



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)

Ninth Session
6-8 March 2006
Paris, France

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ABSTRACT

The 9th session of the GOOS Scientific Steering Committee, meeting in Paris, France, from 6-8 March 2006 addressed GOOS development noting substantial progress with the implementation of the Open Ocean Module and the need to foster global implementation of the Coastal Module. The roles and responsibilities of GOOS Regional Alliances (GRAs) and mechanisms for enhancing cooperation amongst them were major topics of discussion. The Committee heard from, and discussed, a number of partner programs including the IOC/WMO Joint Commission on Marine Meteorology (JCOMM), the Group on Earth Observations (GEO) and the Integrated Global Observing Strategy (IGOS). GOOS related Capacity building and outreach efforts were also discussed.

The Committee noted that the two major expected results for GOOS during the 2006-2007 biennium are (i) increased member state contributions to operational open ocean observing systems; and (ii) establishment of clear principles and guidelines for GRAs.

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1 OPENING AND WELCOME

The chair, John Field, opened the ninth session of the Global Ocean Observing System (GOOS) Scientific Steering Committee (GSSC) at 09:15 on Monday 6 March 2006 at the headquarters of the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

Patricio Bernal, Executive Secretary of the IOC, welcomed the Committee to IOC, expressing his pleasure both to meet old friends and see the many new faces on the Committee. This body holds the primary responsibility to provide scientific and technical advice for the implementation of the GOOS. If, in anyone's mind, there had been doubts about the usefulness of monitoring the ocean in real time, the Indian Ocean tsunami of late 2004 must have proven the case. GOOS is not just operational, it is also the only way we can move forward scientific knowledge of the ocean using a finely honed tool for observing the entire cascade of scales of variation in the ocean. The original vision of GOOS was a bold one. To fulfill it we need to improve the level of engagement of governments, through the Intergovernmental Panel, I-GOOS. Perhaps the key will be to outline, for governments, a set of concrete goals to achieve in 5 years, or 10 years and sharpen our focus on deliverables. We also need to improve our capacity to reach out to the widest possible community and to society as a whole. GOOS is not being built as a purely public service oriented system, it has from the beginning been conceived as an open platform from which a wide variety of users, including private sector companies, can contribute to and benefit from.

John Field, GSSC chair, thanked the staff of the GOOS Project Office for their generous hosting arrangements. He welcomed both returning and new members of the Committee.

1.1 INTRODUCTIONS

Members of the Committee and observers all briefly introduced themselves.

1.2 ADOPTION OF THE AGENDA

The provisional agenda was discussed and adopted with four additions:

- 6.7.3 Ferrybox presentation from Franciscus Colijn
- 6.7.4 Adricosm presentation from Giovanni Coppini
- 8.2 IODE presentation from Peter Pissierssens on behalf of IODE chair Lesley Rickards
- 9.1 GEOSS architecture and data User Forums presentation from Jay Pearlman

1.3 FORMATION OF SESSIONAL WORKING GROUPS

The chair suggested the formation of three working groups: (i) One on actions and priorities including liaison with other programs chaired by John Field, (ii) a second on coastal GOOS implementation and the GRAs chaired by Tom Malone, and (iii) a third on outreach and communication chaired by Jim Baker. These groups were tasked with meeting at least twice during the first two days of the meeting and reporting back to the full GSSC on the last day.

2 GOOS DEVELOPMENTS

2.1 REPORT FROM THE GSSC CHAIR

John Field started the meeting with his perspectives on GOOS after one year in office and his first time as chair of the GSSC meeting. He noted three new faces in GOOS leadership, François Gérard, chair of I-GOOS, Keith Alverson, director of the GPO and himself as chair of the GSSC.

There has been an important change in the structure of GOOS through the formation of the I-GOOS board and the clear distinction of roles for I-GOOS, involving governmental input and budgeting decisions, and GSSC, which is a scientific and technical advisory body to I-GOOS. This new structure should be effective, though much will hinge on everyone working together well. The GOOS Regional Alliance (GRA) forum in November 2006 will be crucial and the GSSC will need to prepare for it. Another key decision will be the possible formation of a joint coastal panel with GTOS. Finally it will be important to clarify the responsibilities for observations in the coastal zone between GOOS, GTOS and JCOMM. The PowerPoint file of this presentation entitled "GSSC-IX.chair.ppt" is available on the GOOS website.

2.2 REPORT FROM GPO DIRECTOR

Keith Alverson provided his perspectives from the GOOS Project Office (GPO). He highlighted a few elements from the director's report (Document GSSC-IX/7) including the expected results for GPO activities in the coming biennium. The two expected results during the 2006-2007 biennium are (i) increased member state contributions to operational open ocean observing systems; and (ii) establishment of clear principles and guidelines for GRAs. He also mentioned the GPO has, for the first time, earmarked finances and some of the working time of a professional staff member specifically for outreach and communications.

2.3 REPORT FROM IOC GOOS PROGRAMME OFFICE IN RIO DE JANEIRO, BRAZIL

Janice Trotte provided perspectives from the Rio GOOS programme office. She outlined a number of operational observing activities in the South Atlantic being coordinated by the GOOS program office in Rio, including the PIRATA array. The PowerPoint file of this presentation entitled "GSSC-IX.rio.ppt" is available on the GOOS website.

2.4 REPORT FROM IOC GOOS PROGRAMME OFFICE IN PERTH, AUSTRALIA

Bill Erb provided perspectives from the Perth GOOS programme office. Activities of the past year have been dominated by the role of the Perth office in serving as host for the Intergovernmental Coordination Group for Indian Ocean Tsunami Warning and Mitigation System. Perth Office responsibilities include Western Australia GOOS, Indian Ocean GOOS, Pacific Islands GOOS and South East Asia GOOS. The PowerPoint file of this presentation entitled "GSSC-IX.perth.ppt" is available on the GOOS website.

2.5 DISCUSSION

There was no discussion arising from presentations within agenda item 2.

2.6 ACTIONS

No actions arose during discussion of agenda item 2.

3 I-GOOS

3.1 REPORT FROM THE I-GOOS CHAIR

François Gérard provided his perspectives as I-GOOS chair. He highlighted the role of GOOS in the Global Earth Observing System of Systems (GEOSS). GOOS is not solely developed by operational agencies but also built on the contributions of the research community. The GSSC and I-GOOS might respectively interact with operational and research communities. The roles of JCOMM and GRAs within GOOS governance and implementation were also discussed. The modes of operation of various GRAs have at times almost no commonalities, as for example is evident

when comparing EuroGOOS and Indian Ocean GOOS. Thus, one of the main tasks for the coming year will be to clarify implementation criteria for GRAs. Over the 2005-2009 timeframe, four primary actions for GOOS are foreseen: (i) Secure GOOS as a primary element of GEOSS; (ii) Consolidate the GOOS role in the context of the new TORs established by the 23rd IOC Assembly; (iii) Consolidate the open ocean module of GOOS ensuring sustainability of the observing elements; and (iv) Organize the implementation of the coastal module of GOOS. He noted that there now are three vice-chairs of I-GOOS: Mary Altalo (USA), Lin Shaohua (People's Republic of China) and Kouadio Affian (Ivory Coast). A fourth vice-chair from South America will be appointed shortly. The PowerPoint file of this presentation entitled "GSSC-IX.igoos.ppt" is available on the GOOS website.

3.2 DISCUSSION OF I-GOOS' RELATIONSHIP WITH GSSC

The representative of the International Council for Science (ICSU) stated that the co-sponsors of GSSC had not been properly consulted in the change in governance structures. ICSU would like to be more proactively involved in the panel membership selection of the GSSC. In particular, ICSU feels that the current membership is too dominated by Anglophones. ICSU does not wish to be presented with membership decisions that were "fait-accompli" but rather a slate of candidates to choose from.

3.3 ACTIONS

No actions arose during discussion of agenda item 3.

4 JCOMM

4.1 REPORT FROM THE JCOMM CO-PRESIDENT

Peter Dexter, JCOMM co-president, reported on the results of the JCOMM-II session held in Halifax in 2005 (the draft report is available at <http://ioc.unesco.org/jcomm/>); reviewed progress that has been made in the Services, Observations, and Data Management Program Areas; and highlighted priority areas for the next four year period. JCOMM priorities for 2006-2009 include: operational ocean products and services; marine multi-hazard warning services; full implementation of operational ocean observing system; support for coastal GOOS implementation; data management pilot projects and integration with IODE and WMO Information System; focused capacity building to support program implementation; involvement of smaller maritime countries; and engagement with the private sector. P. Dexter also reviewed progress that has been made in the past six months since JCOMM-II in the areas of natural disaster prevention and mitigation, GEOSS, and interactions with the private sector. A brief overview of JCOMM-ops web based metadata services was shown, as were JCOMM plans for new operational products for development over the medium term.

Seven action items for GSSC decision were presented:

- 1) Decide on GOOS co-sponsorship of a GOOS/JCOMM task team on industry;
- 2) Review GOOS membership on this team;
- 3) Endorse action items from the group's meeting (3-4 March 2006);
- 4) Recommend GSSC co-sponsorship of an *ad hoc* coastal/GRA task team;
- 5) Review/propose GSSC membership on such a team;
- 6) Review/propose/endorse JCOMM capacity building rapporteurs;
- 7) Advise on co-sponsorship and possible membership for a task team on resources for capacity building.

The PowerPoint file of this presentation entitled “GSSC-IX.jcomm.ppt” is available on the GOOS website.

Worth Nowlin presented the draft terms of reference for the joint JCOMM/GOOS Industry Task Team with the mandate to raise the profile of GOOS in political, public and private sectors. He noted that the group had already met once, just prior to this GSSC meeting and was seeking additional involvement from fisheries and maritime security sectors.

4.2 DISCUSSION OF JOINT JCOMM ACTIVITIES WITH GSSC, RELATIONSHIP WITH GRAs

This discussion is reported under agenda item 6.

4.3 DISCUSSION OF POTENTIAL JOINT TASK TEAMS WITH JCOMM

This discussion is reported under agenda item 8.

D.Y. Lee suggested that IOC might consider asking its member states to negotiate with industries in their domains to seek to ensure contributions to the observing systems. As an example, he stated that the South Korean government was able to link contributions to regional observations with regulations associated with putting offshore drilling infrastructure in place.

Keith Alverson pointed out that although GSSC cannot itself commit funding from the GPO budget for task teams though it can make recommendations of this nature to I-GOOS. He noted that in considering whether to recommend formation of any task teams, the GSSC should explicitly specify if they are also recommending GPO budget or staff resources be used to support these teams.

Decision: *The GSSC endorsed co-sponsorship of the JCOMM/GOOS task team on industry proposed by JCOMM including its current membership and the outcomes of their first meeting (3-4 March 2006).*

4.4 ACTIONS

No actions arose during discussion of agenda item 4.

5 OPEN OCEAN MODULE OF GOOS

5.1 REPORT FROM OOPC REPRESENTATIVE

On behalf of Ed Harrison, the chair of the Ocean Observations Panel on Climate (OOPC), Albert Fischer provided an update on OOPC. He highlighted elements of the system funded operationally, as pilot projects, or through research mechanisms. He showed new ocean sea surface temperature indices available on the OOPC website through a brief report on the state of the oceans. Topics for GSSC discussion included how to capitalize on high-level political interest in global observations, questioning the traditional GOOS paradigm of ‘transition’ from research, through pilot projects, to operational modes of operation and financing. The PowerPoint file of this presentation entitled “GSSC-IX.oopc.ppt” is available on the GOOS website.

Franciscus Colijn asked if the GPO could realistically serve as a central hub for serving information on the state of the global ocean.

Jim Baker stated that a website that helps understand the state of the ocean is a good step forward. He suggested we should look to more modern means of communications such as pod-casts and blocs. He pointed out that governments require a good business case for making observations the same way businesses do.

Bill Erb brought up the Indian Ocean plan for OOPC and asked how GOOS can best facilitate its implementation.

