ICOS RI Highlights

- » Providing harmonised European-wide measurements on carbon cycle, on greenhouse gas emissions and on atmospheric concentrations of greenhouse gases
- » Integrating pan-European networks of high-precision atmosphere, ecosystem and ocean observations
- » State-of-the-art infrastructure for the European research community, policy makers and public
- » Central Facilities for data processing, quality control, calibration, instrument development and training
- » Reliable data curation and open data access through the Carbon Portal

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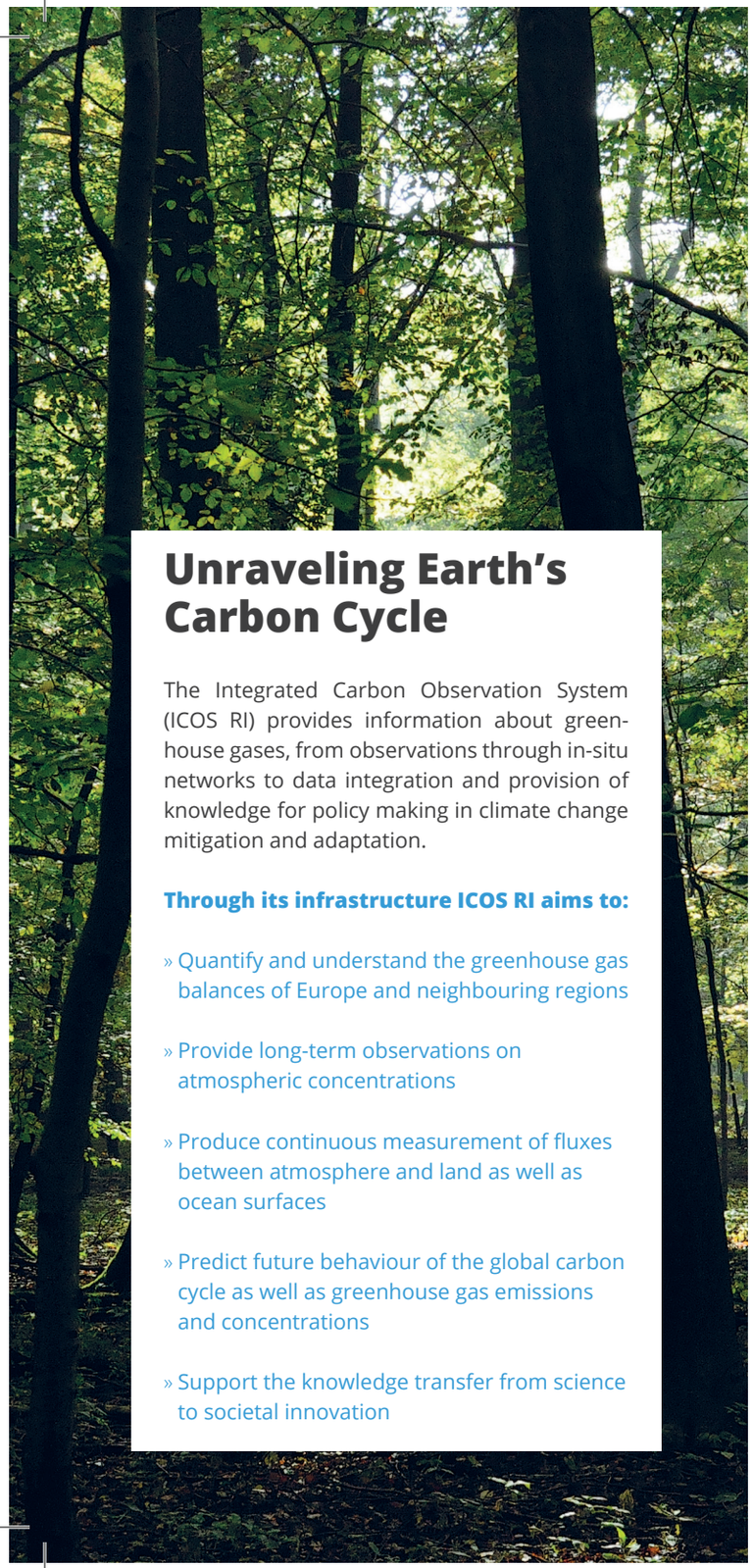
More information on ICOS RI data can be found at **www.icos-cp.eu**.

ICOS INTEGRATED CARBON OBSERVATION SYSTEM

Knowledge Through Observations



Unraveling Earth's Carbon Cycle

The Integrated Carbon Observation System (ICOS RI) provides information about greenhouse gases, from observations through in-situ networks to data integration and provision of knowledge for policy making in climate change mitigation and adaptation.

Through its infrastructure ICOS RI aims to:

» Quantify and understand the greenhouse gas balances of Europe and neighbouring regions

» Provide long-term observations on atmospheric concentrations

» Produce continuous measurement of fluxes between atmosphere and land as well as ocean surfaces

» Predict future behaviour of the global carbon cycle as well as greenhouse gas emissions and concentrations

» Support the knowledge transfer from science to societal innovation

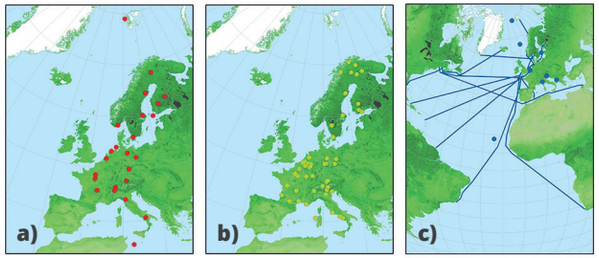
Why we monitor greenhouse gases

The global cycles of carbon and greenhouse gases have been disturbed by human emissions, leading to more greenhouse gases in the atmosphere and to climate change. This will feed back to the natural carbon sources and sinks in the biosphere. In order to support accurate and informed policy decisions long-term integrated observations on natural processes and human emissions are essential.

Why we need reliable data

In the past, measurements of greenhouse gases in Europe have suffered from heterogeneity, discontinuity and lack of sustainability in the long term. Continuously providing standardized and automated high precision measurements is therefore a key focus of the ICOS RI. Comparability of data is obtained through the use of measurement protocols and standardized instrumentation.

ICOS National Networks for atmosphere (a), ecosystem (b) and ocean (c) measurements



Pan-European measurements

ICOS RI integrates atmosphere, ecosystem and ocean greenhouse gas observational networks in order to provide the data for a full European carbon balance and its trends. Standardized measurements are carried out throughout Europe - at tall atmospheric towers and ecosystem sites from the Artic to the Mediterranean, as well as on ocean platforms and vessels covering the North Atlantic, the Mediterranean Sea and the Baltic Sea.

Pan-European facilities

Each network is coordinated by its Thematic Centre responsible for data integration and processing, centralized quality control, network training and data transmission. ***ATC - Atmosphere Thematic Centre*** is based in France and Finland, ***ETC - Ecosystem Thematic Centre*** is based in Italy, Belgium and France and ***OTC - Ocean Thematic Centre*** is based in Norway.

The ***CAL –*** ICOS ***Central Analytical Laboratories*** are based in Germany and provide accurate reference gases to the networks and perform high precision analyses of air samples.

The ***Carbon Portal*** is ICOS RI's central data portal based in Sweden, which makes all ICOS data freely available and produces higher-integrated knowledge products.