Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IOC-WMO-UNEP-ICSU Scientific Steering Committee of the Global Ocean Observing System (GOOS)

Thirteenth Session
8-12 March 2010
London, UK

GOOS Report No. 183 UNESCO

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IOC-WMO-UNEP-ICSU/GSSC-XIII
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ABSTRACT

The GSSC, comprised of representatives of several major industry and research institution leaders, the chair of OOPC, chair of GRC, director EEA, and others met in London March 8-12, 2010 to discuss the status of the GOOS and what actions seem most urgent to push GOOS forward. Advances in coastal GOOS are being plotted through the PICO which is drawing up a coastal implementation plan intended to galvanize activities of GRAs to produce coastal observations which will underpin the expansion of GOOS into coastal zones with strong regional priorities. Reports of the needs and advances of Open Ocean GOOS (or Climate GOOS) through activities of the Global Climate Observation System and the Ocean Obs' 09 working group, emphasize the potential for expansion and completion of OOGOOS, but also the only partial coordination and support from the IOC, UNEP, ICSU and WMO, the sponsors of GOOS, in direct participation of these forces. A conclusion of the GSSC was that the coordination of GOOS from the IOC must be improved and shown to be an IOC priority. The intergovernmental governance paradigm for GOOS must be questioned if stronger participation by the member states cannot be elicited. The role of the I-GOOS, GSSC and other IOC based coordination bodies of the GOOS should be questioned, restructured, and adapted to new needs.

(SC-2010/……)

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1 OPENING AND WELCOME

1.1 INTRODUCTION AND APPROVAL OF AGENDA

The chairman of the GSSC, Ralph Rayner, opened the GSSC XIII and PICO III by welcoming the committee, invited experts and other participants. Appreciation was expressed for the support of IMAREST and Oceanology International '10 in helping organize and host these meetings. The central theme of this year's GSSC meeting will be the efficiency of the GSSC and the PICO. The committee meetings are being held in the context of a continuously decreasing level of financial support from the sponsor organizations for governance activities. In the past it has been a task of GOOS governance to identify and create implementation plans. Now the driving charge to the committees is to find practical ways to drive the process forward, to find ways to implement the implementation plans. The agenda of the meeting was described and approved by the chair.

1.2 REVIEW OF ACTION ITEMS OF GSSC XII

Action items from the previous GSSC meeting, GSSC XII, were reported by the GOOS Project Office secretariat, summarized in document GSSCXIII-1.1.2. Outstanding and incomplete actions were discussed. Of particular concern were Actions 16-20 concerning the GODAE OceanVIEW. A report on the progress of integrating GOV into the JCOMM ETOFS was made available to the GSSC XIII by the GOV team. The issues were discussed at the JCOMM III meeting.

2 PICO JOINT SESSIONS WITH GSSC

The PICO III meeting was held in parallel and in joint sessions with the GSSC. During the joint sessions, the generality of the PICO development of the Coastal Implementation Plan was discussed. A summary of the PICO meetings was delivered to the GSSC on the final day.

2.1 UPDATE AND STATUS REPORT ON PICO IMPLEMENTATION PLAN DEVELOPMENT: PAUL DIGIACOMO AND JOSE MUELBERT

The status of the PICO coastal implementation plan was described and the general work plan conceived to complete the IP. The workplan focuses on selected Phenomena of Interest and End to End system analysis as basis of the IP. Final phase is the Build out plan, with phased prioritization of ECV.

The IP will be reviewed first by the GSSC and GRAs. Then it will be put out to as wide an audience as possible for comments, including, GEOSS, LME, OO'09 and perhaps even a web wiki.

Discussion:

This sort of document meets an immediate need in developing countries. The focus of the IP should be on the Implementers rather than on the mandate conventions. The implementers will use the plan to build their response to mandates. They are best positioned to make such direct implementation decisions. In developed countries you can use legislative drivers, top down, but in developing countries the leverage is from the community upwards.

2.2 WALK THROUGH OF SPECIFIC END TO END SOLUTION: COASTAL FLOODING (PHYSICAL FOCUS, POTENTIAL LINK TO OOPC): TOM MALONE

An end to end solution will comprise: Design drivers; Observing system requirements; Operational status & challenges; Priority pilot projects; and Potential partners. The coastal flooding end to end was presented to illuminate the implementation plan development procedure. Identify the risks and costs to develop Design Drivers and products, such as "Vulnerability Index" and "Water Quality Indicators". The other side of design drivers are the users expected to be affected by or pay for the risks. These groups have developed many applications, perhaps using GOOS products, to suit their needs. So the object here is to identify data requirements for as many of those products as possible, and prioritize them. For coastal flooding priorities are: Mapping capabilities; Real time water levels; Remote sensing for post-event evaluation; In-situ chemical analysis. Modeling needs are: Mapping; Water level forecasting; Vulnerability mapping. These are all within existing technology, although Vulnerability Indices could use more R&D. Based on these ideas a pilot project can be developed targeting developing countries where capability must be increased.