5.2 REPORT FROM GCOS REPRESENTATIVE

On behalf of John Zillman, chair of the Global Climate Observing System (GCOS), the GCOS secretariat director, David Goodrich, provided an update on GCOS. He pointed out that 55% completion of the open ocean observing system for climate is a long way from 100% and that there are substantial sustainability issues that remain of concern. He discussed GCOS reporting to the United Nations Framework Convention for Climate Change (UNFCCC) and the Committee on Earth Observing Satellites (CEOS). He mentioned an upcoming GCOS Africa Workshop 18-21 April 2006 on mobilizing resources to sustain development in Africa through climate information and stated that GOOS-AFRICA would be represented at the meeting. He highlighted the importance to GCOS of GOOS, specifically through the OOPC, for science guidance and JCOMM for implementing and tracking development of the system. The PowerPoint file of this presentation entitled "GSSC-IX.gcos.ppt" is available on the GOOS website.

Tom Malone asked whether there was any relevance of the coastal module of GOOS to GCOS. David Goodrich replied that it certainly was in particular *via* sea level monitoring through GLOSS and implications of climate change in the coastal zone. Exchange of boundary conditions for open ocean modeling and coastal modeling is also an area for collaboration with the coastal module of GOOS.

Detlef Stammer asked if this was meant to imply that a global sea level should be monitored from tide gauges and suggested that in fact altimeters monitor sea level rise very well. Tide gauges serve mostly for ground-trusting and for ensuring continuity of record between satellite missions.

Justin Ahanhanzo confirmed that GOOS-AFRICA is collaborating with GCOS efforts in Africa and will continue to do so.

Albert Fischer pointed out that it is fairly easy to monitor elements of the observing system that are provided over the GTS but that many other observations are harder to track. He pointed out that such tracking was a GEOSS task that GOOS is taking the lead in. He also pointed out that past efforts to do this had been frustrated by relative lack of response to IOC circular letters asking Member States to list their observing contributions to GOOS.

5.3 REPORT FROM IGOS OCEAN THEME CO-CHAIR

Paul DiGiacomo provided an update on the IGOS ocean theme. He gave a short introduction to the IGOS partners and their ocean theme. The existing ocean theme report was published in 2001, and is undergoing a rolling review that will update the report. The PowerPoint file of this presentation entitled "GSSC-IX.igosocean.ppt" is available on the GOOS website.

5.4 DISCUSSION: STRATEGY FOR THE OPEN OCEAN MODULE OF GOOS

There was no discussion under this agenda item.

5.5 ACTIONS

No actions arose from discussion of agenda item 5.

6 COASTAL GOOS

6.1 REPORT ON THE COOP IMPLEMENTATION STRATEGY

Tom Malone reported on Coastal GOOS. The strategic design plan was published in 2003 and implementation strategy for coastal GOOS was published in 2005. The I-GOOS and subsequently the IOC Assembly endorsed both documents. This endorsement includes a call for a global coastal network of regional systems. A minimum suite of common variables across the global network has been defined. Numerous GOOS Regional Alliances are already active. Global coordination and regional collaboration will be required to meet coastal GOOS goals. A major issue is the coordination of observations of non-physical variables and it is questioned if JCOMM may be able to also undertake this task. The PowerPoint file of this presentation entitled “GSSC-IX.coop.ppt” is available on the GOOS website.

Mary Altalo introduced a proposed set of GOOS Certification Criteria for GRAs. Can we develop a suite of performance targets to ensure that the GRAs progress and develop optimally and adopt common standards and protocols to ensure interoperability? The suggested performance levels for GRAs were:

- Level 1 – Legal entity in Place
- Level 2 – Business Plan, Inventories, Pilot Projects
- Level 3 – Interoperability and Integration phase
- Level 4 – Operational and expansion phase

The PowerPoint file of this presentation entitled “GSSC-IX.altalo.ppt” is available on the GOOS website.

Helen Yap raised the issue of how to best develop capacity in developing countries through targeted research driven programs. She provided as an example the development of coral reef research centers of excellence through the GEF and the World Bank. She also indicated that it was important to do a stock taking of existing programs and capacities before developing new ones.

Bill Erb pointed out that GRAs presently have many different structures and methods of operation. This diversity of ‘structure’ reflects different regional attitudes about how to organize. He urged that any certification process primarily focus on products and services that are being produced by GRAs. We do need standards. However, if we put a priority on how GRAs organize themselves we will get bogged down for a long time – this can perhaps be done in the long term but should be a secondary issue for now.

Mary Altalo responded that there is a need to ensure that GRAs are legal entities with accountability. Entraining new funding for GRAs, for example through GEF, will require this.

Worth Nowlin questioned what the motivations were for a GRA to try to achieve these levels of performance without any incentives. He also questioned Tom Malone’s idea that we might create an intergovernmental body alongside JCOMM for coastal issues and/or non-physical variables and suggested we might better use JCOMM to implement the majority of the coastal variables.

Tom Malone agreed that a coastal body does not need to be created if not required. If JCOMM is indeed willing and able to take on the coastal implementation of GOOS then that option should be pursued. He also stressed that if the plans for a global coastal network (as proposed in the implementation strategy for the coastal module) are to go ahead it is essential to obtain support from the GRAs at the GOOS regional forum in November 2006.

Janice Trotte suggested that GOOS pay more attention to how GRAs have been created in the past, not just develop new sets of criteria and new mechanisms. She pointed out that “functionality” was an important element missing from the proposed set of criteria.

Savi Narayanan approved of the idea of a set of criteria for GRAs. She felt that although these might not be important in all countries, there will be some that will benefit from them greatly. She felt, however, that an assessment of the breadth of a GRA – i.e. how wide a spectrum of coastal observations it covers – was missing from the proposed certification levels.

Jay Pearlman expressed concern that the propagation of standards through regional alliances would be a ‘lifetime task.’ He suggested the sessional group on outreach at this meeting discuss this issue. He noted that IOC is not a member of the interoperability task group within the GEOSS architecture and data committee. Tom Malone pointed out that Jay Pearlman himself, as both a GSSC member and chair of that group, provides a linkage, but agreed that this was certainly an important group to interact with.

Peter Pissierssens pointed out that it was important that certification criteria be established and used at the national level, not just internationally.

Shaohua Lin pointed out that there was wide disparity in the mechanisms and national policies for regional cooperation in coastal observations. She expressed concern that development of new global or ‘uniform’ criteria might not pay sufficient attention to regional differences. For example North East Asia GOOS receives guidance from, and is governed by, WESTPAC. She further pointed out that it is important that member states opinions are accounted for in any development of GRA performance criteria.

Bill Erb suggested the focus of certification should be on recognizing which GRAs are actually providing a product or service.

Detlef Stammer highlighted the commonalties between these coastal issues with the same set issues for the global GOOS. He suggested open ocean and coastal GOOS should be tied together as a single system, not separated. Tom Malone agreed that there must be a global component to the coastal system, but we must retain the ability to scale down to regional and local scales.

6.2 REPORT FROM THE GTOS REPRESENTATIVE

GTOS did not report.

6.3 REPORT FROM THE IGOS COASTAL THEME CO-CHAIR

Paul DiGiacomo reported that the coastal theme of IGOS-P was a strategy to develop integrated and sustained observations with emphasis on the land-sea-air interface in the coastal zone. The IGOS coastal theme has recommended the formation of a GOOS-GTOS integrated coastal observations panel, J-PICO. He recommended that members read document GSSC-IX/10 for further information on this recommendation. The IGOS-P has also suggested establishment of a GEOSS community of practice on coastal observations and recommended supporting and

expanding the global chlorophyll pilot project. The PowerPoint file of this presentation entitled “GSSC-IX.igoscoastal.ppt” is available on the GOOS website.

6.4 DISCUSSION: POTENTIAL FORMATION OF A JOINT GOOS-GTOS COASTAL PANEL

Keith Alverson gave a brief outline of the GPO perspective that he provided to the GTOS Steering Committee (25-27 January 2006) before they endorsed the proposal to form a joint GOOS-GTOS coastal panel (J-PICO). From the GPO perspective the panel must be a true 50-50 sharing between GTOS and GOOS including both representation on the panel and financial and administrative support for the panel. The TOR should include explicit milestones, goals and a sunset clause. The panel should consist of fewer than 12 people and be a balance of scientists and ‘operational’ coastal managers. It should meet annually and create no sub-panels. Minimum support from the combined GOOS and GTOS secretariats to make the panel effective would be \$50k/year ‘regular’ budget and 50% time of a professional technical secretary. Formal approval is required by the GSSC and I-GOOS, *via* its board, (meeting in March 2006) as well as the IOC Executive Council in June. Finally, if such a panel is formed, the GSSC should be shrunk commensurately as the reason for the GSSC’s expansion (as decided by the IOC Assembly XXIII) was to include coastal expertise in order to provide implementation advice on the coastal module of GOOS. The PowerPoint file of this presentation entitled “GSSC-IX.director.ppt” is available on the GOOS website.

Further discussion on this agenda item is recorded under the report from the sessional group on coastal observations (agenda item 10.3)

6.5 PAN AFRICAN LMES/GOOS-AFRICA LEADERSHIP WORKSHOP ON OPERATIONAL OCEANOGRAPHY AND REMOTE SENSING

Justin Ahanhanzo, technical secretary for GOOS-Africa, reported on this workshop planned to be held back-to-back with the GOOS Regional Forum in Cape Town. He provided an overview of GOOS-AFRICA and the need not to just build capacity, but to empower existing African capacity and transfer knowledge and leadership to the next generation of African marine scientists. The workshop will further elucidate how to add value to ocean observations in Africa by utilizing African LME network for implementation of GOOS-Africa. A book, African Oceans 2030, is in development. Gaps in GLOSS in the African continent should be filled in the next decades. GOOS-AFRICA has been instrumental in facilitating the free provision of remote sensing data for Africa, for example to facilitate HAB forecasts in the Benguela LME waters.

He reviewed the calendar of three meetings planned in Cape Town in November:

6-10 November 2006 is the LME/GOOS leadership workshop just described.

13 November 2006, Second Pan-African LME Forum, not discussed at this meeting.

14-17 November 2006, Third GRA Forum.

The PowerPoint file of this presentation entitled “GSSC-IX.africa.ppt” is available on the GOOS website.

6.6 THIRD FORUM OF THE GOOS REGIONAL ALLIANCES

Justin Ahanhanzo, on behalf of the planned host of the 3rd GRA Forum, Geoff Brundrit, reported on preparations for the Forum. Preparations have begun amongst members of the GPO, I-GOOS Board, GSSC and JCOMM. Justin Ahanhanzo is serving as technical secretary and the contact in the GPO for these preparations. Recommendations from the 2nd Forum have been endorsed with the report of the I-GOOS chair to the IOC-XXIII Assembly. GOOS-Africa is

honored and pleased to host the 3rd Forum. The meeting will be held back-to-back with the Pan-African LMEs/GOOS-Africa leadership workshop on Operational Oceanography and Remote Sensing and the LME Forum both to ensure cost effectiveness and build positive synergies with the LMEs. He presented a number of objectives of the GRA Forum. He also presented a list of topics that have been discussed so far and emphasized that this list was open for discussion now. He highlighted a number of planned outputs from the workshop. The PowerPoint file of this presentation entitled "GSSC-IX.graforum.ppt" is available on the GOOS website.

Bill Erb pointed out that GRAs need to be included in the development of the agenda for the Forum. He also suggested that matters pertaining to the EU-funded project GRAND should be dealt with outside the Forum.

François Gérard pointed out that GRAND is under completion and a brief report may be presented to the meeting. Matters pertaining to the GRACE project should be dealt with outside the Forum and should not be included in the meeting material.

Peter Pissierssens expressed his disappointment that IODE and OdinAfrica in particular, were not listed as participants.

John Field stressed that all of these bodies, GRAs and IODE will be engaged immediately subsequent to the endorsement by GSSC and the I-GOOS Board.

Kouadio Affian pointed out that African heads of state, at the highest political level, have endorsed GOOS-AFRICA.

Worth Nowlin appreciated the effort so far, however he felt that objectives 4, identify means for implementing the COOP implementation strategy, and 5, position GOOS and GRAs as implementing the Global and Coastal ocean components of GEOSS, were the critical ones and should be the main two objectives of the meeting. He agreed that GRA members themselves must be brought into the process of development of this agenda.

