

GHG-EUROPE - Greenhouse gas management in European land use systems



The GHG-Europe project aims to improve our understanding and capacity for predicting the European terrestrial carbon and greenhouse gas (GHG) budget by applying a systematic, comprehensive and integrative approach. GHG-Europe quantifies the annual to decadal variability of the carbon and GHG budgets of terrestrial ecosystems in EU27 plus Switzerland and in six data-rich European regions via data-model integration, diagnostic and predictive modelling. Models are calibrated by multi-site observations. Research includes CO₂, CH₄ and N₂O in forests, croplands, grasslands, shrublands, peatlands and soils. Via an integrated approach, GHG Europe scales up consistently from local to regional and continental scale via scale dependent error propagation and systematic quantification of uncertainties, model validation at different scales and top-down verification by atmospheric inversion models.

At regional and European scale lateral C transport by land use, trade and rivers are included. Variability in C and GHG budgets is attributed to natural (climate) and anthropogenic drivers (N deposition, land use, past and present management) by synthesis of past and emerging experiments, targeted observations in hot spots and hot moments and model sensitivity analyses. For this purpose, observations are extended to under-sampled regions and ecosystems with likely high importance for the European C budget: forests and land use change in Eastern Europe and Mediterranean shrublands. The future vulnerability of carbon pools and risks of positive feedbacks in the climate-carbon system are assessed by scenario analyses with biophysical models and by integrating feedbacks with socio-economic changes and EU climate and land use policies. GHG-Europe uses a bidirectional interaction with stakeholders to provide regular and timely scientific advice targeted to the emerging needs of the UNFCCC process and for implementing post-2012 climate commitments in Europe.

Research area: ENV.2009.2.1.3.1 Soil processes and modelling,
ENV.2009.1.1.3.1 Quantification and attribution of annual-to-decadal changes of carbon and GHG budgets in European terrestrial ecosystems to human and natural drivers and associated climate-carbon feedbacks

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Partners: 40

Start Date: 2010-01-01

Duration: 42 months

Project Cost: 8.93 million euro

Contract Type: Large-scale integrating project

End Date: 2013-06-30

Project Funding: 6.65 million euro

Project URL: <http://www.ghg-europe.eu>