

Integrated Carbon Observation System
in Flanders

www.icos-belgium.be



ES Brasschaat

ICOS Objectives

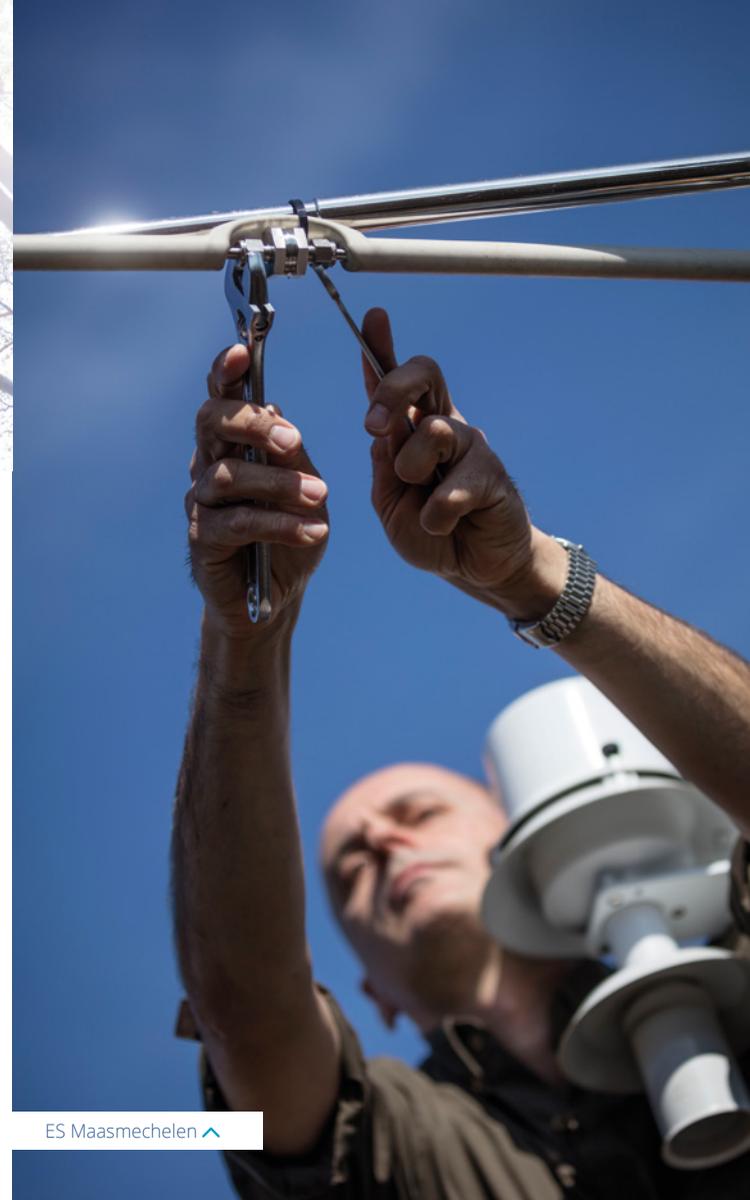
ICOS, the Integrated Carbon Observation System, is a European Research Infrastructure that provides long-term observations for better understanding the carbon cycle and greenhouse gas emissions above Europe. ICOS enables prediction of the future climate and the evaluation of activities aimed at the mitigation of climate change.

ICOS Research Infrastructure

An extensive network of standardized and integrated atmosphere, ecosystem and ocean monitoring stations forms the backbone of the ICOS Research Infrastructure.

- **Atmosphere** Network: more than 30 atmospheric tall towers measuring greenhouse gas concentrations.
- **Ecosystem** Network: more than 60 monitoring stations measuring exchanges of greenhouse gases and energy between terrestrial ecosystems and atmosphere, and ecosystem variables.
- **Ocean** Network: more than 20 observation platforms measuring carbon exchange between sea surface and atmosphere, and water characteristics.

The data collected through the monitoring networks are available via the **Carbon Portal** (www.icos-cp.eu) as open source, quality-controlled ICOS data.



ES Maasmechelen

A central role for the University of Antwerp

The University of Antwerp plays a central role in the ICOS Research Infrastructure by coordinating the ecosystem network. It forms the **Ecosystem Thematic Centre** together with the University of Tuscia in Viterbo (IT) and the INRA in Bordeaux (FR).

