

Minutes of the 8th SOLAS Scientific Steering Committee Meeting

5th, 6th & 9th May 2008

**Center for Biodiversity Conservation
Kirstenbosch National Botanical Gardens (May 5-6)
and Cape Town International Convention Center (May 9)
Cape Town, South Africa**

In attendance:

BA	Bob Anderson	GEOTRACES Co-Chair; (LDEO) USA
BH	Barry Huebert	Member; USA
DK	David Kieber	Member; USA
DW	Doug Wallace	Chair; Germany
EB	Emilie Brévière	IGBP and IPO Project Officer; Sweden
ES	Eric Saltzman	New Member; USA
EU	Ed Urban	SCOR; USA
GB	Georgia Bayliss-Brown	IPO Research Associate; UK
GL	Gerrit de Leeuw	Member; Finland
GS	Guang-Yu Shi	Member; China
IC	Isabel Cacho	Member; Spain
JH	Jeff Hare	IPO Executive Officer; UK
JS	Jacqueline Stefels	New Member; Netherlands
OU	Osvaldo Ulloa	Member; Chile
PL	Peter Liss	Past Chair; UK
RG	Roland von Glasow	New Member; UK
ST	Shigenobu Takeda	Member; Japan
TJ	Truls Johannessen	Member; Norway
VG	Veronique Garcon	Member; France
WM	Wade McGillis	WCRP Member; USA

Apologies:

ChL	Christiane Lancelot	Member; Belgium
CIL	Cliff Law	Member; New Zealand
NK	Nilgun Kubilay	New Member; Turkey
SG	Sergey Gulev	WCRP Member; Russia
VR	Vladimir Ryabinin	WCRP; Switzerland

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- Registrations were used to pay for the plenary speakers, and this left very little resource for other costs of the OSC

Barcelona 2009

Presented by: Isabel Cacho

Isabel presented an overview of the facilities, accommodations and financials for OSC 2009.

Background

- The meeting will be held between Monday 16th November – Thursday 19th November 2009.
- The venue is at the Cosmo Caixa, which is the science museum supported by the Caixa Bank in Spain.
- The facility has accommodated us with reduced costs, provided we agree to provide public activities, including educational exhibits and public lectures.
- Barcelona is well-connected with transportation systems, reasonable climate, and the facility is good for the purpose.

Venue

- The main auditorium only seats 312 people, which is a limitation. However, an adjacent room can be used to hold an additional 220 people with a closed-circuit video system. We may need to discuss more completely the possibility for audience questions, etc from the second auditorium.
- There are 5 additional rooms for meetings, synthesis sessions, etc which hold about 12, 55, 65, 65 and 80 people.
- There will be a tent area for posters and, possibly lunches, and the coffee area has been determined.

Costs

- These conference facilities are cost at a high price reflecting the demand from international business. The cost for the tent is about 9500 EUR, and the poster boards will require about 6600 EUR.
- Lunch, coffee, ice breaker, dinner, etc will total about 85k EUR.
- Current local sponsorship is as follows:
MEC 20k EUR;
AGAUR 6k EUR;
Uni 3k EUR;
CSIC 3k EUR;
ACA 6k EUR and
Aignes del Liebreget 3k EUR.
We are hoping that local sponsorship will total to between 40-60k EUR.
- Locating funding is at the forefront of importance at this stage in organising the conference and funds raised outside of our normal contributors relays back to lesser registration fees and lower risk in covering cost commitments. A benefit of the outreach, an inevitability of the agreement in using Cosmo

Caixa, is that it may open us up to more funding sources.

Commitments

- The museum has offered the free usage of the rooms on the agreement that they may hold a 'SOLAS Week' of activities, with demonstrations for families and kids on weekends and mornings, 2-3 workshops or experiments for kids, and 2-4 talks to the general public perhaps including a panel discussion. There will be a press release associated with these events.

Most of the SSC believe that the technical details for the meeting will be worked out and are excited about the venue and the possibilities that Barcelona present. We need to find out how to develop international press to attract attention to the conference.

Discussion & Comments

Schedule

- **Jeff** points out that organizing steering committees must be developed, and ideas are needed for the themes, plenary speakers, and outline for the outreach effort. We need to develop a strawman list of potential speakers and topics.
- **Peter** asks for more time (40-45 minutes) for each plenary speaker.
- **Doug** suggests that the sessions be centered around the presentations (posters and plenary) during the meeting.
- **Barry** asks 'what if we develop the controversial topics for the sessions?' For example, CLAW hypothesis, iron fertilization, geo-engineering, etc.
- **Peter** suggests that the presentation topics from the plenary speakers can provide the introductions to the synthesis sessions. This will require careful planning by the OSC organizers.
- **Doug** agrees that the plenary sessions can raise the topic awareness for the delegates' considerations and this will provide discussion time for each plenary talk.
- **Isabel** opines that young researchers be sought as plenary speakers and that they be given priority for financial support.
- **Doug** states that we are also asking the plenary speakers to lead discussion in the afternoon sessions
- **Ed** suggests that the SSC come up with a list of key individuals who will be charged with development of the synthesis sessions.
- **Roland** states that going into Xiamen, he didn't know what was expected of participants in the afternoon sessions. People should know to be prepared to participate in the discussions.
- **Dave** felt that it isn't reasonable for the sessions to be planned around 2 hours of discussion alone. There needs to be some groundwork and structure to stimulate debate.
- **Eric** suggests that there be very short introductions for posters; to illuminate contacts of comparable topics.

