

Existing forest research capacities and priorities in the Mediterranean basin

G. Scarascia-Mugnozza, G. Di Matteo, S. Bajocco, P. Nardi (CRA)
J.C. Valette, G. Herrero, A. Jambois (INRA)

Why mapping Mediterranean research capacities?

Who.....

How many.....

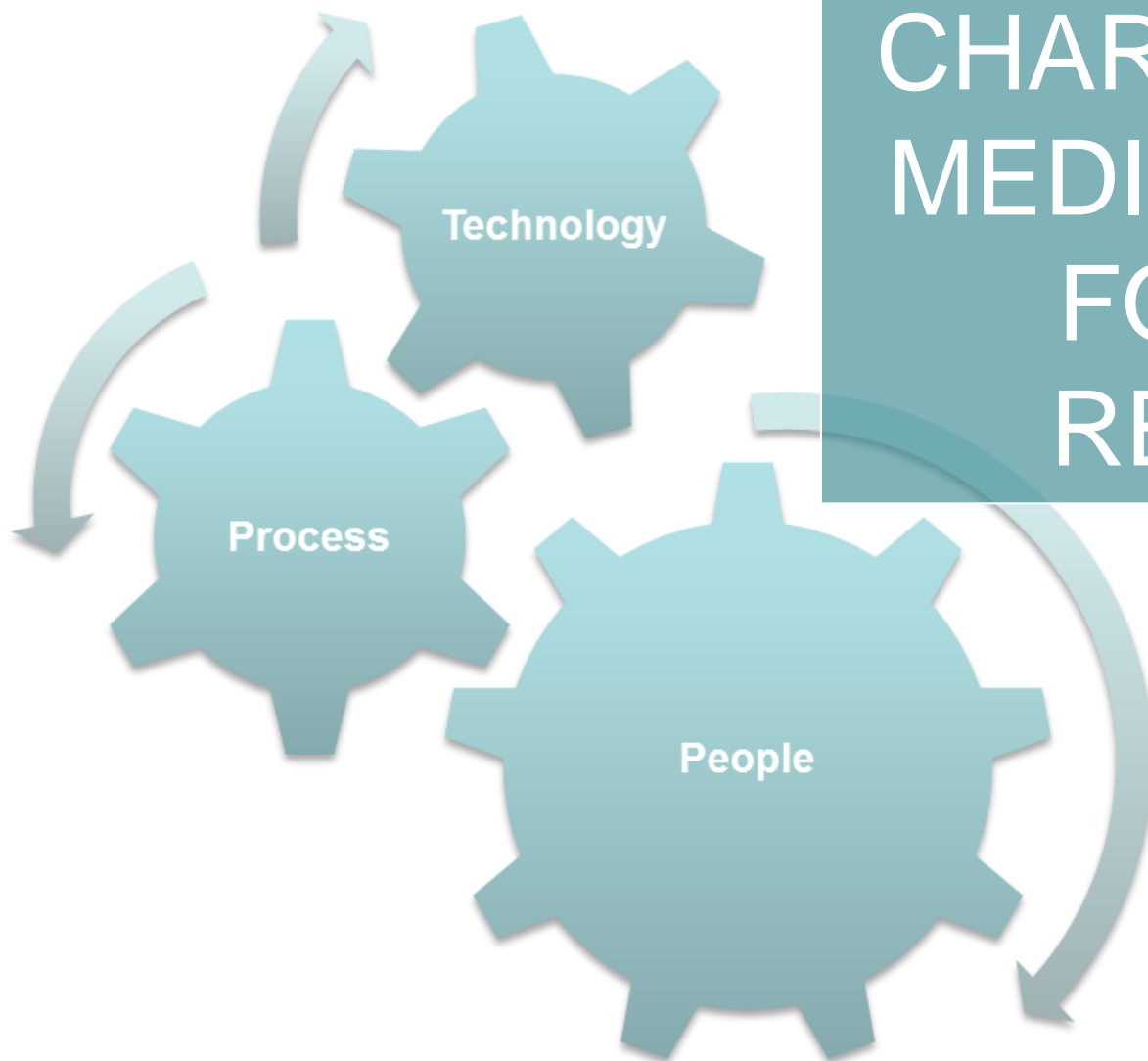
What.....

Where.....

