

Understanding the European Greenhouse Gas Budget: Towards supporting COP21

Organised by the NERC Greenhouse Gas Emissions and Feedback Programme
Royal Society, London, 8-9 March 2017 (Wed/Thu)

The first 1.5 days of the meeting will be a multidisciplinary exposition of current GHG research in the UK that will feed into discussions on future challenges and opportunities for the UK in the global context. The second half-day is focused on providing accessible material and results that will help transfer knowledge to stakeholders.

Main meeting page: www.greenhouse-gases.org.uk/royalsoc2017

Agenda

Note that detailed timings are subject to change.

Wednesday, 8 March 2017 - 10:00-16:30 - Science Meeting

9:30-10:00 Registration, Tea & Coffee

10:00-12:00 Project Overview:

The UK Greenhouse Gases Emissions and Feedback Programme

This NERC-funded research programme has developed a programme of comprehensive measurements, data analysis and modelling activities, focusing on the key greenhouse gases (GHGs) carbon dioxide, methane, and nitrous oxide. Keynote talks present the main aims, structure, results and achievements of this and related initiatives.

Session Chair: Richard Sanders (National Oceanography Centre Southampton)

10.00-10.15 Welcome, logistics, Intro and overview-scientific importance of GHGs
(Mat Williams, University of Edinburgh)

10.15-10.40 GREENHOUSE (Mat Williams, University of Edinburgh)

10.40-10.50 Discussion

10.50-11:15 RAGNARoCC (Andy Watson, University of Exeter)

11.15-11.25 Discussion

11.25-11.50 GAUGE (Paul Palmer, University of Edinburgh)

11.50-12.00 Discussion

12:00-13:00 Lunch

13:00-14:30 Key area 1: Integrated observing systems

Building on the integrated UK GHG programme, we are now at the stage where the UK can play a leading science role in a new pan-European GHG observing system via a coherent measurement programme. Invited presentations in this session discuss current observing systems and future needs.

Session Chair: Dorothee Bakker (University of East Anglia)

13:00-13:10 New observations of land surface properties: local to national scales, and beyond?

Mat Disney (University College London)

13:10-13:15 Discussion

13:15-13:25 The value of chamber based N₂O measurements in developing national scale inventories

Bob Rees (Scotland's Rural College)

13:25-13:30 Discussion

13:30-13:50 Understanding surface ocean observations

Ute Schuster (University of Exeter)

13:50-14:00 Discussion

14:00-14:20 Integrated atmospheric observing systems for greenhouse gases

Simon O'Doherty (University of Bristol)

14:20-14:30 Discussion

14:30-15:00 Tea & Coffee

15:00-16:30 Key area 2: Regional budgets

Understanding and quantifying sources and sinks on a regional scale is essential for national and international monitoring and mitigation efforts. Invited presentations summarise recent progress towards regional GHG budgeting from systematic observations and targeted field campaigns, and the remaining challenges.

Session Chair: Penelope Pickers (University of East Anglia)

15:00-15:10 Modelling land surface exchanges using JULES

Ed Comyn-Platt (Centre for Ecology&Hydrology)

15:10-15:15 Discussion

15:15-15:25 Regional modelling of N₂O emissions

Kairsty Topp (Scotland's Rural College)

15:25-15:30 Discussion

15:30-15:40 The RAGNARoCC anthropogenic carbon budget for the North Atlantic

Elaine McDonagh (National Oceanography Centre Southampton)

15:40-15:45 Discussion

15:45-15:55 Rapid increase in observed uptake of CO₂ by the N. Atlantic, and the mismatch with IPCC models

Alice Lebehot (University of Exeter)

15:55-16:00 Discussion

16:00-16:20 Using atmospheric observations to understand regional budgets

Neil Harris (Cranfield University)

16:20-16:30 Discussion

16:30 End (Vacate room by 17:00)

Thursday, 9 March 2017, 9:30-13:00 - Science Meeting (ctd)

9:00-9:30 Registration

9:30-11:00 Key area 3: Connecting the Scales - bottom-up and top-down

Understanding GHG fluxes requires analysis at multiple scales. In this session, invited speakers discuss how to upscale local measurements to larger scales, and how to use top-down methods to constrain GHG emissions.

Session Chair: Gareth Phoenix (University of Sheffield)

9:30-9:40 The carbon balance of UK forests at fine resolution

Luke Smallman (University of Edinburgh)

9:40-9:45 Discussion

9:45-9:55 Reconciling top-down and bottom-up GHG emission estimates

Pete Levy (Centre for Ecology&Hydrology)

9:55-10:00 Discussion

10:00-10:10 Monitoring and forecasting the GHG budget of UK Shelf Waters

Yuri Artioli (Plymouth Marine Laboratory)

10:10-10:15 Discussion

10:15-10:25 Contrasting interannual and multidecadal variability of the North Atlantic carbon sink

Matt Couldrey (National Oceanography Centre Southampton)

10:25-10:30 Discussion

10:30-10:50 Connecting the scales

Matt Rigby (University of Bristol)

10:50-11:00 Discussion

11:00-11:30 Tea & Coffee

11:30-12:30 Key area 4: New technology

Various new technologies for improved GHG measurements in the ocean, atmosphere and terrestrial biosphere were developed in the last few years during the course of the UK GHG Programme. Invited speaker discuss their technical and logistical aspects.

Session Chair: Rebecca Brownlow (Royal Holloway University London)

11:30-11:45 New technologies for GHG flux measurements at fine scales

Sylvia Toet (University of York)

11:45-11:50 Discussion

11:50-12:05 New technologies for understanding oceanic GHG fluxes

Andy Watson (University of Exeter)

12:05-12:10 Discussion

12:10-12:25 New technologies for atmospheric GHG measurements

Hartmut Bösch (Leicester University)

12:25-12:30 Discussion

12:30-13:00 A UK Roadmap for Future GHG Research

Engagement with the whole community of UK GHG researchers has been an important part of the UK GHG Programme. In this session, we present a community-designed roadmap to underpin future GHG science in the UK.

12:30-13:00 A Roadmap for Future GHG Research

Paul Palmer (University of Edinburgh)

Thursday, 9 March 2017, 14:00-16:00 - Stakeholder Meeting

13:00-14:00 Lunch

14:00-14:30 Project overviews

14:00-14:15 **The rationale behind the NERC Greenhouse Gas Programme**

Ned Garnett (NERC)

14:15-14:30 **The UK Greenhouse Gases Emissions and Feedback Programme - Achievements and Future Challenges**

Paul Palmer (Edinburgh), Andy Watson (Exeter), Mat Williams (Edinburgh)

14:30-15:30 Questions and Answers - Panel discussion

In an open question and answer format, the panel will discuss questions like: What are the key science requirements for understanding GHGs? How can results be used by policymakers? How do we turn science into impacts? What is the status of mitigation efforts in the UK (and the world)?

Chair: **Helen Czerski** (University College London)

Panellists: **Jo House** (University of Bristol), **Amanda Penistone** (BEIS),

Dave Reay (University of Edinburgh), **Andy Watson** (University of Exeter)

15:30-16:00 Tea & Coffee

16:00 End (Vacate room by 17:00)

Please return your name badge when you leave, so that we can save resources by reusing them at the next meeting. Thanks!