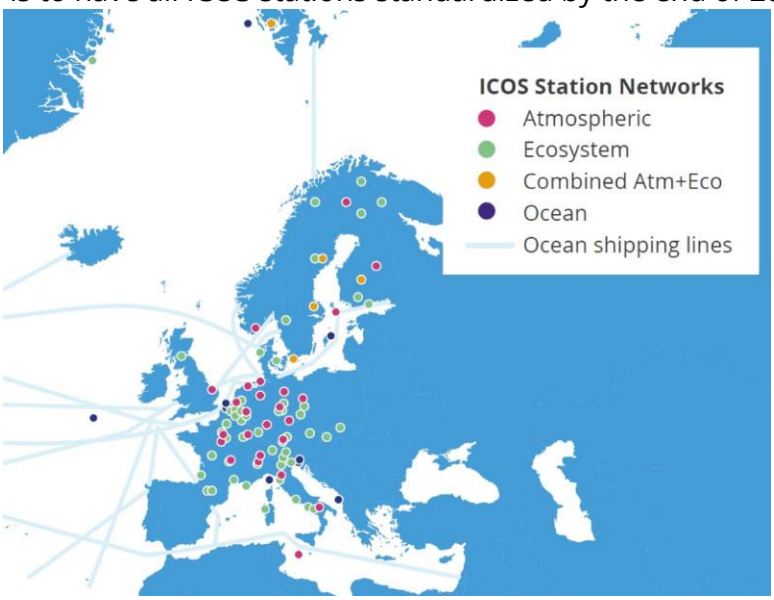
ICOS Sweden Newsletter

February 2018

First ICOS stations have been labelled

After more than five years since ICOS started building the extensive network of the current approximate of 140 stations, the first seven stations have now met the high standards of a certified ICOS measurement station. The stations receiving their certificates are located in Belgium, France, Finland, Italy and Germany. The remaining ICOS stations continue their work and the aim is to have all ICOS stations standardized by the end of 2019.



Should top-down approaches be used for national reporting of GHG emission?

According to the 2015 Paris Agreement, both developed and developing countries have agreed to report their main greenhouse gas (GHG) emissions from all anthropogenic sectors. Currently they mainly do so through bottom-up inventories that is scaled up by using universally applicable emission factors.

However, a recent article published in *Atmospheric Environment* discusses the need to shift attention towards including more top-down-based GHG emission estimates and the use of larger observation networks, such as Copernicus Atmosphere Monitoring Service (CAMS) or ICOS. To employ top-down approaches would not only be more cost efficient, but would also increase accuracy and transparency for national GHG estimates. Several of the article authors are involved in ICOS.

ICOS National Network Sweden

Mercury in lakes could soon be a thing of the past

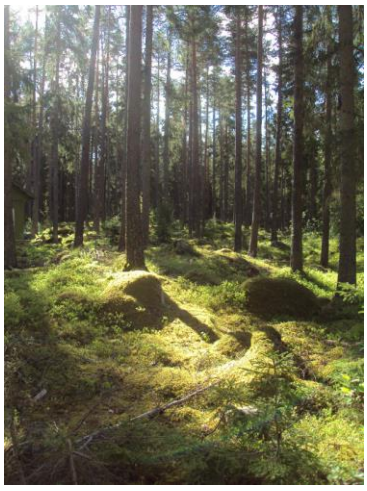
A Swedish-Chinese-Swizz research group has recently published an article in *Scientific Reports* regarding the mass balance of mercury and all in- and outflows into the ICOS Sweden site Degerö mire. The study showed that the flux from the mire to the atmosphere was twice as high as the inflow through rainwater. This would mean that the mercury currently stored in the mire is anticipated to have disappeared within a couple of decades, instead of centuries that was first thought to be the case.

Nordic ENVRI report on recommendations for future work in Nordic research infrastructures

The Research Infrastructure Network for Nordic Atmospheric and Earth system science (ENVRI) is a network project between research infrastructures (RIs) situated in Denmark, Finland, Norway and Sweden. It has been funded by NordForsk in order to build, enhance and strengthen Nordic RI collaboration, strengthen the Nordic participation and positions in international RI projects and to improve communication with Nordic and national agencies and ministries. The core RIs within the project have been ICOS, ACTRIS, AnaEE and SIOS.