....conducting forest research



CHARACTERIZING MEDITERRANEAN FORESTRY RESEARCH



<http://193.146.122.109/formtools/clients/index.php>



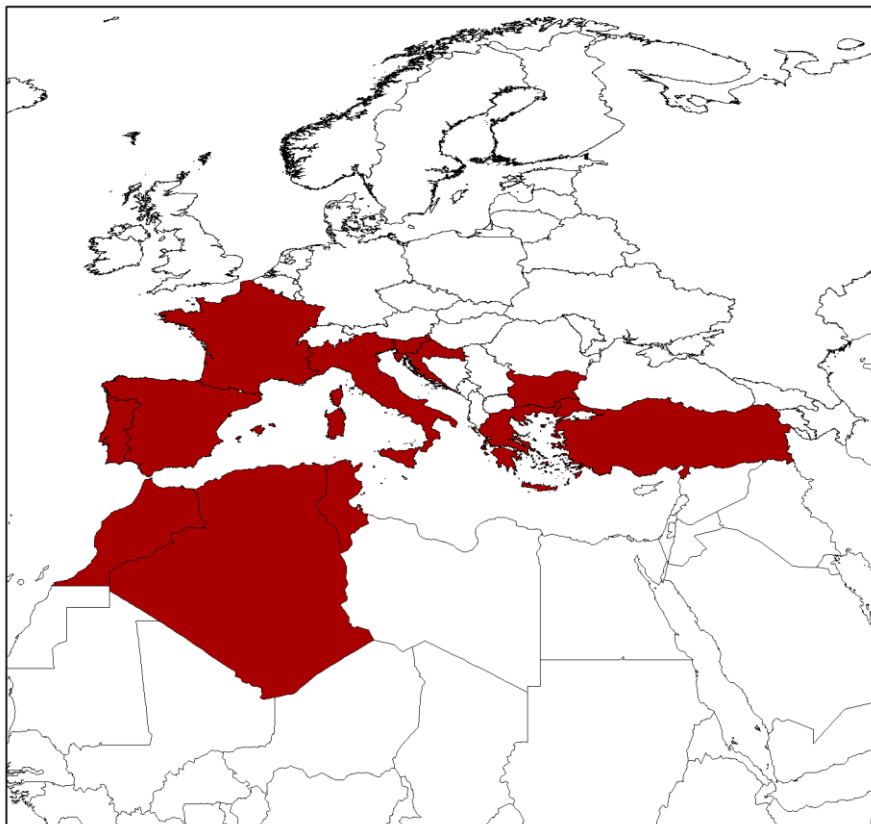
Forms

Welcome! This program stores all information submitted by your website visitors. To view submissions for a particular form just click on the **VIEW** link, or see the leftmost navigation menu for other options.

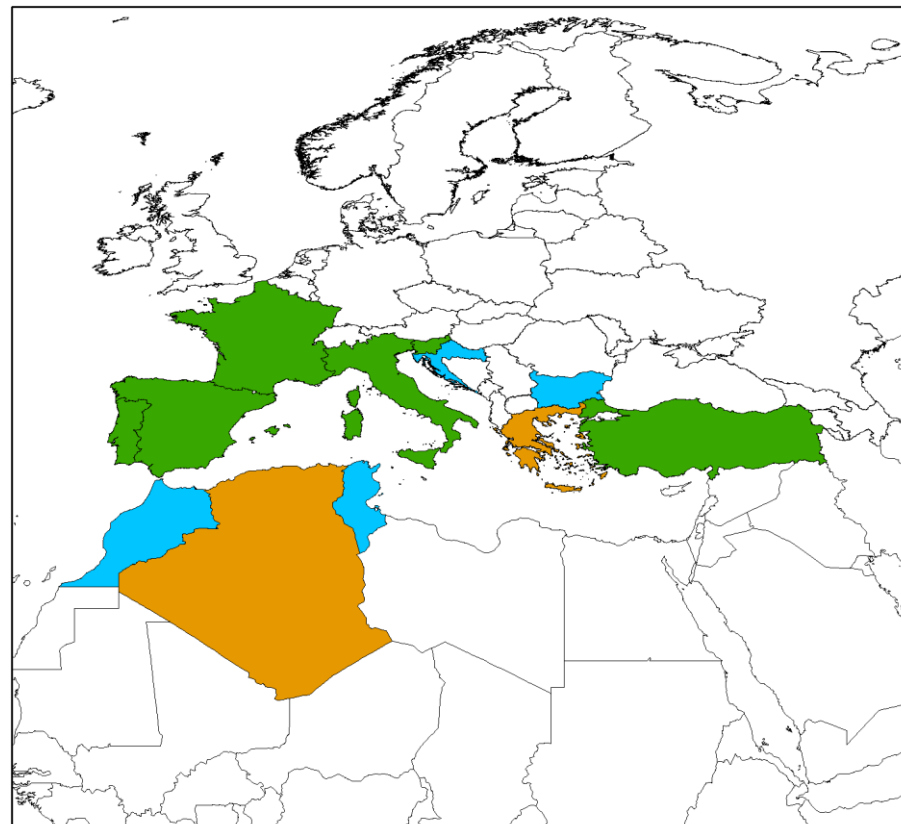
A total of 81 forms have been submitted
48 from research organizations and the rest from
funding bodies and programs



PARTICIPANT COUNTRIES



Countries participating in the FORESTERRA Consortium.



Questionnaires survey coverage - Green: complete; Blue: partial; Orange: information collected directly through documentation from main scientific organizations.

Information

- Forest research structures (number, where)
- Research staff (permanent, non-permanent)
- Budget for research (overall, for forestry)
- Major research subjects
- Research projects
- Scientific publications (how many, journals)
- Research infrastructures

