# 7th OceanSITES Steering Team meeting

**Date:** 17-19th September 2009

**Location:** Venice, Italy

**Authors:** Uwe Send (Scripps Institution of Oceanography)
Robert Weller (Woods Hole Oceanographic Institution)

**Meeting information:** http://www.jcomm.info/oceansites2009

## Revision Information

| Date | Prepared by | Reviewed by | Version |
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## 1. Introduction

The 7th Steering Team and 3rd Data Management Team meetings of OceanSITES place jointly and were hosted by Thetis SpA in Venice Italy, made possible through the hospitable and generous efforts by Cristina Nasci. The Managing Director of Thetis, Dr Antonio Paruzzolo welcomed the OceanSITES team members and explained that Thetis was an environmental management company and described some of its work. A focus for Thetis which related to OceanSITES was the work being undertaken in safeguarding Venice lagoon. Thetis has an active partnership with Scripps Institution of Oceanography.

Uwe Send then provided a short introduction on behalf of the Co-chairs. He reviewed progress since the last meeting which had been considerable, reflected on 10 years of development and discussed future plans and requirements for the OceanSITES network.

The Steering Team Meeting (reported here), the Data Management meeting (reported separately) and the first OceanSITES Executive Committee meeting, took place over three days just prior to the OceanObs'09 conference.
Nearly all attendees of both teams (see Appendix A) were present at both of the sessions.

The objectives of the meetings were:
1) to assess the progress in getting the OceanSITES data system working and address issues, particularly Quality Control
2) to review, renew and expand commitments from PI's and DAC's to provide data
3) to develop user requirements and engage with users of the system
4) to identify opportunities to work better with other timeseries communities and provide a coordination mechanism for biogeochemical communities
5) to make OceanSITES function better as a project (organization, outreach, website, project office, country contributions/funding, etc)
6) to develop funding approaches and proposals to build, homogenize, extend, and sustain the system.

The meeting was well attended with around 30 participants from all disciplines and varied expertise.

The meeting agenda was arranged as follows:

A. Steering Team Meeting (focus on physical data) (chair R.Weller)

B. Data Management Team meeting (chairs: B.Burnett, S.Pouliquen,)
   - The discussions and results of the Data Management meeting and joint decisions with the Steering Team are detailed in a separate Data Management report.

C. Steering Team meeting continued (focus on Biogeochemical data) (Chair U.Send)

D. Executive Committee meeting (chairs: Uwe Send and Bob Weller)

## A. Steering Team Meeting (focus on physical data) (chair R. Weller)

Hester Viola ,Matthias Lankhorst, Meghan Cronin, Pattahbi Rao (INCOIS), Bill Burnett, Cecile Robin, Scott Woodruff, Eric Schulz, Taco De Bruin, Alex Kozyr, Makio Honda, Thierry Carval,

Mike McCann, Nan Galbraith, Chris Meinen (AOML), Bob Weller, Uwe Send, Richard Lampitt, Christina Nasci.

### *A-1* Report from Project Office

The Project Office coordinator, Hester Viola, presented an update on behalf of the OceanSITES co-chairs, of the work undertaken by the OceanSITES Steering Team, Data Management Team and JCOMMOPS in 2008-09. She reminded the group that she was part of JCOMMOPS: which is an operational program support centre resourced by two technical coordinators and one half time IT staff member (employed by CLS with funds provided by the USA for OceanSITES). JCOMMOPS provides support for the Argo Float Program & Ship Observations Team (70% and 30% respectively of Mathieu Belbeoch's time) and the Data Buoy Cooperation Panel and OceanSITES (70% and 30% of Hester Viola's time) on behalf of the JCOMM Observations Program Area.
She reviewed the main duties and responsibilities of the project office.
She then outlined the priority tasks in the previous year, which were:

- Updating documentation to get a clearer Network status
- Creating new map products to view network status
- Updating websites
- Updating contact details and user groups
- Supporting the Data Management Team in getting data (and metadata) onto GDACs
  - Maintaining Site Catalog, monitoring data flows and GDAC structure
- Seeking Sustained funding for the Project Office Support

Updating the network status documents involved: Familiarization with existing documents and the aims of OceanSITES (the program and the teams). A letter was then compiled and sent out as a request to OceanSITES participants to update the content of existing "Whitepaper" documents (from 2005/2006). These papers were then collated into 4 documents, grouped by ocean basin. These were uploaded to http://www.oceansites.org/network/.
This was used to create a new summary spreadsheet listing all sites and then to create Current Status maps and Vision maps (2009) and a Google Earth file as a new interface to the map data.
A new Monthly map now available shows sites sharing data on the GTS of WMO. It was noted in discussion that some sites do not submit data to the GTS, either by choice since they want to serve as withheld data sites for model validation or since they use alternate telemetry paths to broadcast real time data. In the future, OceanSITES will work to recognize the wider set of sites providing real time data and status maps will need to reflect all real-time data flows, GTS and GDAC.

The current status is as follows:

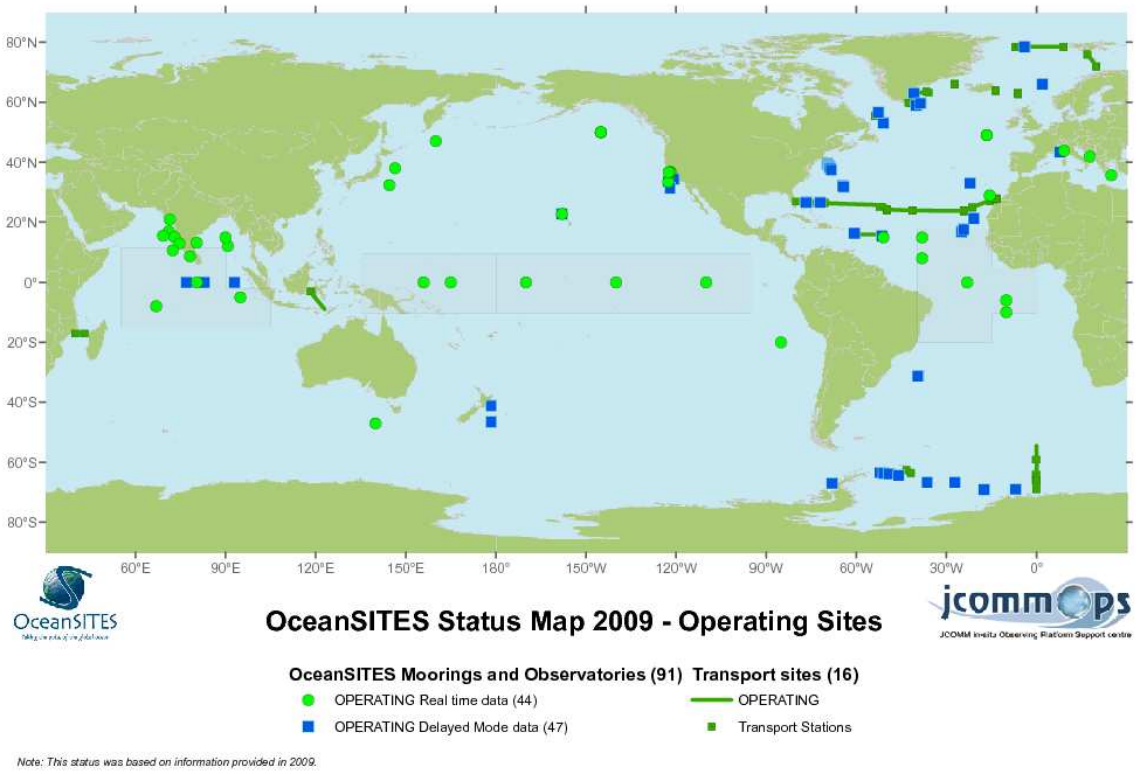


Figure 1: Map of Current Status – Operating Sites

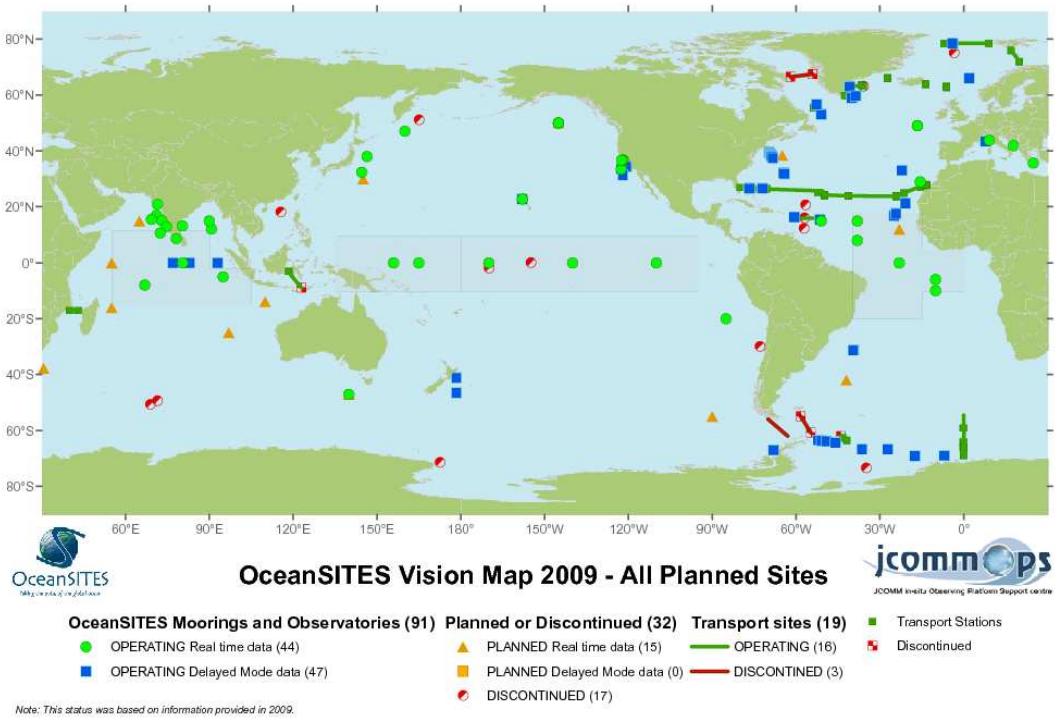


Figure 2: Future Vision – All planned sites

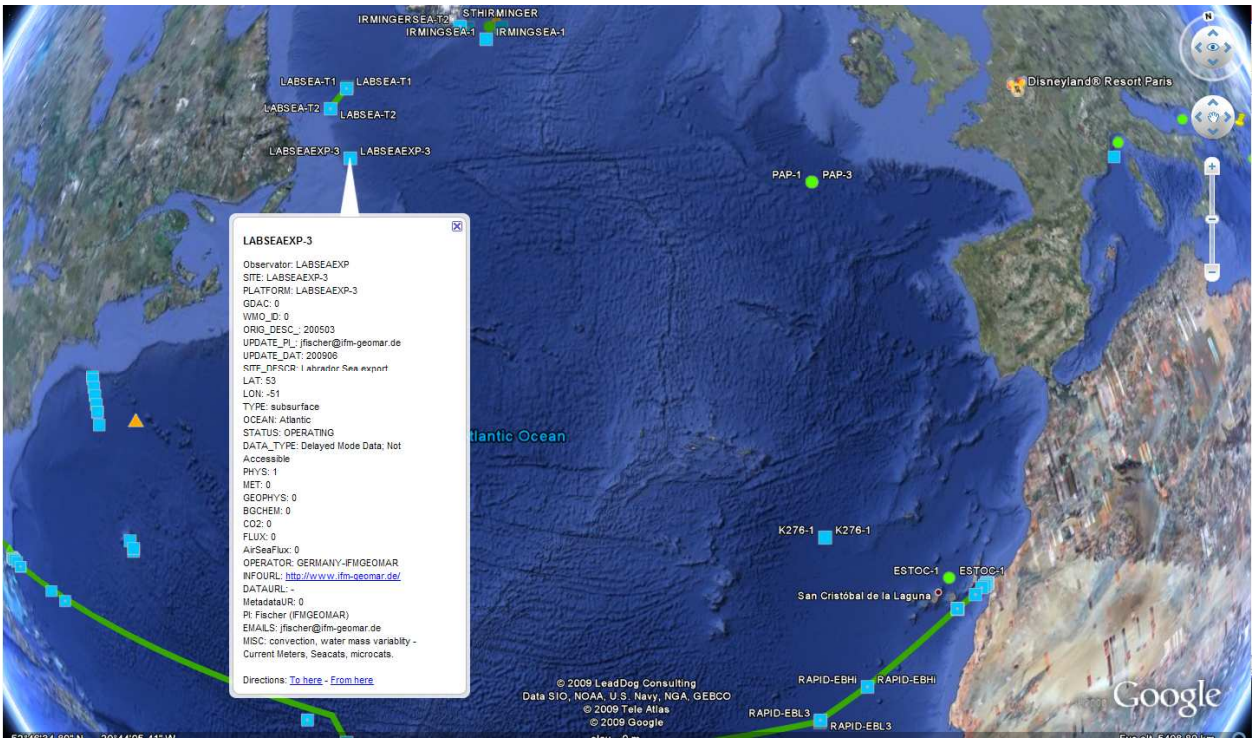

Figure 3. Google Earth map (including Metadata balloon for all sites)

The management and documentation of Metadata was a high priority for OceanSITES in 2008-2009 and the Project office contributed to this by: becoming familiar with the metadata in the OceanSITES NetCDF data format, assisting NDBC in compiling a questionnaire for metadata management, following up with some DACs to ensure that the questionnaire was filled in and metadata put onto GDACs in .doc or .xml format, maintaining a Site Catalog with up-to-date information about sites which were preparing or ready to share data on the GDACs, reviewing data flow to the GDACs and structure of file management, worked with GDAC administrators on how to deal with older datasets and problems with synchronizing

The website www.oceansites.org was updated to correct some outdated links and update documentation about sites. The structure was slightly simplified and new links to data for sites were added.

JCOMMOPS has created photo albums for all observing networks stored on Google Picasa, an OceanSITES album has been created at http://picasaweb.google.com/JCOMMOPS/OceanSITES#, participants are encouraged to share images for the album. Additionally, on behalf of OceanSITES the project office created a web page on http://www.jcomm.info under the Observations Programme Area.

The project office has maintained contact details for OceanSITES participants and Principal Investigators (in a central repository either on the JCOMMOPS or JCOMM website) which included creation of new email lists

- oceansites-exec@jcommops.org
- oceansites-sc@jcommops.org
- oceansites-dmt@jcommops.org
- oceansites-dmInfo@jcommops.org
- oceansites-guests@jcommops.org

Plus aliases

- projectoffice@oceansites.org, info@oceansites.org
- gdac@oceansites.org
- cochairs@oceansites.org, cochairs-dm@oceansites.org

Some user groups/mailing lists on the JCOMM website (OceanSITES Science Team, Data Management Team) have also been created for the OceanSITES community and to enter meeting information on that site e.g. http://www.jcomm.info/oceansites2009

The funding situation for the project office was then discussed. Currently there have been some new funding stream from Australian plus commitment from IFREMER, France, as well as the support from NOAA. In an effort to seek more funding for OceanSITES (and JCOMMOPS) the DBCP Chair approached NIOT India to request additional funds with no luck. POGO does not seem to have any additional money. In 2008, the DBCP offered to cover one year of funding for OceanSITES, but that was a one-off contribution.

Hester Viola then outlined her future priorities and plans, which were summarized as follows:

- Support DACs in providing data and metadata
- New DACs and expanded data sets for existing DACs in line with DMT priorities
- New sites - constantly work to identify additional operators of candidate sites and convince them to become part of the OceanSITES system
- Help to make the OceanSITES web page, a portal to all the other products/indicators and for data web pages.
- Assist with finding and providing products (15m currents, surface fluxes, SSS, etc) and indicators collected from various OceanSITES member websites
- Ensure that each site's web page adds an OceanSITES logo or name at the top/side.
- Create groups to contact as experts on specific sensors and variables (Mentors)
- Develop JCOMMOPS metadata loading routines to check status of GDACs and automatically update database
- Create monthly map showing GDAC data flows.
- Maintain list of DAC's and data flows to and track progress of data provision/flow
- Google earth file updated daily/monthly with full metadata descriptions and links to GDAC datasets
- Redesign web mapping tools at JCOMMOPS for all OceanSITES layers (synchronized with Google Earth)

She finished by stressing that the Project Office is focused on the priority tasks but should be used as a support mechanism to further the OceanSITES program. The generic email address is projectoffice@jcommops.org. For those who wish to have more information about the activities in the last year should refer to the six monthly reports, prepared for the Co-Chairs on: http://www.jcommops.org/FTPRoot/OceanSITES/status/project_office_reports/

The team then discussed the products available and the workload of the project office, particularly relating to reporting requirements for JCOMM and GCOS/GOOS/OOPC.
Members of the team stressed that it was important to have "flat earth" views (which Google Earth can't provide) for interactive maps, so that ad-hoc maps can be created for publications. etc. The team commented that the priorities and future plans looked reasonable. There was some discussion about the ease of management of metadata by DACs.

### *A-2* Report from the Co-chairs

- including recent meetings, funding,
  - DBCP 24,
  - Wave workshop in New York. This included discussions of putting wave sensors on time series buoys , calibration and transfer functons wind drag, cable tension, other interference issues, and of upward looking ADCP for surface waves (no need to worry about moving platform versus waves, absolute measurement. At the moment only on the bottom rigid mounting, working on a hanging bottom mount)
  - Time series workshop at SIO, interaction between carbon time series and OceanSITES, the carbon timeseries groups are various, including coastal. Repeat hydrography not included in OceanSITES though they are time-series – unless specific sites can be identified to representative of the regional ocean basin. Ocean site minimum "blue print" specification. Some time series data would be difficult to put onto a GDAC. Worked out a compromise for including open-ocean repeat hydrographic surveys (see below re inclusion of 2-3 representative locations)
  - POGO – January 2009 meeting in Chile was supportive; developing ship and cruise database, OceanSITES should create site-related cruise needs for the POGO database with approximate turn-around time needs.
  - GEO S&T Committee and GEO workshop with IEEE in Bremen in early 2009. We see the need stress the ocean and Time-series When interacting with GEO GEO is asking for a community of best practice for ocean time series - any best practices documents and working group reports should go to the JCOMM catalog.

### *A-3* Update on major new initiatives

- OOI,
  - While the four global sites of the OOI are considered part of OceanSITES, the PIONEER Array, which is coastal, would probably not be considered OceanSITES.