Nordic ENVRI has recently published a report which identifies several thematic areas recommended to be further developed in the future. These areas involve arctic research, enhanced collaboration between terrestrial ecosystem infrastructures, biosphere-atmosphere exchange processes and aquatic systems. ICOS was recognized to be one of the main RIs performing measurements needed to assess the greenhouse gas fluxes and was used as a concrete example of collaboration and co-location benefits between different RIs, together with ACTRIS.

How does the emission of airborne particles affect the climate?

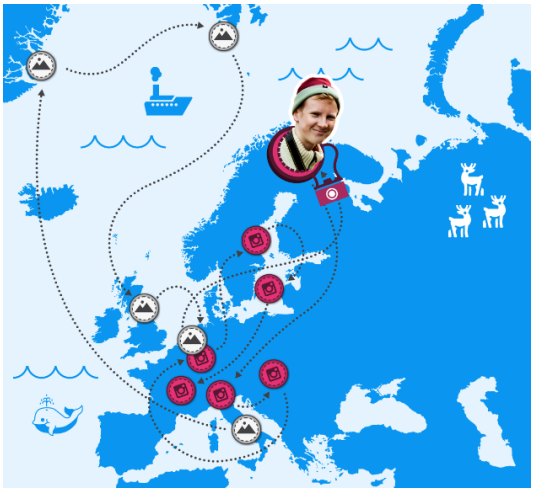


Two projects have received grants to investigate how reactive hydrocarbons released from Swedish spruce forests and atmospheric particles affect our climate. The first project is a grant from FORMAS given to Professor Janne Rinne who will do measurements at ICOS Sweden sites Hyltemossa and Norunda, whilst the second grant from the Royal Physiographic Society of Lund is given to ACTRIS to install measurement equipment in a 30 meter tower at the ICOS Sweden site Hyltemossa. These news have received media coverage in SVT, Kemivärlden

Biotech, Lantbruksnytt, Skog Supply and ATL.

New ICOS station has been visited

Have you missed the ICOSscapes campaign? Join the adventure and wildlife photographer Konsta Punkka as he visits different ICOS stations around Europe. His latest visit was Loobos, Netherlands.



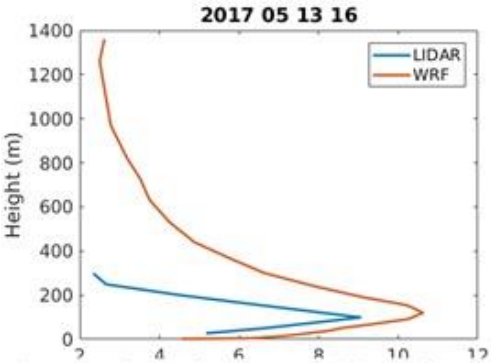
2nd Baltic Earth Conference in Helsingør, Denmark

Between 11-15th of June 2018 a Baltic Earth conference will be held, with the topic 'The Baltic Sea region in transition'. The conference will in particular highlight the Baltic Earth Grand Challenges as defined by the Baltic Earth Science Plan and will cover topics such as salinity dynamics, land-sea-atmosphere biogeochemical feedbacks, natural hazards, sea level dynamics and regional climate system modelling.

Deadline for abstract submission is 18th of February.

What research is going on at the stations? Low-level jets at Östergarnsholm

Nina Svensson and Erik Sahlée studies low-level jets using the Östergarnholm station. Low-level jets are wind maxima typically found at 100 to a few hundred meters. They are mainly generated during stable atmospheric stratification and mostly during the spring, when the water in the Baltic Sea is cold but the air temperature can be quite warm. The measurements are mainly performed by the PhD student Nina Svensson and will be used to evaluate how well low- level jets can be simulated by using the atmospheric Weather Research and Forecasting (WRF) model.



A comparison between LIDAR and tower measurements at Östergarnsholm during a low-level jet event the 13th of May 2017. Figure made by: Nina Svensson

We are looking for more research examples from the different ICOS Sweden sites. If you are doing research within ICOS which you would like us to highlight, please contact Ylva van Meeningen and tell her more about your project: ylva.van_meeningen@nateko.lu.se