

Status of SOLAS Activities in The Netherlands

(Submitted by Gerbrand Komen)

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1. Current status of SOLAS planning

In June 2001 a one-day SOLAS workshop was held at the University of Groningen with Paul Crutzen as keynote speaker and a poster session with some 25 presentations. This produced a little booklet, containing a listing of Dutch scientists having expressed interest in SOLAS.

A fairly large number of SOLAS-type activities is already under way. To mention a few:

Eddy accumulation technique

Among many projects the NOP has supported the eddy accumulation technique of Henk Zemmeling for air/sea exchange of both CO₂ and DMS, for which Zemmeling successfully participated in the US GASEX field study last February 2001, as well as a previous field experiment in autumn 2000, both kindly facilitated by Rik Wanninkhof, Wade McGillis, John Dacey and others in context of US programmes.

CARUSO

The just completed EU CARUSO project was focusing on carbon dioxide uptake in the southern ocean and among others was partly supporting the two southern ocean iron enrichment experiments SOIREE (1999) and Polarstern 18/2 in 2000. Both experiments had components relevant for SOLAS. The CARUSO website and database of seven participant institutes are now being completed for access by thirdparties. Overall CARUSO was a one million Euro subsidy.

IRONAGES

The ongoing EU IRONAGES project aims at improved Ocean Biogeochemical Climate Modeling. By including a realistic plankton ecosystem module within the OBCM's there will be more realistic simulation for five major bloom-forming taxonomic groups (diatoms, coccolithophorids, phaeocystis sp., N₂-fixers like trichodesmium, small prokaryotic picoplankton) with co-limitation by four nutrients (Fe, N, P, Si) towards improved modelling and prediction of air/sea fluxes of both CO₂ and DMS. Within IRONAGES there are twelve participating institutes. Overall IRONAGES is about 2.5 million Euro subsidy.

The effects of breaking waves and bubbles on air-sea gas transfer

TNO-FEL has coordinated the EU laboratory study LUMINY on the effects of breaking waves and bubbles on air-sea gas transfer. Results from LUMINY have in part been published, other publications are in preparation.

Atmospheric Nitrogen Inputs in the Coastal Environment

TNO has also coordinated the EU project ANICE (Atmospheric Nitrogen Inputs in the Coastal Environment). Results have been submitted. In both projects CO₂ transfer was included. Techniques applied were micro-meteorological and geochemical. Bubbles, which have a large influence on gas transfer, are studied with optical techniques. The bubble measurements are still being analyzed, in particular as regards the behaviour of bubble plumes (classification).

North Sea Platform (MPN)

KNMI is currently carrying out continuous flux measurements at Meetpost Noordwijk. These will be complemented with a wave follower experiment. A DMS experiment is planned for the Spring of 2003. Recently, Jan Fokke Meirink completed his PhD thesis entitled "The role of wind waves and sea spray in air/sea interaction".

Modelling and measuring of DMS and CO₂

The group of Winfried Gieskes is working on gas exchange. Winfried is also chairing SCOR Working Group 120 (Marine phytoplankton and global climate regulation: the *phaeocystis* species cluster as model). This working group will study the role of the ocean's microalgae in the cycling of elements that determine, to a large extent, the global climate. More in particular, this group will make an inventory of aspects that relate to cycling of biogeochemically relevant elements.

Earth System Modelling

Gerbrand Komen and Guy Brasseur are coordinating a modelling project which aims at the development of a flexible European Earth System Model. Three ocean biogeochemistry models participate: HAMOCC (MPI-MET), PISCES (IPSL) and HadOCC (Hadley Centre). A special effort goes into the definition of the interfaces with other components of the Earth System Model.

2. Future plans for national SOLAS activities, including opportunities for national participation in international SOLAS activities

Several activities are in the planning stage:

European Network on Ocean Carbon Cycle

Hein de Baar is preparing a proposal for an Integrated Project under the Sixth Framework Programme of the European Union. The topic is Ocean Carbon cycle and the Uptake of Fossil Fuel.

Eurocores

Prof. Gerhard Herndl and Hein de Baar have been working towards setting up an European network of six laboratories to be supported under the Eurocores umbrella of the European Science Foundation ESF. This initiative is supported by NWO, the Netherlands Organization for Scientific Research. When successful there would be a five years funding amounting to about Euro 250.000 per annum per nation, surely helpful for getting SOLAS underway.

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National SOLAS committee

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