



GLOBAL
RESEARCH
ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

INRA
SCIENCE & IMPACT

AgMIP
The Agricultural
Model Intercomparison
and Improvement Project

FACCEJPI
Agriculture,
Food Security
and Climate Change

Workshop “Model Intercomparison on agricultural GHG emissions”

March 19-21, 2014

INRA - 147, rue de l'Université - 75007 Paris – France

This workshop is organized by the Soil Carbon and Nitrogen Cycling Cross-cutting Group (C-N group) of the Global Research Alliance on Agricultural Greenhouse gases (GRA). It brings together the CN-MIP, Models4Pastures, COMET-Global and MAGNET projects which have recently been funded by a multi-partner call (including FACCE JPI, Canada, New-Zealand and USA) and other modelling groups involved in projects like AgMIP, and the FACCE JPI network MACSUR.

Objectives

The main objective of the workshop is to launch a coordinated activity across projects and within the GRA in order to benchmark and intercompare simulation models aiming at simulating GHG emissions and removals from arable crops and from grasslands.

This exercise is **open to all modeling teams**, provided that the model used can match some defined standards and/or the team can make available high quality data that will be **solely used for the purpose of model benchmarking**.

Modeling teams will run their own model(s), only input and output data will be circulated and assembled in a common data base. The use of a standard protocol across projects and initiatives is seen as a way to gain momentum and attain a critical size in terms of the number of models intercompared and the number of sites used, as well as the benefits gained from the insight of a large number of experts.

We anticipate for each crop species and for each grassland type to have at least three ‘golden sites’ (sites with high quality data) distributed on at least three continents. Data from these sites will be made available to each modeling group participating.

To this end, this workshop will be the first step of the coordinated Intercomparison and Benchmarking activity.

It aims to review protocols circulated in advance concerning the steps of the activity, the data-model interfaces, the analysis of the results and intellectual properties rights. Results of a first pilot blind test of models will be presented, based on sites from several continents with high quality data for agricultural production, GHG emissions and removals.



Participation

The number of participants to Workshop 2 is limited in order to facilitate discussions and working in plenary sessions. The acceptance of the registration for workshop 2 will depend on the number of registration. If necessary, priority will be offered to scientists involved into one of the recently funded project and also countries involved in the GRA Soil CN cross-cutting group. As the main objective of the workshop is GHG modeling, modelers and data providers are greatly encouraged to attend.

Background

The Global Research Alliance on Agricultural Greenhouse Gases (GRA, www.globalresearchalliance.org) includes a cross-cutting group on Soil C and N cycling which has started an activity on model benchmarking and inter-comparison focussing on agricultural greenhouse gas (GHG) emissions and removals.

The international AgMIP program (www.agmip.org) develops and evaluates agricultural models which are later used for projections of climate change impacts. Model benchmarking and inter-comparison activities are well advanced for some arable crop species, with a soil group which has started studies on GHG emissions. Moreover, the grasslands and livestock group is planning for model inter-comparison and benchmarking.

Recently, four projects (CNMIP, Model4Pasture, COMET Global and MAGGNET) have been funded by the multi-partner call on agricultural GHG (including FACCE-JPI <http://www.faccejpi.com/>, Canada, New Zealand and USA) which all have the potential to contribute to a joined exercise that will deliver synergies in terms of understanding and of publications.

In addition, MACSUR (<http://www.macsur.eu/>) is a knowledge hub within FACCE-JPI which addresses the impacts of climate change on European agriculture by gathering existing research in livestock, crop, and trade science to describe how climate variability and change will affect regional farming systems and food production.

We plan for a joined effort across the GRA and AgMIP to intercompare, benchmark and improve models, concerning:

- i) Agricultural GHG emissions and removals for both crops and grasslands;
- ii) Grassland production.

This will provide the basis for future work dealing with production, climate change impacts and adaptation under AgMIP (grasslands) and with the modelling of mitigation options under the GRA (crops and grasslands).

Scientific committee

Co-chairs of the C-N group: Jean-François Soussana (France), Leann Palmer (Australia).

