

RNM-296 Forest Ecology and Landscape Dynamic

Coordinator: Dr. José Antonio Carreira de la Fuente (jafuente [arroba] ujaen [punto] es)

The “Forest Ecology and Landscape Dynamic” research group is engaged in the ecology disciplines of Forest and Soil Ecology, and Biogeochemistry. We study the vulnerability of forest and agricultural ecosystems to different components of global change (climate change, soil and atmospheric pollution, land-use changes, wildfires), as well as their responses to adaptive management (forestry treatments, soil management and fertilization, etc.). This involves disentangling how living beings (plants, microorganisms) interact with the Earth’s chemical and physical conditions, and in the face of disturbance, in terms of population biology, community ecology and nutrient cycling and ecophysiology.

The group has advanced equipment in place for the chemical, biological and metagenomic analysis of samples of soils, tissues and waters, and heads the Interdisciplinary Soils Laboratory (LISUJA; <https://ceactierra.uja.es/>) integrated into the Advanced Earth Studies Centre (CEACTierra). The group has also modelling capabilities (vulnerability analysis through forecasting future trends in tree-growth, species distribution and mortality risks).

Research lines

- FOREST ECOLOGY (A). Effects of disturbance (climate warming and drought, atmospheric pollution, land-use changes, wildfires) on the spatial distribution, canopy structure and stand dynamics of forest ecosystems
- FOREST ECOLOGY (B). Application of dendrochronological techniques (tree-rings analysis) applied to the characterization and prediction of tree-growth decline and forest dieback and mortality processes; vulnerability analysis and forecasting of forest responses to climate change
- FOREST ECOLOGY (C). Design and testing of management protocols for the adaptation of forest ecosystems to climate change; conservation of threatened forest species
- PLANT-SOIL RELATIONSHIPS AND SOIL ECOLOGY. Plant ecophysiology, biogeochemistry and nutrient cycling, and biomolecular analysis of the structure and function of soil and rhizosphere microbial communities
- AGROECOLOGY: fertilization and nutrient-use efficiency; sustainable management of agroecosystems and provision of ecological services.
- Geomorphology and landscape dynamic in high mountain areas.

Related services and products

- [Work on environmental analysis and ecology monitoring of the natural environment and agroecosystems, including remote sensing techniques and physical-chemical, biological, ecophysiological and biomolecular indicators](#)
- [Evaluation and remediation of effects of air and heavy metals pollution on forest ecosystems and soils](#)
- [Forest conservation and management plans](#)
- [Environmental Reports and Environmental Impact Evaluations](#)
- [Soil analyses and foliar analyses](#)
- [Specialization courses in Forest Ecology and Soil Ecology](#)

Spanish website: <https://bit.ly/2V11USH>