2.3 WALK THROUGH OF SPECIFIC END TO END SOLUTION: EUTROPHICATION AND HYPOXIA (BIOLOGICAL/ECOLOGICAL FOCUS): JOHN PARSLOW

The PICO implementation plan is being designed around example end to end systems of several particular products of interest to the coastal community. These help to define the Phenomena of Interest, and identify end-to-end system components and solutions. The example of Eutrophication and Hypoxia was used to exemplify the issues which become important with biological/ecological programmes.

2.4 HARMONIZING INDICATORS FOR A UNIFIED AND INTEGRATED APPROACH TO MANAGING HUMAN USES OF ECOSYSTEM GOODS AND SERVICES AND ADAPTING TO A GLOBALLY CHANGING CLIMATE: TOM MALONE

Within the context of coastal ecosystems at risk, indicators are evaluated which reflect anthropogenic and natural stresses on the environment. Many conventions are in place indicating a need for Ecosystem based management and evaluation methods. Continuous and Timely data and information to detect change are assumed by these conventions, but are not, in fact, available. The AoA and Regular Process explicitly recognize this problem. DPSIR (Drivers, Pressures, States, Impacts, Responses) models identify these indicator needs. However the reason the indicators do not exist is that they cover an impossibly wide range of space and time scales, with mismatched timeliness requirements and inability to provide assessments in time and with quality needed. The bottom line is that there is no coherent, widely used set of indicators; there are too many which are inadequate. PICO can help by contributing to a consensus on a common set of indicators.

2.5 PICO III SUMMARY REPORT TO GSSC IMPLEMENTATION PLAN DEVELOPMENT: DIGIACOMO/JOSE MUELBERT

3 REPORTS OF OTHER PROGRAMMES

3.1 REPORT FROM GCOS ON 2010 UPDATED IMPLEMENTATION PLAN: W WESTERMEYER GCOS SECRETARIAT

The GCOS Implementation Plan update for 2010 from the 2004 IP has been completed, reviewed and will be finalized August 2010 and presented at the upcoming COP-16. The update emphasizes progress of science and technology and reinforces the "UN Delivering as One" goal. Conclusions of the IP note that an increasing profile of Climate Change has reinforced the awareness of importance of GCOS. However financial commitments have not kept pace. Developing nations have made little or negative progress and capacity building efforts as a part of GCOS development has been too small. GCOS still falls short of needs for UNFCCC. The ocean component of the GCOS IP received contributions from GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC) and was reviewed by other GOOS participants.

Discussion:

Ecosystem Essential Climate Variables, ECVs, are still weakly represented in GCOS IP. There is a reluctance to add additional ecosystem ECVs until they are well defined. Ocean color has been introduced. Other "placeholder" ECVs are in the IP for future work.

Action 1: GSSC and GOOS PO to cooperate with GCOS in staging a side event for the presentation of the GCOS IP at the COP-16.

Action 2: GSSC to consider aiding in completion of cost benefit analysis for GCOS and GOOS.

3.2 OOPC REPORT: ERIC LINDSTROM

The OOPC continues to emphasize its main foci: State of the Ocean via ocean climate indices; Societal Relevance via highlighting use of observations and climate indicators by society; Brief Current Events via timely distribution of information about climate events; State of Observing System monitoring of status and completion of observing system buildout; Liaison and Review by interacting with the ocean and climate community by advocating and reviewing the components of the system. An effort is being developed to emphasize regional and local effects which might be affected by global indices.

Discussion: Biologist and ecologist representation on OOPC is present, but there is a need for biogeochemical representation.

3.3 PRESENTATION ON THE ASSESSMENT OF ASSESSMENTS (AOA): JACQUELINE MCGLADE DIRECTOR EEA , CO CHAIR AOA GROUP OF EXPERTS

The AoA most assuredly will go forward and will happen. The UN General Assembly, UNGA, in 2002 endorsed it, and in 2006 established the Group of Experts, charged to assemble information about marine assessments and examine the methodology of assessments and their scientific credibility, policy relevance, legitimacy and usefulness. Existing assessments have been assembled and evaluated for their regional distribution (21 global areas) and according discipline (Water Quality, LMR, Habitat, Food Webs, Protected Sp, Social & Economic). The regularity and consistency of the assessments is their weakest issue. A churning mass of assessment experts and organizations recycle themselves, repeating data and conclusions from previous assessments. The AoA GoE is struggling to define Best Practices for AoA. Benchmarks and Baselines are needed to regularize the process.

The value of the assessments is that they are both a product and process of value. The Regular Process Overall Objective: To serve as the mechanism to keep the world's oceans and seas under continuing review by providing regular assessments at global and supra-regional levels. Integrated assessments will show the seas' importance covering environmental, economic and social aspects. The Regular Process will be positioned within IPCC, GEO, CoML, LME, IOC, UNEP, FAO, World Bank, to provide fully integrated environmental economic and social assessment of services. The Regular Process is forward looking to provide current state and scenarios for management decisions, and outlook to future states and forecasts.

Followed a short discussion of the use of the Eye on Earth data portal as an integrative tool of importance to the AoA and to the GOOS. A big contribution is the metadata tagging technology, a unique identifier for data items which maps to a registry, allowing providence of data to be maintained, end to end.

Action 3: Use IOC convening power and political framing to put before the Member States the framework and process.