François Gérard emphasized that the I-GOOS Board has preparations for this meeting on its agenda for Thursday and Friday and that the first official announcement will come from that body. He agreed that the objectives of the Forum must be few and must be created with a shared input from the GRAs.

Keith Alverson expressed his thanks for the many suggested inputs into the agenda and objectives for the meeting and the many expressions of desire to participate. He noted that these offers might ideally be accompanied by offers to help fund the meeting. He reminded the group that the overall budget for the meeting, \$100k, has not yet been raised. He noted that he has tentatively allocated \$35k, the entire remaining GPO activities 'regular' budget for 2006, to the meeting. He pledged to find matching extrabudgetary funds in response to any contribution made in the form of a transfer of funds to the IOC trust fund earmarked for the 3rd GRA forum.

Justin Ahanhanzo reported that the list of participants for the GRA Forum is not yet established. It has been anticipated that the GRAs will play a key role in planning and organizing the Forum. Information about the Forum will be widely disseminated to all interested partners after the GSSC-IX session and the I-GOOS Board meeting on 9-10 March 2006.

Franciscus Colijn stated he would approach the LOICZ project office for financial support.

Action 1. *Franciscus Colijn to approach LOICZ to help support the 3rd GRA forum. Deadline: 15 April 2006.*

Bill Erb stated that GRAs should be informed of the matching funding offer of the GPO and that some funding would probably be available from the Perth Office.

Action 2. *Justin Ahanhanzo to inform all GRAs on the preparations for the Forum. Deadline: 15 April 2006.*

Tom Malone stated that he would try to come up with 25-30k from US agencies. Mary Altalo said this would be an item on the US interagency board to be held on 13 March 2006 and that information as to the result would be available soon thereafter.

Action 3. *Mary Altalo to inform GPO director as to the available of any US funding for the 3rd GRA forum. Deadline: 15 April 2006.*

Savi Narayanan pointed out that Africa was a priority for CIDA and that she would be happy to bring a proposal to CIDA.

Action 4. *Savi Narayanan to propose to CIDA that they provide funding for the 3rd GRA forum and inform the GPO director as to the status thereof. Deadline: 15 April 2006.*

6.7 GOOS PILOT PROJECTS

6.7.1 CODAE

There was no discussion under this agenda item.

6.7.2 Global Chlorophyll Pilot Project

John Field provided an overview of the proposed pilot project. The PowerPoint file of this presentation entitled "GSSC-IX.chlorophyll.ppt" is available on the GOOS website.

Paul DiGiacomo welcomed and supported the pilot project on behalf of the IGOS coastal theme and the GEO coastal community of practice.

Bill Erb pointed out that Pacific Island GOOS has run three Ocean Colour workshops with partnership from POGO. Indian Ocean GOOS was also interested in ocean colour. He underlined the potential inputs from GRA in the Indian Ocean region.

Worth Nowlin pointed out that identification of the required follow-up to make this pilot project operational would be an important component of this effort and is missing in the documents and presentation thus far.

Janice Trotte confirmed that the ANTARES project in the South Atlantic is working in this arena and will be interested in participating in such a pilot project.

Kouadio Affian asked regarding including SST in this pilot and whether the project could be extended to the Gulf of Guinea where the existing LME is already operational. John Field said that this region could certainly be included if there was a receiving station there and if there is existing capacity in ocean colour as part of the Gulf of Guinea LME.

Jay Pearlman pointed out that GEOSS will be assessing 'gaps' and that this group may wish to ensure that this activity is taken account of in that assessment. He further encouraged that underlying causalities, not just measurements, be considered an inherent part of the pilot.

Ehrlich Desa highlighted the importance of doing SST simultaneously with ocean colour.

Tom Malone noted the importance of comparative studies.

François Gérard pointed out that EUMetsat produces an SST product now and will produce an operational colour product starting 2007. Such existing players should not be left out of the planning of the pilot.

Jim Baker asked how JCOMM could be involved in this activity. Were they interested in taking onboard biological measurements?

Peter Dexter replied that some time down the road, depending how the pilot project goes, there would be an opportunity to discuss with JCOMM the possible operational follow-on to the pilot project. JCOMM does not currently have expertise in this area, but would certainly be willing to consider adding such expertise as required.

Savi Narayanan pointed out that IODE data centers should be involved in this right from the start to ensure data management, and this should also include the JCOMM data management area.

Peter Pissierssens followed up to indicate that IODE group had looked at the proposal, and was generally positive, but had a few questions including better identifying sources of funding for the network, ensuring data access, *in situ* monitoring at the national level, and numerous additional points all of which have already been forwarded to the leader of the pilot project.

Jose Muelbert pointed out that this proposal would benefit greatly from many of the comments made today but especially from regional input.

Thorkild Aarup pointed out that the European Service for Ocean Colour (GlobColour <http://www.globcolor.info/>) project funded by the European Space Agency had almost identical goals to those contained in this proposal.

Worth Nowlin asked what the implications of this apparent duplication were and how that would affect the plans for this pilot project.

John Field asked Ehrlich Desa for support for the capacity building aspects of this proposal from the capacity building section of IOC.

Decision: *The Committee endorsed the GOOS global chlorophyll pilot study.*

6.7.3 FerryBox

Franciscus Colijn introduced this EU funded project that ended in November 2005. This is an excellent example of a GOOS oriented pilot project setting up linkages with both government agencies and industry. Monitoring water quality with FerryBoxes delivers data cost effectively with high temporal and spatial resolution that can be combined effectively with remote sensing data. Partners will continue these measurements with existing FerryBoxes despite the formal completion of the EU funded project. Additional FerryBoxes are also being discussed. The PowerPoint file of this presentation entitled "GSSC-IX.ferrybox.ppt" is available on the GOOS website.

Jim Baker asked whether the water samples were tested, for example with DNA analysis.

Francis pointed out that water samples were not standard, but were sometimes triggered by other measurements.

Tom Malone suggested installing ferryboxes on ships with ongoing continuous plankton recorder (CPR) measurements thereby combining the two devices on the same ships of opportunity.

6.7.4 ADRICOSM

Giovanni Coppini introduced this project supported by the Italian Ministry of Foreign Affairs and implemented through UNESCO-IOC. It includes 23 partners from 7 countries: Albania, Bosnia-Herzegovina, Croatia, France, Italy, Serbia-Montenegro, and Slovenia. It is designed to be consistent with the coastal GOOS implementation plan as a contribution to Europe's Global Monitoring for Environment and Security (GMES) and the Global Earth Observation System of Systems (GEOSS). The project consists of ocean observations and forecasting for the Mediterranean region, especially the Adriatic Sea, and related training and capacity building activities. The PowerPoint file of this presentation entitled "GSSC-IX.adricosm.ppt" is available on the GOOS website.

6.8 DISCUSSION: COASTAL ACTIVITIES, PRODUCTS, TECHNICAL ISSUES, NEEDS

6.8.1 Role of GRAs and links with other bodies (I-GOOS, JCOMM, etc.)

The discussion of this item is recorded under agenda item 10.

6.8.2 Transition to operational activity

There was no discussion on this agenda item.

6.9 ACTIONS: ANY RECOMMENDATIONS OF PANELS AND/OR TASK TEAMS TO BE SUGGESTED TO I-GOOS

Action 5. *John Field to continue to lead the development of a chlorophyll-a pilot project and report on progress. Deadline: GSSC-X.*

7 GEO

7.1 REPORT FROM THE GEO SECRETARIAT DIRECTOR

GEO did not report.

7.2 REPORT ON OCEAN COMMUNITY CONTRIBUTIONS TO AND BENEFITS FROM GEO

Boram Lee reported on the activities of the ocean community on GEO. She briefly reviewed declarations and resolutions from POGO, IOC, WMO, I-GOOS and JCOMM emphasizing the importance of existing ocean observation systems to GEOSS. The FAO, UNEP, UNESCO including its IOC, and WMO had formed an interagency coordination panel for Earth Observations, ICPC, reporting directly to agency heads. The IOC Executive Secretary has led the GEO *ad hoc* Working Group on Tsunami Activities as one of the co-chairs.

At the second meeting of GEO (GEO-II, 13-14 December 2005, Geneva), participants from the ocean community including IOC, GOOS, IGOS ocean theme, JCOMM, and POGO agreed to share information regarding, and coordinate consolidated input to, GEO under the coordination of

IOC. This coordination mechanism consisted of an 'Ocean United' group that may be joined by any group active in ocean observations and research simply by emailing Boram Lee. She noted that the Ocean United would play a role of providing a direct link to concrete activities within the GEO framework, and further seeking synergies in future ocean activities in GEO. The Committee further noted that the GEO needed yet clearer understanding on the importance of ocean observation systems' role in GEOSS, including GOOS and JCOMM, which would be the immediate action of Ocean United. The PowerPoint file of this presentation entitled GSSC-IX.geo.ppt is available on the GOOS website.

7.3 GOOS LEAD CONTRIBUTIONS IN THE GEO 2006 WORKPLAN

7.3.1 Gap analysis

Tom Malone presented the ideas for a gap analysis based on document GSSC-IX/14. Tom stated he was seeking three or four people from this committee, together with three or four people from POGO, to work together over email in preparation for the coming GEO plenary in December.

7.3.2 Others

No other GOOS contributions to GEO tasks and activities were discussed.

7.4 DISCUSSION

Jim Baker asserted that the GEO process is only valuable to GOOS if it brings more money to ocean observations. High-level political attention is not valuable in its own right, but only if it leads to high-level political action and thereby something on the order of 100 million dollars of new money annually spent on Earth Observations. Without that, it is unclear why the community should be interested in participating in yet another coordination and reporting process. He suggested that GOOS should send a message back to GEO asking for the roadmap on how to attract money through the GEO process.

Helen Yap stated that GEO was outside the UN system. She asked why, if the big countries are interested in supporting ocean observations, they don't just increase the budget of IOC.

Bill Erb asked why POGO was being highlighted within GEO for capacity building when POGO has a trivial amount of input into capacity building.

D.Y. Lee pointed out that GEOSS was discussed at a very high political level nationally. For example in Korea it is at the cabinet level, and even includes the president. If IOC sends a circular letter to the Korean government, it will reach a much lower level than if GEO sends such a letter.

He stated that this was because many countries are participating in GEO. In many countries ocean observing systems are not well developed and GEO provides a new mechanism to help develop them. In Korea the initial discussions on GEO included 9 ministries, but not the ocean ministry! Now it has been expanded to 12 and includes the ocean. The importance of the ocean module of GEOSS must be highlighted in order to improve national support for GOOS.

Jean-Louis Fellous pointed out that GEO is not a source of funds. It is just another coordinating mechanism that can help us to get resources from existing pots. It is important that we give contributions to GEO if we want to get anything from GEO.

Worth Nowlin pointed out that GCOS has already been reporting on the status of the climate observing systems, including the global module of GOOS, *via* the UNFCCC. These reports are

endorsed not just by ministers, but also by heads of state, and that level of political visibility has resulted in no money.

Peter Pissierssens pointed out a number of areas in the table in document 16 where IODE and GOOS should be added.

Keith Alverson noted that we should be careful to define what it means when we list GOOS as 'leading' or 'contributing to' GEO tasks. Who exactly is planning on doing what?

Peter Pissierssens pointed out that IODE contributions were designation of expertise in these areas that IODE already has.

Boram Lee pointed out that IGOS-partners have tailored much of their activities to GEO societal benefit areas.

Paul DiGiacomo hoped that the GEO secretariat would find the existing IGOS strategy useful and not try to reinvent what has already been done.

Janice Trotte pointed out that GRAs should be tapped as regional bodies that can contribute to GEOSS.