The University of Antwerp also acts as the national **Focal Point**, representing and coordinating the Flemish and Belgian network of ICOS partners.

ICOS Flanders Partners



Each network is coordinated by its **Thematic Centre** responsible for data collection and processing, standardization of measurement protocols and support and training of the ICOS community.

ICOS is coordinated centrally by the **Head Office** in Finland.

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www.icos-belgium.be
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ICOS Flanders

is involved in two of the three observation networks: the Ecosystem and the Ocean Network

OS Simon Stevin

© Photography by Konsta Punkka and Eli VerHeyen



ES Maasmechelen

The Ecosystem Network

The Ecosystem Network monitors the exchange of greenhouse gases and energy between ecosystems and the atmosphere. Fluxes are measured using the eddy covariance technique (flux towers) and automated chambers. Meteorological data are recorded at high frequency and complemented with soil climate and additional vegetation information.

Flanders Ecosystem Stations (ES)

UAntwerp since 1997

ES Brasschaat is one of the longest-running and most complete flux monitoring stations in the world. In this Scots pine forest, established in 1929, fluxes and forest dynamics have been continuously monitored since 1997. On the 40 meter tall tower, not only greenhouse gases but also air pollution are closely monitored in collaboration with INBO.

UAntwerp since 2010

ES Lochristi is a bioenergy plantation established in 2010, formerly known as the POPFULL project. A total of 11 hectares of fast growing poplars are harvested every 2-3 years and transformed into green electricity or heat. After having evaluated the energetic and economic efficiency, the focus is now on the greenhouse gas balance of the only bioenergy plantation in the ICOS network.

UAntwerp since 2015

ES Maasmechelen is located in Belgium's only national park 'Hoge Kempen' in Limburg. Characterized by its typical heather vegetation, the station covers a unique ecosystem type within the ICOS network. Together with the cutting edge UHasselt Ecotron infrastructure, ES Maasmechelen makes up the Field Research Centre.



The Ocean Network

The Ocean Network monitors the carbon exchange between the sea surface and the atmosphere as well as surface temperature, salinity, dissolved carbon dioxide (CO₂) and chlorophyll-a.

Flanders Ocean Stations (OS)

VLIZ since 2012

OS RV Simon Stevin is a coastal research vessel that operates in the Belgian part of the North Sea and adjacent seas. The scope is to measure CO₂ fluxes between the sea and atmosphere and map the biogeochemical status of the Belgian coastal waters.

VLIZ since 2014

OS VLIZ Thornton buoy is a time series marine station located at the C-Power Thornton wind turbine farm. The buoy is equipped with sensors to measure physical, chemical and biological parameters and collect data that will help describe the biogeochemical status of the local marine environment.

Collaboration opportunities

The ICOS monitoring stations are open to researchers from outside the ICOS community who would like to conduct complementary research on-site and/or use the ICOS data for free.

Contact us via info@icos-belgium.eu.



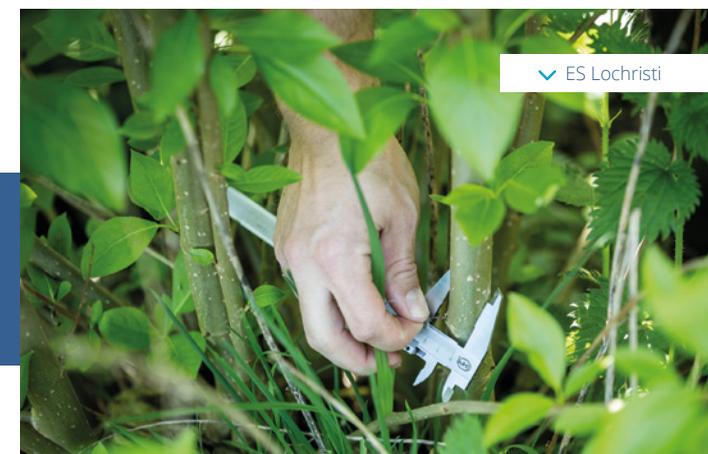
OS Simon Stevin



ES Brasschaat



ES Lochristi



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