Action 4: Set up a small group from GSSC to take on action on AoA issues:

- Assure that GOOS or GSSC members are nominated to AoA Group of Experts.
- Assure SE Asia and Asia has representation on Group of ExpertsUnderstand data requirements and minimum data variable set relevant to GOOS IP's.GOOS to act as cosponsor of AoA inside GEO

Action 5: PICO to ask Jacqueline McGlade to work with Coastal Implementation Plan in a few months.

3.4 LME PROGRAMMES: J. MCGLADE

A very short review of some of the issues of the Regional Seas programmes. GES-LME money will be important to moving Regional Seas programmes.

Action 6: Carry forward GSSC XII action on contacting GES about Regional Seas issues.

3.5 GRA STATUS/SPECIFIC CHALLENGES OF REGIONAL COASTAL OBSERVING SYSTEM IMPLEMENTATION: HANS DAHLIN

The GRAs remain a challenging group to administer. The 2008 GRF formed the GRC, but not with unanimous consent. There are several very active regions: National regions, USA, Australia; multinational regions, EuroGOOS, MedGOOS, NearGOOS. All regions share challenges of sustained observations, implementation, pilot projects and data management, in reverse order of difficulty of obtaining funding. Primary issue is that it is difficult for national priorities to look outside the borders of the individual states. Several European countries, mainly ICES member states, have an application driven development of Operational Oceanography. In other countries the development is R&D driven. Operational Oceanography is seen as a research lab funding opportunity. EuroGOOS is looking into restructuring to respond to EU, EC and European Agencies (EEA, ESA...).

The GRAs would benefit from identifying a product and delivering on-line. The SEPRISE demo and MyOcean have demonstrated that some form of data delivery will be picked up quickly, 100,000 web hits per month.

Planning a GRC/GRA Forum for 26-29 October, 2010 to be held in Lisbon. The GRA Forum

has been postponed and is now scheduled to meet alongside the 6th EuroGOOS Conference, October 4-6, 2011 in Sopot, Poland. Suggested agenda items for the GRF are:

- State of development in GRAs
- What can we demonstrate as a fast track?
- Up-date Implementation Strategy
- First implementation plan
- Joint project proposal(s)?
- Exchange experience

Action 7: POGO to request joint meeting with GRAs. A session at the GRA Forum.

3.6 REGIONAL OBSERVATION SYSTEM ORGANIZATION, IOOS

IOOS, Zdenki Willis, Director IOOS, NOAA

The IOOS has a regional emphasis, which does contrast with the global aspirations of GOOS. The question is how to sell the observation systems? Local examples and products are useful sales tools. We provide Data Portals, which are very useful. But which one will lead the way? The IOOS is no longer about Pilot Projects. Rather the question is how to take the capacity which exists and roll it out as operational system. The end users are a difficult group to sell to. End to end systems are useful thought exercises, but the variation in real users make precise details impossible to determine.

The GRAs are a strong source of end user requirements.

3.7 POGO MEETING, SUMMARY OF OUTCOMES: STEPHEN DEMORA

Stephen DeMora reported on the POGO meeting he attended 26-28 Jan. 2010, Moscow, Russia. The groupof ocean institutes discussed economic concerns and networked. Oceanography is greater than observing systems and global issues, and regional concerns are major drivers of research support. So POGO is questioning the original purpose of the Partnership for Observation of the Global Oceans. Of particular interest to the GSSC was the discussion of the "Baker Report". POGO would like to engage more fully with GOOS and the IOC. Representation at the IOC assemblies was discussed. POGO is invited as an observer. The GSSC suggested that POGO should be entrained in the process for the GOOS implementation plans, but it was also noted that POGO meeting did not discuss such large and general topics. It was also noted that research labs are the source of all exisiting long-term observation systems and have been operational for a long time.

Action 8 DeMora and Rayner to discuss POGO role in GOOS with Trevor, Herzig and Shuba.

Action 9: GSSC to encourage POGO to interact with IOC ADG. IOC ADG to be invited to attend POGO meetings. IOC ADG to inform POGO of connectivity of POGO institutes with IOC member state delegations.

Action 10: To encourage POGO outreach efforts, the OOPC status PPT should be retooled for POGO.

3.8 GOSIC AND DATA PORTAL SUCCESSES AND SERVICES: CHRISTINA

LIEF

In general, the Global Observing Systems Information Center (GOSIC) seeks to: (1) provide for searches for data and information across all participating Global Observing Systems data centers using the Internet; (2) return results regardless of the data format, or where the data are located; (3) provide results back in a standard easy-to-read, easy-to-understand format; (4) allow users to determine the type and quality of the data through documentation provided by the participating data centers; and (5) allow users to obtain data sets. The GOSIC does not in and of itself hold data. Rather, it maintains metadata (information about the data sets that are available in the three programs) and points to the data centers for the data and information. The GOSIC does not create or modify the presentation of data. If the data centers identify the program that was the source of data and information on a database or product, then the acknowledgement will appear in the GOSIC. These data links and information such as observing requirements, planning documents, data management plans and publications can be found on the GOSIC Portal (http://gosic.org). The GOSIC, in a collaborative project with NASA, uses the Global Change Master Directory (GCMD) to provide users with metadata on the global observing systems data sets. To aid in better publicizing the GOSIC, an EOS cover article was written and published in September 2009; the reference is as follows: Diamond, H.J. and Lief, C.J. (2009), A Comprehensive Data Portal for Global Climate Information, EOS Trans. AGU, 90(39), 341-342, DOI:10.1029/2009EO390001. Article is available at the following link: http://www.agu.org/pubs/crossref/2009/2009EO390001.shtml