7.5 ACTIONS

Action 6. *Tom Malone to identify three or four people from the GSSC, together with three or four people from POGO, to work together over email over the next few months in preparation for consideration of the 'gap analysis' at the coming GEO plenary in December. Deadline: December 2006.*

8 CAPACITY BUILDING

8.1 IOC CAPACITY BUILDING STATUS, PLANS AND INTERACTION WITH GOOS

Ehrlich Desa presented the new strategy for self-driven capacity development in ocean sciences and observations. He presented the three-year implementation plan, to be developed in five regions, for leadership workshops, proposal writing, coastal monitoring and development of operational products. These activities are supported by sponsorship from the Swedish Development Agency (SIDA). The PowerPoint file of this presentation entitled "GSSC-IX.capacity.ppt" is available on the GOOS website.

Discussion on capacity building is recorded under agenda item 7.3

8.2 IODE

On behalf of the IODE chair, Lesley Rickards, Peter Pissierssens presented an overview of IODE including recent decisions of its intergovernmental group and executive board, long term priorities, capacity building and opportunities associated with the IODE project office in Oostende, Belgium. Opportunities for cooperation between IODE and GOOS include in capacity building collaboration between ODINs and GRAs, provision of GOOS content for the web-based teaching module Ocean Teacher, organization of joint training courses, achieving interoperability of GOOS data and use of the IODE virtual laboratory. The PowerPoint file of this presentation entitled "GSSC-IX.iode.ppt" is available on the GOOS website.

Tom Malone emphasized that cooperation between ODINs and the GRAs was a critical need.

Jim Baker asked if you could search for anything in the data systems irrespective of where it sits, to which Peter Pissierssens replied that we have not yet achieved this, the holy grail of data managers.

Savi Narayanan commended IODE on its successful review process and the way it is moving forward.

Helen Yap asked how IODE does 'data quality control'.

Shaohua Lin pointed out that IODE has a working group on exactly this topic, chaired by Sid Levitus of the USA.

T. Yoshida expressed his hope that IODE would help GRAs to adopt data standards in coastal observations.

8.3 DISCUSSION

A spirited discussion on capacity building took place with input from numerous committee members.

John Field pointed out that JCOMM had terminated its stand-alone capacity building panel and instead designated some cross cutting rapporteurs. He asked if GOOS should not do the same. Should we have stand-alone capacity building structures or activities or should we mainstream capacity building within our ongoing activities?

Helen Yap stated that the GSSC should make itself useful to IOC capacity building efforts rather than trying to create our own parallel efforts.

Peter Pissierssens agreed that leadership in African institutions did not always buy into capacity building and that the current strategy developed in the IOC capacity building section was therefore very welcome.

John Field recalled that the leadership workshop planned just before the GRA forum was precisely to contribute to these activities.

Worth Nowlin explained that the JCOMM decision to make capacity building a cross cutting activity was to avoid developing new capacity building tools. He asked GSSC to take a stance on the proposed joint JCOMM/GOOS task team for resources in capacity building. The chair, John Field, responded that he was personally very positive about formation of such a task team. Peter Dexter welcomed any suggestions from this committee for possible members on the proposed task team. A decision on formation of a JCOMM/GOOS task team for resources for capacity building was delayed until the sessional working groups had reported back to plenary.

Ehrlich Desa stated that the IOC capacity building panel was being reconstituted and that they would be happy to add GOOS representatives to the panel. He further asked members of this committee to help the CB section fill out a table on products.

8.4 ACTIONS

There were no actions arising from agenda item 8.

9 OUTREACH AND COMMUNICATIONS

9.1 IEEE/GEOSS ARCHITECTURE AND DATA USER FORUMS

Jay Pearlman provided an overview of a series of user forum workshops being carried out by IEEE as a contribution to the GEOSS architecture and data committee's activities. Themes of the workshops have included, or will include topics such as 'disasters and agriculture', 'disasters and water/drought', 'wind energy and resource management', 'renewable energy and ocean management' and 'air quality and climate'. He encouraged GOOS to consider using this series of user fora as a platform for GOOS outreach and communications efforts. The PowerPoint file of this presentation entitled "GSSC-IX.userforum.ppt" is available on the GOOS website.

Franciscus Colijn asked how the 'users' were targeted for these fora.

Tom Malone asked how the GRAs might play into the problem of establishing user demand.

Justin Ahanhanzo supported the approach of using regional groups to help define and plan the user fora and offered GOOS-AFRICA as one such collaborating regional organization in the future.

9.2 GPO REPORT ON OUTREACH AND COMMUNICATIONS

Keith Alverson pointed out that as of the decision of the GSSC-VIII, subsequently endorsed by I-GOOS-VII and the IOC Assembly XXIII, the GPO now has a mandate, and a small budget, to carry out activities in the realm of outreach and communications. He introduced David Roberts who showed the prototype of a new GOOS website that he started to develop shortly before the GSSC-VIII meeting. David Roberts will working on the new GOOS web site over the next three months and encouraged the Committee to comment. David Roberts presented the draft website.

9.3 DISCUSSION

Jim Baker stated there should be a 'contact us' button on the front page.

Jay Pearlman reinforced the need to find phone numbers for people in the secretariat easily and to have a broader 'about us' easily accessible.

Janice Trotte volunteered to add a paragraph or two on the Rio office. She asked if we have a graph of implementation that shows 'sensors in the water'.

Savi Narayanan stated that we should make use of existing information not reduplicate, or provide conflicting information on existing activities at JCOMM-ops or IODE.

Peter Pissierssens pointed out that we plan to develop a seamless IODE-JCOMM-GOOS web presence.

Helen Yap hypothesized that if a member of the public wished to find information, for example, on 'sea state' in their local community they will use google. How can we ensure GOOS information appears in the answer they receive. She also suggested making 'Observing System for the Ocean' very large on the page and minimizing acronyms.

John Field suggested easy access to a calendar of meetings.

Franciscus Colijn asked when the site will be available, to which David Roberts replied that the site will go public on 1 April 2006, and after that we will incrementally add features.

Jay Pearlman asked to link to certain sites including the IEEE as an expert site.

Philippe Dandin stated that he was upset and surprised by the lengthy discussion of these trivial technical details of the website. He asserted that the Committee was wasting time and urged the group to discuss important topics instead.

9.4 ACTIONS

Action 7. *David Roberts to incorporate all committee suggestions into the website. Deadline: 1 April 2006.*

10 RELATED ACTIVITIES

10.1 GPO REPORT ON LIAISON PRIORITIES AND ACTIVITIES

Keith Alverson stated that the GPO had started to work on a list of priorities amongst the many bodies and groups that GOOS liaises with, including how to better tap GSSC members who may already sit on various committees as 'free' liaisons to those groups as agreed at the last GSSC meeting. The GPO invited GSSC feedback on the draft document prepared by the GPO (GSSC-IX/18) and the sessional working group on this topic was charged with providing this feedback.

10.2 DISCUSSION

There was no discussion on this agenda item.

10.3 ACTIONS

No actions arose from this agenda item.

11 REPORT FROM WORKING GROUPS

11.1 COMMUNICATIONS AND OUTREACH

A draft report of the sessional working group on Communications and Outreach was distributed in hard copy and presented by the chair, Jim Baker. Members of the group included Mary Altalo, Philippe Dandin, Peter Dexter, Bill Erb, Jean-Louis Fellous, Mary Feeley, Boram Lee (secretariat) and Jay Pearlman. The report submitted for consideration by plenary was as follows (*in italics*):

The Intra-sessional Working Group on Communications and Outreach met twice and reported to the GSSC-9 plenary on 8 March 2006. The group had a lively discussion about many aspects of communication and outreach for GOOS, and noted that many of these aspects had been discussed at previous meetings.

There was a special focus on using the example of the Indian Ocean Tsunami of 26 December 2004 to emphasize the need for an Indian Ocean-wide observing system and all of the associated warning architecture. In general, the Group believed that it was important to warn the public that much of the regional and global ocean information – where it exists – that is taken for granted today may well disappear if inadequate funding levels for observational systems continue. The observing system is at risk, and it will cost more to respond to natural hazards without data and associated products and services than to maintain and enhance existing systems.

Communications and outreach are essential to making the case for better support of the observing system. What could be done to move communications and outreach forward now?

Recommendations:

Actions: The Group put its highest priority on immediate implementation of the recommendations of the action items agreed to at the meeting of the Industry/GOOS/JCOMM Task Team held during 1-2 March 2006 including identification of responsibility, timeline, and cost. These recommendations include the development of the communications plan, and will enhance private sector involvement in GOOS. They will help support advocacy to convince governments to continue to invest in the required infrastructures.

Cost: The Group recommended that a fund-raising effort begin immediately to find the funds identified by the Task Team, and that initial funding be found from existing sources (regular budgets) even if other programs or meetings needed to be cut back to provide the funds.

IOC/Industry workshops/short courses/demonstration projects:

The Group endorsed the current IOC memorandum of understanding with the London School of Economics to develop closer ties with Industry by showing how GOOS can help improve business management through workforce training. It urged GOOS to use the newly formed IMAREST Marine Information Alliance to help with advocacy.

New means of communications:

The Group urged GOOS to consider new means of communication for the GOOS message, including podcasts downloadable from various GOOS websites, GOOS blogs, and traveling museum exhibits on ocean observing systems, perhaps in conjunction with the new Oceans Hall at the U.S. Smithsonian National Museum of Natural History.

The group agreed with Chairman John Field's suggestion that the primary level of public references should be to the "system", the global ocean observing, data processing and services facilities and infrastructure, and not to the myriad of committees involved in governance, planning and implementation (GSSC, I-GOOS, JCOMM, etc.), which can only be confusing. Of course, at some other level, the importance of the respective roles of these bodies will need to be explicitly recognized, but not necessarily as part of the outreach process.

*Encourage the establishment of an ocean outreach material resources library.
Identify and educate key media spokespeople.*

Encourage science workshops that connect science-oriented users with the GEO architecture and its development. GSSC could designate one or two members to help with this. Do early next year.

Note that pilot projects are a good basis for outreach.

Do a science symposium as part of the next GSSC meeting to help engage local decision-makers.

The report of the sessional working group was discussed.

Keith Alverson asked the group to specify which "other programs or meetings needed to be cut back to provide the funds [identified as needed by the JCOMM/GOOS industry task team]" from the GPO regular budget. The Committee had no suggestions.

The following actions arose from discussion of the sessional working group's report:

Action 8. *Jay Pearlman to arrange a science workshop that connects science-oriented users with the GEO architecture and its development. Deadline: early in 2007.*

Action 9. *Jim Baker to send a letter, on behalf of the GSSC, to a number of relevant agencies asking them to plan now for a JASON-3 follow-on precision ocean altimetry mission. Deadline: mid-2006. The Committee agreed to the content below for this letter:*

To: CNES, NASA, NOAA, ESA, EUMETSAT, BNSC, EC, CEOS Chair, GEOS Secretariat
From: The GOOS Scientific Steering Committee (GSSC)
SUBJECT: Continuity of Altimeter Measurements over the Ocean

Monitoring ocean circulation is a key element of the global ocean observing system, and central to such monitoring is global, continuous measurement of the height of the ocean by satellite-borne altimeters. Such altimeters, begun with TOPEX/POSEIDON and continued with JASON-1, have given us new knowledge of the changing sea level and circulation, and have also provided new data about changing ice near both poles. This knowledge has been documented in numerous scientific and technical papers and reports.

Global continuous altimetry information, when added to in situ data, has been critical to developing better models and forecasts of climate change impacts on coastal and global populations. It is essential that these measurements be continuous, otherwise gaps in the record preclude accurate assessments of trends.

Currently, JASON-1 has been flying since 2001, and is not expected to last beyond the end of 2006. The earliest that the planned follow-on, JASON-2, can fly is in 2008 at the earliest. Therefore we are already expecting one major gap. With the long lead-time for satellites and their instruments, it is impossible to remedy this potential loss of data.

But we can plan for JASON-3, and now is the time to do so. If the responsible national and international agencies can begin now to commit to JASON-3, then the likelihood of yet another unfortunate gap will be minimized.

This letter is to urge the responsible agencies to step up now to commit to JASON-3 in a time frame that will minimize the possibility of another gap in the current data stream.

