

GEO Global Forum 2025 / GEO-20 Plenary

Full Statement

Group on Earth Observations – GEO Global Forum 2025 & GEO-20 Plenary

Statement of the

Integrated Carbon Observation System European Research Infrastructure Consortium (ICOS ERIC)

The Integrated Carbon Observation System (ICOS) remains committed to produce and provide high-quality and open *in situ* data following the principles and engagements of GEO. ICOS measurements of concentrations and fluxes of greenhouse gases in the atmosphere, on land and in the ocean are essential information for many communities in GEO, be they satellite experts for calibration and validation, modelers to constrain their models and improve predictions of climate trends, or developers to produce new tools based on EO data. GEO represents an ideal framework to support ICOS and foster collaboration with various EO organisations. ICOS multi-domain measurements are invaluable as the need for high-quality, *in situ* cal/val data grows in proportion to advances in satellite observations.

As a key element of the strategy of ICOS, the support to under-observed regions of the world also benefits from the links to members and participating organizations in GEO. ICOS activities in Africa are tightly connected to AfriGEO which represents a particularly relevant stage to engage with key partners in the region. GEO's efforts to improve *in situ* observations and climate services in Africa (e.g. in the TEMBO pilot) are perfectly in line with the objectives of the KADI project. KADI's aims to strengthen Africa's ability to generate, access, and use high-quality climate data and services aligns with GEO's vision for locally owned and globally integrated EO systems that advance inclusivity, empower users and support climate resilience.

Other potential contributions to GEO activities can be found in the experience ICOS has gained in urban settings, in climate risks... as well as in its strong position as a provider of surface ocean data. Together with other partners in GEO, synergies are sought to improve the amount, the quality and the sustainability of ocean observations.

EXAMPLE: Quote/Testimonial

"With the *Knowledge and Climate Services from an African Observation and Data Research Infrastructure* (KADI) project, ICOS intensifies its cooperation with Africa. The GEO Post-2025 Strategy's emphasis on co-design, digital infrastructure, open and FAIR data echoes the core values of KADI. ICOS is committed to ensuring that African-led knowledge systems are central to the next generation of EO services. At the Climate Chance Europe-Africa Summit in Marseille (April 2025), KADI presented its deeply collaborative activities, aiming to shift the center of gravity of climate research toward African ownership, leadership, and innovation."



Dr. Theresia Bilola *Project manager of the KADI project*



Quote/Testimonial

"The EU has established a certification framework for permanent carbon removals and carbon farming (CRCF regulation). In the *Integrated Research Infrastructure Services for Climate Change Risks* (IRISCC) project, ICOS has, together with various stakeholders, categorized risks related to carbon farming and possible certification schemes. These risks can add up and severely reduce the potential of measures initially taken to enhance carbon sequestration. The work highlights the need for digital tools providing monitoring capabilities and common, openly available data sets able to assess the schemes. ICOS is ready to contribute to such a data pool, e.g. with in situ flux data benchmarking models and supporting their improvement."



Dr. habil. Werner L. Kutsch *Director-General of ICOS ERIC*



Quote/Testimonial

"ICOS and the European Space Agency (ESA) are exploring opportunities to join forces to combine in situ and satellite measurements for calibration/validation (cal/val) activities, to ensure the accuracy, reliability and consistency of satellite data. ESA currently funds cal/val campaigns, but ICOS data gives ESA the benefit of using near-real-time, long-time series and quality-controlled intercomparable measurements at several locations in Europe and beyond. ICOS is also ready to improve the routine measurements in order to match satellite requirements – a gap analysis is currently underway in the framework of the *New Users for a Better ICOS* (NUBICOS) project."



Dr. Elena Saltikoff

Head of Operations & Coordinator of the NUBICOS project



Quote/Testimonial

Please write a short quote below related to an advancement/impact/result from your participation in GEO towards GEO's vision. Please limit the number of words to a minimum.

"Ocean CO₂ uptake varies significantly in time and space and needs a network of high-quality continuous measurements to monitor and predict these variations. The ICOS ocean stations, along with other merchant and research vessels, moorings, sail boats and uncrewed surface vehicles, are the background of the Surface Ocean CO₂ Observing Network (SOCONET). It is the corner stone of a value chain that delivers data, e.g. to the community-driven data quality control and synthesis element known as the Surface Ocean CO₂ Atlas (SOCAT), which is, in turn, used for global decision-making. The alarming decline in ocean CO₂ observations in recent years underlines the role of ICOS in supporting the surface ocean carbon value chain."



Dr. Sindu Raj Parampil *Scientific Integration Officer*