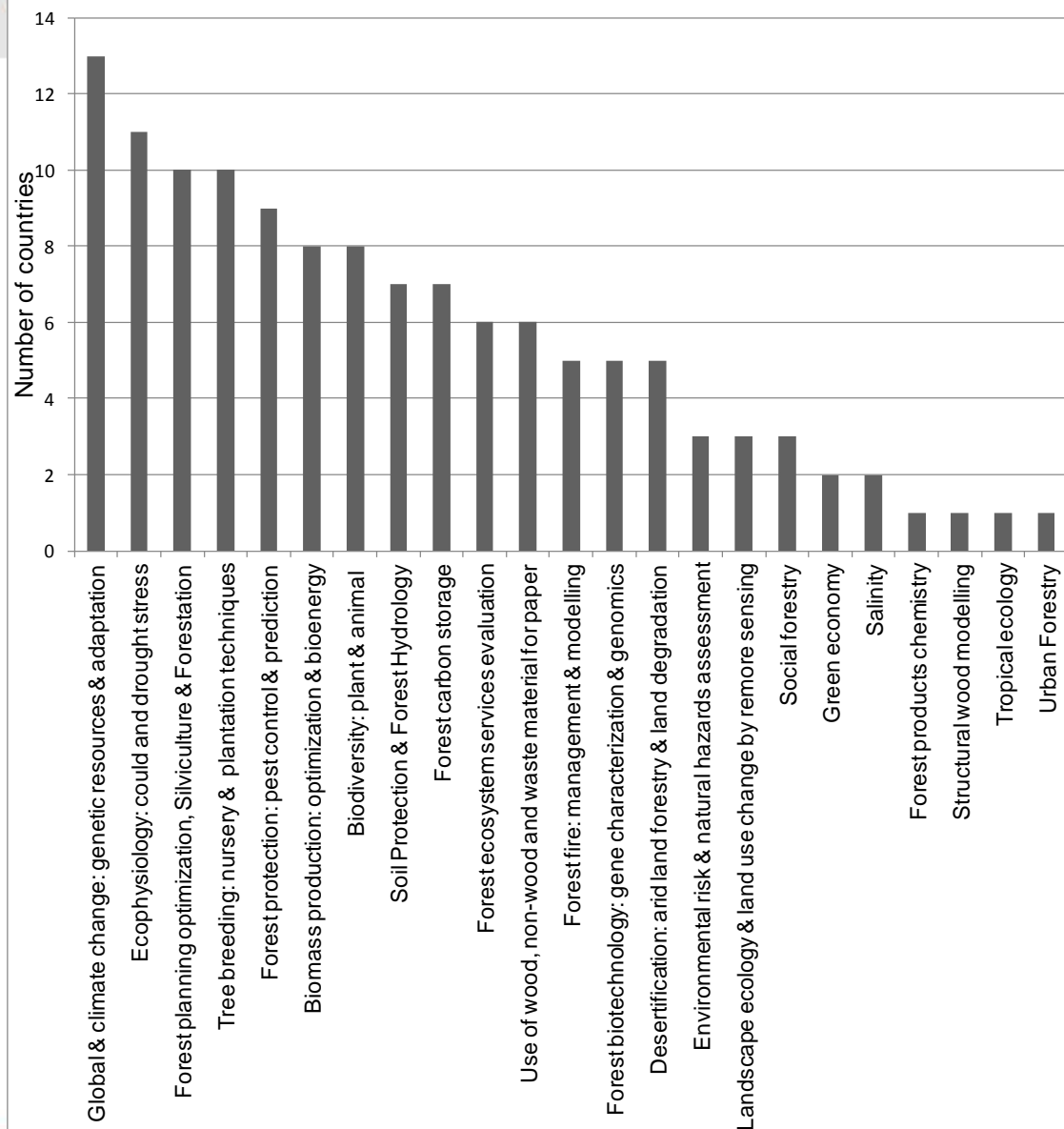
Budgets, number of forest projects, ISI papers and personnel in Mediterranean countries leading forest research

| | Budgets | | Projects | Papers | Staff | | |
|------------|--------------|---------------------|---------------------|---------------------|-------------|---------------------|-------------------|
| | Overall | Forest projects | Forest | ISI | Permanent | Non-permanent | Total researchers |
| | | M€ yr ⁻¹ | Nr yr ⁻¹ | Nr yr ⁻¹ | | Nr yr ⁻¹ | |
| France | 87.4 | 21.2 | <i>na</i> | 261 | 878 | 356 | 777 |
| Spain | 54.1 | 17.0 | 111 | 221 | 481 | 335 | 566 |
| Italy | 50.8 | 16.4 | 87 | 226 | 551 | 322 | 652 |
| Turkey | 27.7 | 5.1 | 128 | 151 | 858 | 104 | 548 |
| Croatia | 10.1 | 3.0 | 73 | 24 | 286 | 38 | 192 |
| Portugal | 8.0 | 2.2 | 11 | 108 | 114 | 166 | 217 |
| Greece | 7.6 | <i>na</i> | <i>na</i> | <i>na</i> | 148 | 140 | 204 |
| Slovenia | 6.6 | 3.3 | 35 | 38 | 64 | 66 | 100 |
| Bulgaria | 1.8 | 0.7 | 34 | 21 | 245 | 17 | 145 |
| Algeria | 1.1 | <i>na</i> | 4 | <i>na</i> | 123 | <i>na</i> | 123 |
| Tunisia | 0.8 | 0.2 | 5 | 29 | 110 | <i>na</i> | 42 |
| Morocco | 0.6 | <i>na</i> | <i>na</i> | <i>na</i> | 70 | <i>na</i> | 70 |
| Israel | <i>na</i> | <i>na</i> | <i>na</i> | 16 | 36 | 15 | 51 |
| Sum | 256.4 | 69.1 | 488 | 1095 | 3964 | 1559 | 3687 |