11.2 PRIORITIES AND LIAISON

John Field presented the report of this sessional group with help from Albert Fischer. Members of the group included Kouadio Affian, Philippe Dandin, John Field, Albert Fischer (secretariat), David Goodrich, Worth Nowlin, Detlef Stammer and Helen Yap.

The report consisted of the following table of suggested actions for consideration by the plenary (*in italics*):

<i>Agenda</i>	<i>Action</i>	<i>by whom</i>	<i>by when</i>
2, 3, 4	<i>To finalize agreement on responsibilities for GOOS between GSSC, I-GOOS, JCOMM, and</i>	<i>GPO (KA)</i>	<i>June 2006</i>

	<i>IODE: create a draft diagram, get feedback from chairs of bodies, then publicize when final.</i>		
5.1	<i>To send message that appropriate links to global research programs be maintained (e.g. OOPC with WCRP/CLIVAR, IGBP/SCOR groups; coastal GOOS with LOICZ, GCRMN; and with ICES and PICES), since much of GOOS is being implemented by the research community. Suggest continued:</i> <ul style="list-style-type: none"> • <i>communications and liaison,</i> • <i>coordination meetings,</i> <i>(including message that the GSSC supports and encourages sustained, long-term systematic observations, and recommends that GOOS search for funding to maintain these).</i>	<i>Chair (by letter to chairs of appropriate research programs, GRAs)</i>	<i>end May 2006</i>
5	<i>To consolidate the development of the global climate module of GOOS, check on its implementation by JCOMM, and check on its scientific and technical development</i> <ul style="list-style-type: none"> • <i>in situ networks,</i> • <i>satellite networks,</i> • <i>data streams,</i> • <i>products,</i> • <i>new knowledge and changing requirements,</i> • <i>new observing techniques for incorporation into GOOS.</i> 	<i>Chairs of OOPC and JCOMM report to GSSC</i>	<i>annually</i>
5.2	<i>To contribute to GCOS reporting of implementation of the observing system to the UNFCCC.</i>	<i>Chair and sec of OOPC</i>	<i>ongoing</i>
5 and 6	<i>To improve the links between the global and coastal modules of the observing system:</i> <ul style="list-style-type: none"> • <i>ensuring coordination and sharing of observing networks, data streams and management,</i> • <i>encouraging model downscaling and the creation of products in coastal regions.</i> 	<i>Reminder for entire GSSC</i>	<i>ongoing</i>
6	<i>To agree on draft ToRs for J-PICO.</i> <i>To recommend to I-GOOS that J-PICO be formed, and membership of GSSC be reduced accordingly.</i> <i>draft MoU with GTOS for J-PICO</i>	<i>GSSC</i> <i>Chair and GPO</i> <i>GPO (TA)</i>	<i>done</i> <i>immediate (I-GOOS and GTOS) and to IOC/EC</i> <i>ASAP</i>

6	<i>To agree on joint JCOMM-GSSC-GRA task team to give advice on the roles of GRAs and JCOMM in implementing the global coastal network and its variables (Malone as chair, GRA, GSSC and JCOMM reps identified)</i>	GSSC	done
6	<i>To formulate recommendations for roles of GRAs and JCOMM in implementing the global coastal network and its variables, in particular on the:</i> <ul style="list-style-type: none"> <i>JCOMM interface with GRAs</i> <i>rest of issues in ToRs of group</i> 	<i>joint TT above, with input from Chairs of I-GOOS, JCOMM, GSSC, GRAs</i>	<i>Sept., for GRA Forum</i> <i>report to next GSSC and JCOMM-MAN</i>
6.6	<i>Planning for the GRA Forum:</i> <ul style="list-style-type: none"> <i>suggest modifying draft objectives of Forum (focus on last 2 objectives),</i> <i>include GRA point of view (starting by sending draft agenda to GRAs within 2 weeks),</i> <i>include IODE and JCOMM,</i> <i>incorporate ideas for long-term coordination mechanisms for liaison between GRAs and with GOOS.</i> 	<i>GSSC to organizers</i> <i>J. Ahanhanzo</i> <i>organizers</i> <i>organizers</i>	<i>done</i> <i>end March</i> <i>ASAP</i> <i>ongoing</i>
6	<i>To recommend establishment of Global Body of GRAs.</i> <i>draft proposal of this body's ToRs.</i>	<i>Chair to GRA Forum</i> <i>T. Malone and team</i>	<i>Nov.</i> <i>Nov.</i>
6.7	<i>To move forward with the global chlorophyll pilot project;</i> <ul style="list-style-type: none"> <i>carefully considering present and upcoming sustained efforts (including data management and involving GEBICH),</i> <i>considering the mechanisms for sustaining this effort after the pilot study,</i> <i>further suggestions to be incorporated.</i> 	<i>pilot project planning group</i>	<i>Report to next GSSC</i>
6	<i>To endorse coastal GODAE, FerryBox project, CPR program (scientific endorsement only).</i>	<i>Chair to send letters to groups</i>	<i>ASAP</i>

[illegible]

9	<i>To endorse the proposed actions of the TT Industry, and recommend funds be sought for implementation. (in order to raise the profile of GOOS with the private sector, to create advocates for funding of the ocean observing system).</i>	<i>TT/Industry and GPO To I-GOOS for approval</i>	<i>as identified in TT action plan</i>
9	...		
	...		
	<i>To encourage science workshops that connect science-oriented users with the GEO architecture and its development.</i>		
	<i>To use pilot projects as an opportunity for outreach.</i>		
	<i>To plan science symposium as part of next GSSC meeting to help local decision-makers.</i>	<i>Chair and GSSC members</i>	<i>Before next GSSC</i>

Jim Baker stated that responsibilities of I-GOOS, GSSC, JCOMM and IODE are clear, but GRAs responsibilities are still being developed. Tom Malone pointed out that a document had been developed three or four years ago as to what a GRA was.

Jim Baker asked for better definition of what supporting and encouraging liaison with science programs means.

The report of the sessional working group was discussed. The specific decisions and actions adopted by the plenary arising from these discussions were:

Decision: *Recommend formation of a GTOS-GOOS coastal panel with shared and adequate funding and administrative support provided for that panel by the respective secretariats.*

Decision: *Recommend formation of a JCOMM-GSSC-GRA task team on the roles of GRAs and JCOMM in implementing the global coastal network and its variables.*

Action 10. *Keith Alverson to create a diagram as described in the table. Deadline: June 2006.*

Action 11. *John Field to send a letter to various research programs as described in the table. Deadline: May 2006.*

Action 12. *Keith Alverson to ensure I-GOOS board considers GSSC's recommendation to form a JCOMM-GSSC-GRA task team on implementing coastal GOOS. Deadline: 9 March 2006.*

Action 13. *Keith Alverson to ensure I-GOOS board considers modifying the draft objectives for the GRA Forum and to include IODE and JCOMM in the preparations. Deadline: 9 March 2006.*

Action 14. *Justin Ahanhanzo to send the concept document related to the preparation of the 3rd Forum to the GRAs in order to obtain their input into the agenda. Deadline: March 2006.*

Action 15. *Justin Ahanhanzo to work proactively with the organizing committee to prepare for the 3rd GRA forum. Deadline: ongoing until November 2006.*

Action 16. *John Field to recommend, on behalf of the GSSC, the establishment of a global body of GRAs to the GRA forum. Deadline: November 2006.*

Action 17. *John Field to send letters to GODAE, Ferrybox and CPR programs offering the scientific endorsement of the GSSC. Deadline: GSSC-X.*

Action 18. *Joint GOOS/JCOMM Industry Task Team to develop a preliminary communications plan based on the GOOS strategic plan. Deadline: GSSC-X.*

Action 19. *Keith Alverson to ensure I-GOOS board considers endorsing the proposed actions of the JCOMM/GOOS task team on industry and pass on GSSC's recommendation that funds be sought for their implementation. Deadline: 9 March 2006.*

Action 20. *Dong-Young Lee to plan a science symposium as part of the next GSSC meeting to help local decision makers. Deadline: GSSC-X.*

11.3 COASTAL GOOS

The results of the coastal sessional break-out group were presented by the chair Tom Malone. The group's members included Thorkild Aarup (secretariat), Franciscus Colijn, Giovanni Coppini, Peter Dexter, Paul DiGiacomo, Bill Erb, Maria Paula Etala, Dong-Young Lee, Shaohua Lin, Jose Muelbert, Savithri Narayanan, Worth Nowlin, Janice Trotte, Helen Yap, and Takashi Yoshida. The report submitted for consideration by plenary was as follows (*in italics*):

1. Scientific and Technical Advice

The Issue

Should the GSSC provide scientific and technical advice to guide implementation and evolution of the coastal module or should a Joint GOOS-GTOS Panel for Integrated Coastal Observations (J-PICO) be established for this purpose?

Background

At GSC-VIII, it was agreed that the GSC would take on these functions through the formation of subcommittee on Coastal GOOS Implementation. This was agreed to after the GOOS Secretariat informed the GSC that funding was not available to support a separate panel.

The COOP had originally recommended the formation of a Panel for Observations of the Coastal Ocean (POCO). This recommendation was deleted from the COOP implementation strategy due to a lack of funding. The IGOS Coastal Theme and GTOS recommend formation of J-PICO, and it now appears that funding for this panel is available from the sponsors of GTOS and GOOS. Coastal GTOS has recommended Terms of Reference for this Panel (Appendix A). If approved, this would result in two high level advisory bodies, OOPC for oceans and climate (air-sea interactions) and PICO for the coastal zone and coastal ocean (land-sea interactions).

Recommended Actions

The Working Group strongly recommends that J-PICO be formed, that the membership of the GSSC be reduced accordingly. Half of the membership of J-PICO should be approved by the GSSC and its sponsors and half by the GTOS SC and its sponsors.

A sub-group has been formed to review and recommend changes to the Terms of Reference for J-PICO drafted by GTOS. This group will also recommend the size of the panel and the areas of expertise that should be represented. The GSSC is asked to recommend the following Terms of Reference:

The GSSC is asked to endorse, based on information from the IGOS Coastal theme report and the Terms of Reference recommended by Coastal GTOS, the formation of a GOOS-GTOS Joint Panel for Integrated Coastal Observations (J-PICO) with the following Terms of Reference:

- (1) Provide the scientific steering Committees of GOOS and GTOS with technical advice needed for scientifically sound, coordinated implementation of the Coastal Modules of GOOS and GTOS including cross-boundary (land-sea) effects of climate change, natural hazards and human activities on coastal development (urbanization, agriculture, infrastructure development, etc.), public health risks, hydrological and biogeochemical cycles, and ecosystem health and productivity.*
- (2) To liaise with relevant scientific and technical organizations to facilitate synergy between advances in science and technology and the development of operational capabilities, including coastal services, according to the implementation plans of coastal modules of GOOS and GTOS.*
- (3) Provide expertise and advice to the scientific steering Committees of GOOS and GTOS on the development of the operational elements of the Coastal modules of GOOS and GTOS including interoperability and the management and dissemination of non-physical, physical and socio-economic variables regarding:*
 - Observations,*
 - Data management and distribution,*
 - Modelling, and*
 - Communication of data and Information to user groups.*
- (4) Advise capacity building programs, including those of the sponsoring organizations, regarding capacity building needs of nations and regions and approaches to addressing such needs.*
- (5) Using the implementation strategies and plans for coastal GOOS and GTOS as guiding documents, prepare and periodically update Action Plans supporting implementation.*
- (6) Organize periodic assessments (every 5-year) of the status of implementation and performance of cross-boundary elements of the coastal modules of GOOS and GTOS and recommend improvements and enhancements in them.*

To keep within the GPO budget consequences of the formation of the J-PICO will be an adequate reduction of the size of the GSSC.

Size and Membership:

The J-PICO should not be larger than about 10-15 members. The Panel should include experts from coastal and land-use, ecology marine and coastal sciences, coastal zone management, operational observing systems, industry, and data and information management.

An MOA between IOC and FAO that reconciles differences in the Terms of Reference for J-PICO should be drafted by the IOC and FAO and agreed to by both Steering Committees and their sponsors.

