Towards a UK ICOS program: Existing and planned atmospheric observations on the UK mainland, South Atlantic and Arctic

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ICOS - EU Integrated Carbon Observation System

Continuous measurement sites
Barra (NW Scotland) RHUL
Tall Tower Angus (near Dundee, E. Scotland) U. Edinburgh
Weybourne, East Anglian coast, UEA
Egham (London) RHUL

Ascension Is. (S. Atlantic) RHUL
E. Falklands (S. Atlantic) RHUL

Also several new Tall Tower sites planned in UK

Univ. Bristol: AGAGE (incl. Mace Head, Ireland)

CRAM lab (UEA): support- cylinder filling etc.
\(\text{O}_2: \text{N}_2\) and other gases
Barra (Scottish Hebrides)

SW London (Egham) CO₂ and CH₄
Remote Installations:
Ascension, Falklands (2010)
Barra, NW Scotland (2010 not calibrated)
Ship JC Ross cruises

- Automated calibration with six gas suite: 3 x calibration (MPI-J), target, zero, long-term
- Target gas to last 3 years
- CO₂ precision 0.02 - 0.04 ppm (10 mins)
- CH₄ precision 0.18 - 0.28 ppb (10 mins)
Ascension Island
Installed at Met Office, Wideawake airstrip. WiFi link, Met Office meteorology Steady SE Trades.

E. Falkland Island (Stanley)
• Installed at the top of Sapper Hill, 2.5 km SW of Port Stanley, 25-29 Oct 2010
• Inlet at top of 12m communications mast
• WiFi link to the coast
• Gusts in excess of 15 m/s common during the installation and throughout the year
δ13C of CH₄ and CO₂ measurements made in the RHUL Greenhouse Gas Lab

- Trace Gas preconcentrator and IsoPrime mass spectrometer analysis of δ¹³C of CH₄ and δ¹³C and δ¹⁸O of CO₂ in smaller (75cm³) air samples, since March 2003.

  Second instrument since 2011, under development.

- NIWA-style cryogenic extraction line (1996-)

- Samples from all remote stations and London, plus field campaigns.