

17. Verification approaches (WP 2.14)

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The objective of this work package is to organise three annual workshops on comparison of various possible approaches to the quantification of stocks and fluxes associated with land use change. This requires drawing together of the UK research community and linking with the recent initiatives arising from CarboEurope-IP.

The researchers include (i) modellers, mostly within CTCD, (ii) the eddy covariance flux community, (iii) inventory specialists, (iv) remote sensing specialists within CTCD, and (v) atmospheric scientists operating with tall towers and aircraft.

The first annual workshops has been delayed because of related CarboEurope meetings and discussions about the establishment of an infrastructure for a Europe-wide GHG-carbon monitoring system based also on models, flux towers and atmospheric measurements. This is mentioned here because it is highly relevant and synergistic with the present project. A first proposal for the preparatory phase of a European Integrated Carbon Observation System (ICOS) has been co-ordinated and submitted to the European Commission for funding by Philippe Ciais of the Laboratoire des Sciences du Climat et de l'Environnement, a joint research unit of the Centre National de la Recherche Scientifique (CNRS) and the Commissariat à l'Energie Atomique, two major funding agencies in France. The Partners include the Universities of Tuscia (Italy), Heidelberg (Germany), Amsterdam (Netherlands), Helsinki (Finland), Edinburgh (UK) and the Max-Planck-Gesellschaft (Germany).

The success of the system depends on financial support from member states, and one of the objectives in the preparatory phase of ICOS is to seek substantial funding for the required operational infrastructure.

The observational system would provide verification of GHG fluxes for European countries, dis-aggregation of fluxes into biogenic and anthropogenic components, and identification of the fluxes associated with particular land cover. The data and associated models would therefore enable 'what if' experimentation regarding the impact of making changes in land use.

Much relevant expertise in this area is now in the UK, and it is expected that UK funding agencies will have a major role in the success of ICOS, following the preparatory phase (2008-2012).

The first annual workshop on verification approaches within the UK is now being organised somewhat later than was planned: August 2007 rather than June 2007. By this time, the status of the ICOS bid to the European Commission is likely to be known; also the result of an attempt is being made to gain UK support from NERC.

The first annual workshop will contain these elements

- How the UK inventory is derived
- What Earth Observation can tell us

- Use of atmospheric measurements to verify the inventory
- Modelling the fluxes- data requirements
- Use of the ICOS approach after 2012
- Optimal design of a verification system

CTCD's work on the carbon fluxes associated with forests will be reported in Nature on June 14th 2007. The report provides a new insight into the way 'the hand of man' controls the carbon sink of forests through management (deliberate by afforestation, deforestation and general disturbance) and by fertilizing the forest (inadvertent through the deposition of nitrogen). The analysis is based on a sample of European forests and also new data from N American forests. Magnani F, Mencuccini M, Borghetti M, Grace J and 17 others (2007) The human footprint in the carbon cycle of established temperate and boreal forest. Nature ***, **-**.