

Regional Research Infrastructures Supporting the Global Monitoring of ECVs

Contributing to the Paris Agreement

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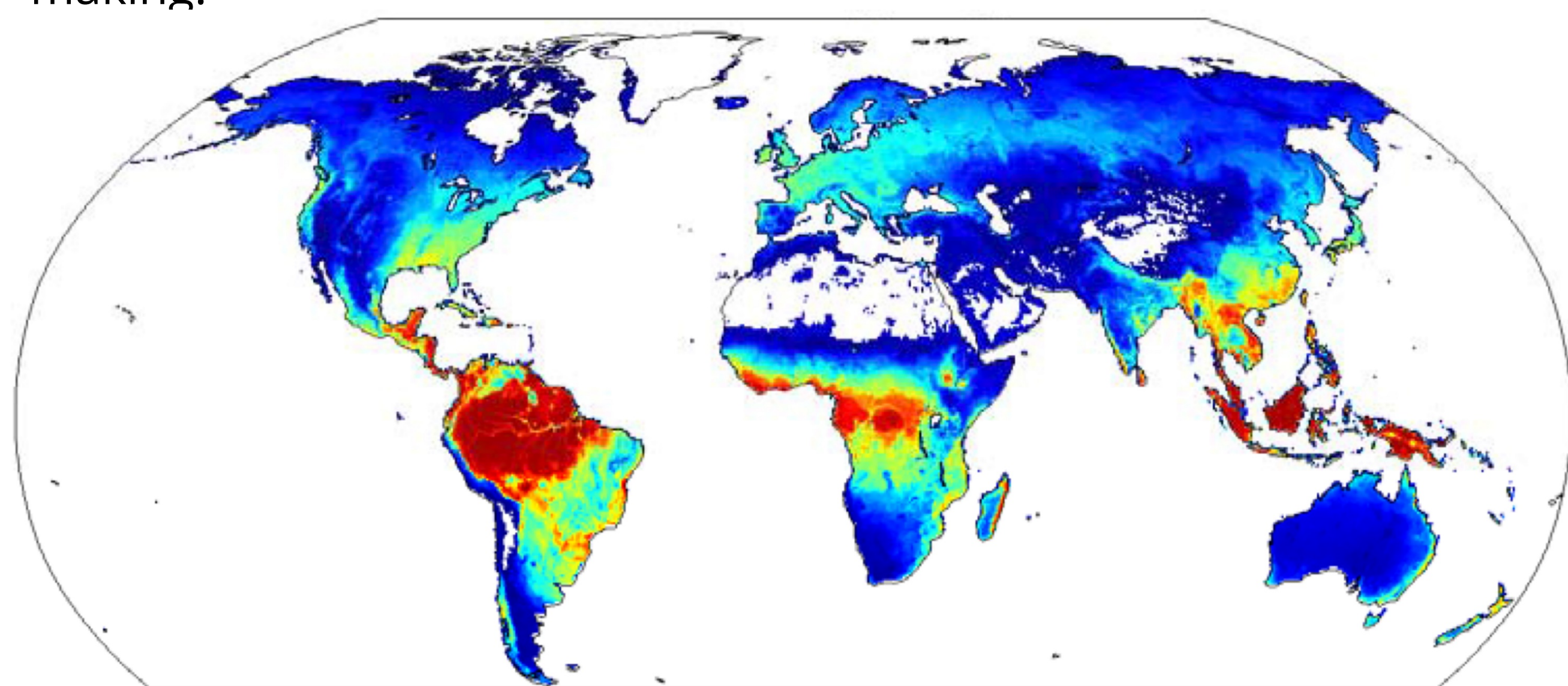