2. Implementing mechanisms for the operational components of the Global Coastal Network and interoperability among GRAs

The issues

Mechanisms are needed to (1) ensure interoperability among GRAs and the development of a GCN that meets the needs of all or most GRAs and to (2) oversee implementation of operational elements of the coastal module.

The JCOMM has formed, and GSSC is asked to endorse, an ad hoc joint JCOMM-GSSC-GRA task team to address the oversight issue (2) as follows:

*Geoff Brundrit (GOOS-AFRICA)
Hans Dahlin (EuroGOOS)
Philippe Dandin (JCOMM and GSSC)
Johannes Guddal (JCOMM)
Ed Harrison (OOPC)
Bob Keeley (JCOMM)
Tom Malone (U.S. GOOS and GSSC)*

The Terms of Reference for the task team are as follows:

- (1) Propose a long-term coordination mechanism or mechanisms between JCOMM, GSSC and the GRAs, to address all areas of mutual interest and avoid overlap and duplication of effort.*
- (2) Based on the COOP IP, and in the light of existing expertise and structures, propose possible immediate and specific actions for GSSC, JCOMM and the GRAs to further the implementation of coastal GOOS.*
- (3) Consider and make proposals concerning possible longer-term actions by GSSC, JCOMM and the GRAs for the implementation of coastal GOOS, e.g. where additional expertise and/or subsidiary mechanisms may need to be developed.*
- (4) Recommend what observations should be taken on by JCOMM and what should be left to the GRAs. It is important to remember that before a measurement or product can be turned over to JCOMM for regulation and coordination it must be in pre-operational phase with agreed standards and protocols for measurement, data management and product production, and it must have a group that is currently responsible for the measurement or product.*

The TT should report to the JCOMM co-presidents and Management Committee, the GSSC and the GOOS Regional Forum or equivalent. The TT will work primarily by email, with an occasional meeting if convenient and necessary. Such a meeting is suggested tentatively to take place in association with the planned third GOOS Regional Forum, September 2006 in Cape Town.

Recommended Actions

- (1) Approve the draft Terms of Reference.*
- (2) Increase GRA representation on this task team by adding at least one member from a GRA in the southern hemisphere and to activate this group as soon as possible.*

Add Janice Trotte (IOC Brazil Regional GOOS Office, OCEATLAN) to the Committee.

- (3) *Of the issues to be addressed in the Terms of Reference for this group, the first two tasks should be completed and communicated to the JCOMM, GSSC and the GOOS Regional Council prior to the 3rd GRA Forum in November 2006. These recommendations will be reviewed and finalized at the Forum.*

This group should do their work via e-mail and teleconferences at no cost to the IOC. As it addresses each issue in the Terms of Reference, the task team should ask for comments and guidance from points of contact identified by each GRA. The work of this task team should be completed prior to the next GSSC meeting.

3. Third GRA Forum

Issue

The 3rd GRA Forum is considered to be an important event for initiating the implementation of the coastal module of GOOS. Engaging all of the GRAs in planning for the forum is critical to its success. Preliminary objectives for discussion have been prepared by an International Scientific Committee established by the IOC to organize this conference (Appendix B).

Recommended Actions

The Coastal Working Group (WG) recognizes the importance of the 3rd GRA Forum for initiating the implementation of the coastal module of GOOS on a global scale. The WG emphasizes that engaging all of the GRAs in planning for the Forum is critical to its success.

- (1) *GOOS-AFRICA should take the lead in engaging all of the GRAs in specifying objectives and developing an agenda that will achieve them. To this end, it is recommended that the International Scientific Committee (ISC) for the 3rd Forum agree on a discussion draft prospectus to be distributed to the Chairs of the GRAs (the GOOS Regional Council) for review and comment. Based on comments received, the ISC will revise the prospectus for final approval by the GOOS Regional Council prior to the Forum.*
- (2) *Establish an ad hoc Task Team to draft, preliminary Terms of Reference for a Global Body that would coordinate GRA development (for interoperability) and the development of a GCN that will serve the needs of all or most GRAs. It is also recommended that the Global Body function under the auspices of the IOC and report independently to IGOOS. This should be done with guidance from the GOOS Regional Council created at the 2nd GRA Forum. The leadership of this Body should be elected by the GRAs.*
- (3) *Modify the preliminary goals and objectives of the Forum as follows:*

The overarching goal of the 3rd GRA Forum is to prioritize recommendations in the COOP implementation strategy for implementing a Global Coastal Network (GCN) and to determine the way forward. In this context, the objectives of the 3rd GRA Forum are to

- Establish an international, global body to ensure interoperability among GRAs as they develop and to coordinate the implementation of a GCN that will benefit all or most GRAs. Recommend how this body should coordinate and collaborate with JCOMM, the GSSC and I-GOOS; membership; and finalize Terms of Reference.*
- Establish mechanisms to cultivate links and synergy between GRAs and LME programmes for mutual benefit.*

- *Position GRAs as implementing bodies for the oceanic and coastal components of GEOSS and prepare a plan to implement the GEO Coastal Community of Practice.*
- *Prepare plans for funding joint GRA-LME pilot projects as a means of achieving objectives 2 and 3.*
- *Prepare action plan with time lines and milestones for achieving these objectives.*

4. Pilot Projects to Enable Implementation

- *Chlorophyll Pilot Project - endorse*

Issues that should be addressed: Data management? – identify a Data Center to take the lead; take into consideration the comments provided by GEBIICH and involve them in further development and implementation - endorse

- *Coastal GODAE (OOPC) - endorse*
- *FerryBox Project – endorse*

The operators of the project are beginning to work with operational services to take this on in an operational mode. Explore the possibility of FerryBox coming under auspices of JCOMM via Ship Observation Team (Mike Johnson, SOOP, etc.)

- *CPR Program – endorse*

The IOC should provide a strong statement of support and, subject to the availability of funds provide an annual grant of \$5K as a symbol of IOC's support. SAHFOS should explore ways to better integrated CPR deployments with existing GOOS SOOP and VOS programs including FerryBox.

- *J-PICO should review guidelines given in the COOP design plan for Pilot Projects and update them.*

Policies and procedures for approving Pilot Projects (including those proposed by groups outside the IOC-GOOS governance hierarchy) should be established by the I-GOOS based on recommendations from the OOPC and J-PICO. Ask the OOPC and J-PICO to work together to develop criteria and mechanisms to ensure that these possibilities are advertised.

- *Ensure that OOPC and J-PICO work to ID and recommend and prioritize pilot projects that will provide a basis for both technology demo and capacity building.*
- *Advise the OOPC and J-PICO to develop and maintain inventories of GOOS pilot projects in their regions.*

5. GRA Accreditation

Issue

A process has been proposed by an I-GOOS Vice-Chair to institute an accreditation process for GRAs.

It is recognized that an accreditation process should help GRAs leverage funding for implementing observing system element, and serious consideration should be given to the adoption of a formal accreditation process.

Recommended Actions

Recognizing that all of the existing GRAs have been approved by the IGOOS and that GSSC and IGOOS have approved GOOS policies for acknowledging bodies as GRAs, the GSSC feels that the general GOOS Policy on GRA endorsement is adequate at this time and that the proposed accreditation process may be too prescriptive.

GSSC should establish a subcommittee to review the current GRA Policy intersessionally and make recommendations to GSSC-X. Report by September 2007 and distribute to GRAs as a discussion document for Forum.

Ask GRAs to review the existing GRA policy and evaluate themselves against that policy and suggest changes in the policy at the forum.

GRAs do need to be encouraged and, where appropriate in term of regional capacity, supported to produce and enunciate products and services; too use common standards and protocols, and to engage more proactively in CB.

Review the policy at the 3rd Forum.

6. Capacity Building

Noting that capacity building is particularly important for implementing the coastal module:

- *Encourage pilot projects that contribute to building GOOS capacity consistent with IOC priorities.*
- *Build more synergy between ODINs and GRAs. Chl PP provides on mechanism to do this.*

Appendix A

Terms of Reference for J-PICO Recommended by GTOS

- (1) *Provide the IGOS Partners, CEOS and the Steering Committees of GOOS and GTOS with technical advice needed for scientifically sound, coordinated implementation of the Coastal Modules of GOOS and GTOS as related to cross-boundary (land-sea) effects of climate change, natural hazards and human activities on coastal development (urbanization, agriculture, infrastructure development, etc.), public health risks, hydrological and biogeochemical cycles, and ecosystem health and productivity.*
- (2) *Facilitate and enable implementation of IGOS Coastal Theme in coordination with implementation of GOOS, GTOS and GEOSS as a whole. This should include the identification of users and specification of observing system requirements based on their data and information needs.*

- (3) *In collaboration with CEOS, promote the development of space-based platforms and sensors that meet coastal requirements for higher spatial, temporal and spectral resolution.*
- (4) *As needed, conduct workshops and work with the national and international bodies to plan and implement pilot projects that enable development of integrated observations across the land-sea and air-sea interfaces.*
- (5) *Establish ties with the scientific and technical organizations (e.g., IGBP and SCOR) to facilitate synergy between advances in science and technology and the development of operational capabilities of the coastal modules of GOOS and GTOS as related to land-sea interactions.*
- (6) *Provide expertise and advice to JCOMM, FAO and other bodies as appropriate on the development of the operational elements of the GCN including the management and dissemination of non-physical, physical and socio-economic variables regarding observations, data Management and distribution, modelling, and communication of data and information to user groups.*
- (7) *Advise capacity building programs, including those of the FAO, JCOMM and the IOC, regarding capacity building needs of nations and regions and approaches to addressing such needs.*
- (8) *Using the implementation strategies and plans for coastal GOOS and GTOS as guides, prepare and periodically update an Implementation Action Plan for the Coastal Theme that is coordinated with implementation of the GEOSS in general and GOOS, GCOS and GTOS in particular.*
- (9) *Organize periodic assessments of the status of implementation and performance of cross-boundary elements of the coastal modules of GOOS and GTOS and recommend improvements and enhancements in them.*

Appendix B

Preliminary Goals and Objectives Proposed for the 3rd GRA Forum

The overall goal of the Forum is to initiate the establishment of a global network of GRAs that will enable regional development of coastal GOOS and oversee the establishment of the Global Coastal Network (GCN) as recommended in the COOP implementation strategy. Representatives from GRAs, LMEs and other GOOS stakeholders will have an opportunity to meet and exchange experiences, achievements and lessons learned.

Objectives

- 1- *Establish mechanisms to cultivate links and synergy between the GRAs and the LMEs for mutual benefits (a major recommendation in the COOP Implementation Strategy);*
- 2- *Adopt a blueprint document to serve the GRAs and the International Waters and Biodiversity Operational Programmes of the Global Environment Facility. This will help the GRAs to tap on some of the available international sources of funding;*

- 3- *Identify means for implementing the GRAs Regional Strategy completed under GRAND: How to bridge the gap in scale between global observations and local needs, and how to add the ecosystem-based information;*
- 4- *Identify means for implementing the COOP implementation strategy approved by I-GOOS and endorsed by JCOMM. In this context, review and take action as appropriate on recommendations from the JCOMM/GSSC/GRA Task Team on coastal GOOS and the GRAs;*
- 5- *Position GOOS and GRAs as implementing bodies for the Ocean and Coastal components of GEOSS. As a first step toward this end, prepare a plan to implement the GEO Coastal Community of Practice.*

The report of the sessional working group was discussed. The specific decisions and actions adopted by the plenary as a result of these discussions were:

Decision: *GSSC recommended the formation of this joint panel with GTOS. This would involve reversing the decision of GSSC8 in response to the overture from GTOS to form such a panel. Formation of this panel would require reducing the size of the GSSC commensurately. Half of the panel members would be nominated by the GSSC.*

Thorkild Aarup pointed out that this proposal would have to be presented to I-GOOS and the Executive Council of IOC.

Action 21. *Keith Alverson to ensure I-GOOS board considers GSSC's recommendation to form a joint GOOS-GTOS coastal panel be formed and membership of GSSC be reduced accordingly. Deadline: 9 March 2006. Done.*

Action 22. *If the above action leads to approval by the I-GOOS board, Keith Alverson to ensure IOC Executive Council or Assembly consider the recommendation to form a joint GOOS-GTOS coastal panel and membership of GSSC be reduced accordingly as part of their deliberations on GOOS. Deadline: IOC-EC XXXIX or IOC Assembly XXIV.*

Action 23. *Thorkild Aarup to work with a member of the GTOS secretariat at the FAO to develop a Memorandum of Agreement that reconciles differences in the TOR for J-PICO. Deadline: to be presented back to the GSSC-X, and the next GTOS scientific steering committee.*

Considerable discussion around the membership of the JCOMM-GSSC-GRA task team occurred. It was noted that the group needed better representation from GRAs and wider disciplinary representation beyond physical sciences. The key task for the *ad hoc* team is to decide how coastal GOOS implementation will occur, either through JCOMM or whether some other body will be taking on this task. Janice Trotte was proposed to join the group. Tom Malone was asked to chair the committee.

Decision: *The GSSC endorsed co-sponsorship of an ad hoc JCOMM-GSSC-GRA task team on coastal GOOS implementation, GSSC membership, and the proposed terms of reference.*

Action 24. *Tom Malone to chair the JCOMM-GSSC-GRA ad hoc task team on coastal GOOS implementation. The Committee endorsed the proposed JCOMM-GSSC-GRA ad hoc task team with the addition of Janice Trotte as a member and nominated Tom Malone as chair. The team will work via e-mail and*

teleconferences. Deadline: beginning immediately for presentation to the 3rd GRA Forum and GSSC-X.

Action 25. *GPO to encourage Hans Dahlin to bring Arctic GOOS proposal back to I-GOOS as originally requested and accounting for I-GOOS comments at its last session to seek broader, including Canadian and Russian, participation. Deadline: I-GOOS.*

Action 26. *Justin Ahanhanzo, on behalf of GOOS-AFRICA, to ensure that the Arctic GOOS group is invited to the November GRA forum as an observer.*

Action 27. *John Field to establish an ad hoc inter-sessional subcommittee to review the current policy on forming GRAs. Deadline: for presentation to the 3rd GRA Forum and GSSC X.*

Decision: *The Board decided that the decisions and actions in this report do not imply a GSSC recommendation on use of GPO financial support or staff time unless explicitly stated therein.*

12 REVIEW OF ACTION ITEMS FROM GSSC-VIII

The Committee did not review the action list from GSSC-VIII.

12.1 CONSOLIDATED LIST OF RECOMMENDATIONS TO IGOOS

The Committee decided to forward a number of actions and recommendations to the I-GOOS board. These are listed at various places in this report as decisions and action items.

13 MEMBERSHIP ROTATION

Thorkild Aarup reported on the membership rotation for the GSSC. He confirmed the membership of the committee was endorsed by the GSSC sponsors as of one week before GSSC-IX. Three members, Maria Paula Etala, Takashi Yoshida and Franciscus Colijn, rotate of the committee after this meeting and were thanked by John Field for their service.

Action 28. *Keith Alverson to work with the secretariats of the other GSSC sponsors, UNEP, WMO and ICSU, to review and update the MOU covering the GSSC. Deadline: GSSC-X for draft. Formal approval of sponsors to follow.*

14 CALENDAR OF GOOS MEETINGS IN 2006

14.1 There was no report on the GOOS calendar.

14.2 The Committee did not discuss the GOOS calendar.

15 NEXT GSSC MEETING

The Committee noted that alternate meetings are held in Paris and others elsewhere.

Dong-Young Lee offered to host the next GSSC meeting in Korea and the GSSC accepted this offer. The GSSC decided that the next meeting be held in the last week of February or first week of March 2007.

In concluding the meeting, the chair thanked the GPO staff for their help and all of the members of the committee for their attendance. In particular he thanked three members who are rotating off the committee, Franciscus Colijn, Maria Paula Etala and TakashiYoshida San for their longstanding support of GOOS. He further thanked the many new members for whom this was their first meeting and looked forward to working with them in the future. The chair closed the meeting at 17.05 on Wednesday, 8 March 2006.

16 LIST OF ACTIONS

ACTION 1.	FRANCISCUS COLIJN TO APPROACH LOICZ TO HELP SUPPORT THE 3 RD GRA FORUM. DEADLINE: 15 APRIL 2006.....	10
ACTION 2.	JUSTIN AHANHANZO TO INFORM ALL GRAS ON THE PREPARATIONS FOR THE FORUM. DEADLINE: 15 APRIL 2006.....	10
ACTION 3.	MARY ALTALO TO INFORM GPO DIRECTOR AS TO THE AVAILABLE OF ANY US FUNDING FOR THE 3 RD GRA FORUM. DEADLINE: 15 APRIL 2006.	10
ACTION 4.	SAVI NARAYANAN TO PROPOSE TO CIDA THAT THEY PROVIDE FUNDING FOR THE 3 RD GRA FORUM AND INFORM THE GPO DIRECTOR AS TO THE STATUS THEREOF. DEADLINE: 15 APRIL 2006.	10
ACTION 5.	JOHN FIELD TO CONTINUE TO LEAD THE DEVELOPMENT OF A CHLOROPHYLL-A PILOT PROJECT AND REPORT ON PROGRESS. DEADLINE: GSSC-X.....	12
ACTION 6.	TOM MALONE TO IDENTIFY THREE OR FOUR PEOPLE FROM THE GSSC, TOGETHER WITH THREE OR FOUR PEOPLE FROM POGO, TO WORK TOGETHER OVER EMAIL OVER THE NEXT FEW MONTHS IN PREPARATION FOR CONSIDERATION OF THE 'GAP ANALYSIS' AT THE COMING GEO PLENARY IN DECEMBER. DEADLINE: DECEMBER 2006.	14
ACTION 7.	DAVID ROBERTS TO INCORPORATE ALL COMMITTEE SUGGESTIONS INTO THE WEBSITE. DEADLINE: 1 APRIL 2006.....	17
ACTION 8.	JAY PEARLMAN TO ARRANGE A SCIENCE WORKSHOP THAT CONNECTS SCIENCE-ORIENTED USERS WITH THE GEO ARCHITECTURE AND ITS DEVELOPMENT. DEADLINE: EARLY IN 2007.	19
ACTION 9.	JIM BAKER TO SEND A LETTER, ON BEHALF OF THE GSSC, TO A NUMBER OF RELEVANT AGENCIES ASKING THEM TO PLAN NOW FOR A JASON-3 FOLLOW-ON PRECISION OCEAN ALTIMETRY MISSION. DEADLINE: MID-2006. THE COMMITTEE AGREED TO THE CONTENT BELOW FOR THIS LETTER:	19
ACTION 10.	KEITH ALVERSON TO CREATE A DIAGRAM AS DESCRIBED IN THE TABLE. DEADLINE: JUNE 2006.	23
ACTION 11.	JOHN FIELD TO SEND A LETTER TO VARIOUS RESEARCH PROGRAMS AS DESCRIBED IN THE TABLE. DEADLINE: MAY 2006.	23
ACTION 12.	KEITH ALVERSON TO ENSURE I-GOOS BOARD CONSIDERS GSSC'S RECOMMENDATION TO FORM A JCOMM-GSSC-GRA TASK TEAM ON IMPLEMENTING COASTAL GOOS. DEADLINE: 9 MARCH 2006.	23
ACTION 13.	KEITH ALVERSON TO ENSURE I-GOOS BOARD CONSIDERS MODIFYING THE DRAFT OBJECTIVES FOR THE GRA FORUM AND TO INCLUDE IODE AND JCOMM IN THE PREPARATIONS. DEADLINE: 9 MARCH 2006.	23
ACTION 14.	JUSTIN AHANHANZO TO SEND THE CONCEPT DOCUMENT RELATED TO THE PREPARATION OF THE 3 RD FORUM TO THE GRAS IN ORDER TO OBTAIN THEIR INPUT INTO THE AGENDA. DEADLINE: MARCH 2006.	23
ACTION 15.	JUSTIN AHANHANZO TO WORK PROACTIVELY WITH THE ORGANIZING COMMITTEE TO PREPARE FOR THE 3RD GRA FORUM. DEADLINE: ONGOING UNTIL NOVEMBER 2006.	23
ACTION 16.	JOHN FIELD TO RECOMMEND, ON BEHALF OF THE GSSC, THE ESTABLISHMENT OF A GLOBAL BODY OF GRAS TO THE GRA FORUM. DEADLINE: NOVEMBER 2006.	24
ACTION 17.	JOHN FIELD TO SEND LETTERS TO GODAE, FERRYBOX AND CPR PROGRAMS OFFERING THE SCIENTIFIC ENDORSEMENT OF THE GSSC. DEADLINE: GSSC-X.....	24
ACTION 18.	JOINT GOOS/JCOMM INDUSTRY TASK TEAM TO DEVELOP A PRELIMINARY COMMUNICATIONS PLAN BASED ON THE GOOS STRATEGIC PLAN. DEADLINE: GSSC-X.....	24
ACTION 19.	KEITH ALVERSON TO ENSURE I-GOOS BOARD CONSIDERS ENDORSING THE PROPOSED ACTIONS OF THE JCOMM/GOOS TASK TEAM ON INDUSTRY AND PASS ON GSSC'S RECOMMENDATION THAT FUNDS BE SOUGHT FOR THEIR IMPLEMENTATION. DEADLINE: 9 MARCH 2006.	24

- ACTION 20.**DONG-YOUNG LEE TO PLAN A SCIENCE SYMPOSIUM AS PART OF THE NEXT GSSC MEETING TO HELP LOCAL DECISION MAKERS. DEADLINE: GSSC-X..... 24
- ACTION 21.**KEITH ALVERSON TO ENSURE I-GOOS BOARD CONSIDERS GSSC'S RECOMMENDATION TO FORM A JOINT GOOS-GTOS COASTAL PANEL BE FORMED AND MEMBERSHIP OF GSSC BE REDUCED ACCORDINGLY. DEADLINE: 9 MARCH 2006. DONE..... 31
- ACTION 22.**IF THE ABOVE ACTION LEADS TO APPROVAL BY THE I-GOOS BOARD, KEITH ALVERSON TO ENSURE IOC EXECUTIVE COUNCIL OR ASSEMBLY CONSIDER THE RECOMMENDATION TO FORM A JOINT GOOS-GTOS COASTAL PANEL AND MEMBERSHIP OF GSSC BE REDUCED ACCORDINGLY AS PART OF THEIR DELIBERATIONS ON GOOS. DEADLINE: IOC-EC XXXIX OR IOC ASSEMBLY XXIV. 31
- ACTION 23.**THORKILD AARUP TO WORK WITH A MEMBER OF THE GTOS SECRETARIAT AT THE FAO TO DEVELOP A MEMORANDUM OF AGREEMENT THAT RECONCILES DIFFERENCES IN THE TOR FOR J-PICO. DEADLINE: TO BE PRESENTED BACK TO THE GSSC-X, AND THE NEXT GTOS SCIENTIFIC STEERING COMMITTEE. 31
- ACTION 24.**TOM MALONE TO CHAIR THE JCOMM-GSSC-GRA AD HOC TASK TEAM ON COASTAL GOOS IMPLEMENTATION. THE COMMITTEE ENDORSED THE PROPOSED JCOMM-GSSC-GRA AD HOC TASK TEAM WITH THE ADDITION OF JANICE TROTTE AS A MEMBER AND NOMINATED TOM MALONE AS CHAIR. THE TEAM WILL WORK VIA E-MAIL AND TELECONFERENCES. DEADLINE: BEGINNING IMMEDIATELY FOR PRESENTATION TO THE 3RD GRA FORUM AND GSSC-X. 31
- ACTION 25.**GPO TO ENCOURAGE HANS DAHLIN TO BRING ARCTIC GOOS PROPOSAL BACK TO I-GOOS AS ORIGINALLY REQUESTED AND ACCOUNTING FOR I-GOOS COMMENTS AT ITS LAST SESSION TO SEEK BROADER, INCLUDING CANADIAN AND RUSSIAN, PARTICIPATION. DEADLINE: I-GOOS.... 32
- ACTION 26.**JUSTIN AHANHANZO, ON BEHALF OF GOOS-AFRICA, TO ENSURE THAT THE ARCTIC GOOS GROUP IS INVITED TO THE NOVEMBER GRA FORUM AS AN OBSERVER. 32
- ACTION 27.**JOHN FIELD TO ESTABLISH AN AD HOC INTER-SESSIONAL SUBCOMMITTEE TO REVIEW THE CURRENT POLICY ON FORMING GRAS. DEADLINE: FOR PRESENTATION TO THE 3RD GRA FORUM AND GSSC-X. 32
- ACTION 28.**KEITH ALVERSON TO WORK WITH THE SECRETARIATS OF THE OTHER GSSC SPONSORS, UNEP, WMO AND ICSU, TO REVIEW AND UPDATE THE MOU COVERING THE GSSC. DEADLINE: GSSC-X FOR DRAFT. FORMAL APPROVAL OF SPONSORS TO FOLLOW..... 32