Members: Bruno Basso (Soil group of AgMIP), Gianni Bellocchi (MACSUR), Peter Grace (C-N group GRA), Mark Liebig (MAGGNET), Keith Paustian (COMET-Global), Sylvie Recous (CN-MIP), Val Snow (Models4pastures)

Local organisation committee

Fiona Ehrhardt, Lénaïc Pardon, Sylvain Pellerin, Sylvie Recous, Antonio Bispo

https://colloque.inra.fr/workshop_gra_jpi_facce_eng

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- Agenda -

Wednesday March, 19th

Localisation: Rue de l'Université

10:00-10:45 Check-in & Welcoming Coffee

Morning - Projects kick-off sessions: Multi-partner call on agricultural GHG research

Localisation : Rue Jean Nicot

11:00 **Kick-off parallel sessions** for FACCE-JPI projects

Parallel 1. CN-MIP (Sylvie Recous)

Parallel 2. Models4pastures (Val Snow)

Parallel 3. COMET-Global (Mark Easter)

13:30 Lunch

Localisation: Rue de l'Université

Afternoon- Workshop "Models Inter-comparison on agricultural GHG emissions"

Localisation: Rue de l'Université

14:30 **Welcoming message**

Objectives of the workshop (Jean-François Soussana)

14:45 **Short introduction to projects/networks** contributing to the meeting (10' each)

(Chair : Peter Grace)

CN-MIP (Sylvie Recous)

Models4Pastures (Val Snow)

COMET-Global (Mark Easter)

MAGNET (Alan Franzluebbbers)

MACSUR- Grassland & Livestock group (Gianni Bellocchi)

GRA (Jean-François Soussana and Peter Grace)

AgMIP (Jean-François Soussana and Bruno Basso)

16:00 **Introduction** ‘Why intercompare and benchmark models?’ (Pete Smith)

16:15 Coffee Break

16:35 **Roundtable:** Open discussion on added value of a joined activity (Projects representatives; Chair: Jean-François Soussana)

17:10 **Introduction** to the pilot blind test and to the benchmarking/intercomparison activity (Jean-François Soussana)

17:40 **Results from regional intercomparison/benchmark** : Grassland modelling in MACSUR (Gianni Bellocchi)

17:50 **Discussion**

18:15 End of day 1

Boat Paris Tour (Optionnal)

Thursday March, 20th

Morning – Pilot Blind Test: Results & feedback

Localisation: Rue de l'Université

09:00 **First results from the pilot blind test & discussion** (10'+10')

(Speakers : Jean-François Soussana, Sylvie Recous, Peter Grace, Fiona Ehrhardt ;
Animation/discussion : projects holders)

- Crop yield, grassland production, crop N₂O, grassland N₂O, crop soil C, grassland soil C, other issues (e.g. soil water, CH₄, etc...)
- Feedback & discussion on pilot blind test issues
- Introduction to parallel sessions objectives.

10:40 Coffee break

Localisation: Rue Jean Nicot

11:00 **Working group sessions: contributing to deeper results analyses.**

Parallel 1. N₂O + Soil C (Group animation: Val Snow, Peter Grace, Pete Smith, Mark Easter)

Parallel 2. Yield & production (Group animation: Alan Franzluebbbers & Jean-François Soussana)

13:00 Lunch

Localisation: Rue de l'Université

Afternoon - Blind test : Building protocols

Localisation: Rue Jean Nicot

14:00 **Parallel sessions: working on protocols.**

Parallel 1. Models parametrisation, calibration and needs.

(Group animation: Gianni Bellocchi, Rich Conant, Ward Smith)

Parallel 2. Site data exchange formalization: requirements for models, quality, definitions and units. (Group animation: Alan Franzluebbbers & Roberta Farina)

15:30 Coffee break

Localisation: Rue de l'Université

15:50 **Reports from parallel sessions** (5 sessions, 15' each)

17:05 **General discussion on modelling protocols and data requirements**

(Chair: Jean-François Soussana & Peter Grace)

18:00 End of day 2

18:00 Working session for project holders

20:00 Dinner

Restaurant La Poule au Pot, 121 rue de l'Université, Paris
(optional, by reservation, cost 32 euros/person, maximum 48 persons)

Friday March, 21st

Morning – Collaborations, projects network

Localisation: Rue de l'Université

9:00 **Roundtable:** Intellectual property issues and consortium agreements
(Projects holders)

9:45 **Modeling platforms** (15' each)
RECORD (Hélène Raynal)
GRAMP (Jagadeesh Yeluripati)
NREL Model Development Environment (MDE) (Mark Easter)

10:15 Coffee break

10:35 **Co-joined activities:** work plan, project organization and collaborations, deadlines and next meeting. (project holders)

12:45 Message from François Houllier, President of INRA.

13:00 End of workshop
Lunch

Afternoon – Projects sessions

Localisation: Rue Jean Nicot

14:00 **Parallel sessions** for projects
Parallel 1. CN-MIP (Sylvie Recous)
Parallel 2. Models4pastures (Val Snow)
Parallel 3. MAGNET (Mark Liebig)
Parallel 4. Comet-Global (Mark Easter)
Parallel 5. Integration of Rice Group to the model intercomparison activity
(Jean-François Soussana)

