

ICOS Research Infrastructure, Progress in the European Carbon Cycle and Greenhouse Gas Observing Network

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Since the Integrated Carbon Observation System (ICOS) European Research Infrastructure Consortium (ERIC) was established in November 2015 as the legal framework for the European Integrated Carbon Observing Network, large progress has been made in making the *in situ* network operational. The main objective of ICOS is to provide long-term high quality multi-domain (atmosphere, ecosystem, and ocean) observations using highly-standardized operations using community-developed protocols. Currently ICOS has 12 member states that provide national networks with in total 126 stations. All stations, new and already established, currently go through the labeling process, to be certified as an ICOS station that complies with the ICOS standards for measurement and data quality. The first few stations have been certified at the end of 2017 and many more will follow in 2018. All ICOS data will be licensed using CC4BY through the ICOS data portal, called the Carbon Portal. In this talk we will concentrate on the setup and progress in the atmospheric network and the data portal. The Carbon Portal has been designed from the ground off as open source, open-linked data system, that allows for full transparency and reproducibility of the data, long-term persistent storage of all data levels, full and open discovery and access, while at the same time providing the checking of the data licence, usage tracking, and dynamic data citation for proper attribution to the data provider. The basis functionality for this portal is now operational and is serving a fast-growing amount of data objects (>10,000), including the first higher level datasets from the certified atmospheric network stations and higher levels elaborated products, and services, like atmospheric footprint calculations in the cloud, that build upon the data and metadata services.



Figure 1. Overview of the ICOS station network for all three domains. Overseas stations are not all shown here.