

## Minutes of the SOLAS/ESA meeting

**Location and dates :** LEGOS, Observatory Midi Pyrénées, March 30-31, 2010

**Title of meeting :** Towards an ESA/SOLAS Collaborative action : Earth Observations for Ocean-Atmosphere Interactions Science

**Participants :** Diego Fernandez, Christoph Garbe, Véronique Garçon, Gerrit de Leeuw, Philippe Maisongrande, Aurélien Paulmier, Yves Du Penhoat, Jacqueline Stefels, Joël Sudre, Brian Ward, David Woolf, Hussein Yahia.

The agenda of the meeting is provided at the end of the minutes.

On **Day 1**, Yves Du Penhoat welcomed the participants after a brief description of the Observatory Midi-Pyrénées activities and research themes from the LEGOS. Then Véronique Garçon recalled the basics of the SOLAS Science and listed the SOLAS Mid-Term Strategic Planning which are underway : Ocean-derived aerosols : Production, Evolution and Impacts; Ship plumes : Impacts on atmospheric chemistry, climate and nutrient supply to the oceans; Atmospheric control of nutrient cycling and productivity in the surface ocean; Air-sea gas fluxes at Eastern boundary upwelling systems; Sea ice biogeochemistry and exchange with the atmosphere; Large scale experiments for SOLAS; and Surface ocean and lower atmosphere observations (incl. MOIN : Minimalist OceanSITES Interdisciplinary Network). Then a series of introductory presentations followed (see Agenda at end of Minutes) along with questions and discussions. Then Diego Fernandez (ESA) presented what was the philosophy behind the call for Support to Science Element (STSE), the new ESA tool to support scientific activities aimed at:

- Developing of novel mission concepts addressing key observational gaps and scientific needs in preparation for the next generation of European scientific missions.
- Developing of innovative algorithms and products establishing a sound scientific basis for novel applications that may exploit the increasing ESA multi-mission capacity.
- Supporting the Earth System Science Community to maximise the scientific return of ESA missions.
- Reinforcing ESA scientific collaboration with major international scientific programs.

In this context, ESA has established a close working collaboration with major international scientific groups such as GEWEX, iLEAPS or CliC via the definition of common scientific priorities, the organisation of joint workshops and conferences, the publication of joint papers and scientific reports and the preparation of dedicated projects funded under the STSE to support scientific activities addressing the main scientific priorities of these groups while maximising the scientific return of ESA data. For SOLAS, a few scientific themes need to be identified which will help in preparing a Scientific Requirement Document describing the major scientific needs and priorities of the SOLAS community in terms of novel observations, products, models and scientific results where ESA missions and EO data may contribute. This document will provide a basis for ESA to prepare a potential ESA-SOLAS STSE dedicated project in summer or early fall 2010.

ESA envisions around 1 MEuros for two to three 2-year projects, meaning a budget around 300 KEuros for each project. The contribution of an industrial partner is not mandatory. The ESA call is open to anybody, public or private institutions. The selection criteria are: expertise of applicants, background, quality of methods proposed to achieve the project objectives set

by ESA, and management of the project in order to fit with the project articulation into Phases and Work Packages. ESA will follow phase by phase the progress of each selected project with a meeting organized after one year. The ESA Officer to follow this STSE will be most likely Craig Donlon (to be confirmed). Any equipment bought from these ESA funds will remain ESA property. If for the sake of the project, *in situ* experiments are necessary, they could be partially funded but the rationale has to be expressed very clearly. After approval of the different themes by the SOLAS Scientific Committee end of April 2010, these themes will be sent to Diego Fernandez at ESA. Diego Fernandez mentioned there were enough interesting science themes to launch a STSE for SOLAS.

The group selected 4 themes: Sea Spray Aerosol Production, Sources and sinks of climatically-active gases in the Eastern Boundary Upwelling and Oxygen Minimum Zone (OMZ) systems, Air-Sea Exchange of greenhouse gases using satellite data, Sea ice biogeochemistry and interactions with the atmosphere. The group started writing up these 2 pages document per key topic for defining the Scientific Requirement Document for ESA.

On **Day 2**, the group edited all the texts and finalized them.

### **Agenda of Meeting :**

#### **Tuesday, March 30, 2010 :**

**09:30** Welcome at LEGOS at the Observatory Midi Pyrénées (Yves Du Penhoat)

SOLAS mid-term strategy initiatives (Véronique Garçon)

**09:45** Introductory presentations

The use of remote sensing to determine sea spray aerosol production and ensuing dispersal and effects (Gerrit de Leeuw)

Remote Sensing of Air-Sea Exchange; Some Options (David Woolf)

Quantification of air-sea gas exchange including whitecapping from remotely sensed data (Brian Ward)

Measuring sources, production rates and transport of trace gases from satellite remote sensing (Christoph Garbe)

**11:00** *Coffee*

**11:15** : Air-sea fluxes at Eastern Boundary Upwelling and OMZs systems (Aurélien Paulmier)

Motion analysis in turbulent datasets with the Multifractal Microcanonical Formalism and cascading properties (Hussein Yahia)

Multiscale methods for the evaluation of high resolution ocean surface velocities and subsurface dynamics from ocean color, SST and altimetry data fusion (Joël Sudre)

Sea ice biogeochemistry and exchange with the atmosphere (Jacqueline Stefels)

Providing satellite images: aerosols and atmospheric CO<sub>2</sub> contents, ocean colour in various conditions (coastal waters, sun glint and atypical phytoplankton blooms) (Véronique Garçon on behalf of Capgimini)

**13:00** *Lunch*

**14:00** Discussion over of the list of priority areas set by ESA and potential others set by the SOLAS group : Summary of ESA observational capacities and Scientific Support Program (Diego Fernandez)

**16:00** *Coffee*

**16:15** Selection of two or three key topics with scientific rationale, need for remotely sensed observations, and anticipated benefits – Link with potential SOLAS short term initiatives

**20:00** *Meeting Dinner* La Braisière (Carmes Subway Station) 42 rue Pharaon

**Wednesday, March 31, 2010:**

**09:00** Continued selection of key topics

**10:30** *Coffee*

**11:00** Writing and editing of the 2 pages document per key topic for defining the Scientific Requirement Document for ESA

**13:00** *Lunch*

**14:00** Discussion over a larger ESA-SOLAS scientific consultation Workshop to be eventually held by ESA in June 2010.

**15: 30** *Coffee*

**16:00** Close up of meeting.

**Appendix**

The four documents prepared during the Meeting to be sent to ESA are attached below.