3.9 NON-CLIMATE VARIABLES IN OPEN OCEAN IMPLEMENTATION PLAN AND INTERFACE WITH COASTAL ISSUES: JOHN GUNN

Non-climate Open Ocean observations are ecosystem and biological systems. The Census of Marine Life is holding a closing conference in October 2010 in London. A CoML II is expected, but will need sizeable funding, again. The OBIS (Ocean Biogeographic Information System) has been placed in IODE and held the OBIS Strategy and Work plan Meeting, Oostende, Belgium, 18-20 November 2009.

A major outcome of the CoML is that now the field of Marine Biodiversity is a fully accepted discipline of oceanography. Other observing systems which will be considered for inclusion in GOOS are the Ocean Tracking Network, Continuous Plankton Recorder, and microbial community monitoring with gene tagging.

John Gunn further described the development and structure of the Australian Integrated Marine Observation System, IMOS. The coastal node concept was integrated from the start and now include five regional nodes for coastal issues. Typical to other regional OOS's the coastal nodes do not share much in common, compared to the well integrated ocean components of IMOS. The best systems, IMOS, OTN and IOOS are driven by strong advisory committees.

The GSSC discussed what systems should be brought forward. Coral Reef Monitoring System is now developed enough to be part of GOOS. Biological acoustics studies, OTN, OceanSites and GoShip are potential. Fisheries data sets must be “broken through” to usable access. Making fisheries data available are UN, FAO responsibilities. The Ocean Obs '09 eight areas of bio-communities is the appropriate way to bring these forward.

3.10 INTEGRATED FRAMEWORK FOR SUSTAINED OCEAN OBSERVATIONS TASK TEAM, IFSOO, (OCEAN OBS 09 FOLLOW-UP GROUP)

Eric Lindstrom reported on the Ocean Obs '09 Task Team. The TT will develop a framework for moving forward over the next ten years. The emphasis will be integrating biogeochemical, ecosystem and physical observation systems. Many international

conventions and a larger number of regional and national conventions and regulatory agreements will be important to defining the approach.

4 FUTURE OF GSSC

4.1 DISCUSSION OF CONSULTANT STUDY AND FUTURE OF I-GOOS, GSSC, PICO AND OOPC

Dr. James Baker, the author of the "Planning and Implementation for GOOS – A Consultant Study for WMO and UNESCO/IOC" led a discussion of the study. The GSSC noted that because this study was not requested by the IOC Assembly or the WMO, it has no binding authority, and will be taken up by member states informally. The I-GOOS board requested member states to comment on the report, but received only a few responses.

Business plan for IOC

Dr. Baker described a business plan for the IOC as a device to connect products, services, customers and users. The GSSC preferred to refer this idea as more of an agreement between a set of users to produce the products. IOC and GOOS do not create products and then give or sell them to their member states. Rather they invoke agreements between member states to produce mutually beneficial products. However this mutual agreement system does not apply well to coastal products, which usually do not cross borders.

Governing bodies: The IOC and WMO are appropriate bodies to coordinate and enhance sustained ocean observations. However, this mandate does not map well with UNESCO's goals, and thus IOC seldom commands attention by the UNESCO general assembly. Delegates to UNESCO are not directly interested in the ocean issues which IOC works with. However in most countries this can be said for the governmental science ministries which seldom have an ocean focus.

The I-GOOS was devised to address the issue of representation by operational oceanography decision makers. But the make up of IGOOS moved away from operational needs to ocean coordination and planning. It has become a drain on resources without representation of national resources needed to further operational programmes. A suggestion is to blend the IGOOS into the IOC Assembly, as it is seen that the IGOOS is no more able to move member state resources on behalf of operational oceanography than the IOC member states. This doesn't solve the problem, but at least it is less burdensome on resources. Alternatively a push must be made to get the right sort of delegates to come to the IGOOS. There is a need to address the resource issue and the challenge of satisfactory oversight of GOOS programmes. The essential question remains: How do we adequately encourage participation by members with decision making authority?

The JCOMM is singled out as a well formed body of GOOS. It's mandate matches its achievements. But that is not a reason to assume that it can solve these other problems. It is doubtful that JCOMM could take on more than it is currently doing, especially without a boost in funding.

Dr. Baker recommends a change in the GSSC structure, uniting GSSC, PICO and OOPC. The mandate for GSSC to advise on implementation strategies and planning, cannot be fulfilled without integration of coastal, open ocean and climate GOOS in one system. In addition, resources to hold multiple meetings are not available. Coastal observations should be globally coordinated where they can, but it doesn't make sense to separate them from other global observing systems. Reinforcing connectivity is the mandate (as the AoA programme would necessitate), not separating systems into coastal verses open ocean. The OOPC looks to GSSC for guidance on integration, but will turn to GCOS mechanisms in absence of clear directions from the ocean component of GCOS. Fundamentally the goals of GSSC will be

defined by its members and their interests. Rethinking the membership of the GSSC is the most tractable way to affect its function.