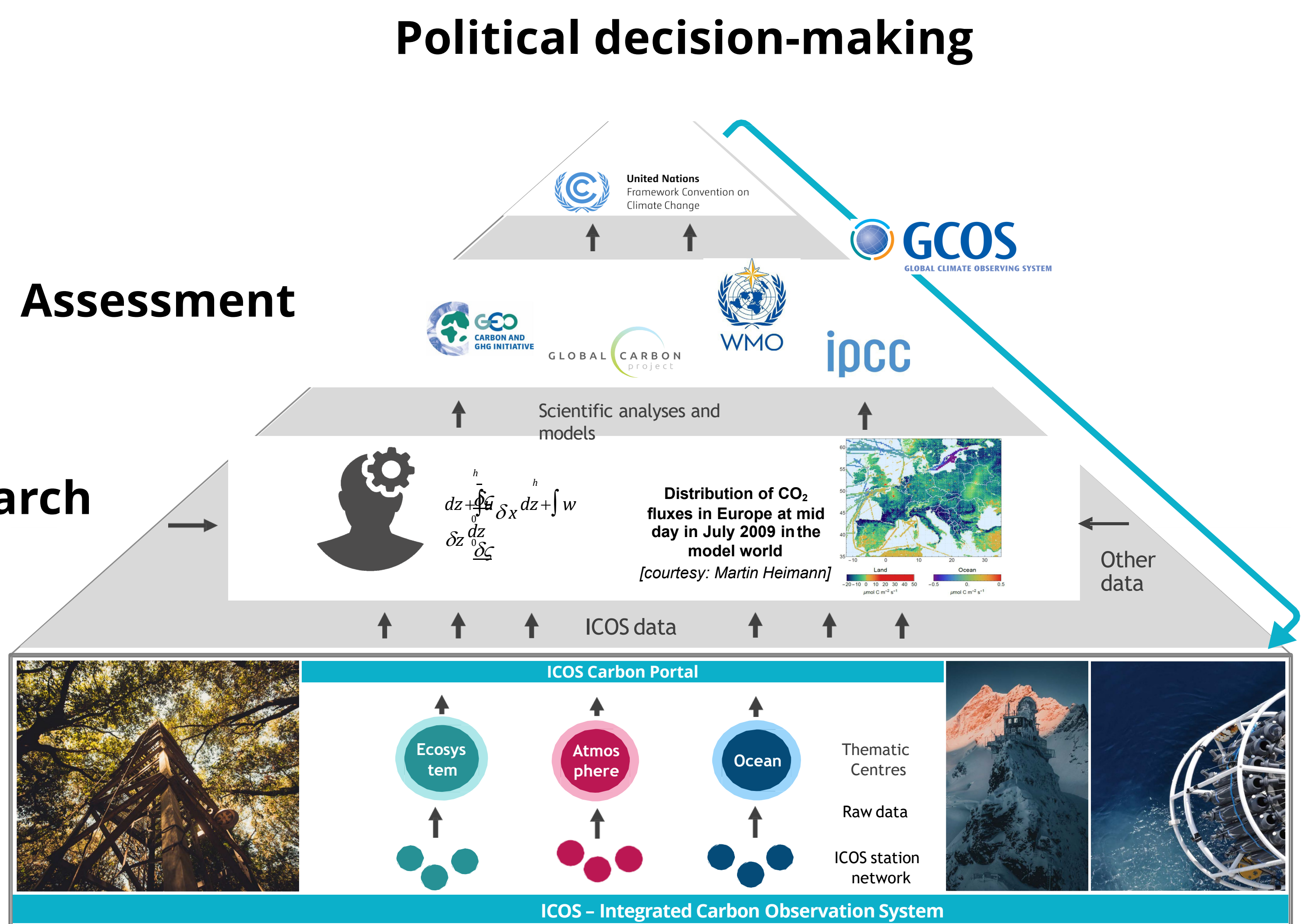
Essential variables need to be observed with a sufficient global coverage. However, particularly in situ observations are often organized in regional networks.

