ICOS/IMECC Workshop on Quantitative Network Design, Paris, June 11-12, 2009

ICOS/IMECC Workshop on Quantitative Network Design (QND) took place at Jusssieu in Paris (France) on 11-12 June, 2009. The workshop aims to discuss possible methods of QND and to apply the **IMECC NA2** research to the need of **ICOS** project.

Agenda

Thursday June 11

12:00 Gathering

12:30 working lunch nearby

13:45 Welcome and logistics (Rayner)

13:50 Introduction (Dolman)

14:10 Quantitative Network Design *by Peter Rayner, LSCE, Gif/Yvette, France*

Estimating European fluxes by various methods

14:30 Network Design: What we learned, what we want to learn (?) b*y Enrico Tomelleri, Max-Planck Institute, Jena, Germany*

15:00 Are representativeness and Network Design two different problems? *by Dario Papale, UNITUS, Viterbo, Italy*

15:30 coffee

15:50 Variational flux estimation *by Frederic Chevallier, LSCE, Gif/Yvette, France*

16:20 The Carbon Cycle Data Assimilation System, CCDAS *by Marko Scholze, QUEST, University of Bristol, United Kingdom*

Existing QND efforts

16:50 IMECC NA2: Development of a Network Design Tool
by Thomas Kaminski, Fastopt, Germany

17:20 Network design in ICOS: some issues
by Han Dolman, University of Amstersdam, The Netherlands

17:40 Discussion

Friday June 12

Getting down to business

09:00 What does ICOS need? (Ciais & Dolman)

09:30 Discussion

12:00 close

As a deliberately free-form meeting this agenda of course ran late as the discussion of each presentation took longer than proposed.

Over-arching questions:
What is the redundancy in the current network?
It was generally noted that this depends on the underlying complexity of the biosphere, itself a fundamental research topic and the subject of several actions arising from the meeting. We noted one could not answer this question without considering management.

It was noted that some questions had technical implications for the design of the ICOS instrument package, particularly the value of the virtual tall tower measurements.

We noted that the CCDAS tool being used in IMECC-NA2 is the only one currently using flux and concentration measurements simultaneously. It seemed valuable to use this shell around several models.

Several empirical methods can upscale flux measurements to continental carbon balances in which case the network optimisation problem becomes a sampling problem of climate and ecosystem variability. One can test this upscaling either with simple models or an artificial neural network by keeping back some flux sites for validation.

Actions:

- Modify IMECC QND tool to produce map of uncertainty (IMECC NA2)
- Add North America as target region (IMECC NA2)
- Seek further support for QND from UK and Germany (IMECC NA2)
- Produce map of Europe showing product of climate, PFT, soil and management disaggregations (Ciais)
- Develop ICOS network scenarios depending on involvement of various countries
- Provide information on representativity (Rayner)
- Generate footprints from FlexPart
- Discuss fossil-fuel with Ingeborg (Rayner)
- Discuss QND for non-CO2 gases (Vesala)
- Check on whether existing Jacobians allow us to test potential value of VTT (FastOpt)
- Prepare 2010 meeting in Amsterdam (ICOS)
- Prepare document on QND similar to the thematic centres (Dolman to prepare outline)
- Update the workplan (Rayner)
- Set up QND tool for upscaling (Papale)
- Generate transport-only error reduction calculation