



SLOVENIAN FORESTRY INSTITUTE, Večna pot 2, SI-1000 Ljubljana, Slovenia

Department for Forest Ecology

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DEPARTMENT FOR FOREST ECOLOGY

Fields of work

- Carbon and water cycle in forest ecosystems
- Forest communities and forest soil as a carbon sink
- Dynamic modelling of critical inputs into forest ecosystems, and their spatial presentation
- Climatology
- Laboratory analysis of soil, plant material and assessment of impacts on forest ecosystems
- Forest hydrology
- Phenology
- Pedology
- Nutrition of forest trees
- Research on wildlife, with emphasis on the most important game species
- Phytosociology, plant ecology
- Cycle of matter in forest ecosystems, forest soil and nutrition of forest trees
- Designing, constructing and adapting of various measuring devices that are needed in the research activities of the Slovenian Forestry
- Forest monitoring plots (EU ICP Forests program Level 1 & Level 2)
- Study of natural heritage with emphasis on forest areas
- Urban forestry



Mission

We investigate the conditions, processes and inter-relationships in forest ecosystems and landscapes. In the comprehensive research tasks we treat factors affecting the growth and development of the forest stands, which forms the technical basis for forest management, silviculture, game management and spatial planning.

POSSIBLE COLLABORATIONS

- Research of ecosystem ecology, vegetation and forest biodiversity
- Research and analysis of forest soils, waters and air
- The effects of climate changes to forest ecosystems, eg. mountain beech forests
- Analysis of the impact of past land use change and forest development on hunting and endangered species, biodiversity and adapted forest and hunting management
- Innovative solutions and products for measuring in forest ecosystems
- Development, setup and running of an environmental monitoring of forest ecosystems

LABORATORY FOR FOREST ECOLOGY

The Laboratory for forest ecology (LFE) is a part of Department for Forest Ecology in the frame of the Slovenian Forestry Institute. LFE is qualified as a specialized laboratory to perform required chemical and physical analyzes of different samples. In laboratory more than thousand soil, water and plant samples are treated per year. Analytical methods in the LFE comply with applicable ISO standards and reference methods for implementation of forest ecosystems monitoring in the EU. Quality measurements in the laboratory are each year repeatedly verified through participation in international inter-laboratory comparisons (ALVA, ICP Forests program, National Institute of Chemistry).

Research fields and services

- Chemical & physical analysis of soil
- Chemical analysis of water
- Chemical analysis of foliar samples and ground vegetation
- Chemical analysis of soil solution and stand precipitation
- Measuring isotopic composition of CO₂ in the air
- Monitoring O₃ in the air

Organisation

- **Central Laboratory of Forest Ecology:** Chemical and physical analysis of water, soil and foliar samples
- **Specialized laboratory for waters:** Preparation of water samples and chemical and physicochemical water analysis



Research equipment

- Atomic absorption spectrometer, Varian DUO AA FS/Z 240
- Elemental analyzer, LECO CNS-2000
- Ion chromatographs, Metrohm 850 & Metrohm IC modular system
- CO₂ isotope analyzer (CCIA-46), LGR Inc.
- Trace metal digestion unit, Gerhardt SM-20
- Automatic conductivity meter, pH meter and titration unit, Metrohm
- Water demineralization station, Ultra Clear™ RO/EDI, Millipore A10, etc.
- Analytical balance, Scaltec & Mettler
- TOC analyzer, Shimadzu 5000a

LABORATORY FOR ELECTRONIC DEVICES

The Laboratory for electronic devices (LED) has a long-standing experience with the construction of measurement systems that are needed in the research activities of the Slovenian Forestry Institute and other research institutions from Slovenia and abroad. The experience and know-how in designing, constructing and adapting of various measuring devices allows us to develop completely new customized measurement systems. Along with designing and construction of measuring devices we can also offer finished systems for lease.

- Different types of data recorders with a desired number of channels for measurement of temperature and analog signals from 0 – 2500 mV
- Automatic soil respiration systems (CO₂ emissions)
- Automatic irrigation systems that are independent of public water or electricity supply
- Construction of different automated measurement systems for soil, water & atmosphere
- Maintenance and repair of digital field equipment
- Practical & scientific approach with comprehensive solutions



Hardware equipment & Patents

- Circuit board plotter, ProtoMat E33
- CNC router, Fireball V90
- Soldering stations
- **A method for measuring the dynamics of root development and apparatus for carrying out said method : EP2289307**
- **Aparatus for capturing a gas flow: P2120602**