Membership criteria should include people with involvement in PICO and GEO.

Action 11: Report GSSC recommendations for Baker Report to IGOOS

5 OUTREACH AND ADVOCACY ISSUES

5.1 DISCUSSION OF OUTREACH AND ADVOCACY ISSUES: RALPH RAYNER

The report on outreach and advocacy activities included the exhibitions at COP-15 and Bonn for the UNFCCC with the GCOS team. Workshops targeting industry leaders have been relatively successful. Some promotional materials have been prepared, but more work on this aspect is needed. The question of targeted audience for outreach was discussed. Engagement with stakeholders is divided between:

Science: provides capabilities, instrumentation, research to improve model forecasts etc.

Intermediate users: product builders, forecast providers.

End users: Those who use weather and climate predictions and observations for livelihood.

General Public: Public, Political support base. Use heavily derived products, like TV weather channel.

Within this discussion one should ask “What are we advocating for?” GOOS needs a narrow vision to answer this question. Suggestion for an advocacy campaign for open ocean system, with Climate change observations as target. Need more encouragement of the General Public to campaign for GOOS by providing more general information about GOOS. An executive summary of the implementation plan is urgently required.

Ralph Rayner: We must encapsulate the vision and concept.

Several messages were tried out on the room: Leveraged growth is worth more, GOOS leverages national observing systems with a global reach creating more value for everyone. We're better because we are GOOS; GOOS: Committed to Sustained Observations; Stewardship of Marine Resources for the long term. This led to a discussion of logos and the use of branding. On the one hand putting GOOS brand on more things, cruise missions, instruments, buoys, meetings improves name recognition. On the other hand over use of the brand could devalue it. We should create quality criteria for GOOS data and systems. Meeting these quality measures would become recognized as a valuable asset. The core element of GOOS is sustained observations. Target the groups that use data, so that they will want to say “We are using GOOS data” What would it mean to be GOOS data? We should put forward five qualities of GOOS data which must be met. This is a change in GOOS business plan from emphasizing implementation to a role of Supporting Requirements and Standards.

Action 12: Formulate an outreach programme based on the GOOS quality label for data and systems.

Action 13: Members of the GSSC and PICO to contribute ideas toward the key message. A small team to distil contributions and rewrite the “elevator speech”.

5.2 OI'10

Oceanology International '10 is a major marine industry showcase and gathering of marine product exhibitors. The OI'10 is a venue for outreach and advocacy of all types, ranging from salesmen of marine technology to academic research institutions. The GOOS was represented by a sizeable exhibition, which was sponsored by the European Environmental Agency, with content donated by the European Space Agency, IOOS, IMOS and other GOOS programmes. The exhibition, posters and content will be made available for future exhibitions.

5.3 OCEANOLOGY OCEAN OBSERVING SESSION

Most members of the GSSC attended the OI'10 session which included talks by Zdenka Willis, NOAA, on the United States Integrated Ocean Observing System, IOOS®, Colin Summerhayes, SCAR, on the Design of a Southern Ocean Observing System, and other talks on a variety of new ocean observing technologies and platforms. Information on these and other OI'10 presentations may be accessed at: http://www.oceanologyinternational.com/page.cfm/Action=Seminars/CategoryID=5

5.3 ACTIVE ADVOCACY FOR GOOS ON OI'10 SHOW FLOOR.

On Wednesday afternoon the GSSC members took advantage of the OI'10 by polling and discussing the GOOS with the exhibitors and other participants. Notes and contact information for the discussions were collected from the GSSC members. GSSC discussion of the contacts was quite varied with different opinions expressed by the exhibitors and marine industry representatives about the importance and accessibility of GOOS. More than 20 response sheets were brought back from the OI'10 show floor with responses to the questions about GOOS recognition and potential advocacy. These types of contacts should be furthered and encouraged.

> ***Action 14:*** Identify quality contact software system and maintain contact list with these surveys as a partial starting point.

5.4 KOREA EXPO 2012: DONG-YOUNG LEE

A presentation about the Korea Expo 2012 to be held in Yeosu, May 12 – August 12, 2012, was given by Dr. Park (Kwang-Soon) from KORDI, as Dr. Lee was unable to attend. The GOOS and IOC have been invited to compete for a place in the exhibition. The Korean government is making the IOC very welcome, by providing support for several meetings and possibly for the exhibition. The theme of the Expo is The Living Ocean and Coast. The Ocean and Coast Best Practice Area, OCBPA, featuring policies, technologies and products in the fields of ocean and coast, will be the GOOS display area. The Best Practices Area is separate from the international organizations pavilion to which a separate IOC/UNESCO display will be requested. Themes within the OCBPA will be displayed in “Areas”: Marine Policy; Marine Industry and Technology; Academics and Science. Costs of design, manufacture and installation shall be responsibility of participants. In May 2010 the ISC will select designated participants for delivery of letter to call for Proposal. March 2011: Collection of proposals with acceptance by July 2011. A slide implied that UNESCO IOC is represented on the International Selection Committee for OCBPA. General GOOS plan (which apparently was submitted to the selection committee already?):

- General introduction of global GOOS
- Introduction of Regional GOOS and demonstration of retrieval of real-time observation data and nowcasting and forecasting products through internet connection to each regional GOOS by the visitors

- Operational Oceanographic System in Korea, demonstration of data and information retrieval for waters adjacent to Korean peninsular.