FORESTERRA

Enhancing FOrest RESearch in the MediTERRanean



Main forest
research subjects
in Mediterranean
FR Institutes

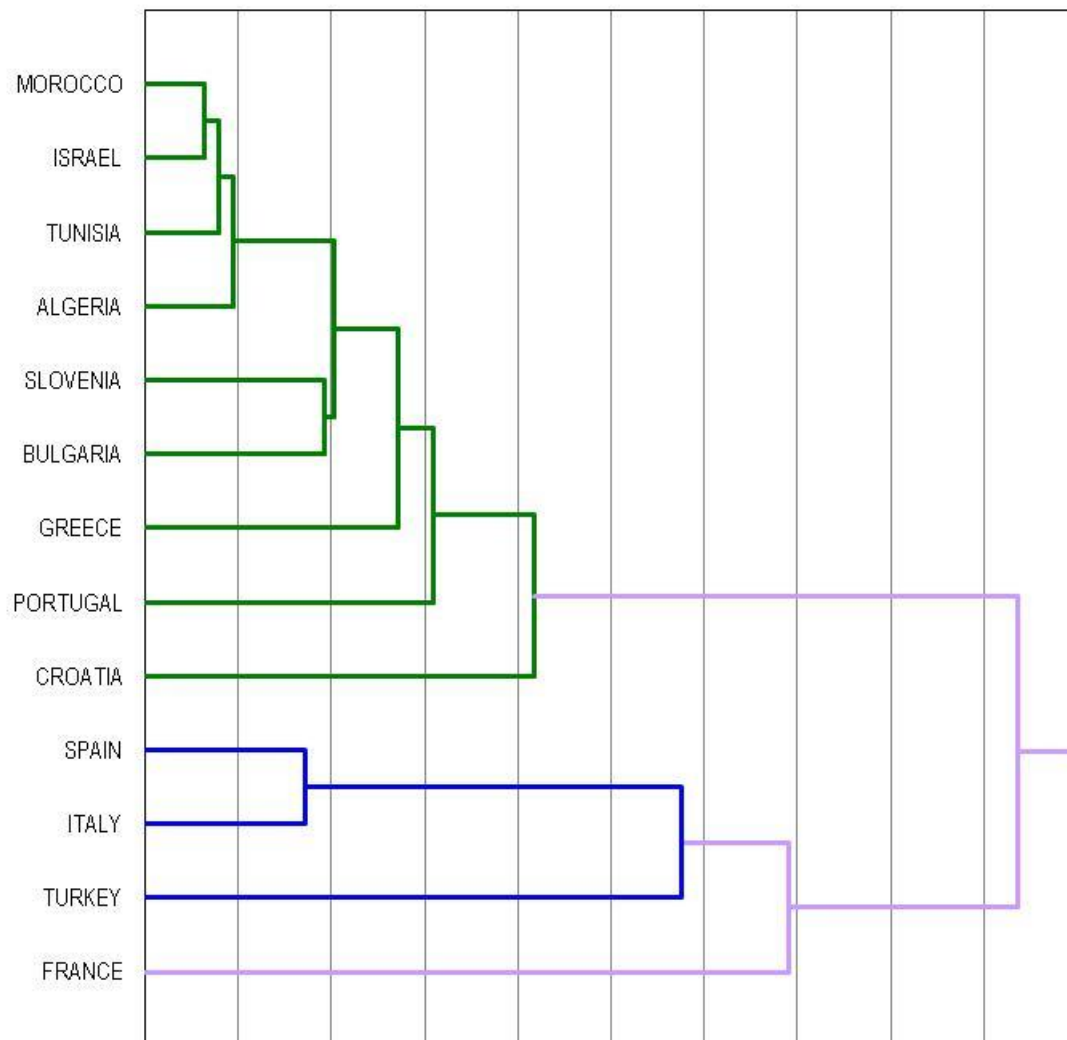
MOST PROMISING RESEARCH LINES

biodiversity **bioenergy** biotechnology breeding carbon
change chemistry climate control damages degradation
disturbance dormancy **ecology** economy **ecosystem** forest
forestry genomics **global** green hazards land
landscape long-term modeling mycorrhiza natural non-wood nursery paper
pest physiology plant products **protection** resources
salinity seed **services** silviculture social **soil** storage stress
sustainable tree tropical urban **wildfire** wildlife wood



