portugal-Spain

Topic	Occurrence
Soil	562
Landscape	443
Habitat	387
Growth	334
Diversity	331
Conservation	318
Drought	309
Abundance	299
Soil organic carbon	261
Biodiversity	241
Precipitation	236
Biomass	191



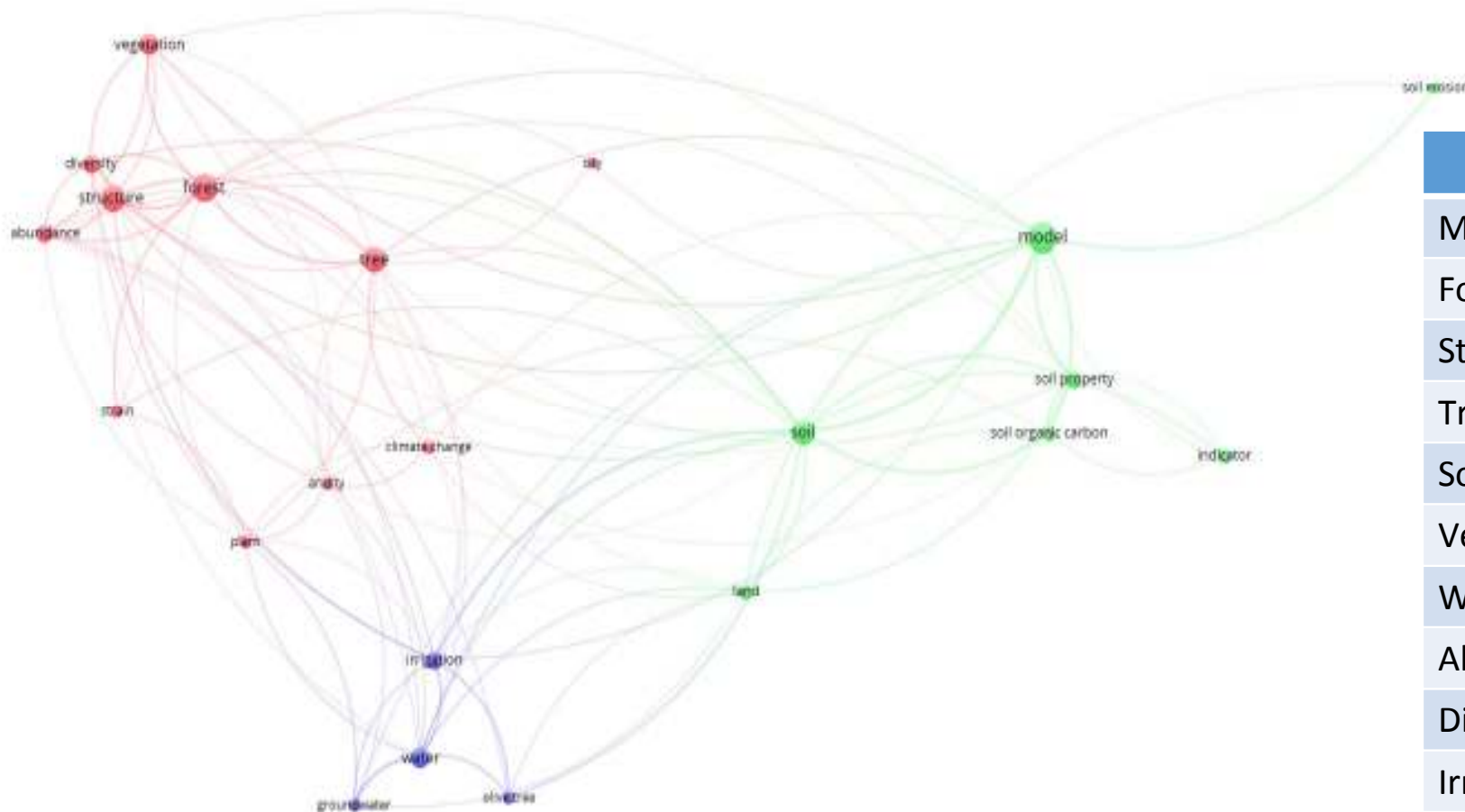


Countries: Greece-Turkey

Topic	Occurrence
Diversity	59
Soil	57
Habitat	46
Structure	45
Classification	43
Mapping	42
Conservation	39
Risk	39
Biodiversity	32
Water	32
Species richness	29
Prediction	24



Northern Africa Med. ountries: **Algeria-Morocco-Tunisia**



Topic	Occurrence
Model	62
Forest	50
Structure	43
Tree	42
Soil	36
Vegetation	28
Water	28
Abundance	21
Diversity	20
Irrigation	20
Soil property	18

Through these surveys we were able to:

1. Mapping Mediterranean forest research capacity and activities;
2. Identify the main and/or less studied mediterranean research topics (hot topics);
3. Identify the fluxes of collaborations among FORESTERRA countries and institutions ((dis)connections);
4. Identify the geographical peculiarity in forest research;



High geographic fragmentation of research capacities in the Mediterranean, encouraging signals of activity in the last decade



Opportunities exist to reinforce collaborations



Research topics addressed

- Multidisciplinary
- Geographical peculiarities



Thank you for your attention!