- Local (Yeosu area) coastal information (Real-time Observation, marine nowcast and forecast for Yeosu area)

Preparation of material (pamphlet, video, audio, exhibition, etc) to promote GOOS. The later two items (national and local observing and prediction system) can be prepared by the on-going project of KORDI. Support from GSSC in preparing first two items(global GOOS and regional GOOS) would be most helpful.

Action 15 GSSC to respond to call for participation in selection committee (E. Lindstrom, S. DeMora and R. Rayner).

Action 16: GSSC to become involved through the GOOS Project Office, by responding to requests for demonstration products: forecasting products, real-time data retrieval portals, etc..

Action 17: Seek corporate sponsorship of project. Develop proposal for Microsoft Eye on Earth demonstration, or Google Ocean demonstration.

6 FORMAL ISSUES

6.1 REPORT ON MEMBERSHIP OF GSSC/PICO

Review the membership document. All sitting members of GSSC will remain members through the end of 2011, so no action is required on their memberships this year.

Action 18: For GSSC XIV nominations for several new members must be submitted.

Action 19: Nominate Stephen De Mora for membership starting Jan 2011.

6.2 OTHER BUSINESS

Plan GSSC XIV for Paris February or March 2011.

PICO to meet with GRA Forum in October 2010. Will mean that travel funding for chair of PICO only will be available for the Feb. or March 2011 meeting.

Action 20: Look for extra budgetary support for GSSC XIV meeting.

7 LIST OF ACTIONS

ANNEX I

- AGENDA -

Monday, 8 March. IMarEST Headquarters 10:00AM

Introduction and agenda *Ralph Rayner (10 minutes)*

Report on GSSC past action items *Tom Gross (20 minutes)*

Report from GCOS on 2010 updated implementation plan *W Westermeyer (20 minutes presentation, 20 minutes discussion)*

OOPC report *Eric Lindstrom (20 minutes presentation, 20 minutes discussion)*

Lunch 12:00 - 1300

- Update and Status Report on PICO Implementation Plan Development- *Paul/Jose (30 mins: 20 min presentation plus questions)*
- Walk through of specific end to end solution: coastal flooding (physical focus, potential link to OOPC)- *Tom (30 mins: 20 min presentation plus questions)*
- Walk through of specific end to end solution: Eutrophication and Hypoxia (biological/ecological focus)- *John (30 mins: 20 min presentation plus questions)*

Coffee Break *(30 mins)*

- Harmonizing Indicators for a Unified and Integrated Approach to Managing Human Uses of Ecosystem Goods and Services and Adapting to a Globally Changing Climate- *Tom (30 mins: 20 min presentation plus questions)*
- Discussion of implementation paths PICO and OOPC priorities/plans, and identification of possible pilot projects- *Entire Group (1.5 hour)**

Adjourn 17:00

Tuesday (All Day), 9 March. OI'10 Excel Center

PICO only, Room 14

1. Brief Review of current status of products/indicators, users and applications; text and tables for end to end solutions- *Lead Author for each Phenomena of Interest (PoI) (~1 Hour: 10 min each PoI)*
2. Discussion on status and way forward per the above, agreement on approach and level of detail needed- *EntirePICO Group (1 hour)*
3. Work each PoI iteratively- *Entire PICO Group (6/7 Hours: 1 Hour on Each PoI)*

GSSC only

4. Oceanology Ocean Observing Session

Wednesday AM 10 March. OI'10 Excel Center Room 14 – Joint Session

- Presentation on the Assessment of Assessments (AoA)- *J McGlade (30 min)*
- Discussion on the AoA et al.- *Entire Group (30 mins)*
- *GEOSS et al.: Paul/Neville on CZCP activities- Entire Group (30 mins)*

10:30 Coffee Break- *30 mins*

- GRA status/Specific challenges of regional coastal observing system implementation- *Hans Dahlin (20 min presentation plus questions)*
- NEARGOOS status as GRA example *Dong-Yong Lee/Shao-Hua Lin (10 minutes)*
- IOOS example of regional observation system organization. *Zdenka Willis (10 minutes)*
- Discussion on GRAs- *Entire Group (30 mins)*

Wednesday PM

PICO only, Room 14

1. Discussion on Chapter 4: Cross-Cuts and Commonalities- *Entire PICO Group (Time TBD)*
2. Way forward and assignments for Chapter 4- *Entire PICO Group (Time TBD)*

GSSC only, Room 15

- Linkage with other activities:
  - Integrated Framework for sustained Ocean Observations Task Team (Ocean Obs 09 Follow-up Group)- *discussion (15 mins)*
  - Status of GODAE/OceanView Presentation- *Eric Lindstrom (30 mins: 20 min presentation plus questions)*
  - LME programmes *J McGlade (15 mins)*

Adjourn for 4:30 pm Plymouth Marine Sciences Partnership reception

Thursday AM: 11 March. OI'10 Excel Center

PICO only, Room 14

5. Work each PoI iteratively- *Entire PICO Group (6/7 Hours: 1 Hour on Each PoI Continued)*
6. Wrap up discussion and close out Chapter 3- *Entire PICO Group (Time TBD)*

GSSC only, Room 15

- POGO Meeting, Summary of Outcomes. Stephen DeMora 15min, 15 min discussion.
- GOSIC and Data Portal Successes and Services, Christina Lief 20 min.
- Korea Expo, Dong-Young Lee 20 min.
- Non-climate variable in Open Ocean Implementation plan and interface with coastal issues. CoML, OBIS, John Gunn, 15 min, discussion 45min.