  For the OOI, which plans sustained 25-year occupation of sites, there are technical challenges, e.g. biofouling, and it is important for best practices for the time series community to share solutions, such as conductive films, which are optically clear, and can be used for generating chlorine to mitigate biofouling.
- EuroSITES, highlights:
  - pH from ESTOC (new sensor)
  - PCO2 from CIS
  - UK Met Office contrib. to PAP
  - Particle flux at PAP
  - Repeat Hydrography at TENATSO
  - ANTARES and Pylos (associated cabled sites).
  - Perhaps merger of Med buoys E2M3W1, Dyfamed (downscaled) and Antares into one observatory?
  - Fishing damage, ship at Station M is likely to be withdrawn by 2010 (2 moorings will remain but failure on sub-surface mooring due to unknown reasons).
  - Future funding uncertainty.(mostly European funding is for research of new elements, changes in personnel mean that the vision is unclear and it is more political)
  - Can we create Ocean Time Series focused promotional material, glossy brochure (shorter), appealing to higher levels.

- Models don't always agree with the data from time series (Nick Fleming) therefore how do we value the network?
- HAUSGARTEN should be considered as a possible new site.
-

- Indian Ocean network
  - 3 current meter moorings on equator, operating for 10 years now, subsurface, all data submitted to GDAC.
  - Will add 4 additional moorings north/south of those. Murty is PI for all of those.
  - New Bay of Bengal moored observatory planned, but data policy not decided yet.
  - Most of the other OceanSITES buoys (they are called "moored buoys" in India) are surface met and wave buoys, goal is to have 12 operational at any one time.
  - Have 12 bottom pressure recorders, but data policy not decided yet.
  - RAMA moorings are all operated by PMEL with Indian ship time, we get the data from PMEL.
  - No biogeochemical timeseries anywhere on Indian moorings/buoys yet (other than coastal), but maybe some RAMA moorings carry pCO2 or similar.
  - New sites need to have documentation provided by the DAC and PI (Action: VSN Murty)
  - 2 wave rider buoys exist, for verification of forecasts.
  -
- Australian Integrated Marine Observing System.
  - Australia operates Southern Ocean moorings, all info is at project office.
  - Should consolidate mooring in the southern ocean
  - Perhaps a PMEL flux reference station in the East Indian Ocean (110E) will be added to complement this. Ken Jarrott is the contact in BOM
- Other new sites
  - Agulhas Return Current (western boundary currents/extensions have the largest heat fluxes, and large uptake of CO2) several new sites needed, but ARC has highest priority as it is fundamentally different due to land masses being different and storm development in the southern ocean. With A84nn use only for forecast assimilation but not for analyses or reanalyses. Documentation is required on this site in order to consider it as a new site. (PMEL/Meghan Cronin)
  - Indonesia – "Coral Triangle Initiative" – highest marine biodiversity in the world (NOAA/US Aid/UNESCO) monitoring for biodiversity and climate change. Will start deploying moorings (Indonesia, Papua New Guinea). Physical and BGChem as well as biodiversity. Local countries will deploy moorings there. Bill will be liason to OceanSITES. They may be buying complete commercial systems. NOAA is involved in many such biodiversity and marine habitat work/funding
  - JAMSTEC**:** Plans to build and deploy an Antarctic surface mooring, but still uncertain.

### *A-4* Site approval process

The group agreed that there needs to be a clear procedure for new site endorsement, which was discussed and would be drafted by the Project Office (**Action** Project Office, ASAP).

A draft is presented here:
In order to be considered an OceanSITES site the following requirements should be met for the site:

**Requirements for becoming an OceanSITES site**

R0. Open-ocean location or location relevant to/representative for open-ocean processes
R1. Sampling at least quarterly, preferably monthly or more frequent
R2 Repeat hydrography or ADCP sections from a repeated ship transect do not qualify
   a. For repeat HYDROGRAPHY (or similar sections), select ONE TO THREE representative sites to extract data and form time series with climate relevance for that ocean area.
R3. The site must be sustained or intended to be sustained
R4. Data Sharing must be free and open. Where real-time telecommunications exists, at least 90% of the data should be available within 24 hours, this includes biogeochemical or ecosystem data for which little/no real-time QC has already been undertaken.
Delayed mode should be available within 12 months of instrument retrieval, with some form of quality control undertaken at the DAC. (a DAC should have some access to the downlink data stream for satellite telemetry, and to the GTS for sharing data). The Project Office of OceanSITES can assist with sharing data on the GTS, if required.

**Proposed Process for being accepted as an OceanSITES site (draft)**

This process (as drafted above) should be reviewed by the team ( *** Action: Steering Team Members, December 2009)

1. A written query should be sent from a PI wishing to be part of the OceanSITES program, to the Project office or co-chairs (cochairs@oceansites.org) expressing their willingness to apply data policy and access agreement (as documented in the OceanSITES data policy and data access papers, see http://www.oceansites.org/documents ) and willingness to work with the OceanSITES teams.
2. Project Office sends template to the PI, for the ***Description of the site*** (2-5 page scientific description), the letter explaining the roles and obligations as members, as well as the OceanSITES brochure and other material of interest. (within one week of receipt of written query)
3. ***Description of the site*** sent back to Project Office (projectoffice@oceansites.org) and together with agreement to the outlined commitments (within one month of receipt of site template)
4. The Project office will review the ***Description of the site*** document to see if the site generally fits into the "**Requirements for becoming an OceanSITES site"** R1-R4 above) (within two weeks of receipt of filled out template)
5. The Project Office will then send out the completed description (within one month), for whole Steering Team to review. (within one month of sending description to Steering Team).

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| 6. Co chairs then take any comments from the Steering Team and recommend to Executive Committee to decide on the inclusion or not. (within two weeks after receiving comments) |
| 7. Once accepted, the PI should nominate a DAC (see http://www.oceansites.org/data) and Data Manager Contact details (who may wish to join the DMT) (within one week after acceptance) |
| 8. The project office will then add the PI to the Steering Team mailing list so that they can participate in meetings (within one week) |
| 9. The project office and GDACs will then work with the chosen DAC to explain the metadata requirements for all platforms (so that the GDAC can be clear what data will be provided from the platform) and send the blank, template for the **Metadata Sheet** to the PI and /or the Data manager (within one week) |
| 10. When the configuration of the platform is known the Data Manager should work with the PI and the DAC to provide **metadata sheet** to the GDAC. (within one month) |
| 11. Once deployed, the Data Manager should work with the GDAC to ensure that data is synchronized from the DAC in the chosen way. (within two weeks) |
| 12. The Project office should be informed of :<br>i. the deployment date<br>ii. The ship used for the deployment<br>iii. as well as the WMO ID used if data is going to the GTS of WMO |
| 13. The Project office will enter information from the ***Description of the Site*** document and the **Metadata sheet**, in the JCOMMOPS database, so that the site will appear on the current maps and in the Site Catalog. |
| |

The team also decided that for the next year or so, all sites should meet these requirements , but

- in a year or so, we could accept data from/disseminate additional timeseries and and create an “equivalent” OceanSITES category for those. Address this in future meetings.
- need to clarify and document more exactly what an OceanSITES site is. **( Action:** Co-chairs, Steering Team, December 2009)

**A note on Data Quality –** The expectations for data quality and reporting the degree of data quality control undertaken, had not been addressed in a consolidated way by OceanSITES to-date. Since sites are sometimes referred to as climate reference stations, this could imply to the user community that more calibration and quality assurance is undertaken than for an average platform, however being part of the OceanSITES network does not imply any particular level of data quality by default. The group noted that the actual requirement is that the QC has documented and quantified errors, not ensuring low errors. Flux reference stations require certain measurements to ensure that complete flux observations are made, but all measurements should have documented accuracies and precisions.

### *A-5* Data Policy and Access agreements

- Review of OceanSITES data policy and access document (lead Send)

The group reviewed the data policy and access document and were happy to leave as is. There was some discussion and agreement on data delivery times/delays, but this needed to be finalized in the Data Management team meeting.

- Commitments by data managers to provide data and make data flow.

The team the briefly discussed the data system which was now in place and the first successes in having data flowing from DACs to GDACs to-date.

