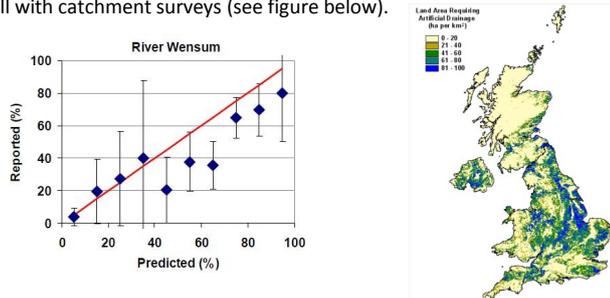


The Greenhouse Gas Platform is a 5-year research programme funded primarily by Defra, with additional support from the Devolved Administrations of Scotland, Wales and Northern Ireland to generate new country-specific measured and modelled Emission Factors for methane (CH₄) and nitrous oxide (N₂O) from agriculture. The main objective of the research is the development of an improved Agricultural Greenhouse Gas Inventory, that uses appropriate country and practice-specific emission factors and that will reflect the adoption of mitigation practices by the agricultural industry, enabling forecasting and monitoring of performance against the wider UK target emissions reductions set by the UK Climate Change Act 2008. The Platform comprises four closely linked projects; this newsletter provides an update and more information on the work that has been carried out over the last eight months:

Data synthesis, modelling and management project:

We have been carrying out a systematic review of non-UK literature on measured methane and nitrous oxide emissions, and have reviewed the availability of relevant industry and government data on current and future UK farm management practices. A proposal for the structure and emission calculations for an improved inventory has been prepared, and an appropriate methodology for calculating the uncertainty in emissions identified. The team are also planning for the long-term future of the inventory, with the development of standards for the management and archiving of the UK datasets contributing to the emissions methodology. Ongoing work to collate data on environment risk factors controlling emissions has included the development of a UK map of the need for field drainage, and a synthesis of historic records on the land area that has benefit from tile drainage installation. Models of drainage need based on soil properties have compared well with catchment surveys (see figure below).



Cross Platform Workshop:

A technical workshop integrating all four of the GHG Platform projects was hosted by Defra at York in January. Presentations were made on progress within the Platform to representatives of government and industry, and the project teams had the opportunity to share expertise and experiences. Posters on work completed in the first project year are available for download from the project website.



Methane ResearCH₄ project:

Experimental work is running at the partner organisations across the UK, with methane emissions being determined from dairy cattle, beef cattle, and sheep, using a range of ages, breed types, and diets. A number of different techniques are being used to measure methane emissions, including chambers, the SF₆ technique, and online monitoring, together with novel techniques such as the hand-held LaserMethane detector. To facilitate knowledge exchange of measurement technologies, a project workshop was held in Edinburgh during January. Partner organisation chamber facilities are currently being compared by NPL to ensure consistency of measurement among partners. Methane emissions from manures are being determined using excreta collected from animals on well characterised diets.



Nitrous Oxide InveN₂Ory project:

The work to measure N₂O emissions from soils across the UK has been continuing, requiring round-the-clock analysis of samples taken from chambers across the UK. Experiments quantifying N₂O emissions from fertiliser and manure applications to grassland and arable land were started in Spring 2011 and measurements from these will continue into 2012. Field teams are currently planning spring 2012 experiments with applications of manure and urine/dung; each urine/dung experiment will require approximately 200 litres of urine and 300 kg of dung!

AFBI are continuing their laboratory examination of the major controls of the effectiveness of the nitrification inhibitor DCD (see photo), and CEH have started their field campaigns to examine spatial variability of N₂O fluxes (see photo using the Fast-Flux Chamber) and comparisons of Eddy Covariance and Chamber methods to quantify fluxes of N₂O. Meanwhile, UEA have commenced their study of indirect emissions, by stratified sampling of drainage and stream waters for dissolved N₂O in the Defra Demonstration Test Catchments.

Links with Global Research Community:



Project partners have represented the UK at Global Research Alliance (GRA) committee meetings on crop lands and livestock, and contributed to the Global ResearCH₄ InveN₂Ory workshop at the University of Reading in October. Ninety delegates from 15 countries saw presentations on existing and developing technologies for measuring greenhouse gas emissions from diffuse agricultural sources. The Right Honourable Minister of State Mr. James Paice gave the keynote address.