Outcomes

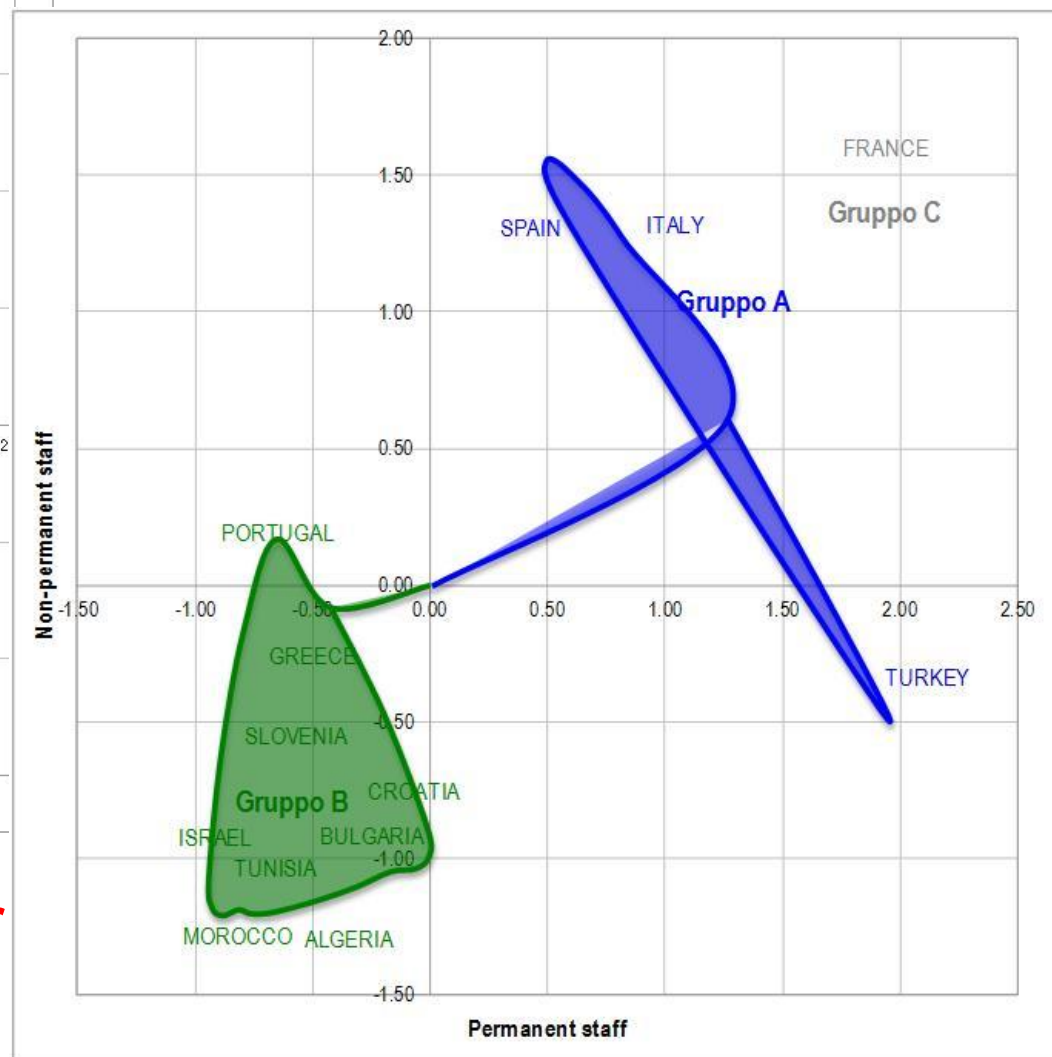
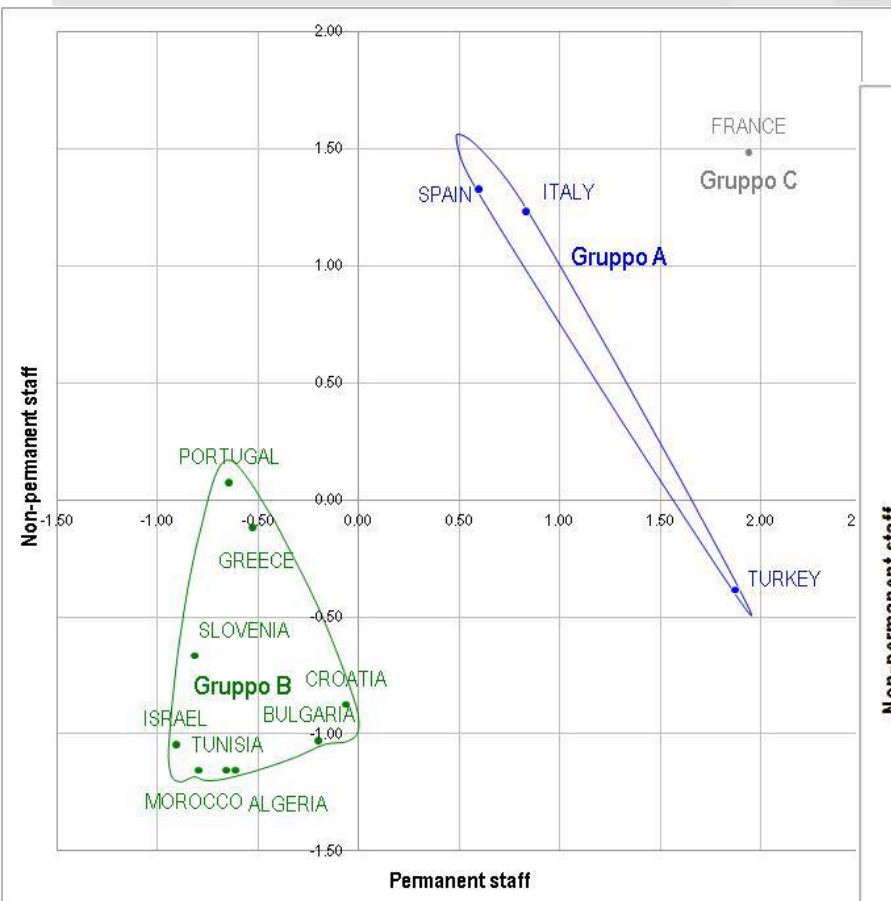
- Some **66 institutions** are engaged in forest research and forest education
- The total, full budget for the FORESTERRA countries amounts at **256 M€ per year**
- Budget allocated to research projects and competitive grants in forest sciences is 69 M€
- **More than 3,600 researchers**, including both permanent and non-permanent researchers
- Ratio non-permanent/permanent staff is 0.7
- **ISI papers** published amount at about **1100 per year** (on more than 60 scientific journals)



Dendrogramme elaborated from:

Permanent staff, Non-permanent staff, Total Researchers; ISI papers; Number of forestry projects.