- **Isabel** states that perhaps there will be too many posters (>200?) to allow for these 1-minute intros. The poster sessions should provide the depth and breadth of the project, while the plenary sessions should provide discussion topics of high interest.

Outreach

- **Doug** agrees that the outreach activities are a great opportunity for SOLAS to be presented to a larger audience. The national programmes should be engaged to develop the outreach activities.
- **Oswaldo** suggests that the SSC take a leading role in developing the public programme.
- **Isabel** points out that we need to develop a list of projects to be presented during the week, and the museum's shop will actually build the demonstration materials, etc.
- A small group of individuals is charged with discussing the outreach over dinner (includes **Oswaldo, Vero, Dave, Barry, Eric, Isabel, Jacqueline**). **Barry** and **Dave** have committed to put together one of these demos.

Funding

- **Doug** suggests that EU funding should be sought for the OSM costs.
- **Ed** suggests that national funding sources be sought for the plenary speakers.
- **Isa** stated that with the aid of the IPO a leaflet about the OSC should be developed for potential funders.

Decisions

1. A list of potential speakers (of a fair sex/age/nationality coverage) for the plenary talks and public lectures must be developed (see below 'Open Science Conference elections' for speakers'.
2. The longer plenary talks will act as introductions to topically-exclusive, directed planning and synthesis sessions, a list of controversial/provocative topics should be written.
3. These sessions will be led by an elected champion, closely related to the SSC.
4. An outlining abstract and questions for debate will need to be submitted prior to the meeting.
5. Posters will be divided randomly over the poster sessions (rather than by foci).
6. Develop outreach using the newly constructed inter-SSC group.
7. Investigate international press attention (contact IGBP).
8. Invited speakers should have their travel and accommodation paid for, following the trend of previous meetings. However, if fewer lecturers are invited, , finances will go further.
9. National/EU funding should be sourced/requested
10. A funding introduction leaflet will be created for local sponsors

OSC suggestions for speakers

i) Plenary Speakers

Chris Fairall	Mick Follows	Cecile Giueu	Mike Bender
Rafel Simo	Dave Karl	Jan Kaiser	Steve Woofsy
Colin O'Dowd	Cristina Facchini	Kevin Arrigo	Sybil Seitzinger
Wally Broecker	Douglas Nilsson	Carles Pelejero	Athanasios Nenes
Ulf Reibesell	Paul Crutzen	Uli Platt	Frank Dentener
Mary Ann Moran	Stephane Blain	Andreas Oeschies	Taro Takahashi
Paul Falkowski	Hein de Baar	Phil Boyd	Michael Tjernstrom
Caroline Leck	Keith Hunter	Vicki Fabry	Anya Waite
Dick Feely	Rik Wanninkhof	Osvaldo Ulloa	Laura Farias
Jean Sciare	Jorg Schulz	Lee Kump	K.K. Liu
Hui-Wang Gao	Yoko Yokouchi	Trish Quinn	Jean Pierre Gatuso
Hiroki Kondo	Nick Bates	Tim Bates	Bob Weller
Christoph Garbe	Ken Denman	Dave Erickson	Dileep Kumar
Margaret Leinen	Tony Michaels	Gill Malin	Andy Ridgwell
Ian Brooks	Victor Gallardo	John Cullen	Claudia Benitez-Nelson
Detlev Stammer	Ken Bruland	Michael Schulz	Nicolas MetzI
Paty Matrai	David Ho		

ii) Young Researchers

Daniela del Valle, Rebecca Langlois, Christa Marandino, Sergio Vallina, Alfonso Sainz-Lopez, Deirdre Toole, Jens Ehn, Barbo, Coleman, Roberta Hamme

iii) Public Lecturers

Barry Huebert, Paul Falkowski, Dave Karl, Susan Solomon, Corinne LeQuere, Osvaldo Ulloa, Doug Wallace, Peter Liss, Rafel Simo, Melchor Gonzalez-Davila, Magdalena Santana, Aida Rios, Veronique Garcon, Isabel Cacho

iv) Steering/Organizing Committee

Peter Liss, Isabel Cacho, Doug Wallace, Rafel Simo, Melchor Gonzalez-Davila, Javier Aristegui, Magdalena Santana, Veronique Garcon, Gerrit de Leeuw, Johannessen
Perhaps include the entire SOLAS SSC and IPO Officers

v) Outreach Committee

Veronique Garcon, Eric Saltzman, Isabel Cacho, Dave Kieber, Barry Huebert, Jacqueline Stefels

3 SOLAS Summer School (SSS)

Presented by: Véronique Garçon

Vero presented a review of SSS07 and developments for SSS09.

Schedule

- The dates for the SOLAS Summer School 2009 have been set and the institute booked for 3rd – 15th August 2009.
- Application will open in mid November 2008 with the deadline for application being in February 2009.
- Following the marked success of the SSS07, by verbal comments, from both students and lecturers, and the feedback forms; the schedule is expected to follow a similar path for SSS09. The schedule consisted of three days of introductory lectures; three days of practical workshops; a rest day and a further four days of lectures, with student presentations, poster sessions and special sessions incorporated into the course.

Funding

- Overall costs for the Summer School are more than 160k EUR.
- The registration fee for the school has been established at 450 EUR.
- **Vero** has received 15k EUR from CNES for the SSS, a portion of this will be used to pay for five days of ship time will cost 5k EUR, significantly greater than the 400EUR/day for SSS07. Further funding must be sourced by SSC members/National reps from international bodies/institutions. It was voiced that it would be helpful if the IPO could provide a standard document which can be forwarded to funding bodies.
- Thanks to **Jacqueline** who has committed the remainder of one of her project's unspent funds for the SSS and to **Vero** who has already secured the funding for the French applicants.

Textbook

- A book is being developed, under the editorial oversight of Corinne LeQuere and **Eric**, and the estimated cost of the book is 85 EUR. **Eric** indicates that the chapters are currently under development, with 13 chapters to be sent to the publisher (AGU) in October. The publisher requires 15k USD for color figures in the book, although the resource to pay for this has not been determined. It was decided that each student attending the SSS09 will receive a copy of the textbook and that this cost will be included in the registration fee.

Decisions

11. The following national efforts and institutions should be contacted: UK-SOLAS, SOLAS-Germany, SOLAS-Japan, Canadian-SOLAS, SOLAS-Spain, Indian-SOLAS, Southern African SOLAS, NASA, NOAA, NSF, IAI, Global Environmental Fund of World Bank, ONR, IOC, SCOR, APN, Chinese Academy of Sciences, Abdus Salam International Center for Theoretical Physics (etc.).

7 Implementation (IMP) Groups and Collaborations

i) IMP1

Presented by: Doug Wallace

The IMP1 structure isn't currently functional, with co-Chairs Bill Miller and Mits Uematsu now cycled off the SSC. Part of the problem with functionality of this group is the fact that IMP1 science is so broad. DW suggests that changes in the leadership/structure of IMP1 be put off until we've brainstormed on new scientific ideas for the project.

Decisions:

19. No changes to IMP1 leadership and structure of IMP1 will be made until new scientific ideas are decided.

ii) IMP2

Presented by: Wade McGillis

Wade provides an introduction to IMP2 through the map of SOLAS observational provinces and the IMP2 mission statement. IMP2 focuses on improvement to gas transfer parameterizations, understanding the effects of sea spray on reactive gases, bubbles, coastal gas exchange, over-ice observations, etc.

- As Chair, **Wade** has asked each member of IMP2 to seek national/local support to conduct an activity within the group. This shares the financial burden across the many groups.
- In May 2009, members of IMP2 have proposed to conduct a joint meeting with the GasEx/DOGEE experimental campaigns (USA and UK, respectively). These experimental efforts share some common research goals (process studies to make progress on understanding air-sea gas exchange and to improve parameterizations).
- There will be a special session on these cruise results at the 2008 AGU in San Francisco.
- IMP2 coordinates significantly with the Working Group on Surface Fluxes (WGSF) of WCRP, and there are two papers under development by the WGSF (one on gas exchange, one on particles).
- IMP2 is also involved in OceanSITES with VOS and buoy observations. The Shipboard Automated Meteorological and Oceanographic System (SAMOS) is an effort to provide accurate high-quality, high-resolution observations from research vessels and VOS. The Ocean Research Interactive Observation Networks (ORION) has developed sea-floor modular mooring systems for shelf observation systems.
- IMP2 seeks deeper engagement with IMP1 and IMP3.
- The 6th International Conference on Air-Gas Transfer will be held in Kyoto, Japan, from 17 – 21 May 2010. SOLAS should play a major role in developing the program for this conference.

Decisions:

20. SOLAS should consider developing a programme for the 6th International Conference on Air-Gas Transfer (May 2010)

iii) IMP3: Joint Session with IMBER

Presented by: Arne Koertzinger and Truls Johannessen

Truls is now the sole Chair of the SOLAS-IMBER-CARBON (SiC) group and continues to liaise with IOCCP, and he provides the overview of this group.

- The SiC has three sub-groups: Surface Ocean Systems (Nicholas Metzl, Chair), Interior Ocean Carbon Storage (Niki Gruber, Chair), Carbon Cycle Climate Sensitivities and Feedback, (Kitack Lee, Chair).
- The Interior group has developed a whitepaper advocating the implementation of oxygen sensors onto ARGO buoys.
-Five regional groups have been identified: Atlantic Ocean (Ute Schuster, lead), Pacific Ocean (Dick Feely, lead), Coastal and Marginal Seas (Arthur Chen and Alberto Borges, leads), Indian Ocean (V.V.S.S. Sarma, lead) and Southern Ocean (Bronte Tilbrook, lead).
- Important work is being conducted in the future oceans area, including new initiatives on acidification (EPOCA) and mesocosms (Bergen and IFM-GEOMAR, etc).

Meetings and Products

- Based on the successful May 2007 IOCCP-sponsored meeting on Surface Ocean Carbon Variability and Vulnerabilities (SOCVV) in Paris, there is a special issue of DSR being coordinated with 15 contributions.
- The next CARBOOCEAN meeting will be held in December 2008, and another meeting with IOCCP is planned for June 2009.
- A Global Carbon Synthesis symposium is planned for July 2009 in Switzerland.

Related Projects

- Borne of the association of SiC with IOCCP; is a responsibility to support the Global Ocean Ship-based Hydrographic Investigations Panel (GO-SHIP) and the Surface Ocean CO₂ Atlas (SOCAT).
- Arne Koertzinger (IMBER SSC) presents the whitepaper on oxygen sensors for ARGO floats and discusses Oxywatch, which is a proposed project to develop a pilot study on oxygen depletion zones. This project is proposed for 4 years at a level of 3.5mEUR and will develop oxygen sensors for float platforms.
- The project named CARINA (CARbon dioxide In the North Atlantic) is collecting CO₂, oxygen, and nitrogen from over 200 cruises.

8 Sponsors

i) IGBP

Presented by: Emily Brévière (Deputy Director of Natural Sciences, IGBP)

Emily presents a brief discussion on IGBP.

- A new Director has been named (Sybil Seitzinger), and the IGBP review is currently underway.
- A possible merger with WCRP is being developed, but the timing is uncertain.
- A recent IGBP sponsored workshop on IPCC AR4 has resulted in a publication of review papers.

ii) SCOR

Presented by: Ed Urban (Executive Director, SCOR)

Ed provides a presentation on SCOR, including the SCOR 50th Anniversary event at WHOI in October 2008.

- The High CO₂ World Symposium is also in October 2008, and there are scheduled some discussions on biological processes. An additional day has been added for public and policy outreach activities. Many of the sessions are biological and/or modeling-oriented. It is expected that a special issue of Biogeosciences will come out of this symposium.
- The guide to best practices for shipboard CO₂ measurements (Dickson, Sabine and Christian, editors) has been published.
- A SCOR project summit meeting is scheduled for May or June 2009 in Delaware.
- GEOHAB will conduct a modeling workshop in June 2009.

iii) iCACGP

Presented by: Maria Kanakidou (President, iCACGP)

Maria provides a brief overview of the organization of the Commission.

- Kimitaka Kawamura could be considered as a liason between iCACGP and SOLAS.
- Requests for the attendance and the suggestion for special SOLAS sessions for the IAMAS-IAPSO-IACS meeting to be held in Montreal, Canada dated 19th – 29th July 2009. (<http://www.iamas-iapso-iacs.2009.montreal.ca>). The theme of the conference is 'our warming planet', and it is expected that 1500 people will attend. There will be discussion on megacities (air-pollution in global environment) as well as a session on biogeochemical cycles and climate.
- IGAC and iCACGP will co-sponsor a conference in Halifax in July 2010, and a half-day of SOLAS sessions could be organized.

Decisions:

25. A SOLAS session should be set up for the IAMAS-IAPSO-IACS meeting

9 COST Action 735

Presented by: Jeff Hare

Project Integration

- The SOLAS Project Integrator, Tom Bell, works closely with COST Action 735, is developing distinct areas of development for flux products with a new DMS climatology (database created by Jamie Kettle but being revisited by Rafel Simó and Aranzazu Lana), organohalogenes, alkyl nitrates, isoprene, methanol, ammonia, aerosol/dust, transfer velocity, dry/wet deposition, CO₂, NH₄, N₂O (database created by Freing and Bange).

Meetings

- a 'k-Conundrum' workshop in Norwich (leads were **JH** and David Woolf), which sought to outline the current state-of-the-art for gas and particle transfer parameterizations and to recommend to the air-sea exchange community as to the appropriate use of parameterizations (use a Sweeny-modified Wanninkhof 1992 routine when only wind information is available, else use the NOAA-COARE algorithm of Fairall); and
- a workshop on 'Short-lived halocarbon intercalibration' that was held in London on February 4th (leads were Jim Butler and Tom Bell). This latter workshop sought to develop ideas to discriminate between environmental and measurement variabilities. Bromine and iodine compounds are involved in production of oxidizing compounds in the MBL. The data sets are difficult to compare, and long-term strategies are needed. Thus, a group has formed under COST-735 for this purpose.

Finances

- Future workshops can be funded with an allocated fund of 90k EUR over a period of the next 3.5 years of the COST Action-735, although it can only be used to fund European attendance. These workshops need to be coordinated with other resources (co-funding) to allow for participation beyond the European arena.
- There has been a fundamental problem in executing the Action 735, due to inadequate leadership. We need to press upon the leadership to develop meaningful workshops over the next couple of years.
- Furthermore, the Chair, **JH**, will be stepping down in August, and a suitable replacement needs to be identified.
- The funding for the networking project is managed in Brussels, but the money is meant to be transferred to control of the IPO at UEA.

Discussion & Comments

- **Peter** suggests that an Executive Committee be formed to provide impetus to the Management Committee and co-Chairs of the Working Groups as to what workshops should be developed.

11 Major new activities & developments

i) ADOES

Presented by: Guang-Yu Shi

ADOES is the Asian Dust and Ocean Ecosystems Study, and this activity arose from discussions in Halifax (OSM 2005). They have established a working relationship with Canadians (Maurice Levasseur, for example), and this may bring a financial infusion to the SOLAS-China effort. The project has developed collaboration with Canada (Levasseur is the Canadian lead). Asian dust is one of the key 'dust regimes' including the Sahara and Patagonian areas. This project can be a central component of a broader regional initiative into studying the effects of Asian dust on marine ecosystems, and it also includes atmospheric transport and chemical transformation. Effects downwind (and downstream) can be studied in cooperation with other international efforts.

- There have been two workshops based in Asia to promote this collaboration, which includes China, Japan, Korea, etc.
- Possible connections with iLEAPS should be investigated.
- **GS** presents the project and asks that the SOLAS SSC provide them with Task Team status. Support from International SOLAS is important for financial backing from Asian nations.

Discussion & Comments:

- **Gerrit** indicates that iLEAPS is interested in dust transformations and satellite observations.
- **Doug** indicates that the SSC should endorse ADOES as a task team, particularly as we need to more deeply engage in Asian activities. Perhaps IGAC and iLEAPS will be interested to partner with us in this endeavor.
- **Isabel** notes that the palaeo community is also interested in this research area.
- **Vero** asks about the definition of 'Task Team'. What does this designation provide?
- **Doug** responds that a Task Team is provided with a particular short-term task, and we should require that they develop and coordinate a research program.
- **Eric** says that a Task Team should conceive and develop the plan, but then anyone can do the work (including people within and outside the 'Team').
- **Peter** indicates that HitT did write up a whitepaper, but they have been relatively inactive since. It is up to the larger community to take up the mantel.
- **Doug** indicates that we need to support SOLAS-China and the larger Asian-SOLAS effort with an endorsement of ADOES as a regional-scale Task Team that will develop and coordinate regional research (China, Japan, Taiwan, Korea, etc).

- **Barry** suggests that perhaps Joe Prospero should be involved and that the COST-735 be engaged to request his datasets. These valuable time series should be archived before he retires.

Decisions:

29. SOLAS to endorse ADOES as a regional task team **and** connect with iLEAPS and IGAC to partner in this endeavour

30. COST-735 should contact Joe Prospero, requesting his datasets (Asian dust initiative).

ii) HitT

Presented by: Roland Von Glasow

Roland introduces the Halogens in the Troposphere Task Team and discusses the current status.

- Two special sessions were held at AGU (San Francisco in Dec 2007) and at EGU (April 2008 in Vienna), and over 50% of the presentations were on marine boundary layer and polar regime halogen chemistry.
- In June 2008, there is to be an AICI-HiT workshop at BAS to improve the modelling of field data and to define key questions and approaches to advance polar and free tropospheric halogen chemistry research.
- Future aims of HitT include increasing research on megacities and ship plumes, making use of Cape Verde observatory, volcanic plumes, bromine in polar regions, interactions with mercury, etc.

iii) VOCALS

Presented by: Barry Huebert

Barry provides some perspective on the project, which originally had a significant SOLAS component (DMS fluxes through CLAW hypothesis to cloud development and radiative effects at the surface). Due to leadership and funding issues, SOLAS has been somewhat side-tracked, although Paty Matrai and **Barry** will be involved (productivity measurements and DMS fluxes, respectively). In some respects, this project is a lost opportunity for SOLAS, but this was not under our control. There will be no measurements on oxidation chemistry, very little aerosol observations, etc. There will be CCN/cloud connectivity measurements, but the SOLAS connection is weakened from original plans. This project demonstrates some of the difficulties of developing multi-national expeditions, in that mechanisms for national agency funding are not necessarily conducive to good science.

Discussion & Comments

- Bob Duce (guest in the session) points out that the IGBP National Committees may be of assistance to interact with the national funding agencies.

iv) ASCOS

Presented by: Gerrit de Leeuw

Gerrit provides a brief on the Arctic Summer Cloud Ocean Study, which will occur in June on the icebreaker Oden. This project looks at the feedback between biota, particles, CCN and clouds. Cloud and aerosols are the largest source of uncertainty in Arctic climate models. Each experiment will operate from individual research grants. The fundamental questions to be answered are whether or not marine organic matter enriched in aerosols are a source for CCN, are a driver of aerosol photochemistry, are responsible for production of oxidants, VOC's and halogens, and if they interact with terrestrial aerosols. Experimental characterization of aerosols will be accomplished, including physical size and chemical composition. There is also a modeling component to the effort.

v) ECEARTH

Presented by: Jacqueline Stefels

Jacqueline briefs us on this effort to use an Earth system weather model at ECMWF to provide short-term climate forecasts. The model is unique in that it assimilates a large array of observations, and the products can be readily verified from near-term observations. **Jacqueline** notes that the biogeochemistry of the Arctic is distinctly different than that of the Antarctic, particularly the DMS chemistry through the ice.

vi) OceanSites

Presented by: Doug Wallace

The aim of OceanSites is to set up a long-term time series for the surface ocean. Traditionally, the physical oceanography community has developed these resources, gradually introducing air-sea coupling (for example, incorporating observations of momentum, heat and moisture fluxes from sea to air) and now integrating biogeochemical observation systems. This array includes permanent moorings that measure temperature, currents, salinity, oxygen, sediment traps, pCO₂, optics, etc. Data will be available in real-time and multi-disciplinary. MOINS (the Minimalist Ocean Systems Interdisciplinary Network) can be used to move to a global level. Maintaining moorings is expensive, and it is thus prudent to keep the biogeochemical observations at a limited level for now (oxygen, carbon dioxide, nutrients, spectral radiometer, etc) in selected biomes or biogeochemical provinces. A genuine benefit of this project will be that it can provide SOLAS with long-term time series.

vii) Oxygen Minimum Zones (OMZ)

Presented by: Veronique Garcon

Vero provides some background on OMZs, including the Eastern Tropical Pacific area. This chemistry affects the nitrogen cycle and the anamox processes. The French are proposing OXYCLINE to determine the control mechanisms of biogeochemical activity by linking bulk measurements of bacterial communities, quantification of biogeochemical processes and bacteria, and investigate the variability of the environment and its contribution to OMZ's. This effort is a collaboration with CICESE (Mexico) and institutions in Columbia, Denmark, Germany (IFM-GEOMAR), Spain

(CSIC), and the US (MIT), and the work will attempt to explain why these systems develop, what is the role of nitrogen to these OMZ's, what is the role of CO₂?

Discussion & Comments

- **Doug** points out that this research is also of significant interest to IMBER.
- **Isabel** mentions that the paleo community is also interested in these systems.
- **Oswaldo** indicates that these OMZ regimes are also important for DMS chemistry and therefore may play a role in atmospheric processes (CLAW, for example).
- **Barry** points out that these regimes are also of interest to ADOES and other dust deposition areas in that dust carries nitrogen to the ocean surface.

Decisions:

31. Discuss the involvement of IMBER and ADOES with OMZ

32. DMS, palaeo- and dust communities should be considered for involvement in OMZ effort

viii) UK-SOLAS

Presented by: Peter Liss

Peter provides a very brief overview of the project to date. Seven cruises have been conducted under UK-SOLAS, 25 projects have been funded, the Cape Verde Observatory has been developed and is coordinating with TENATSO, and the Centre for Observation of Air Sea Interaction and Fluxes (CASIX) has coordinated with UK-SOLAS (satellite observations). An important paper by Schuster and Watson indicates that the North Atlantic is becoming a less efficient sink for CO₂. A major initiative on ocean acidification is being formulated.

ix) Halocarbon Intercomparison Workshop

Presented by: Roland von Glasow

Roland outlines the COST-735 / UK-SOLAS sponsored workshop on intercomparison of marine observations of halocarbon species which took place in London in early February 2008. Jim Butler (NOAA) and Birgit Quack (IFM-GEOMAR) are the chairs of the group, and the group met to discuss whether the observational differences are a result of spatial or seasonal variability or due to observational differences. They discussed development of international standards for calibrations and brainstormed on finding a parent organization for long-term intercomparison and quality control. In addition, proposals were presented on developing field campaigns within the next few years.

x) Iron Fertilization

Presented by: Shigenobu Takeda

Shigenobu talks about the SCOR-sponsored initiative to compile the existing Fe-fertilization data sets (those which were synthesized in the seminal Boyd et al and Jickells et al Science papers) into common format and to provide a legacy for their long-term maintenance. The project began in early 2008, and funding is conditional on

12 Future of SOLAS

Discussion & Comments

- **Roland** posits that important areas include ship plumes (photochemistry in the boundary layer, nitrates and sulfates into the ocean, SO₂ particle growth, DMS chemistry, etc), megacities (ozone budget, etc), and open ocean halogen chemistry. Furthermore, some progress can be made toward understanding the CLAW hypothesis. It may not be possible to resolve the entire process within the time frame of SOLAS.
- **Dave** suggests that efforts should be developed on organic matter in aerosols (sources of CCN, aerosol photochemistry, production of oxidants, interaction with terrestrial aerosols such as iron and nitrogen, needs to develop aerosol characterizations, etc), algal blooms (gas fluxes, aerosol production, blooms as laboratories for controlled observations, etc), and investigations over ice (porous surface, photochemically reactive, ecologically unique, physically variable, etc).
- **Peter** indicates that large scale experiments need to be developed to show linkages between ocean biology and atmospheric physics. **Doug** mentions that ocean time series stations and atmospheric observatories be integrated into such plans.
- **Barry** agrees that large scale experiments still need to be developed by SOLAS. Does biology control some of the CLAW hypothesis processes and other physical processes? Large experiments could focus on developing the link between ocean biogeochemistry and physical processes.
- **Doug** indicates that these large experiments need to couple atmospheric and oceanic observations (such as TENATSO and Cape Verde).
- **Eric** states that bloom experiments would be a useful SOLAS project, including flux measurements over a spring or summer bloom area. This will provide insight into the k-U relationships (parameterizations). We would need surveys of the ocean to determine important study areas on large scales. We could make systematic CO₂ and DMS flux measurements on research vessels and VOS. **Eric** asks whether or not groups are currently working on the nitrogen, phosphorus, iron chemistry, and can we link up with these groups to collaborate and coordinate.
- **Shigenobu** indicates that direct linkages be developed between atmospheric and oceanic processes, particularly with regard to differences in spatial and temporal scales. For example, ADOES seeks to understand ocean surface response to atmospheric transport, transformation, and deposition processes. As oceanic endeavors often require a month of observation (due to scales of

Directions and Priorities (See Figure 1)

Open question: Do these working groups, in effect, supplant the IMP1 structure?

a) SOLAS-Asia regional research network

- ADOES, W-PASS, SEATS, (Megacities)
- China, Taiwan, Korea, Japan, (Malaysia, Indonesia)
- **Shigenobu** Takeda, **Guang-Yu** Shi, Hui-Wang Gao, Kitack Lee, Mits Uematsu, K.K. Liu, Wu-Ting Tsai, Arthur Chen, Nakasuta (PAGES)

b) African Dust / Halogens at Cape Verde and Africa

- TENATSO
- Germany, UK, USA, France, Turkey
- **Doug** Wallace, Lucy Carpenter, Nilgun Kubilay, Cecile Guieu

c) Eastern Boundary Upwelling Systems (Pacific)

- VOCALS
- Chile, France, USA, Germany, (Mexico, Columbia, Peru, Norway)
- **Vero** Garcon, **Oswaldo** Ulloa, Jose Carriquiri (PAGES), **Isabel** Cacho, Paty Matrai, **Barry** Huebert

d) Sahara Dust

- UK-SOLAS, SOPRAN (TENATSO), DYFAMED, BATS
- UK, Germany, USA, France, Spain, Turkey, Finland, (Puerto Rico, Bermuda)
- **Doug** Wallace, Lucy Carpenter, **Peter** Liss, Alex Pzenny, Bill Keene, Joe Prospero, Cecile Guieu, Nilgun Kubilay, Vivian Lutz, Melchor Gonzalez-Davila, Nick Bates, Eric Achterberg

e) Ice (Arctic / Antarctic)

- ASCOS, AICI, OASIS
- Norway, USA, UK, Germany, Sweden, Canada, Netherlands, Finland, Australia
- **Jacqueline** Stefels, Paty Matrai, Lisa Miller, Maurice Levasseur, Harry Beine, Eric Woolf, Caroline Leck, **Gerrit** de Leeuw, **Dave** Kieber, **Roland** von Glasow, Xui (?)

f) Marine aerosols

- MAP, P2P
- Australia, Ireland, USA, Finland, Sweden
- **Gerrit** de Leeuw, **Roland** von Glasow, **Dave** Kieber, Barry Huebert, Douglas Nilsson, Colin O'Dowd

g) Large scale experiments

- UK, USA, Germany, Japan
- **Peter** Liss, **Doug** Wallace, **Eric** Saltzman, **Barry** Huebert

Figure 1: SOLAS Future direction

IDEA	What	Who	Priority/ STATUS
Ship Plumes	Working group	Roland	
Aerosol/Spume		Gerrit	
Megacities	SOLAS/IGAC/Working group	Tim Jickells	
Organic Aerosols	Coordinate	Dave	
Large scale experiments	Working group	Peter	
N. Atlantic Bloom		Eric	
DMS climatology		Eric	
Air-Sea linkages		Shigenobu	
Surface Mircolayer		Shigenobu	
Aerosol standards		Shigenobu	
Ice		Dave/ Jacqueline	
Nitrogen fixation	Coordinate	Doug	
Gas Exchange	IMP2	Barry/Wade	underway
Acidification	IMP3	Truls	underway
C-N cycling in OMZ		Vero	

Figure 2: Summary of decisions

Number	Details	In charge	Status
Open Science Conference (OSC)			
1	A list of potential speakers (of a fair sex/age/nationality coverage) for the plenary talks and public lectures must be developed (see below 'Open Science Conference elections' for speakers'.	SSC	done
2	The longer plenary talks will act as introductions to topically-exclusive, directed planning and synthesis sessions, a list of controversial/provocative topics should be written.		No action
3	These sessions will be led by an elected champion, closely related to the SSC.		No action
4	An outlining abstract and questions for debate will need to be submitted prior to the meeting.		No action
5	Posters will be divided randomly over the poster sessions (rather than by foci).		No action
6	Develop outreach using the newly constructed inter-SSC group.	Outreach	In prog.
7	Investigate international press attention (contact IGBP).	IPO	To do
8	Invited speakers should have their travel and accommodation paid for, following the trend of previous meetings. However, if fewer lecturers are invited...finances will go further.		No action
9	National/EU funding should be sourced/requested	IPO	To do
10	A funding introduction leaflet will be created for local sponsors	IPO/OSC	In prog.
SOLAS Summer School (SSS)			
11	The following national efforts and institutions should be contacted: UK-SOLAS, SOLAS-Germany, SOLAS-Japan, Canadian-SOLAS, SOLAS-Spain, Indian-SOLAS, Southern African SOLAS, NASA, NOAA, NSF, IAI, Global Environmental Fund of World Bank, ONR, IOC, SCOR, APN, Chinese Academy of Sciences, Abdus Salam International Center for Theoretical Physics (etc.).	IPO/OSC	In prog.
12	All SSC members and National Representatives (NRs) are responsible to find funding, national representatives should particularly have the	SSC/NRs	To do

	responsibility to contact agencies for their students' funding.		
13	The IPO will contact all the NRs and SSC with a standard document to supply to funding bodies	IPO	To do
14	The textbook cost is included in the registration fee (further aid to fund the book will need to be sought).		No action
Communications			
15	Redevelop the e-bulletin to make it more readable	IPO	Complete
16	Explore funding to pay for distribution of hardcopies of the newsletter to the whole community (20kGBP/annum)	IPO	To do
Scientific Steering Committee			
17	Shigenobu will act as vice-chair	IPO	Complete
18	Four SSC replacements will need to be sourced, within the correct discipline areas.	IPO/Chair	Complete
Implementation (IMP) Groups and Collaborations			
19 (IMP1)	No changes to IMP1 leadership and structure of IMP1 will be made until new scientific ideas are decided.	IMP1	No action
20 (IMP2)	SOLAS should consider developing a programme for the 6 th International Conference on Air-Gas Transfer (May 2010)	SSC/IPO	To do
21 (IMP3)	The steering committee for Oceans in the High CO2 world should be consulted for recommendations to SiC as to which issues are of critical importance to future research	Truls	?
22 (IMP3)	Kitack Lee should remain as Chair for SIC		No action
23 (IMP3)	Nicholas MetzI should be supported if he decides to continue as lead for WG1, although either Dorothee Bakker or Nick Bates should be approached as leads if he steps down.		No action
24 (IMP3)	Jim Orr and Jean Pierre Gatuso should be contacted to link SIC with EPOCA	Truls	?
Sponsors			
25 (iCACGP)	A SOLAS session should be set up for the IAMAS-IAPSO-IACS meeting	SSC/IPO	To do
COST Action 735			
26	Press upon the leadership to develop meaningful COST-735 workshops over the next couple of years, by creating an Executive Committee and identifying a suitable replacement as COST-735 Chair	COST MC	Complete

27	Consider developing a relationship of COST-735 in conjunction with OCB in the US developing scoping workshops	COST MC	To do
Partner Projects			
28 (GOOS)	Investigate how SOLAS can partner in the GOOS effort	IPO/SSC	?
Major new activities & developments			
29 (ADOES)	SOLAS to endorse ADOES as a regional task team and connect with iLEAPS and IGAC to partner in this endeavour	Guang-Yu	?
30 (ADOES)	COST-735 should contact Joe Prospero, requesting his datasets (Asian dust initiative)	Guang-Yu	?
31 (OMZ)	Discuss the involvement of IMBER and ADOES with OMZ	Vero	?
32 (OMZ)	DMS, palaeo- and dust communities should be considered for involvement in OMZ effort	Vero	?
Next meeting			
33	The next SSC will take place in Washington DC between February and May 2009	IPO	In prog.
34	All US-members of SSC should assist in the next SSCs organisation	US-SSC	In prog.