



FACCE-JPI is the **Joint Programming Initiative on "Agriculture, Food security and Climate change"**. It brings together 21 European and associated countries to coordinate their research capacities to address the vital challenge of ensuring sufficient production of food, as well as feed, fibres and bio-fuels, in the context of demographic growth and a changing climate.

The Multi-partner Call on Agricultural Greenhouse Gas Research, initiated by FACCE-JPI with the American National Institute of Food and Agriculture of the USDA, New Zealand's Ministry for Primary Industries and Agriculture and Agri-Food, Canada aims to bring together excellent research consortia to enhance international collaboration in the face of the global issue of climate change mitigation.

In the frame of this call, the following project has been recommended for funding:

Basic Data

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| Title | C and N Models Intercomparison and Improvement to assess management options for GHG mitigation in agrosystems worldwide |
| Acronym | CN-MIP |
| Theme | Improved methodologies for quantifying GHG emissions and removals in agricultural systems and in national inventories |
| Topic | Greenhouse gas emissions in the agriculture sector arising from agricultural soils including crops and grasslands, domestic livestock and waste management systems |
| Duration | 01.01.2014 – 31.12.2016 |
| Total cost (in €) | 1 343 531€ |
| Requested funding (in €) | 536 288€ |

Coordinator

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Partners

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|--------------------------|---|
| Organisation Name | University Court of the University of Aberdeen |
| Country | UK |
| Organisation Name | Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum |
| Country | Germany |
| Organisation Name | University of Florence |
| Country | Italy |

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| Organisation Name | CRA- Consiglio per la Ricerca e la Sperimentazione in Agricoltura |
| Country | Italy |
| Organisation Name | Universita degli Studi di Milano |
| Country | Italy |
| Organisation Name | Università degli studi di Sassari, Nucleo di ricerca sulla desertificazione |
| Country | Italy |
| Organisation Name | The New Zealand Institute for Plant and Food Research |
| Country | New Zealand |
| Organisation Name | Colorado State University |
| Country | USA |
| Organisation Name | Woods Hole Research Center |
| Country | USA |
| Organisation Name | Queensland University of Technology |
| Country | Australia |

Summary

The “**C and N Models Inter-comparison and Improvement to assess management options for GHG mitigation in agrosystems worldwide**” (CN-MIP) addresses theme 1, topic 1 of the FACCE-JPI 2013 call. Our project will coordinate international development, evaluation and inter-comparison of agricultural process-based models to reduce uncertainty in estimating greenhouse gas emissions from crops, grassland and livestock systems. The project will focus on improving the simulation of management options to enable evaluation of credible mitigation strategies adapted to diverse agrosystems under different climatic conditions. CN-MIP responds to the priority of the core theme 5 "Mitigation of Climate Change" of the FACCE-JPI strategic research agenda, to improve the greenhouse gas (GHG) inventory methods, particularly the "certified" modelling TIER3 modelling approach for quantifying emissions and the effects of mitigation options. The project also supports initiatives outlined in the Global Research Alliance (GRA) on Agricultural Greenhouse Gases, which aim to improve measurement methodology and modelling, as well as inventory of GHG emissions and C sequestration in soils. The consortium comprises eleven partners: INRA (France), University of Aberdeen (UK), Helmholtz-Zentrum Postdam (GER), University of Florence (IT), CRA-Consiglio per la Ricerca in Agricoltura (IT), University of Milan (It), University of Sassari (IT), New Zealand Institute for Plant and Food Research (NZ), Colorado State University (USA), Woods Hole Research Center (USA), Queensland University of Technology (AU). The proposing partners are experienced modelers and experimentalists, already involved in internationally funded projects on measuring and modelling of greenhouse gas emissions, soil carbon sequestration, and reactive nitrogen, for a variety of agricultural conditions (annual crops, grasslands, tree crops) under temperate, Mediterranean and tropical conditions (GRA CN, Livestock and Cropland groups, AgMIP, MACSUR, Reactive N RCN, NANORP, etc.). This network will provide connections and sharing of models, modelling protocols and datasets, but also the necessary interactions with stakeholders. The project will be undertaken from January 2014 to December 2016, in 4 work packages (i) Definition of model data requirements, selection of process-based CN models (i.e. DNDC, DNDC mobile, DSSAT, Roth C, DayCent, PaSim, STICS, APSIM, EPIC, CN-SIM), selection of appropriate databases; (ii) development of common protocols for modelling and model inter-comparison; (iii) identification and testing of mitigation options, improvement of models for coverage, predictive capability and reliability; (iv) dissemination and training. Deliverables will be guidelines for the selection of database and the simulation of mitigation options, evaluation of uncalibrated and calibrated model performances for an array of GHG emission outputs, improved model tools, peer-reviewed research papers, communication and reports to policy makers and stakeholders, and training sessions for students and scientists.