See the Data management meeting report (Agenda item B-2) for further detail.

| Data Provider | DAC | Update |
|---|---|---|
| Bergen University | | No progress |
| PMEL | PMEL, NDBC | All TAO data not yet included. (Need to capture all delayed mode data from TAO as well as a lower priority)<br>• Cochairs requested that NDBC input what is available and generate a routine to create simple text file of metadata (**Action**: NDBC)<br>• Cochairs to send similar request to Mike McPhaden to get delayed mode data to OceanSITES data system. (**Action**: Co-chairs) |
| CDIAC | CDIAC, PMEL, NDBC | no data for a while due to QC issues. TAO not yet processed |
| Scripps | NDBC | SIO MOVE data for 10 years, delayed mode only. (**Action**: Lankhorst to provide data to the GDACs and metadata in text export from CDL.) |
| CCHDO/SIO | NDBC | Decades of data from Bermuda and Hawaii CTD and bottle data. Need to get an inventory. Line-P, Labrador, Line-W. Bottle and CTD. Need assistance compiling metadata. |
| WHOI | NDBC | Good progress on 3 sites and full metadata nearly complete. Metadata creation is time consuming: SensorML for Real Time, cdl for DM |
| Nioz-DMG | Nioz-DMG | No progress, but strong committment |
| MBARI, | MBARI | Data and metadata available, sub surface velocity and PCO2 to come |
| EuroSITES | IFREMER, NOC | Some sites providing data and Metadata |
| INCOIS | INCOIS | All data flowing. One metadata file missing. Not synchronized. Need to put the CM moorings in to the site |

| | | |
|---|---|---|
| | | catalog |

Potential Data Providers and DACS

| Data Provider | DAC | Update |
|---|---|---|
| JAMSTEC | JAMSTEC | No progress but strong commitment<br>- DMT needs to encourage the DAC to develop capability as FTP site is available for JKEO, and TRITON and Japan is willing to provide the data. (**Action:** M Honda and B Burnett) |
| Univ Hawaii | | resourcing issues |
| IMOS Australia | | Strong Commitment |

The team stressed that historical data is also an important consideration and seen as a valuable resource. OceanSITES could eventually generate a product to show the continuity (with data that is known to exist but is not on the GDAC) and coverage over time at each site. The team commented that the naming standards on the GDACs needed to be reviewed as well as the synchronization of the two GDACs. The site catalog must be generated from the data holdings on the GDACs (using the index files) and the metadata at JCOMMOPS eventually (**Action:** Project office and GDACs).

The GDACs could produce a yearly summary of downloads (with information about the origin of the data user etc). (**Action**: GDACs)

### *A-6* Physical/meteorological QA/QC (both Data management and Steering Teams)

- Quality control procedures: Development of an OceanSITES Data handbook, including real-time QC processes for Phys/Met parameters. (Report from Burnett)
- Discussion of real-time QA/QC for biogeochemical variables (Report from Dickson) see agenda item C-2

**Deferred to C-2**

### *A-7* Relationships to other programmes

The various users of the OceanSITES system and potential products of use were discussed and a progress report given about contact with related programs.

Science users:

Need to provide easy access to data which are integrated and synthesized. Single projects/institutions already have user-friendly sites, so the attraction must lie in the larger network and more standardized formats and QC (e.g. compatible with Argo etc).

Also OceanSITES needs to produce science/papers to generate interest, users, students, funding. We have to demonstrate the science payoff from OceanSITES, and encourage people to use and want those data.

An important purpose of OceanSITES sites is to provide the context of the time-series data or moorings or cruises for supplementary, focused process experiments by other scientists. Also this needs to be demonstrated and advertised.

***Action (from 2008):*** *advertise use of time series context (data and hardware/logistics) to conduct focus experiments/studies.*

Science disciplines developing algorithms, forecast and operational tools are likely to need products that can be used for validation/ground-truthing, like flux fields, sea surface salinity data sets, surface current data sets, wave observations, etc. This is particularly true for the remote sensing community, needing SST, SSS, chl, waves, wind, etc.

Requests were made to some User groups about products and data that would be useful (action items from the last meeting). The status of these requests are as follows.

| Data User group or Community | Status | Comment |
|---|---|---|
| GODAS for monthly state estimate validation | Underway | The Climate Prediction Center at NCEP produces a monthly state of the ocean report. This report shows the major modes of ocean climate variability as simulated by the GODAS analysis. Wherever possible the GODAS results are compared with observational data. CPC is interested in including the OceanSITES time series data in the monthly report and has only been waiting for the GDAC structure to mature and for them to become well populated with standard data files. Development can probably begin shortly as the GDACs are nearing that level of development. Probably enough data today to allow the process to begin. |
| Wave Community | Underway | The chair commented on interactions with the wave community. The chairs had attended the JCOMM waves workshop in September 2008. Hester Viola attended the first meeting of the PP-WET: JCOMM Pilot Project on Wave measurement Evaluation and Test from moored buoys (http://www.jcomm.info/wet) |
| OSCAR surface current project and NCEP | Underway | Receptive to working with the OceanSITES community. Standard reference of 15m and recommendation to standardize or to interpolate to 15 (from 10m). Very interested in using data. No progress with NCEP. (SURFA project is using OceanSITES to compare surface met and flux). |
| BOM | No specific update | Flux verification, SURFA. |
| NASA | Underway | Real time one minute surface radiation data - telemetry doesn't currently support this. |
| GODAE/GSOP/Stammer | No Progress | November GSOP meeting – will address synthesis (data needs) and outcomes from OceanObs09. Expecting more specific guidance from GSOP on data requirements |
| Indian Ocean GOOS | Underway | Dec 2008, meeting. IOGOOS is surveying user requirements (Pattabhi in charge). Data Management workshop. |

| | | |
|---|---|---|
| Modelling community | Ongoing | Proper engagement is critical. Very clear user of data once there is enough data available in one place, with one format in an integrated way. Also Ecosystem modelling needs such data. Richard Lampitt will get into contact with the Ecosystem modelling reps at OceanObs09 (**Action**: R Lampitt) |
| US CLIVAR Process Study and model Improvement Panel | No Progress | Sonia Legg, Paquita Zuidema are contacts |
| WCRP/GSOP/ Trenberth, e.g. flux products | Ongoing | Comparison of Atmospheric models, SURFA. Activity recently. continue dialog (**Action**: R Weller). |

*N.B. See the action list in Appendix C for more detail on the actions suggested*

- see also agenda item C-5

## B. Data Management Team meeting (chairs: B.Burnett, S.Pouliquen,)

The data management team met and discussed the following agenda items:

### *B-1* Review of OceanSITES Data Holdings

- Brief on OceanSITES Data Assembly Centers and review of commitments from 2008 (Burnett)

### *B-2* Priorities for expanding OceanSITES Data Holdings (lead Burnett)

- Current data providers – data sets and distribution policies (current = last two months)
- Former data providers – data sets and distribution policies (former = last year) including approaches to managing data in superseded formats
- Delayed-Mode data providers – data sets and distribution policies (data sets that are not "real-time."
- New data providers
- Future priorities - Which are the sites that the GDACS must concentrate on?
    - And different data types from existing sites.

### *B-3* Review and Revise Product Format description

### *B-4* Update of GDAC Data Management Plan and User Handbook

B-5 Deferred until next day.

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A full report from the Data Management Team meeting is available on http://www.oceansites.org/meetings/

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### *A-8 Ideas for OceanObs09 outreach/activities*

- Possible meetings to attend and represent OceanSITES:
  - POGO meeting Monday
  - WCRP session Wednesday.
  - Send out updated information to the people giving relevant plenary talks and chairing relevant fora. (**Action**: R Weller)

All these were very successful and OceanSITES featured in many plenary presentations and break-out discussion groups.

### *B-5 OceanSITES data release to modelling centers: Approaches to holding back of data to prevent use in NWP (Viola, Cronin)*

- Many operators and PIs don't want data from buoys in operational model products.
- But big demand for real-time data from operational forecasts
  - Numerical modeling centres do not tightly constrain to the point data
  - Best would be if we could tell if they use the data or not across the board
- Benefits of having data on the GTS is that there are data centers doing independent quality checks on the data and feedback will be given.
- the message is that we need to interact with the modeling community better,
  - but the withholding of data is an important part of the benefit seen from the OceanSITES.

- Invite someone from SURFA to present at the next meeting. (**Action:** R Weller, next meeting)

## C. Steering Team meeting continued (focus on Biogeochemical data) (Chair U.Send)

### *C-1* Network planning

- Developing an OceanSITES standard/generic mooring, especially for MOIN sites
  - Standardized system (instrument package) that Manufacturers could develop to capture a standard suite of Meteorological, Physical, Biological and Chemistry platform. Telemetry mode would need to be a consideration (possible two different designs for attached line or split sub surface system). Standard depths for sensors would be essential.
  - Definition of hardware may be difficult.
  - Upper ocean structure needs to be resolved – so standard depths could be defined in general terms for sensors, ADCP etc
  - Clarifying which biological measures are important can be difficult.
  - Volunteers to revisit the MOIN variables to present back to OceanSITES with more thought to hardware, telemetry, standard depths and sampling rates (with assistance from moored buoy experts MC) (Action: R Lampit, F Chavez, D Wallace)

        - D Wallace said OceanSITES could cooperate to have a tender to develop such a mooring.
    - Aiming to be affordable, with just a set of Core components and measurements
    - Aiming to create a network of equivalent platforms across the globe and assist in proposals for new time series and assist in creating more multi-disciplinary platforms more easily. Need multiple mooring designs which can be more easily implemented due to the minimalist nature – want a straightforward implementation.

- Paths towards the Core/Backbone network
    - Next step would be to encourage the addition of the core sensor package onto new proposals or existing sites.
    - MOIN map needs to be updated with existing moorings (**Action**: Co-chairs, Project Office )
    - It was suggested that the Co-chairs write a letter to desirable sites to see if they are interested in installing the MOIN mooring. (**Action**: Co-chairs)
    - The Steering Team reviewed the existing backbone/MOIN map to add sites which would be best for upgrading for biogeochemical.
    - It then decided to create a current (near future) map and a separate Vision map for the sites that would be highest priority (considering realistic/likelihood of being implemented). Several new sites were added to the Vision map.
    - These maps were drafted and approved by the Team.