ANNEX I

AGENDA

1 OPENING AND WELCOME

- 1.1 INTRODUCTIONS*
- 1.2 ADOPTION OF THE AGENDA*
- 1.3 FORMATION OF SESSIONAL WORKING GROUPS*

2 GOOS DEVELOPMENTS

- 2.1 REPORT FROM THE GSSC CHAIR*
- 2.2 REPORT FROM GPO DIRECTOR*
- 2.3 REPORT FROM IOC GOOS PROGRAMME OFFICE IN RIO DE JANEIRO, BRAZIL*
- 2.4 REPORT FROM IOC GOOS PROGRAMME OFFICE IN PERTH, AUSTRALIA*
- 2.5 DISCUSSION*
- 2.6 ACTIONS*

3 I-GOOS

- 3.1 REPORT FROM THE I-GOOS CHAIR*
- 3.2 DISCUSSION OF I-GOOS' RELATIONSHIP WITH GSSC*
- 3.3 ACTIONS*

4 JCOMM

- 4.1 REPORT FROM THE JCOMM CO-PRESIDENT*
- 4.2 DISCUSSION OF JOINT JCOMM ACTIVITIES WITH GSSC, RELATIONSHIP WITH GRAs*
- 4.3 DISCUSSION OF POTENTIAL JOINT TASK TEAMS WITH JCOMM*
- 4.4 ACTIONS*

5 OPEN OCEAN MODULE OF GOOS

- 5.1 REPORT FROM OOPC REPRESENTATIVE*
- 5.2 REPORT FROM GCOS REPRESENTATIVE*
- 5.3 REPORT FROM IGOS OCEAN THEME CO-CHAIR*
- 5.4 DISCUSSION: STRATEGY FOR THE OPEN OCEAN MODULE OF GOOS*
- 5.5 ACTIONS*

6 COASTAL GOOS

- 6.1 REPORT ON THE COOP IMPLEMENTATION STRATEGY*
- 6.2 REPORT FROM THE GTOS REPRESENTATIVE*
- 6.3 REPORT FROM THE IGOS COASTAL THEME CO-CHAIR*
- 6.4 DISCUSSION: POTENTIAL FORMATION OF A JOINT GOOS-GTOS COASTAL PANEL*

6.5 *PAN AFRICAN LMES/GOOS-AFRICA LEADERSHIP WORKSHOP ON OPERATIONAL OCEANOGRAPHY AND REMOTE SENSING*

6.6 *THIRD FORUM OF THE GOOS REGIONAL ALLIANCES*

6.7 *GOOS PILOT PROJECTS*

6.7.1 CODAE

6.7.2 Global Chlorophyll Pilot Project

6.7.3 FerryBox

6.7.4 ADRICOSM

6.8 *DISCUSSION: COASTAL ACTIVITIES, PRODUCTS, TECHNICAL ISSUES, NEEDS*

6.8.1 Role of GRAs and links with other bodies (I-GOOS, JCOMM, etc.)

6.8.2 Transition to operational activity

6.9 *ACTIONS: ANY RECOMMENDATIONS OF PANELS AND/OR TASK TEAMS TO BE SUGGESTED TO I-GOOS*

7 GEO

7.1 *REPORT FROM THE GEO SECRETARIAT DIRECTOR*

7.2 *REPORT ON OCEAN COMUNITY CONTRIBUTIONS TO AND BENEFITS FROM GEO*

7.3 *GOOS LEAD CONTRIBUTIONS IN THE GEO 2006 WORKPLAN*

7.3.1 Gap analysis

7.3.2 Others

7.4 *DISCUSSION*

7.5 *ACTIONS*

8 CAPACITY BUILDING

8.1 *IOC CAPACITY BUILDING STATUS, PLANS AND INTERACTION WITH GOOS*

8.2 *IODE*

8.3 *DISCUSSION*

8.4 *ACTIONS*

9 OUTREACH AND COMMUNICATIONS

9.1 *IEEE/GEOSS ARCHITECTURE AND DATA USER FORUMS*

9.2 *GPO REPORT ON OUTREACH AND COMMUNICATIONS*

9.3 *DISCUSSION*

9.4 *ACTIONS*

10 RELATED ACTIVITIES

10.1 *GPO REPORT ON LIAISON PRIORITIES AND ACTIVITIES*

10.2 *DISCUSSION*

10.3 *ACTIONS*

11 REPORT FROM WORKING GROUPS

11.1 *COMMUNICATIONS AND OUTREACH*

11.2 *PRIORITIES AND LIAISON*

11.3 COASTAL GOOS

12 REVIEW OF ACTION ITEMS FROM GSC-VIII

12.1 CONSOLIDATED LIST OF RECOMMENDATIONS TO IGOOS

13 MEMBERSHIP ROTATION

14 CALENDAR OF GOOS MEETINGS IN 2006

14.1 There was no report on the GOOS calendar.

14.2 The Committee did not discuss the GOOS calendar.

15 NEXT GSSC MEETING

16 LIST OF ACTIONS

ANNEX II

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ANNEX III

LIST OF DOCUMENTS*

Document Code	Title	Agenda item	Lang.
WORKING DOCUMENTS			
GSSC-IX/1 prov.	Provisional Agenda	All	E only
GSSC-IX/2 prov.	Provisional Timetable	All	E only
GSSC-IX/3 prov.	Summary Report of the session (to be prepared during or after the session)	All	E only
GSSC-IX/4 prov.	Provisional List of Participants	All	E only
GSSC-IX/5 prov.	Provisional list of Documents (this document)	All	E only
GSSC-IX/6	Report from GSSC Chair	2.1	E only
GSSC-IX/7	Report from GPO Director	2.2	E only
GSSC-IX/8	JCOMM	4.	E only
GSSC-IX/9	Report from OOPC representative	5.1	E only
GSSC-IX/10	Links with GTOS	6.4	E only
GSSC-IX/11	GOOS Africa document	6.5	E only
GSSC-IX/12	GRA Forum Planning	6.6	E only
GSSC-IX/13	Chlorophyll Pilot Project Pre Planning Meeting Report	6.7.2	E only
GSSC-IX/14	Proposed GOOS-POGO "Gap analysis"	7.3.1	E only
GSSC-IX/15	GEO Coastal Zone Community of Practice	7.3.2	E only
GSSC-IX/16	Report on Ocean Community Contributions to and Benefits from GEO	7.4	E only
GSSC-IX/17	Developing Capacity to develop and use Operational Products and Services to address societal needs in Developing Countries: Enhancing the contribution from IOC Capacity Building	8.1	E only
GSSC-IX/18	List of Liaison Priorities	10.1	E only
GSSC-IX/19	List of Action Items from GSSC-VIII	12.	E only
GSSC-IX/20	Report on the COOP Implementation Strategy	6.1	E only
INFORMATION AND OTHER REFERENCE DOCUMENTS			
GSSC-IX/B1	IGOS-P Coastal Theme Report	6.	E only
GSSC-IX/B2	COOP Implementation Plan	6.	E only
GSSC-IX/B3	GEO Workplan for 2006, version 3	7.	E only
GSSC-IX/B4	GSSC-VIII Report (Melbourne, Australia, 21-23 February 2005) (GOOS Report No. 144)	All	E only
GSSC-IX/B5	Letter of invitation to attend GSSC-IX (IOC Letter No. 519/GOOS/PB/KA/hhl)	All	E only
GSSC-IX/B6	IOC Resolution XXIII-5 & XXIII-16	All	E only
GSSC-IX/B7	OOPC-X Report	5.1	E only
GSSC-IX/B8	GOOS-related Meeting 2006-2007 Calendar	10.1	E only
GSSC-IX/B9	Letter from I-GOOS Chair	5.	E F
GSSC-IX/B10	Report to the sponsors, on activities of the IOC Perth Regional Programme Office, Western Australia	2.4	E only
GSSC-IX/B11	JCOMM Capacity Building Rapporteurs' CV (to be submitted to the Joint JCOMM-GOOS Task Team for Resources for selection)	4	E only

* This list is for reference only. No stocks of these documents are maintained.

ANNEX IV

LIST OF ACRONYMS

ADRICOSM	ADRIatic sea integrated COastal areaS and river basin Management system
BNSC	British National Space Centre
CEOS	Committee on Earth Observation Satellites
CIDA	Canadian International Development Agency
CLIVAR	Climate Variability and Predictability
CNES	Centre national d'études spatiales (France)
CODAE	Coastal Ocean Data Assimilation Experiment
COOP	Coastal Ocean Observations Panel
CPR	Continuous Plankton Recorder
DBCP	Data Buoy Co-operation Panel
EC	European Commission
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
ESA	European Space Agency
FAO	Food and Agriculture Organization of the United Nations
GE-BICH	Group of Experts on Biological and Chemical Data Management and Exchange Practices
GCN	Global Coastal Network
GCOS	Global Climate Observing System
GCOS IP	Global Climate Observing System Implementation Plan
GCRMN	Global Coral Reef Monitoring Network
GEF	Global Environment Facility
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GLOSS	Global Sea-Level Observing System
GMES	Global Monitoring for Environment and Security
GODAE	Global Ocean Data Assimilation Experiment
GPS	Global Positioning System
GPO	GOOS Project Office
GOOS	Global Ocean Observing System
GRACE	Gravity Recovery and Climate Experiment
GRAs	GOOS Regional Alliances
GRAND	GOOS Regional Alliances Network Development
GRC	GOOS Regional Council
GSSC	GOOS Scientific Steering Committee
GTOS	Global Terrestrial Observing System
GTS	Groupe de Travail Scientifique
ICES	International Council for the Exploration of the Sea
ICPC	Interagency Coordination Panel for Earth Observations
ICSU	International Council for Science
IECC	Institute of Electrical and ElectronicS Engineers
IGBP	International Geosphere-Biosphere Programme
IGOS	Integrated Global Observing Strategy
IGOS P	Integrated Global Observing Strategy Partnership
I-GOOS	Intergovernmental Committee for GOOS
IMarEST	Institute of Marine Engineering, Marine and Technology
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IODE	International Oceanographic Data and Information Exchange
ISC	International Scientific Committee

JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JCOMM-MAN	JCOMM Management Committee
JCOMM TT	JCOMM Task Team
J PICO	Joint GOOS GTOS Coastal Panel
LME	Large Marine Ecosystem
LOICZ	Land-Ocean Interaction in the Coastal Zone
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
ODIN	Ocean Data Information Network
OOPC	Ocean Observations Panel for Climate
PICES	North Pacific Marine Science Organization
PIRATA	Pilot Research Moored Array in the Tropical Atlantic
POGO	Partnership for Observation of the Global Ocean
SAHFOS	Sir Alister Hardy Foundation for Ocean Science
SCOR	Scientific Committee on Oceanic Research
SOOP	Ship-of-Opportunity Programme
SST	Sea Surface Temperature
TEMA	Training, Education and Mutual Assistance programme (IOC)
TOR	Term of Reference
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNFCCC	United National Framework Convention on Climate Change
WCRP	World Climate Research Programme
WESTPAC	IOC Sub-Commission for the Western Pacific
WMO	World Meteorological Organization