Metrics: **Euclidean distance**

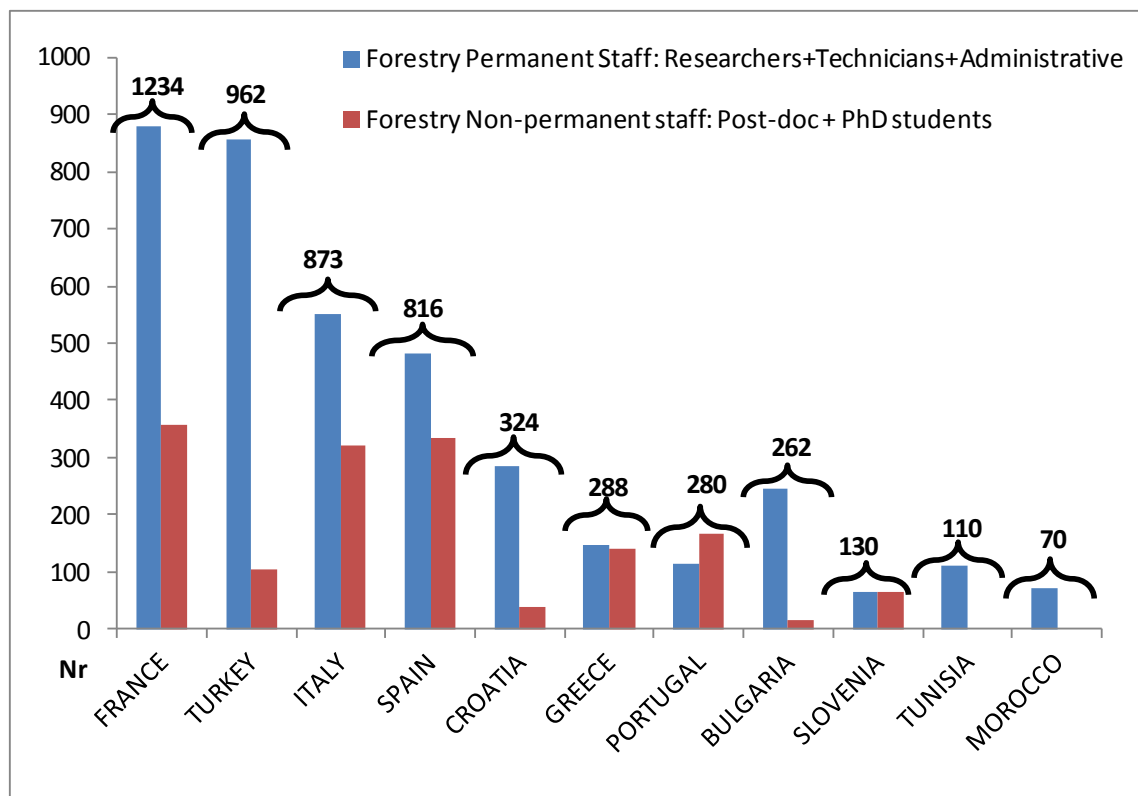


Cluster analysis on staff number



MAPPING RESOURCES & CAPACITIES

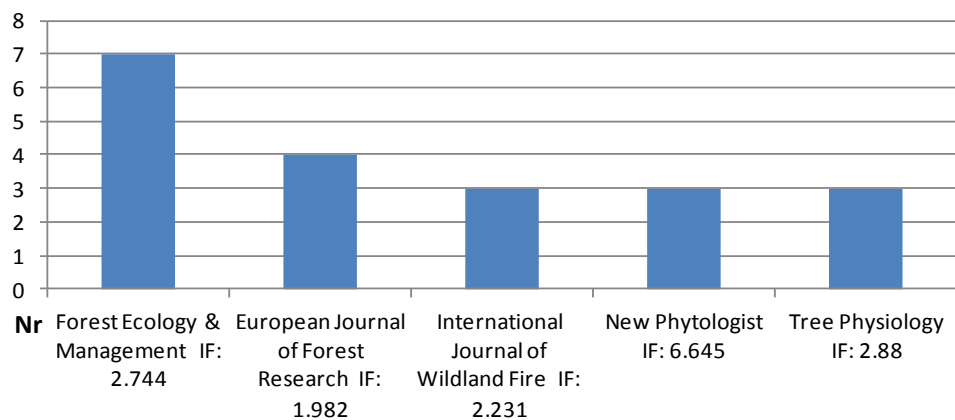
FORESTRY RESEARCH STAFF



Total staff employed in forestry scientific organizations.
For Tunisia and Morocco data on non-permanent staff are lacking

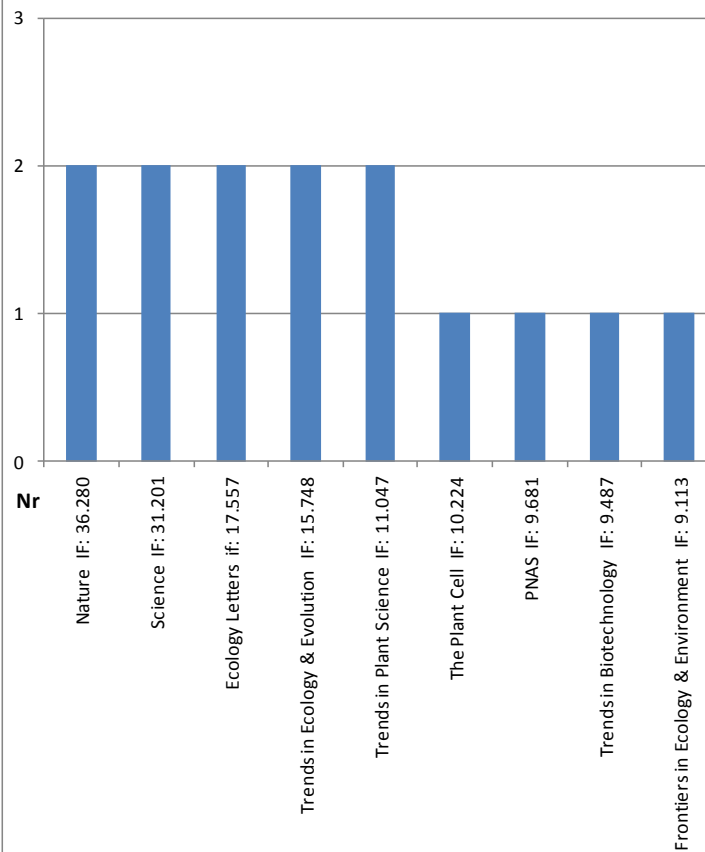
PUBLICATIONS ON ISI JOURNALS

Most popular forest journals



Frequency graph of the top five most popular ISI journals used by the FORESTERRA countries.

Forest journals with highest IF



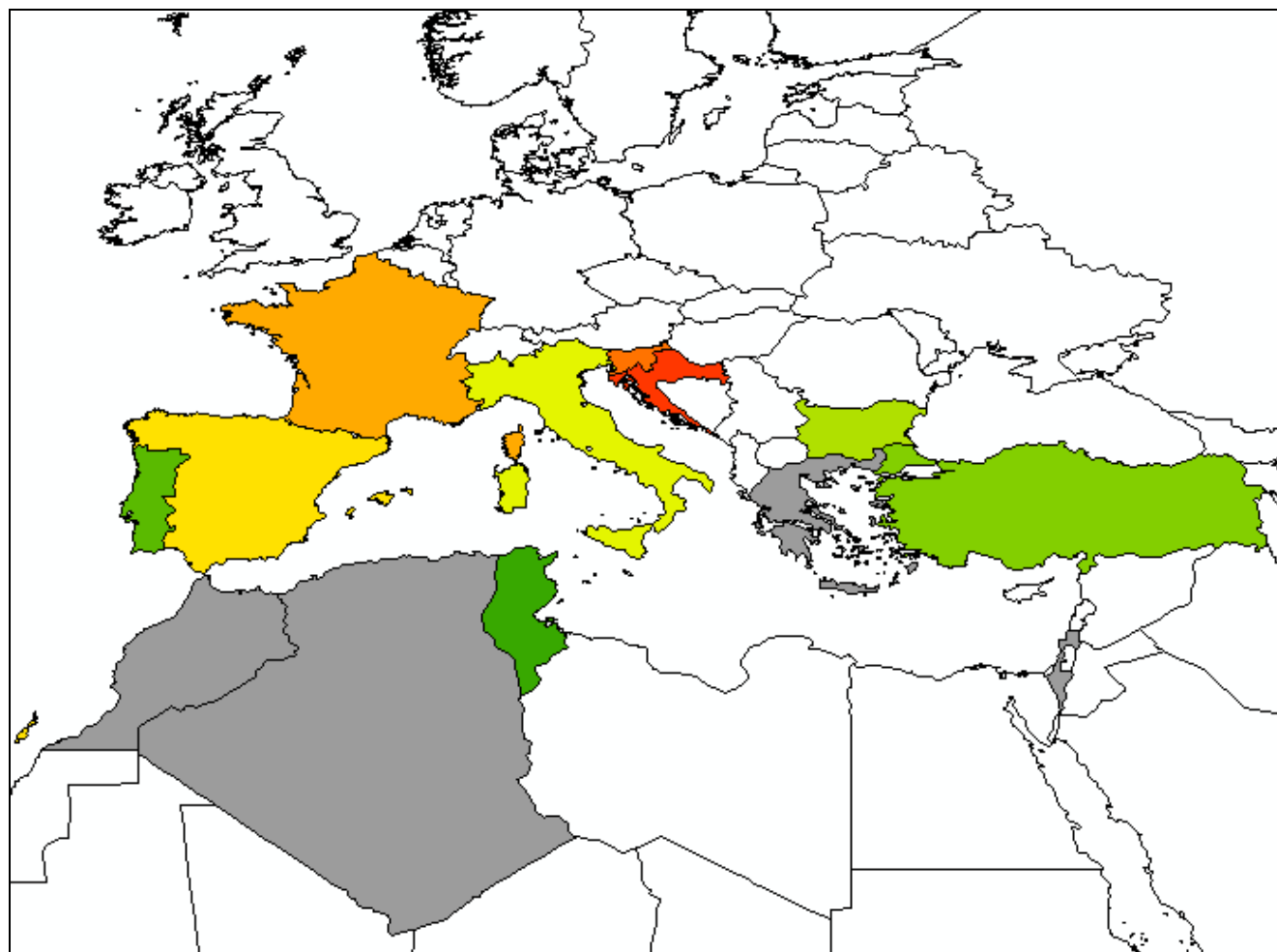
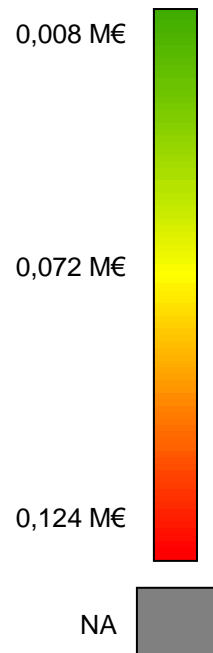
Frequency graph of the top nine most prestigious IF journals (with highest IF) used by the FORESTERRA countries.

