

ME O1 Integrated observations and modelling of greenhouse gas budgets at the ecosystem level in the Netherlands

Project manager	Eddy Moors, dr. Cor Jacobs, prof.dr. Han Dolman		
Institute	Wageningen UR, CWK, VU University Amsterdam, Faculty of Earth and Life Sciences		
Email	eddy.moors@wur.nl, cor.jacobs@wur.nl, han.dolman@falw.vu.nl		
Consortium	Wageningen UR: Centre for Water and Climate, Soil Science Centre, NCP, Soil Science, PPS, METAQ, Agrotechnology and Food Innovations BV VU University Amsterdam, Faculty of Earth and Life Sciences Energy Research Centre of the Netherlands (ECN) TNO – Environment, Health and Safety Royal Netherlands Meteorological Institute (KNMI) University of Groningen		
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Context / Social problem

Under the Kyoto Protocol the Netherlands is bound to report its national greenhouse gas emissions. The uncertainty in these figures is still very high. The Netherlands is also committed to reducing the size of its greenhouse gas emissions; the effects of the measures taken will have to be established objectively.

What do we know/not know?

A significant part of our national greenhouse gas emissions are from the land surface. In contrast to industrial emissions, these terrestrial emissions depend strongly on a large number of highly variable environmental factors, such as the weather, biological processes, soil conditions and rural land management. The exact influence of these factors is poorly understood and estimates of the terrestrial component of greenhouse gas emissions are inaccurate at present. Many are based on global trends, and the extent to which these apply to specific areas like the Netherlands is not known. These estimates do not meet the future demands that will be made of these reports and accompanying uncertainty estimates after the end of the 'Kyoto period'. By influencing factors like the management practices of the land areas it is possible to reduce terrestrial emissions of greenhouse gases, but our knowledge of these processes is inadequate for developing tailor-made area-based measures. The lack of background knowledge is partly due to a lack of suitable observations and measurements.

What is being studied?

The project is investigating the influence of environmental

factors and agricultural and conservation management on greenhouse gas emissions. Innovative measurement methods, partly under development, are being used. The selection of methods was also partly based on the suitability of the techniques for future reporting objectives. Methods are being developed to improve estimates of greenhouse gas emissions in rural and natural areas in the Netherlands, and to determine their uncertainty margins. Ways of mitigating greenhouse gas emissions or promoting their uptake through changing land use management are also studied.

What are the results, and who are they for?

With ME02 and ME03, ME01 lays the foundation for future reporting obligations to be met by local and regional authorities and various government agencies. This basis consists of a combination of measurements and modelling which makes it possible to obtain realistic estimates of greenhouse gas emissions from rural areas and to monitor emission reduction measures. Insight into the workings of emissions will point managers of agricultural and nature conservation areas towards optimal combinations of functions in rural areas that will reduce national greenhouse gas emissions. The results will also be an important input to estimates of future trends in greenhouse gas concentrations in the atmosphere.