This poster informs about recent progress on research infrastructures in Europe that systematically observe Essential Climate Variables like atmospheric composition, ocean biogeochemistry or land-atmosphere CO₂ fluxes (still to be defined as an ECV).

Furthermore, it shows global cooperation efforts on standardization and data integration and introduces a design study to establish a respective research infrastructure in Africa.

Observations as e.g. provided by the European Research Infrastructure are the base of a value chain (or pyramid, respectively) that includes Research, Assessment and Political decision-making.

Observation



Observation-based estimate of Global Gross Primary Production (CO₂ uptake by vegetation) as example for global integrated products based on flux observations. (Courtesy of Martin Jung and the FLUXCOM Community)

Global Cooperation of Regional Infrastructures

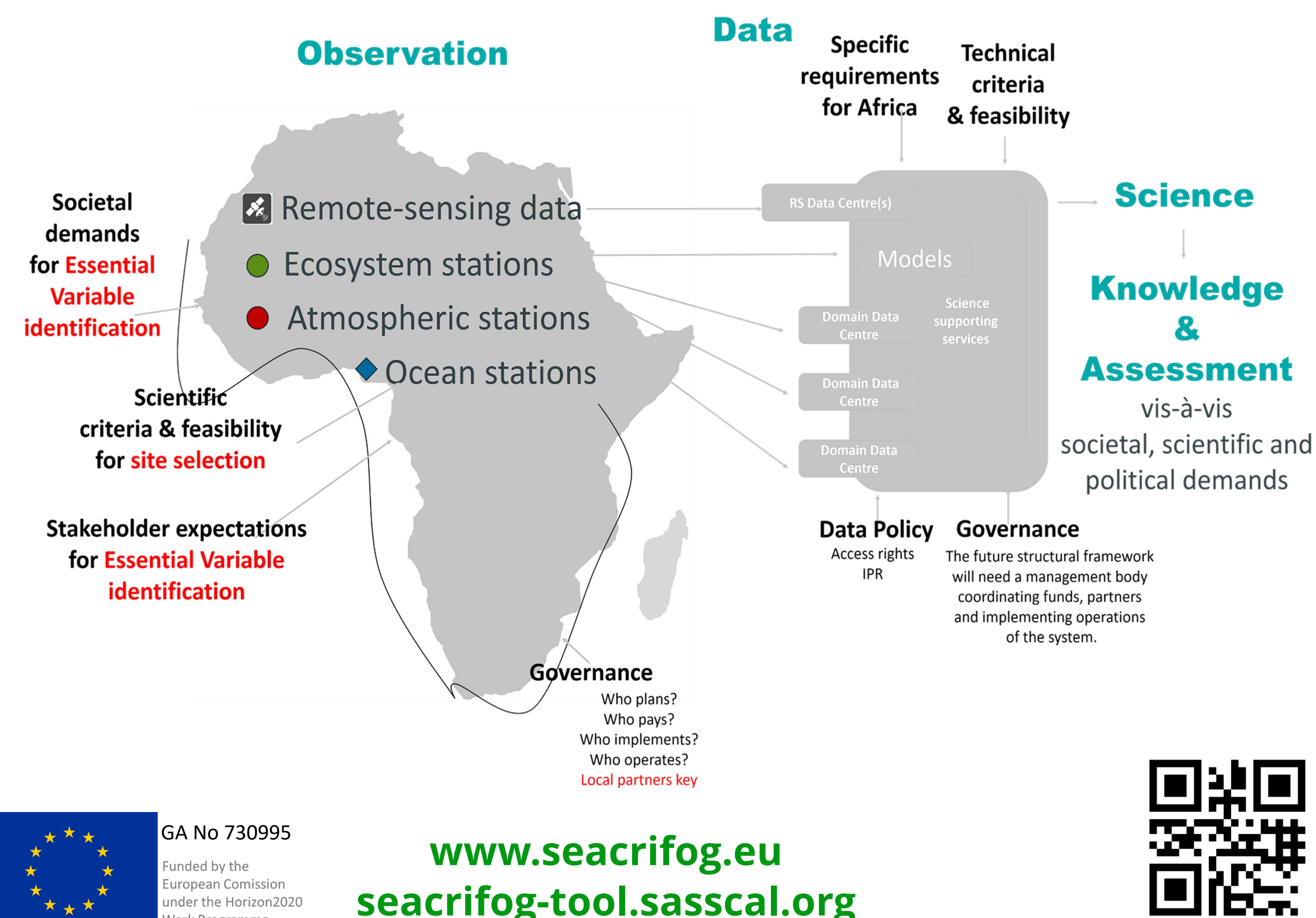
As the European pillar of a global system observing carbon and greenhouse gases, ICOS is cooperating with all major similar RIs in other parts of the world: e.g. NOAA, NEON and AMERIFLUX in the U.S., CERN in China, TERN in Australia, NIES in Japan, SAEON in South Africa. This cooperation is essential to provide the necessary geographic coverage, the harmonization of standards, and to support excellent science.

As an integrated infrastructure, ICOS makes its data also available through global data networks: the GAW program of WMO for atmospheric data, Fluxnet for land-atmosphere fluxes and SOCAT for the ocean biogeochemistry.

A design study for long-term GHG observations in Africa

SEACRIFOG designs a sustainable pan-African GHG observation system of GHGs to support climate-smart agricultural practices.