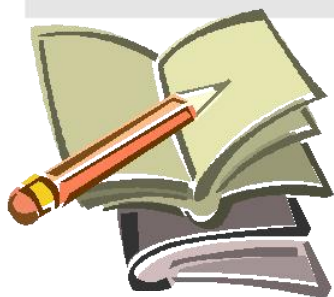


MAPPING EFFICIENCY

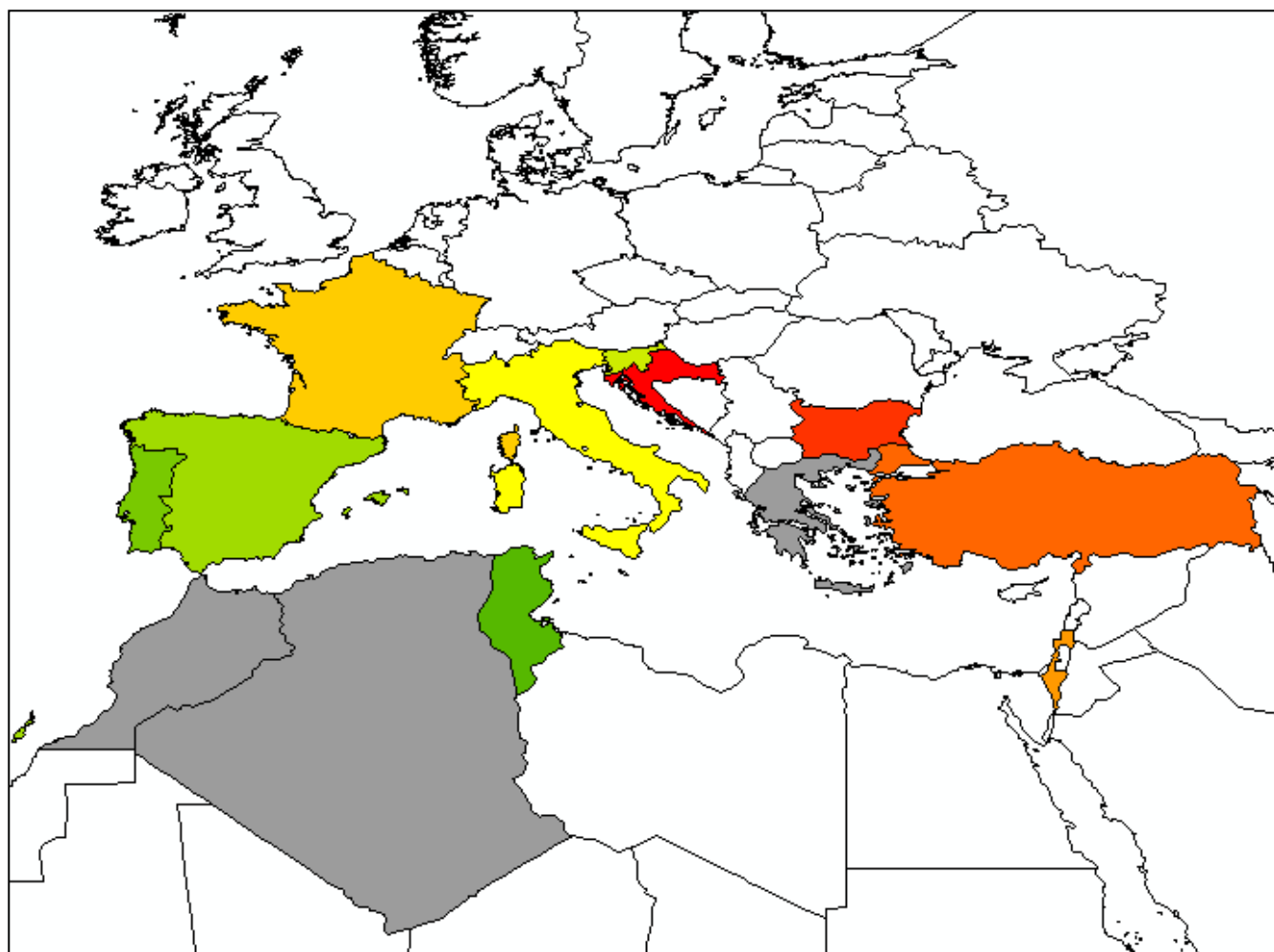
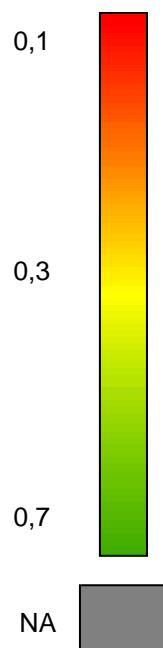


How much does an ISI paper cost?





How many ISI papers per researcher (per year)?



INFRASTRUCTURES: TYPES & FREQUENCY

- | | |
|---|--|
| 1. Experimental forest nursery | 24. Plant analysis lab |
| 2. Forest genetics and Biotechnology lab | 25. Silviculture lab |
| 3. Forest research site for long-term monitoring | 26. Wood harvesting lab |
| 4. Lab and field equipments for climate change studies | 27. Botany lab |
| 5. Meteorological station | 28. Environmental lab |
| 6. Forest protection lab (entomology and pathology) | 29. Gis lab |
| 7. Soil lab | 30. Seed bank |
| 8. Eco-physiology lab | 31. Seed Lab |
| 9. Experimental field | 32. Arboretum |
| 10. Forest genetic trial network | 33. Ergonomics lab |
| 11. Greenhouses | 34. Fire and Wildland fire modelling lab |
| 12. Biomass and wood technology | 35. Forest biochemistry lab |
| 13. Forest hydrology lab | 36. Micropropagation lab |
| 14. Forest biometry lab | 37. X-ray analysis |
| 15. Forest geomatics lab | 38. Arboretum for fauna conservation |
| 16. Microscopy lab | 39. Botanical garden |
| 17. Carbon flux towers | 40. Economics lab |
| 18. Chemistry lab | 41. Farm and experimental services |
| 19. Common garden for testing plant genetic material at local scale | 42. Forest construction and transportation lab |
| 20. Stable isotope lab | 43. Informatics lab |
| 21. Wildlife ecology lab | 44. Mobile Lab Unit |
| 22. Climate chambers and phytotrons | 45. Rainfall simulator |
| 23. Ecology lab | 46. Rhizotrons |

Frequency in FORESTERRA Countries: >10 5-10 2-5 <2

Some conclusions

- **High geographic and thematic fragmentation** of research capacities in the Mediterranean
- **Considerable number of scientific publications** on ISI journals, from forest research, in Mediterranean countries
- **Potential for substantial improvements** within the forest research sector, in Mediterranean countries
- **Major opportunities exist to reinforce the coordination and integration** of forest research capacities and programmes to reduce the high fragmentation and to maximize the impacts of Mediterranean forest research
- Large added value are expected from creating a **truly integrated research community and improving quality research** on forest ecosystems in the Mediterranean area