Thursday PM:

PICO only, Room 14

3. Discussion on Chapter 5: Integrated System of Systems- *Entire PICO Group (Time TBD)*
4. Discussion on Chapter 6: Build out plan- *Entire PICO Group (Time TBD)*
5. Implementation Plan Way forward: assignments, actions, schedules, etc.- *Entire PICO Group (Time TBD)*

GSSC only, Room 15

- *Jim Baker Review Discussion. Future of I-GOOS, GSSC, PICO, OOPC how they fit together and how they can be funded.*
- *UK response. Trevor Geymor*

Friday AM: Joint GSSC/PICO Session 12 March. IMarEST Headquarters

1. Report back from PICO Breakouts- *Entire Group (30 mins)*
2. Report back from GSSC Breakouts- *Entire Group (30 mins)*
3. Discussion of joint pilot project and other interactions between PICO and OOPC (follow on to potential Monday conversation on this topic or in lieu of)- *Entire Group (1 hour)*
4. Discussion of implementation issues- *Entire Group (2 hours)*

Friday PM: Joint GSSC/PICO Session (or PICO only breakout)

- Discussion of outreach and advocacy issues Ralph Rayner- *Entire Group (Time TBD)*
- *Report on Membership of GSSC/PICO*
- *Summarize and accept action items for GSSCXIII/PICOIV*
- Potential for final PICO breakout session- *(Time TBD)*

ANNEX II

- LIST OF PARTICIPANTS -

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ANNEX III

- LIST OF DOCUMENTS -

(All documents and presentations are available on line at http://www.ioc-goos.org/GSSC-XII)

Document Code	Title	Responsible	Agenda item
GSSC-XIII/1.1.1	Provisional Agenda	Secretariat	All
GSSC-XIII/1.1.1.2	List of Participants	Secretariat	
GSSC-XIII/1.1.1.3	List of document (this document)	Secretariat	
GSSC-XIII/1.1.2	Action Items GSSC XII/PICOII and GSSCXIII/PICOIII	Secretariat	All
GSSC-XIII/1.1.3	Update of the GCOS Implementation Plan in Support of UNFCCC IP-10	Secretariat	All
GSSC-XIII/1.1.4	OOPC Report to GSSC XIII, PICO III	Secretariat	All
PICOIII-1.2.1	Update on PICO Implementation Plan Development	Secretariat	1.4
PICOIII-1.2.2	PICOII Coastal Inundation E2E	Secretariat	All
PICOIII-1.2.4	Harmonizing Indicators for a Unified & Integrated Approach to Managing Human Uses of Ecosystem Goods & Services & Adapting to Climate Change	Secretariat	All
GSSC-XIII/3.1.1	AoA Major Findings and Recommendations of the Group of Experts		
GSSC-XIII/3.1.4	GRA Status/ Challenges of regional coastal observing systems		
GSSC-XIII/3.1.5	Pilot Project: Coastal Tidal Model		
GSSC-XIII/3.3.1	Integrated Framework for Sustained Ocean Observations Task Team 2010		
GSSCXIII-3.3.2	GODAE OceanView Status and Work Plan March 2010		
GSSCXIII-4.2.2	Comparison of Ocean Data Portals		
GSSCXIII-4.2.2	GOSIC Report to GSSC XIII		
GSSCXIII-4.2.3	YEOSU Ocean Expo Plans		
PICOIII-5.1.1	PICO III Report Back to GSSC Implementation Plan Development		
GSSCXIII-5.2.2	Report on GSSC / PICO Membership and Nominations for 2010		
GOOS-175	GSSC-XII Report	Secretariat	
GOOS 180	Final Report of the Second Session of the Panel for Integrated Coastal Observation (PICO-II)		
GCOS	Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC (2010 Update)		
ETMC-III/Doc. 3.1	Review of the global Ocean Observing System (GOOS), and Global climate		

Document Code	Title	Responsible	Agenda item
	Observing System (GCOS) requirements for climatological data sets		
GOOS-study	Planning and Implementation for GOOS – A Consultant Study for WMO and UNESCO/IOC		
GSSC-XII/6.2.1	Questionnaire-Planning and Implementation for GOOS		
GOOS-study	UK comments on Baker report		

