Combination of CP & CSA

D6.1 - INTERACT- ICOS station established in NE Greenland

Project No.262693– INTERACT

FP7-INFRASTRUCTURES-2010-1

Start date of project: 2011/01/01 Duration: 48 months
Due date of deliverable: 2011/12/31 Actual Submission date: 2012/01/29

Lead partner for deliverable: ULUND
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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the Consortium (including the Commission Services)	
CO	Confidential, only for members of the Consortium (including the Commission Services)	

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Publishable Executive Summary

Biospheric feedbacks from the Arctic's surface to the climate system are a major focus of concern and consequently for research and monitoring. Fluxes of carbon are particularly important in the tundra and several INTERACT Stations are measuring these fluxes. However, upscaling from sites and comparisons among them cannot be easily made because of lack of standardisation of measuring equipment and techniques. To solve these problems and to establish new data streams the Integrated Carbon Observing System (ICOS) was established by the EU. INTERACT is collaboration with ICOS to standardise measurement and to initiate new observations.

Through an intensive effort during the summer of 2011, an already established carbon flux monitoring station in the Zackenberg Valley, Greenland, was upgraded with a new gas analyser and sonic anemometer so that it now follows the protocol set up by the new ICOS standards (Deliverable D6.1). The upgrade was successfully completed and data is now being produced following the ICOS-level 2 standards.

The installation now forms part of routine observations at Zackenberg and the data will be made available through the Station's database, through a WP6 INTERACT server in Lund and eventually, the planned ICOS carbon portal. This development is a case study that can be subsequently applied to other INTERACT Stations.

1. INTERACT-ICOS

Biospheric feedbacks from the Arctic's surface to the climate system are a major focus of concern and consequently for research and monitoring. Fluxes of carbon are particularly important in the tundra and several INTERACT Stations are measuring these fluxes. However, upscaling from sites and comparisons among them cannot be easily made because of lack of standardisation of measuring equipment and techniques. To solve these problems and to establish new data streams the Integrated Carbon Observing System (ICOS) was established by the EU. INTERACT is collaboration with ICOS to standardise measurement and to initiate new observations.

1.1. Details of ICOS related installations at Zackenberg, Greenland

The greenhouse gas flux and meteorological measurements at the Fen Site at Zackenberg were upgraded during 2011 to meet the requirements of an ICOS level-2 site. Old eddy covariance instrumentation (closed path gas analyzer LI-6262, LICOR Inc, USA; and 3D sonic anemometer Gill R2, Gill Instruments Ltd, UK) was replaced by new, state-of-the-art sensors (enclosed path gas analyzer LI-7200, LICOR Inc, USA; and 3D sonic anemometer Gill HS, Gill Instruments Ltd, UK). A power system with combined fuel cells (EFOY) and solar panels has been installed to ensure year-round measurements. Data is being logged at 10 Hz on a CR1000 data logger (Campbell Scientific Inc, USA) during the manned period (May-October) and 5 Hz during the un-manned period (November – April) due to data storage issues. Additionally, sensors monitoring important environmental characteristics such as net radiation (Kipp&Zonen CNR4), snow depth (sonic range, SR50a), soil fluxes (Hukseflux), air, soil and snow temperature, air pressure, precipitation sensor etc., have been installed or upgraded. Prior to the upgrade, the only old Campbell air temperature and relative humidity sensor was installed and manual measurements of snow depth, water table and soil moisture were performed.

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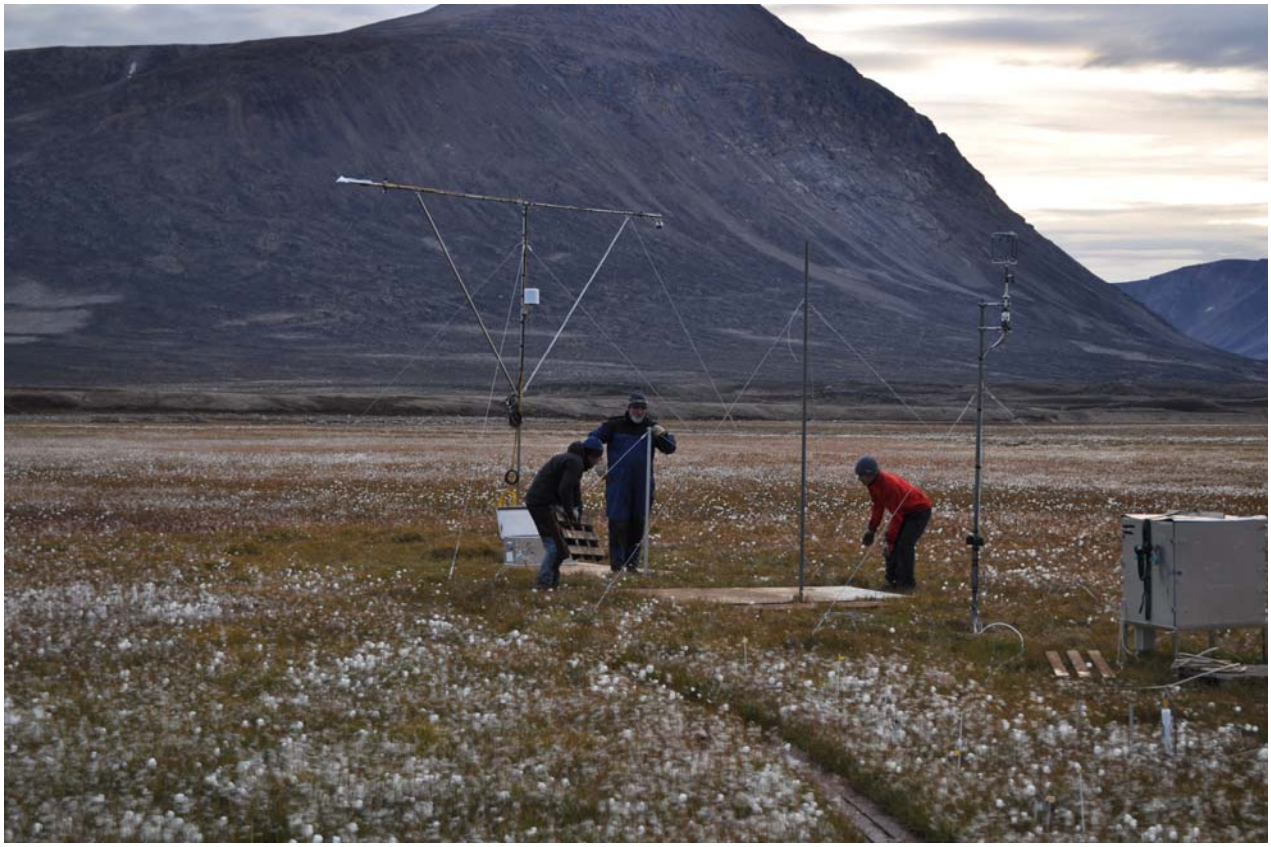

The INTERACT/ICOS construction work in the Zackenberg fen area during August 2011