- Review of present status of the system, maps, site information, etc
    - The maps of GDAC status quarterly (including single named files) and GTS data (monthly by country) were demonstrated.
    - Changes to the maps were suggested by the Team:
        - Transport stations to be merged with other moorings.
        - Consider changing RT/DM to Telemetered, non telemetered. Or Real Time data transfer, No real time data availability (i.e. no satellite telemetry). Include this also in the station list. Satellite Communications Y/N
        - Change the 1/0 in Phys etc to Yes/No. Match new values in the User Manual and file name codes.
        - Update google earth to split planned and discontinued and investigate how to simplify legend (or explain the symbols/colors somewhere)
        - (**Action**: Project Office)
    - Need other google earth files to show the data by
        - discipline,
        - air-sea flux etc
        - GDAC and GTS
        - Updates to maps and new google earth files (**Action**: Project Office)

### *C-2* QA/QC (both Data management and Steering Teams)

The different types of data flows were discussed and the nomenclature adopted was as follows:

- Real Time
- Provisional (post recovery dump)
- Delayed Mode (Best Copy)
- Mixed

The Quality control in real-time and delayed mode was discussed by break-out groups. The reports for these groups were presented to the meeting. The groups presented their highest priority actions.

- Discussion of real-time QA/QC for physical data (report from B Burnett)
  - Define the parameters to be checked
  - Make a list of the required real-time checks
  - The group will continue to compare existing documents and the checks that need to be performed, merge all necessary parameters and checks and report them in the Data Management Handbook.
  - (**Action**: Working group on real-time QC)

- Discussion of real-time QA/QC for biogeochemical variables (Report from A Dickson)
  - Real-time QC of biogeochemical variables is not yet a reality, so best practices do not exist.
  - Near-real time is more realistic.
  - The working group will use the Physical QC check methods/types and review to see how appropriate they are.
  - (**Action**: Working group on near real time QC of BCG variables)

- Delayed-mode QC approaches for physical/met variables (lead Cronin or Weller)
  - List of documents compiled.
  - These will be reviewed and gaps identified

- Delayed-mode QA/QC approaches for biogeochemical variables (lead Church or Lampitt)
  - Appeal to community for existing documents. List of documents to be compiled (**Action**: Project office)
  - The working group will then review the existing documents and identify gaps
  - (**Action**: Working group on delayed mode QC of BCG variables)

### *C-3* Other parameters and quantities (both Data management and Steering Teams)

The teams then discussed data flow for HOT and BATS via Scripps and parameters/platform arrays that could be considered in future.

- Data inventory from SIO – CCHDO.
  - Steve Diggs showed the status for Bottle and CTD from HOT and BATS. (HOT is not sending full BCG to SIO, some data is missing from chlorophyll, etc).
    - Pigments and Bacteria data could be served (though can not be QC'd by CCHDO) therefore flagged with "No QC"
  - BATS data is intermittent, but they are very willing to share. Data needs moderate reformatting. Metadata must be sourced by the DAC, PIs must be contacted. Data Processing is slow but consistent.
  - CTD ready to go and Bottle data is a bit slower.
- Status of Bottom pressure data (e.g. DART Buoy data and other)
  - The Steering Team discussed that these platforms are usually not recovered in order to get data – only used for alerts. If there is a need for the sensor data then the need should be made clear to the Tsunami Project.

  - Bottom pressure data should definitely be included for sustained sites, e.g from inverted echosounder sites.
  - Accuracy is unclear (esp DART), but the data could still be useful. If it is a lot of effort without real value, then perhaps not, but if the Steering Team decides it is useful then it should be included. NDBC already has US Bottom Pressure data which could be converted into OceanSITES format. The DMT might consider a Pilot project to see how the conversion and management of DART (US) goes and then expand to other countries, networks (**Recommendation**: DMT Members)
  - EuroSITES will have bottom pressure Data.
  -
- Acoustic data - There are Passive acoustic sensors (precip, wind). PAL is the most accurate Precip sensor.
  - The steering team commented that perhaps the derived quantities would be the time series product, rather than providing the raw acoustic data.
- Inverted Echo Sounders – e.g. one array is “SeaDrake”, UR is operating and has data from many others. Variable is vertical Travel Time, but usually combined with bottom pressure. Contact Randy Watts and SIO Drake community (Action: U.Send)
- Image data – Probably not for now.
- No other parameters brought up

The team agreed considering the array of potential measurements from OceanSITES platforms that generally the types of new measurements adopted should focus those that are likely to be on multiple OceanSITES, to ensure efficiencies in the data system.

### *C-4* Relationships to other communities

- SCOR workshop in Venice during the preceding week – Kate Larkin reported that this workshop brought together a group of Observers, Technologists etc to address the challenges of observing ocean life and its response to global change.
  - Equivalent of the time-series version of IMBER.
  - It discussed the fact the the observing system needs to cover full latitudinal range and eastern/western boundaries. (encompassing 12 example areas to understand ecosystem properties.)
  - Ocean Biology Observatory – divided into Open Ocean and Coastal
    - Various different observing platforms considered: Fixed moorings, Cabled or autonomous, Drifters, Argo Floats, Repeat Hydrography, TOPP, Satellite. ROVs and Animals (Animal Trackers were well represented at the meeting).
    - Coastal platforms could include Moorings (e.g.T,S,O2, CO2 pH), gliders, ships of opportunity, OTN Ocean tracking Network (hydrophones on the sea-floor) with extra instrumentation,
  - A clear data user community. Looking for water column data.
  - OceanSITES could utilize the coastal data if suitable and similar to other OceanSITES platforms.
- CPPS
  - F Chavez reported on the Cooperation between Peru, Colombia, Ecuador and Chile, known as CPPS
  - Interested in ENSO responses.
  - Suggestion is to create an array of gliders with moorings in amongst the array.
  - These countries are still active and could be integrated into OceanSITES
- Developing modelling communities as users

  - R Weller reported that it is important for OceanSITES to keep up connections to NWP especially the SURFA connection
  - Ocean Modelling is ramping up and will be an important data user base.
  - Ecosystem modellers want validation data
- IMBER/SOLAS. Going through mid-term strategy review – MOIN was considered very important in the strategy in coming (6-7) years. After OceanObs would be the time to push the proposals for expanding sites to be part of the MOIN.
  - Program managers seem to be supportive of the minimalist mooring network for Biogeochemal and Optical measurements.
  - Could OceanSITES partner with SOLAS participants? Though SOLAS platforms are generally process studies.

Meetings at which OceanSITES should be represented:

  - SOLAS
    - Strategy before the next SOLAS meeting ?
  - Satellite communities – ocean colour, etc
  - Working group for SCOR (Kate Larkin)
  - GSOP
  - OceanObs09 follow-up working group (F.Chavez now is part of this)
  - Glossy Brochure, and generic Presentation required.

### *C-5* Website

The project officer, Hester Viola presented some of the new products available on the website. She explained that she had updated broken links and removed some of the more complex elements of the website.
She demonstrated the use of the PDF maps produced (which have layers, allowing different information to be shown or not shown on the maps) and also the Google Earth file for current status.
The Steering team commented that they would like maps by discipline (**Action**: Project Office, March 2009)
Steve Diggs also pointed out that it was easy to present the KML data used for the Google Earth file in Google Maps and also by installing a plugin to view the Google Earth view directly in a web browser (not requiring the full Google earth installation on the computer being used) (**Action**: Project Office, March 2009)

### *C-6* Demonstrating the value of OceanSITES and time series data

- The development of Metrics and products was discussed. This was still immature as it relied on a stable data system. The NOAA/JCOMM Observing System Monitoring System was developing new indicators and climate products and would soon access the OceanSITES data available.
- The team then discussed new ideas for promoting products and data from OceanSITES such as:
  - Products pages e.g. Link to IMOS flux page
  - Refer to Posters from OceanObs which have OceanSITES references
  - Graph growth of data holdings in bytes. Or similar metrics.

### *C-7* Wrap up and Actions

- An action list is available in Appendix B.

### *C-8* Review of Team names (Steering Committee vs Science Team …) and membership, plus Executive Committee Membership

U Send explained the rationale and process for creating an executive committee and its relationship to the other teams.

a) OceanSITES Executive Committee
    a. Membership comprises
        i. Co-chairs and Project Officer, plus other continents and disciplines.
        ii. Initially Tom Trull, Doug Wallace, (maybe Thierry as proxy for GDAC), VSN Murty, Tony Knap were invited to represent the community
    b. Sought Willingness of participants and Endorsement from sponsoring bodies.
b) OceanSITES Steering Team (which will be composed of existing Steering Committee members, representatives from the DMT, and all PIs or operators of sites in the system)
c) OceanSITES Data Management Team, remains as is.

The teams then discussed the Function and Naming of the teams and agreed that it is necessary to give a voice to all people operating sites and a chance to be informed. The team commented that:

- There is a need to have operating principles in terms of serving on executive and in positions
- Terms of Reference should be updated
- Need to develop voting procedures, term of service of officers/chairs
- Working relationships between teams: do the DMT and Steering Teams always need to meet together? The Steering Team should define the needs (e.g. data quality ) and pass onto the DMT to implement. Similarly, the DMT can generate issues/questions that need to be addressed by the Steering Team.
    - It is important to have the Steering Team meeting with the Data Management team while the GDACs are in development, but in future the meetings could be run with parallel sessions to work through details.

***Next Meeting/s***

Having the meeting alongside to a Science Conference, as done in the past, is not necessarily helpful for the DMT. Linking to other meetings may be useful sometimes, but it does not necessarily create efficiencies for all and OceanSITES has enough support to warrant individual meetings.

The teams thought there were benefits to having the Steering and Data Management Team meetings together (at least for a few more years while the data management system is under development) but that having the meetings 6 months apart, separately, could lead to more efficient achievement of goals and fulfilling of action items as there would be two peaks of activity during the year.

The co-chairs of the DMT expressed a wish to have a workshop between the meetings in any case, or at least some web meetings. The meeting participants agreed that the Data Management meeting needs at least 2 days. And needs to have as many DACs represented as possible.

It was decided that the DMT is mature enough to have independent face-to-face meetings in the future, ideally half-way between Steering Team meetings, to keep the momentum going. At least the co-chairs of the DMT and Steering Team should be mutually present.
The first possibility for face-to-face meeting of the DMT was the IMDIS conference in Paris at end of March, and the DMT members decided to meet around that. In addition Bill Burnett offered to coordinate regular web meetings for the DMT (**Action**: B Burnett, Done). This has become a regular quasi-monthly event and contributes greatly to keeping the activities going.

Next Steering Team Meeting – the team decided it would try to gather opportunistically which would not allow full representation of the Team, but would allow for a check on actions and some discussion. No specific meeting time was set.

## D. Executive Committee meeting minutes.

Location: Hotel Ca' Formenta, Venice Italy.

Attendees: Uwe Send, Hester Viola, Bob Weller, Doug Wallace, Makio Honda, Bill Burnett, Eric Schultz (for Tom Trull)

Absent: Sylvie Pouliquen, VSN Murty, Tony Knap

1) Executive Committee Membership

Questions and comments during the Steering Team meeting suggested that it was not made clear enough how the initial members of the Executive Committee were chosen. This had been explained in a single email, but possibly not everybody read that message to the end or the information was not sufficient.

To re-iterate: The four co-chairs had drafted a list of potential members of the Executive Committee, based on the ex-officio members, plus a small number of additional members to represent disciplines and continents/regions sufficiently, while keeping the group manageable and effective in size. The following members were drafted and agreed to participate in an Executive Committee, given endorsement by our sponsors and the group in general:
1) Ex officio: U.Send, R.Weller, S.Pouliquen, B.Burnett, H.Viola
2) additional: D.Wallace, Murty, M.Honda, T. Trull, T.Knap (representing Europe, East and South Asia, southern hemisphere, and physical, biogeochemical, and biological disciplines).
Subsequently endorsement of this initial membership was received from JCOMM, OOPC, and POGO.

- To alleviate some of the ill feelings, and since one member more does not make a large difference, it was agreed to invite Richard Lampitt or Francisco Chavez to participate. EuroSITES is a large and critical program, so Richard was deemed to be the first choice. (**Action**: Co-chairs)

- Membership has a price/cost with additional duties, responsibilities, work, conference calls and meetings, so it must be realized and made clear to members, potential members, and the Steering Team that this is job not everybody wants.

- It was discussed whether it may be seen as an issue that both co-chairs are from the USA. The situation is not ideal, but is a legacy from the earlier years when one was from Europe and one from USA. As long as others perceive no bias/feel excluded and the program runs well, there is no reason to change something that people are happy with. Argo also has 2 North-American co-chairs and nobody seems to sense a bias. When there is discontent or one of the co-chairs wants to retire from this, a change needs to be discussed. We may also consider a third co-chair some time in the future.

2) Operating procedures for executive committee members and team officers.

- There should be some form of vote to appoint co-chairs, when there is a need for replacement or adding a 3rd person.

- The non ex-officio executive committee members should rotate every 3 or so years, beginning with one or two members in 3 years then another 1-2 in 4 years etc so it is staggered. This can be documented in the minutes of each Executive committee meeting.

- Guests should be able to attend the Executive meeting if particular issues of concern need to be discussed or to represent members who cannot attend.

- The Steering Team should be expanded (email list and www.jcomm.info team members) to include all PIs or operators who are willing to become a member (i.e. attend meetings at their own cost, contribute to the design and running of the project. Double-check this with all new additions (**Action**: Project Office)

- Executive committee should be entered on www.jcomm.info. (**Action**: Project Office)

3) A new Brochure should be produced (and an accompanying Powerpoint Presentation with products and animations) to demonstrate

   i) Successes, Example products, what it means to be an OceanSITES site

   ii) Trish White at Woods Hole should be able to assist with this (**Action**: WHOI and others)

4) A list of "new" sites needs to be compiled for approval by the Executive Committee via email in late 2009, i.e. all the new ones that are on the "current" map now. (**Action**: Project Office and Executive Committee)

5) Exec Committee should have quarterly conference calls to discuss status, action items, new sites, etc. (Action project office)

6) Data Policy for "Real time" data
The Steering Team had remained inconclusive about the trade-off between making data available in real-time that are NOT quality controlled, like realtime biogeochemical data, and this inviting mis-use of the data, versus withholding such data until the QC had been properly performed (often 1-2 years). This decision had been left to the Exec Committee to discuss since one of the most fervent advocated of withholding data until they are good was present on the Exec Committee. The following arguments were considered:

   i) There are significant benefits to having real time data: ability to test the system fully, increasing visibility of sites to improve changes of sustained funding, and ability to identify problems quickly (even by the outside community)

ii) Example given with Carbon data from moorings being made available as Graphical products showing the data. This is not useful for OceanSITES, since it does not invite/enable using and manipulating and analyzing the data.

iii) Bringing together different graphical outputs from disparate OceanSITES is one simple product we had wanted to offer, but we need the data available in its most usable form, that is numeric.

iv) To ensure maximum usefulness and attractiveness of the database, we need to have a full databank, and take the risk that some data will be bad in real time. There is a LOT of interesting work that can be done even if an instrument has drifted !

v) If data are mis-used, this is not a fatal blow, and discredits the careless/uncritical user more than OceanSITES. And even with greatest care and QC'd data, there will always be people who do stupid things with the data, so we cannot really prevent it anyway.

vi) The executive therefore decided *unanimously* that the benefits outweigh the risks of publishing non-QC'd data (with appropriate warnings). Thus the data policy it would advocate is that "Real time, digital data sets must be made available as soon as available from telemetered sites" (**Recommendation** to Steering Team via email) (**Action** Project Office)

# Appendix A - Meetings Participants

JCOMM meeting participants list

## Participants List

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# APPENDIX B - ACTION LIST 2009

The complete action lists are available as Excel spreadsheets on http://www.jcommops.org/FTPRoot/oceansites/meetings/

*Actions from the 7th Steering Team meeting*

| Agenda item | Action | By Who | Assisted by who | by when | Status | Comments |
|---|---|---|---|---|---|---|
| A-1 | JCOMMOPS to provide an interactive map viewer (Standard JCOMM projection) for OceanSITES layers (on flat earth) within GOOS/JCOMM viewer, as alternative to Google Earth View. | H Viola | | next meeting | DONE | |
| A-2 | Enter finalised Data Quality working group documents, and Data Management plan into JCOMM Catalog of Best Practices. | H Viola | | next meeting | DONE | |
| A-3 | Need for compilation of Best Practices on dealing with Bio-fouling | Steering Team members | Project Office | | No Progress | |
| A-3 | Need for promotional material to highlight uses of data and value of the global network | ? | Project Office | | No Progress | |
| A-4 | Develop a clear document outlining site approval process and the requirements that need to be fulfilled to become part of OceanSITES | U Send, R Weller | B Burnett, H Viola | | Underway | Hviola: Site Approval Process documented. |
| B-5 | Invite somebody from the SURFA community to the next meeting | R Weller | | 2010 | No Progress | |

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| C-1 | Volunteers to revisit the MOIN variables to present back to OceanSITES with more thought to hardware, telemetry, standard depths and sampling rates (with assistance from moored buoy experts MC) | R Lampitt | F Chavez, D Wallace | | No Progress | |
| C-1 | MOIN map needs to be updated with existing moorings (plus a vision map created) | Co-chairs, Project Office | | | No Progress | |
| C-1 | Write a letter to desirable sites to see if they are interested in installing the MOIN mooring | Co-chairs | | | No Progress | |
| C-1 | Update maps as suggested by the team and creat new google earth files to symbolise by discipline and data flow (GDAC/GTS) etc | H Viola | | | No Progress | |
| C-2 | Continue to compare existing documents and the checks that need to be performed, merge all necessary parameters and checks and report them in the Data Management Handbook. | B Burnett | Members of Real-time physical QC WG, | | Underway | |
| C-2 | Review checks that need to be performed in real time to assess if appropriate to Near-real time for BCG variables. Report back on how appropriate existing QC checks are. | A Dickson | Members of Real-time BGC QC WG, | | No Progress | |
| C-2 | Review existing delayed-mode QC documents and identify gaps | M.Cronin | Members of DM physical QC WG | | | |
| C-2 | Appeal to community for existing documents about delayed-mode BGC QA/QC. List of documents to be compiled | H Viola | | | DONE | information sent to the working group, and several reminders since. |
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| C-2 | Working group will then review the existing documents and identify gaps (Action: Working group on delayed mode QC of BCG variables) | R Lampitt | Members of DM BGC QC WG, | | No Progress | |
| C-3 | Contact PIES operators who have long timeseries | U.Send | | | underway | |

*Actions from the 1st Executive committee*

| Agenda Item reference or No. | Action | By Who | Assisted by Who | By when | Status |
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| Exec1 | The Steering Team should be expanded (email list and www.jcomm.info team members) to include all PIs or operators who are willing to become a member (i.e. attend meetings at their own cost, contribute to the design and running of the project. | Project Office | | Dec-09 | DONE |
| Exec2 | Invitation to Richard Lampitt to participate in the Executive as the representative for EuroSITES and the Med Sea. | Co-chairs | | | DONE |
| Exec 3 | Executive committee should be entered on www.jcomm.info. | Project Office | | | DONE |
| Exec 4 | A new Brochure should be produced (and an accompanying Powerpoint Presentation with products and animations) to demonstrate Successes, Example products, what it means to be an OceanSITES site. Trish White at Woods Hole should be able to assist with this | WHOI and others | | | Underway |
| Exec 5 | A list of "new" sites needs to be compiled for approval by the Executive Committee via email in late 2009. | Executive | Project Office | Dec-09 | Underway |
| Exec 6 | Exec Committee should have quarterly conference calls to discuss status, action items, new sites, etc. | Executive | | | No Progress |
| Exec 7 | Communicate unianimous decision to the Steering Team, that the benefits outweigh the risks of publishing non QC'd data (with appropriate warnings). Thus the data policy it would advocate is that "Real time, digital data sets must be made available as soon as available from telemetered sites" (Recommendation to Steering Team via email) | Project Office | | | Done |

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| Exec 8 | Exec Committee should have quarterly conference calls | Project office | | | |

*Actions from the 3rd Data Management Team meeting*

| Agenda item | Action | By Who | Assisted by who | by when | Status | Comments |
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| B-1 | Provide templates for metadata sheet to Japan DAC - for JKEO and TRITON buoys. | B Burnett | H Viola | | DONE | |
| B-1 | Scope work required to document metadata for all TAO sites and get data onto delayed mode GDACs | B Burnett | | | DONE | BB: Developing Metadata Sheets for TAO platforms - will develop FTP directories soon. |
| B-1 | Cochairs to request all delayed mode data be made available for PIRATA and RAMA buoys, as they are considered part of OceanSITES? | U Send, R Weller | M McPhaden, P Freitag | | No Progress | |
| B-1 | SIO (on behalf of NDBC as DAC) to provide data for MOVE to GDACs and metadata files | M Lankhorst | | | Underway | ML: T&S complete, velocities and bottom pressure are being processed. Metadata files need to be created (NetCDF dump?) |
| B-1 | Send metadata sheet templates to CDIAC | H Viola | GDACs | | DONE | |
| B-1 | Clarify which data will be made available via CCHDO/SIO and generate metadata desciptions | S Diggs | | | Underway | Progress documented in meeting report from Paris 2010 |
| B-1 | Check which EuroSITES data will be available. EuroSITES to populate archive (ANIMATE, MERSEA - ADCP and BioGeoChemical data) and develop metadata for all sites | M Pagnani | R Lampitt, J Karstenstaen | | Underway | 61 data sets currently available. Metadata is a challenge. |
| B-1 | Follow up with Hawaii about whether they can provide DAC services | H Viola | | | DONE | No DAC services currently. CCHDO is assisting with CTD data. |

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| B-1 | GDACs to match all directories and file names to Site Catalog (or request updates). E.g INCOIS and WHOI should be separated based on SITE code. | GDACs | H Viola | | Underway | Synchronization will commence by May 2010, with SITE as the top-level directory |
| B-1 | Track presence of Historical data sets and encourage DACs to provide older data to the GDACs (charts or google earth to show presence over time) | H Viola | GDACs | | No Progress | DACs can assist by providing a list (excel) of outstanding datasets and those being processed. |
| B-1 | Project office to review with DACs how sites are named | H Viola | DACs | | DONE | |
| B-1 | Merge the station data spreadsheet with the site catalog spreadsheet. Until the site catalog can be automaticallly generated from the JCOMMOPS database (with GDAC index files inputted each day) | H Viola | GDACs | | Underway | Depends on GDAC Synchronization |
| B-3 | DMT members to check that the current SensorML file format adequately captures the required metadata | DMT members | Cecile Robin, Maureen Pagnani | | Ongoing | |
| B-3 | For elements which are not included in the current schemas (e.g. Data mode (DM/RT), etc) there is a need to register the entries in the MMI vocabularies | C Robin | N Galbraith | | Underway | NGalbraith: Some ontologies have been created |
| B-3 | Matthias to include the Sensor Mount and Sensor Orientation as new attributes for all parameters for review and validation by the DMT. | M Lankhorst, T Carval | DMT | | DONE | TCarval: Version 1.2 of the User Manual. Approved at Paris 2010 meeting. |
| B-3 | All Parameters that are present in NetCDF files should be in the OceanSITES parameter table. And part of the format checker and listed in the index files. | DMT members | DMT | | DONE | This relies on synchronization of GDACs for the Index file. |

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| B-3 | Working group members (6) to comment on the Data Management Plan document and then the DMT members should review the document. | DMT members | B Burnett | Dec-09 | Underway | BBurnett: Document still in development. Hope to provide second draft to members by the data management meeting. |
| B-3 | For variables that have not been previously documented, Working group can feed back gaps and Co-Chairs and Project Office will find expertise to provide input and expand on document. Review by DMT (the document will then be included in the JCOMM Best Practices Catalog) | B Burnett | Cochairs, H Viola | Jan-09 | | |
| Action 1 | Each institute named in this list should provide the data management team with the name of a representative who will be a part of the data management mailing list and represent the institutes in the OceanSITES data management meetings. This "Point of Contact" will also be notified when data holdings have not been updated after an appropriate level of time. Action - DACs | DACs | | | DONE | |
| Action 2 | Does IMR want to serve as a DAC or rely on the EuroSITES DAC to distribute their data to OceanSites | IMR? | | | No Progress | |
| Action 3 | The group decided that the GDAC ftp sites should be arranged by site organization (i.e., similar to Ifremer's site). | GDACs | | | DONE | to be completed by May 2010. Ongoing |
| Action 4 | Definitions for Observatory, Network, Site, Platform, deployment should be finalized as soon as possible | DMT members | Project Office, Steering Team | | DONE | |

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| Action 5 | The Technical Coordinator will revisit the "SITE" field names with the eleven DAC managers (once defined) to ensure the fields are filled out correctly. | Project Office | | | DONE | |
| Action 6 | Post citation requests for users using the citation provided into the netcdf files on the OceanSITES website. | Steering Team members | | | No Progress | |
| Action 7 | Cecile Robin to work with Nan Galbraith and Mike McMann to describe more complicated site than ESTOC. | C Robin | N Galbraith, M McCann | | Underway | |
| Action 8 | IFREMER and NDBC will compare their implementation of SensorML and work for a proposal for Oceansites in 2010. | GDACs | | | Underway | |
| Action 9 | Approach US NODC "world data center" and perhaps SeaDataNet, to archive all raw data as GDACs will store only Best Copy Data. Request information from the NODCs to see if they would serve as a long-term archive repository for OceanSITES. | B Burnett, S Pouliquen | | | Underway | BB: NODC and NDBC will meet for a Quality Control Workshop in May. Discussions regarding OceanSITES data holdings will be held at that time. |
| Action 10 | The group will make a proposal to indicate in the name which kind of data it contains. | DMT members | | | DONE | |
| Action 11 | GDACs develop a method to ensure two DACs don't submit different datasets with the same header. | T Carval and B Burnett | GDACs | | DONE | TCarval : the file naming convention proposed should avoid this situation |
| Action 12 | The Team should update the parameter list in the user manual to reflect new parameters that are in the netCDF file but not in the data file. | B Burnett | DMT Members | | DONE | |
| Action 13 | The Team should specify which Temperature and Salinity scales are used: i.e., the reference scale is either ITS_90 or PSS-78. Action – Data management team | B Burnett | | | DONE | |

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| Action 14 | In the user manual there is a Parameter Name and Standard Name table. The Team should develop a mechanism to enable the DACS to update this list when required. Action – Data management team. | B Burnett | | | Ongoing | |
| Action 15 | In particular there is a need for additional names for Carbon in CF. The CF Standard Names Committee has added several new terms for carbon and related studies. A PI or DAC that requires new terms to describe any variable | PIs and DACs | | | DONE | |
| Action 16 | Modifications to the Index File – add a parameter list to the file and lines for when the files are updated | T Carval and B Burnett | GDACs | | DONE | TC : documented in the proposal 1.2 of the user's manual. |
| Action 17 | GDACs to produce regular statistics on data access e.g. yearly summary of downloads (charts about origin of user, regularity etc) | GDACs | Poulique n and Burnett | | Underway | BBurnett: Once the GDACs are synchronized, NDBC will work with Ifremer to install tools to track visitors and data downloads |
| Action 18 | GDACs implement a RSS mechanism to inform users on data updates | GDACs | Poulique n and Burnett | | Ongoing | BBurnett: Work ongoing at NDBC, should be installed end of March |
| Action 19 | GDACs implement OpenDAP access on top of the FTP server | GDACs | Poulique n and Burnett | | Underway | BBurnett: Installed at NDBC - will work to install similar system at Ifremer. |
| B-3 | Update the Users Manual to reflect the format changes agreed upon at the meeting | T Carval | GDACs | After every meeting | Ongoing | We need to document the update/approval procedure. |

# APPENDIX C - ACTION LIST 2008

Completed actions from past meetings have been removed.