ANNEX IV
- TABLE OF ACRONYMS -

AOML	Atlantic Oceanographic and Meteorological Laboratory
API	Application Programming Interface
ASPeCt	Antarctic Sea Ice Processes & Climate
CAML	Census of Antarctic Marine Life
CASO	Climate of Antarctica and the Southern Ocean
CDIAC	Carbon Dioxide Information Analysis Center
CEOS	Committee on Earth Observation Satellites
CGMS	Coordination Group for Meteorological Satellites
ChloroGIN	Chlorophyll Globally Integrated Network
CLIVAR	Climate Variability and Predictability
CoML	Census of Marine Life
COP-15	Conference of the Parties conference, UNFCCC
CPR	Continuous Plankton Recorder
CZCP	Coastal Zone Community of Practice
DART	Deep-ocean Assessment and Reporting of Tsunamis
DBCP	Data Buoy Cooperation Panel
DCPC	Data Collection and Production Centres
DIF	Data Integration Framework
ECOOP	European Coastal-shelf sea Operational monitoring and forecasting system
EEA	European Environment Agency
EG-Ocean	SCAR/SCOR Expert Group on Oceanography
ESA	European Space Agency
ETOOFS	Expert Team on Operational Ocean Forecasting Systems
EUCOCUS	EU Carbon Observing System Coordination
EUEPOCA	EU European Project of Ocean Acidification
FAO	Food and Agriculture Organization of the United Nations
FIEEE	Fellow of the Institute of Electrical and Electronics Engineers
GAW	Global Atmosphere Watch
GCOS	Global Climate Observing System
GCOS IP	Global Climate Observing System Implementation Plan
GEF	Global Environment Facility
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GHRSST	Global High-Resolution Sea Surface Temperature
GIS	Geographic Information System
GLOBEC	Global Ocean Ecosystem Dynamics
GMES	Global Monitoring for Environment and Security
GODAE	Global Ocean Data Assimilation Experiment
GOOS	Global Ocean Observing System
GOS	Global Ocean Sampling expedition
GO-SHIP	Global Ocean Ship-based Hydrographic Investigations Panel
GOSIC	Global Observing Systems Information Center
GOV	GODAE OceanVIEW
GPS	Global Positioning System
GPO	GOOS Project Office
GRAs	GOOS Regional Alliances
GRC	GOOS Regional Council
GRF	GOOS Regional Alliance Forum
GSOP	Global Synthesis and Observations Panel

GSSC	GOOS Scientific Steering Committee
GTOS	Global Terrestrial Observing System
GTS	Groupe de Travail Scientifique
GTS	WMO Global Telecommunications System
IAPSO	International Association for the Physical Sciences of the Oceans
ICSU	International Council for Science
IEEE	Institute of Electrical and Electronic Engineers
IGBP	International Geosphere-Biosphere Programme
I-GOOS	Intergovernmental Committee for GOOS
IGOS	Integrated Global Observing Strategy
IMarEST	Institute of Marine Engineering, Marine and Technology
IMBER	Integrated Marine Biogeochemistry and Ecosystem Research
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCCP	International Ocean Carbon Coordination Project
IODE	International Oceanographic Data and Information Exchange
IO-GOOS	Indian Ocean GOOS Regional Alliance
IOOS	Integrated Ocean Observing System (NOAA)
IPCC	Intergovernmental Panel on Climate Change
IPY	International Polar Year
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMM-MAN	JCOMM Management Committee
JGOFS	Joint Global Ocean Flux Study
KML	Data encoding standard for Google Earth
LAS	Live Access Server
LME	Large Marine Ecosystem
MarBIN	SCAR Marine Biodiversity Information Network
MERSEA	Marine Environment and Security for the European Area
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration (USA)
NCDC	National Climatic Data Center
NetCDF	Data file format
NIES	National Institute for Environmental Studies
NOAA	National Oceanic and Atmospheric Administration (USA)
NODC	National Oceanographic Data Center (USA)
NSF	National Science Foundation (USA)
NWP	Numerical Weather Prediction centers
OceanDIVA	Ocean Data Inter-comparison and Visualization Application
OCB	Ocean Carbon and Biogeochemistry
ODP	Ocean Data Portal
OGC	Open Geospatial Consortium
OOPC	Ocean Observations Panel for Climate
PICO	Panel for Integrated Coastal Observations
PI-GOOS	Pacific Islands GOOS Regional Alliance
PMEL	Pacific Marine Environmental Laboratory
POGO	Partnership for Observation of the Global Ocean
POM	Princeton Ocean Model
PP	Pilot Project
PP-WET	Pilot Project for Wave measurement Evaluation and Test from moored buoys
PSU	Practical Salinity Unit
R&D	Research and Development
ROMS	Regional Ocean Modelling System

SAON	Sustaining Arctic Observing Networks
SASSI	Synoptic Antarctic Shelf-Slope Interactions
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCAR	Scientific Committee on Antarctic Research
SCOR	Scientific Committee on Oceanic Research
SEA-GOOS	Southeast Asian GOOS Regional Alliance
SGGOOS	Steering Group for GOOS
SIF	Standards and Interoperability Forum
SOLAS	Surface Ocean-Lower Atmosphere Study
SO	Southern Ocean
SOCAT	Surface Ocean CO2 Atlas
SOOP	Ship-of-Opportunity Programme
SOOS	Southern Ocean Observing System
SPINCAM	Southeast Pacific data and Information Network in support to Integrated Coastal Area Management
SST	Sea Surface Temperature
TEOS-10	Thermodynamic Equation Of Seawater 2010
ToR	Terms of Reference
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNFCCC	United National Framework Convention on Climate Change
WCC3	World Climate Conference-3
WCRP	World Climate Research Programme
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization