WHAT WE OFFER

Opportunities at our facilities

- Test ecological hypotheses
- Validate ecological and agricultural management strategies
- Experiment with innovative products for (agricultural) ecosystem management
- Explore unconventional or emerging ideas
- Bridge the gap between research and application

Research Facility	Ecotron	Mycotron	RAUs
Start	Operational since 2018	Established in 2023	2026
Type	Large scale climate Macrocosm	Common garden experiment	Small scale climate microcosm
Duration	Long - term	Long term monitoring-short term experiment	Short term 1-6 months
Primary research focus	Integrated simulation and high-resolution monitoring of whole-ecosystem responses to specific climate drivers	Assessing the long-term impact of defined mycorrhizal consortia on soil carbon cycling, and biodiversity.	Flexible, high-controlled environmental manipulation, Exchangeable field-to-lab experiments.
Experimental set-up	12 large climate-controlled chambers: Sunlit Atmospheric Dome & Subsurface Lysimeter.	60 field plots (2,5 x2,5 m). Controlled gradients established via plant mixtures.	8 gas-tight climate chambers. Mobile lysimeters.
Specifications	Deep soil (....m) lysimeter beneath large atmospheric compartment.	6,25 m^2 per plot. Planted with 36 evergreen shrubs.	24 cores (20 cm diameter) / 8 cores (50 cm diameter) 90 cm deep.
Key Manipulation	Independent control of atmospheric and soil parameters (e.g., CO2, CH4 , rainfall, wind, soil temperature).	Controlled gradients of Arbuscular, Ecto-, and Ericoid Mycorrhiza colonization established by specific plant combinations.	Mobile Lysimeters for field-lab transfer; Mimics Macro-scale Ecotron settings.
Lighting	Sunlit Dome (Uses natural light; climate parameters controlled).	Natural Light (Field conditions).	Artificial Light (Allows year-round, non-seasonal experimentation).
Data reloution/ sampling	High time and spatial resolution monitoring (e.g., soil water content/ composition). Most advanced facility within AnaEE-Europe.	Focus on microbial communities, soil functions (e.g., C storage), and soil biodiversity.	Resembles Macro-scale Ecotron. Soil data sampled at 3 depths (10, 30, 60 cm).
Key delivirable	Mechanistic understanding of ecosystem-climate feedbacks in highly realistic, simulated environments.	Mechanistic insights into microbial steering of soil processes at an ecosystem scale.	Rapid and reproducible data under controlled conditions; Bridging gap between field and lab.

WHO CAN BENEFIT?

Researchers & Research Institutes
Access to state-of-the-art experimental facilities

- Support for hypothesis-driven research
- Add-on measurements or new experiments
- Setting up joint research proposals

Companies & Industry

- Test eco-innovations under realistic present and future conditions
- Validate environmental performance of products or services
- Co-develop solutions with researchers
- Assess your environmental impact

Public Sector & Policymakers

- Scientific advice to support evidence-based decision-making
- Publication of policy briefs
- Collaboration on projects with societal and policy relevance

Students & Educators

- Thesis opportunities for Bachelor's, Master's, and PhD students
- Educational visits to our research facilities

General Public

- Science popularization events such as Open Bedrijvendag (Open Company Day) and Dag van de Wetenschap (Day of Science)
- Guided tours and team activities at the Macroscale Ecotron (National Park Hoge Kempen)

CONTACT

ecotron@uhasselt.be
www.uhasselt.be/ecotron
National Park Hoge Kempen, Belgium

nadia.soudzilovskaia@uhasselt.be
francois.rineau@uhasselt.be

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CMKs Ecosystem Research infrastructures

Where ecosystems meet experimentation.
We offer advanced research facilities to explore, test, and innovate in ecosystem science—supporting research, education, and real-world applications.

Our platforms enable the testing of ecological hypotheses, validation of environmental and agricultural management strategies, and experimentation with innovative solutions under realistic conditions. They are open to researchers, industry, policymakers, students, and the wider public, fostering collaboration that bridges scientific research with societal and practical needs through education, co-development, and science communication.

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Macroscale Ecotron

GENERAL INFORMATION

Macroscale Ecotron features 12 large climate-controlled chambers, each consisting of (i) a sunlit atmospheric compartment (dome) containing the vegetation and (ii) a belowground compartment containing the soil (lysimeter). A wide range of atmosphere and soil parameters can be set and controlled to simulate different environments (CO2 levels, temperature, air humidity, rainfall, wind, etc.), while more are monitored at high time and spatial resolution (e.g. soil water content and composition). At the same time, the system continuously measures the response of the ecosystem to these factors: CO2 exchange with the atmosphere in photosynthesis and respiration, methane exchange, water loss, soil nutrient fluxes, etc. Within AnaEE-Europe, Ecotrons are the most advanced and heavily instrumented facilities for ecosystem studies.

RAU

GENERAL INFORMATION

The Rapid Assessment Units (RAUs) are experimental units designed for fast, focused studies on specific environmental impacts, allowing researchers to conduct experiments on the effects of factors like droughts, frost, or changes in soil composition, in a controlled, yet highly realistic environment. The RAUs are cost-effective and flexible, providing valuable data that can quickly address pressing scientific questions related to climate change and ecosystem functioning. With the ability to rapidly simulate and monitor climate change scenarios over short to mediumterm periods (1 week to 6 months), the RAUs are ideal for targeted experiments on the effects of specific environmental changes. This capability makes the RAUs particularly useful for hypothesis testing and provides a complementary approach to the longer-term, large-scale experiments conducted within the Large Terrestrial Research Units (LTRUs).

In each RAU chamber a wide range of atmosphere and soil parameters can be set and controlled to simulate different environments (light intensity, CO2 levels, temperature, air humidity, rainfall, wind, etc.), while more are monitored at high time and spatial resolution (e.g. soil water content and composition). At the same time, the system continuously measures the response of the ecosystem to these factors: CO2 exchange with the atmosphere in photosynthesis and respiration, methane exchange, water loss, soil nutrient fluxes, etc

Mycotron, a Soil Lighthouse

GENERAL INFORMATION

Mycotron is a common-garden experiment designed to quantify the role of different mycorrhizal fungal types in belowground ecosystem functioning. It comprises 60 experimental plots assigned to 10 distinct treatments, each defined by unique combinations of plant species naturally featuring arbuscular mycorrhiza (AM), ectomycorrhiza (ECM), and ericoid mycorrhiza (ERM). These combinations create varying dominance levels of each mycorrhizal type under standardized soil conditions.

A range of biotic and abiotic parameters can be continuously monitored to characterize the resulting mycorrhizal environments. In addition, targeted experimental approaches can be applied to investigate the role of mycorrhizal fungi in key ecosystem processes, such as decomposition, soil respiration, carbon allocation, and water use efficiency.
Mycotron provides a unique experimental platform for quantifying how distinct mycorrhizal fungal guilds shape belowground ecosystem functions and how their combinations modify these processes.

Within AnaEE-Europe, it serves as a specialized facility for investigating mycorrhizal influences on belowground ecosystem functioning under semi-controlled, replicable conditions.