*Actions from the 2nd Data Management Team meeting and the 6th Steering Committee meeting.*

| Meeting at which item was added | Agenda item | Action | By Who | Assisted by who | by when | Status | Comments |
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| OceanSITES-DM-2 | B-1.3 | Commitments to providing data: All operators of sites and representatives of DACs present at the meeting agreed to make their data available in the new format, follow the agreed procedures, and to make the data flow, both in real-time and in post-recovery mode. | All DMT participants | GDACs, H Viola | next meeting | Underway | Also OceanSITES-SC-6 Agenda Item 2. Data flowing from MBARI, PMEL, CCHDO/SIO (Bermuda, Hawaii), EUROSITES, WHOI, NDBC, INCOIS |
| OceanSITES-DM-2 | B-1 | Update the data flow documentation and provide guidelines for DACs on how to submit data to be included in the GDAC data Handbook | S Pouliquen | B Burnett | next meeting | Underway | Included in the Draft OceanSITES Data Management Plan (handbook) |
| OceanSITES-DM-2 | B-3.1.1 | Propose Quality Control best practice for physical and met parameters | B Burnett | Working group on Physical QC | next meeting | Underway | Also OceanSITES-SC-6 Agenda Item 2. Draft went out to Working group in August as part of the "OceanSITES Data Management Plan (handbook)" |
| OceanSITES-DM-2 | B-3.1.2 | Propose Quality Control best practice for Bio-Geochemical parameters | A Dickson | Working group on BCG QC | next meeting | No Progress | Also OceanSITES-SC-6 Agenda Item 2 |

| Meeting at which item was added | Agenda item | Action | By Who | Assisted by who | by when | Status | Comments |
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| OceanSITES-SC-6 | A-2 | PI, DAC, GDAC: Later in the coming 12month period, JCOMMOPS should start tracking the data streams | JCOMMOPS | GDACs | 2010 | Underway | Scripts are available for reading the Argo GDACs that can be easily modified for OceanSITES. Relies on stable GDAC structure |
| OceanSITES-SC-6 | A-5 | Science Users: advertise use of timeseries context (data and hardware/logistics) to conduct focus experiments/studies. | All participants | | next meeting | Underway | |
| OceanSITES-SC-6 | A-5 | Specific Users to contact: request input now about the type of data or products from OceanSITES that would be useful from : | | | | | |
| OceanSITES-SC-6 | A-5 | - GODAS for monthly state estimate validation | D Snowden | | | Underway | The Climate Prediction Center at NCEP produces a monthly state of the ocean report. This report shows the major modes of ocean climate variability as simulated by the GODAS analysis. Whereever possible the GODAS results are compared with observational data. CPC is interested in including the OceanSITES time series data in the monthly report and has only been waiting for the GDAC structure to mature and for them to become well |

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| | | | | | | | populated with standard data files. Development can probably begin shortly as the GDACs are nearing that level of development. Probably enough data today to allow the process to begin. |
| OceanSITES-SC-6 | A-5 | - Wave Community | U Send, B Burnett, R Weller | | next meeting | Underway | |
| OceanSITES-SC-6 | A-5 | - OSCAR surface current project and NCEP | M Cronin | | next meeting | Underway | Receptive to working with the oceansites community. Standard reference of 15m and recommendation to standardise or to interpolate to 15 (from 10m). Very interested in using data. No progress with NCEP. (SURFA project is using oceansites to compare surface met and flux). |
| OceanSITES-SC-6 | A-5 | - BOM | E Schulz | | next meeting | No specific update | Flux verification, SURFA. |
| OceanSITES-SC-6 | A-5 | - NASA | R Weller | | next meeting | Underway | Real time one minute surface radiation data - telemetry doesn't currently support this. |
| OceanSITES-SC-6 | A-5 | - GODAE/GSOP/Stammer | U Send | | next meeting | No Progress | November GSOP meeting - synthesis (data needs) and outcomes from |

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| | | | | | | | OceanObs09. More specific guidance on data requirements |
| OceanSITES-SC-6 | A-5 | - IOGOOS | P Rao | | next meeting | Underway | Dec 2008, meeting. IOGOOS is surveying user requirements (Pattabhi in charge). Data Management workshop. |
| OceanSITES-SC-6 | A-5 | - modelling community | R Lampitt | | next meeting | Ongoing | Proper engagement is critical. Very clear user of data once there is enough data available in one place, with one format in an integrated way. Plus Ecosystem modelling needs such data. *** RL will get into contact with the Ecosystem modelling reps at OceanObs09 |
| OceanSITES-SC-6 | A-5 | - US CLIVAR Process Study and model Improvement Panel | M Cronin | | next meeting | No Progress | Sonia Legg, Paquita Zuidema are contacts |
| OceanSITES-SC-6 | A-5 | - WCRP/GSOP/Trenberth, e.g. flux products | R Weller | | next meeting | Ongoing | Comparison of Atmospheric models, SURFA. Activity recently. *** continue dialog. |
| OceanSITES-SC-6 | A-5 | Products: Explore and implement as many of the products as possible and work towards others (examples in report page 7) | DACs | | | Ongoing | |
| OceanSITES-SC-6 | A-5 | Indices, indicators: www.OceanSITES.org should be the site with all the products and indicators, and the entry portal for single sites. Collect indicators from single sites and display together. | H Viola | DACs, OSMC, co-chairs | 2010 | No Progress | PMEL provide one link to be used |

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| OceanSITES-SC-6 | A-5 | Indices, indicators: How can OSMC at NOAA assist - generate/provide/help implement indicators | D Snowden | | | Underway | OSMC requests help from OS to help determine the logical platform type categories that accurately summarize the status of the OceanSITES network (e.g. Air sea flux reference stations, subsurface time series, transport monitoring arrays, biogeochemical and carbon time series etc) |
| OceanSITES-SC-6 | A-5 | Indices, indicators: Provide entry portal and links for products and indicators on member websites | H Viola | DACs, OSMC, co-chairs | 2010 | No Progress | |
| OceanSITES-SC-6 | A-5 | Indices, indicators: add OceanSITES name/logo on all indivual site websites with products and indicators (all) | All participants | | | Underway | |
| OceanSITES-SC-6 | A-5 | Performance metrics: Need to generate OceanSITES performance metrics for national and international agencies/bodies, and for funding agencies. Examples in the report page 8 | NDBC | H Viola | | No Progress | |
| OceanSITES-SC-6 | A-6 | - update the maps and identify current surface mooring sites | H Viola | | next meeting | Underway | Ongoing (latest status on http://www.oceansites.org/network/) |
| OceanSITES-SC-6 | A-6 | - choose candidates site for core homogenized network (good locations, already some hardware) | R Weller, U Send | | | Underway | "Backbone" network developed, shared as ppt slide |
| OceanSITES-SC-6 | A-6 | - Look for funding to upgrade sites accordingly, e.g. EuroSITES has some funding for upgrades | All participants | | | No Progress | |
| OceanSITES-SC-6 | A-6 | - Turn this into a proposal to be taken to various bodies and panels. plus 1 page on hardware and site options. Need a 3-pager: | | | | No Progress | |

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| OceanSITES-SC-6 | A-6 | 1 page with biogeochemical rationale | D Wallace, F Chavez, R Lampitt | | | No Progress | |
| OceanSITES-SC-6 | A-6 | 1 page with atm/physical side | R Weller, U Send | | | No Progress | |
| OceanSITES-SC-6 | A-6 | - Present plan to panels to discuss paths/funding for upgrades/enhancements. One example is the carbon timeseries workshop at SIO in November '08. Consider meeting 1 day before that to prepare the input. Also approach SOLAS and IMBER Steering Teams with this. | All | | | No Progress | |
| OceanSITES-SC-6 | A-6 | Provide white paper on site-specific glider applications at a few sites (TAO, KEO, Cape Verde, etc). | P Hacker, D Wallace | | | No Progress | |
| OceanSITES-SC-6 | A-6 | Sharing platforms, sensor expertise and sensors: List of mentors for each sensor and list of participants willing to share platforms | H Viola | | next meeting | No progress | |
| OceanSITES-SC-6 | A-7 | Funding of Network: follow up on use of 2-page outline of a global proposal for a backbone multidisciplinary timeseries system with Tony Haymet and POGO | U Send | | | Underway | Susan Avery discussed OOI and sustained time series at POGO 2010. POGO 2011 to have focus on sustained observing; should coordinate OceanSITES presence |
| OceanSITES-SC-6 | A-7 | Compile information about opportunities to share network and willingness to share funds etc | H Viola | All participants | 2010 | No progress | |
| OceanSITES-SC-6 | A-8 | Web site: Updates and fixing broken links, simplify structure and update network status | H Viola | All participants | next meeting | Underway | Ongoing |
| OceanSITES-SC-6 | A-8 | General use PPT slides: Need to craft a few agreed ppt slides for everybody to carry a consistent message to the outside world. Start from Uwe's EGU presentation and post it to invite comments/edits. | U Send | All participants | | Ongoing | Slides shared with OceanObs09 participants |
| OceanSITES-SC-6 | A-8 | Invite somebody from the SURFA community to the next meeting | R Weller | | 2010 | No Progress | |