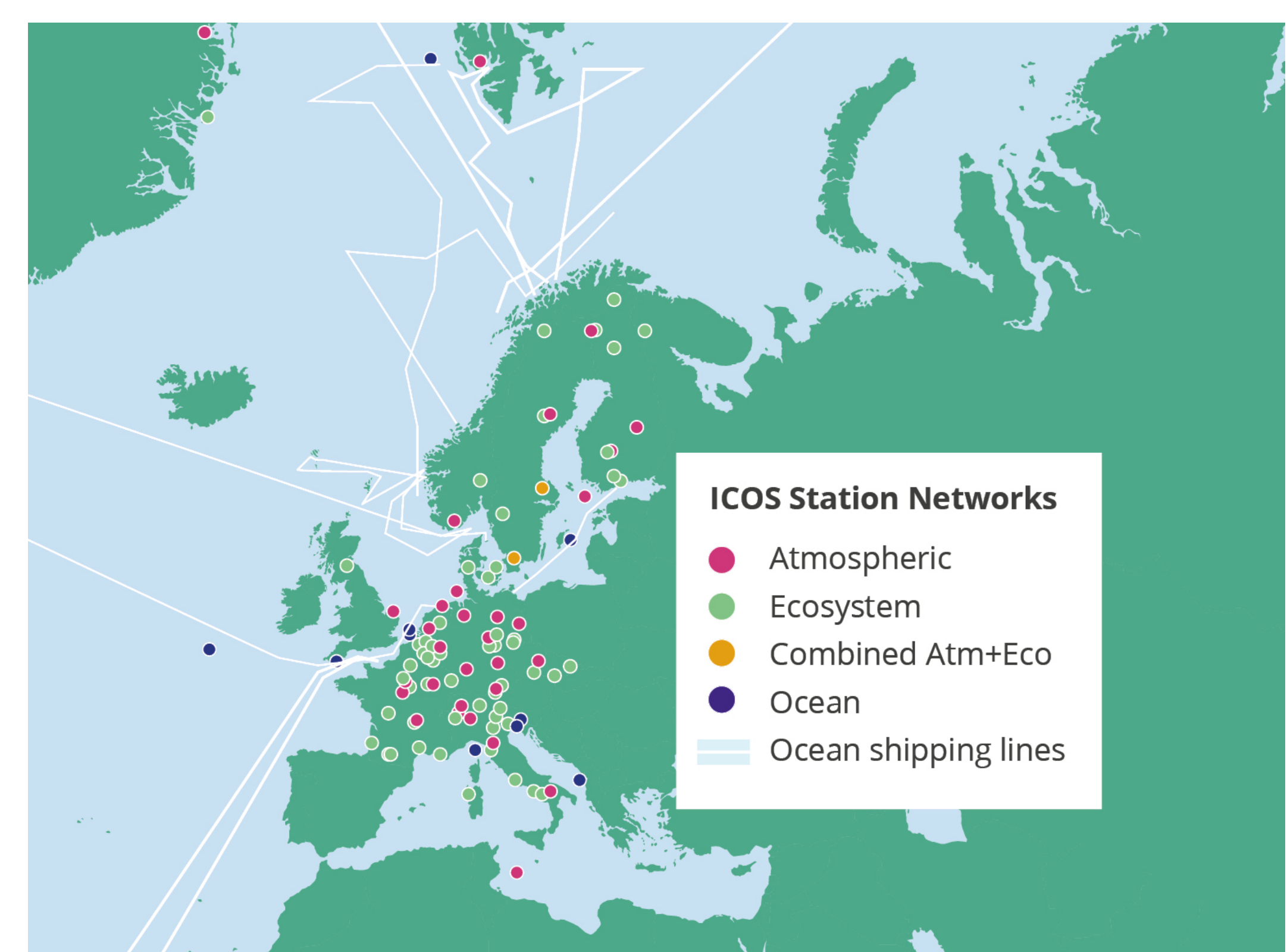
The improvement of global climate science necessitates the reduction of uncertainty in greenhouse gas observations in Africa. A combination of satellite products, ground-based stations, and data centers is needed to optimize emission measurements of CO₂, CH₄ and N₂O over the African continent.



ICOS in a nutshell

The Integrated Carbon Observation System (ICOS) is a European Research Infrastructure providing high-quality, standardized data and scientific knowledge in support of climate action. It integrates atmosphere, ecosystem and ocean observations, and provides open data access through its Carbon Portal. The observations are coordinated by Central Facilities for data processing, quality control, calibration, instrument development and training. They are in accordance with the Essential Climate Variables (ECVs) developed by GCOS.

ICOS is an observing IGO at UNFCCC/COP and a participating organization in the Group on Earth Observations (GEO). ICOS cooperates closely with WMO and its programs (GAW, IG³IS).



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