Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

The Global Ocean Observing System (GOOS) Regional Alliances Forum (GRF)

Fourth Session
25-27 November 2008
Guayaquil, Ecuador

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ABSTRACT

This Report of the Fourth GOOS Regional Alliance Forum (25-27 November 2008, Guayaquil, Ecuador) summarizes the main plenary discussions and presents the action items arrived at by the representatives of the twelve GOOS Regional Alliances (GRAs). Discussions covered the role of the GRAs in furthering the goals of coastal GOOS, the governance of the GRAs by the IOC and GOOS Programme Office, interactions of GRAs with Large Marine Ecosystem programmes and other programmes. Reports summarizing the achievements of the individual GRAs were presented. A wide variety of systems are moving successfully ahead across the globe under GRA programmes. However the presentations revealed a discontinuity and lack of communication between GRAs. The GOOS Regional Council was discussed and formed by six of the GRAs (joined by two more in January 2009) under the co-chairmanship of MedGOOS and EuroGOOS.

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1 OPENING AND WELCOME

Captain Galo Garzon Lopez, Director of INOCAR, opened the IV GRA Forum by welcoming all the participants to Guayaquil. He explained that Guayaquil is connected to the world by a river that has benefited Guayaquil with a maritime trade economy. Guayaquil has long needed knowledge of the sea, currents and tides. Observations and experience passed a form of this knowledge, from generation to generation. From these first stepping stones of knowledge of the ocean modern studies of the ocean now allow us to develop technical and scientific tools to manage ocean issues and take advantage of benefits of the sea. Guayaquil welcomes the international collaborative effort of GOOS and this Forum which highlights assistance at the regional level with GRAs.

Javier Valladares, chair of IOC, welcomed the IV GRA Forum. J. Valladares noted the strength of the GRAs was in the diversity of governance forms that they are allowed to exploit. Through this flexibility the GRAs may campaign for support for GOOS goals in ways the IOC cannot. Namely by actively soliciting support from their member states for the regional goals of GOOS and by encouraging the member state delegations to IOC to become involved in the support for IOC and GOOS activities. J. Valladares took this opportunity to invite the participants to enjoy and support the activities surrounding the 50th anniversary of IOC in 2011.

Mario Alberto Palacios Moreno, on behalf of the CPPS (Comision Permanente del Pacifico Sur), welcomed the participants to the IV GRA Forum. The governments of the member countries of CPPS have supported the formation of the GRASP and activities of GOOS. The CPPS shares the purpose of the Forum providing opportunities to share best practices and support methods. The GRAs can strengthen one another through this Forum. CPPS, IOC, WMO and UNEP have organized the Reunión Interministerial de la CPPS sobre Cambio Climático Global y sus Impactos en los Ecosistemas Marino y Costeros del Pacífico Sudeste meeting for 28th Nov. The participants of the GRA IV Forum have been invited to attend this meeting. The 10th Global Meeting of the Regional Seas Conventions and Action Plans is working simultaneously with the GRA IV Forum, to best articulate collaboration. The 4th GRF and 10th Regional Seas will submit recommendations to the authorities for climate change research and mitigation strategies to the ministerial. The ministerial can be a model to reproduce these efforts in other regions. M. Palacios regretted to inform us that Mario Silva, chair of GRASP, was not able to attend the Forum due to other commitments. Julian Augusto Reyna Moreno will replace M. Silva to represent GRASP and take the role of chairman of the Forum.

Julian Augusto Reyna Moreno, chairman of GRA IV Forum thanked M. Palacios and the GRA chairs for the honour to act as chairman of the Forum. He briefly set the topics of the discussions for the three day Forum: interactions between GRAs; the importance of the GRC; the Coastal Implementation Plan; observation and forecast products of the different GRAs; study the horizontal cooperation mechanisms between the GRAs, such as MOUs.

Thomas Gross, IOC Secretariat, presented a review of the previous GRA III Forum held Nov. 2006 in South Africa, based upon the Summary Report on the Third GOOS Regional Alliance Forum (GSSC-X/4.2), by John Field which was prepared for the GSSC-X. See also the Third GOOS Regional Forum Report (GOOS-159).

2 PROGRAMMES REPORT

2.1 REVIEW OF THE IMPLEMENTATION STRATEGY FOR THE COASTAL MODULE OF GOOS BY FRANÇOIS GÉRARD.

François Gérard, chairperson of I-GOOS presented a view of the role of GRAs in the GOOS implementation strategy. The GOOS coastal implementation strategy relies upon the GRAs. However the GRAs cannot reside within the IOC institutional framework as the GRAs should not be governed as IOC intergovernmental bodies. The IOC welcomes new alliances, but does not create them. The GOOS Regional Council should be the functional unit which interfaces between the collective needs of the GRAs and the IOC. The IOC stands ready to cooperate and support the GRAs, as all recognize the role of GRAs in implementation of coastal GOOS. The IGOOS-VIII work plan for 2007-2009 calls for sustainable, regional development of coastal GOOS. The object of the GOOS modules is a unified system of systems, building the workflow from observation to information. The Regional Alliances are key at both ends, as a source of observations and the key users of the information providing Societal Benefits. The key societal requirements for GOOS:

1. Understanding, assessing, predicting, adapting to climate variability and change ;
2. Reducing loss of life and property from natural and man-induced disasters;
3. Improving weather information, forecasting and warning ;
4. Improving management and protection of ecosystems, protecting biodiversity ;
5. Improving management of energy resources.

The GOOS system is built upon the Regional Ocean Observation Systems, ROOS, satisfying regional needs. Climate ROOS is the worldwide system, the other ROOS's answer local and regional needs, usually with a coastal emphasis. The future of GOOS will be determined by how we fill in the “GOOS Gaps”. Forty percent of the climate module is not available; Satellite missions are discontinuous; Polar areas are not part of GRAs or the climate module; GLOSS needs to increase its user base; non-physical variables are under sampled; not all IOC member states contribute to GOOS; GOOS's universal ownership and sustainable funding mechanisms have not been attained. The GRAs play an important role in bridging the Gap, by providing universal access and ownership through regional alliances. The key to success for GOOS is the production of sustained data streams and derived information which is recognized and used by policy makers.

2.2 GOOS STRATEGIC PLANNING FOR GOOS REGIONAL ALLIANCES (GRAS), BY KEITH ALVERSON, GPO.

Keith Alverson, Head of GOOS Program Office, IOC Paris, reported on the coordination and support role of the GPO and IOC for the GRAs. He emphasized that the GRAs develop their own policies and strategy and do not require advice or consent from the IOC or I-GOOS in Paris. The role of the I-GOOS is to provide a coordination mechanism for sustained observation of the oceans. The GRAs generate the content of Coastal GOOS and are a platform for the generation of ocean products and activities. The GOOS is designed to provide societal benefits and be a part of the research process. The GOOS coordinates a broad range of partners and members, including: WMO, IOC, UNEP, ICSU, GEO, CEOS, WIGOS, JCOMM, IODE, GCOS, WCRP, and scientific unions, national and regional agencies. A new form of the GOOS organization chart

emphasizes the governance role of IGOOS, the scientific advice role of the GSSC and PICO and OOPC and the implementation roles of: GRAs, GPO, JCOMM and IODE.
Keith Alverson outlined the GPO budget, which only includes support for secretariat functions and has very little discretionary budget to fund activities, such as this GRA Forum. This Forum is the entire activities budget for 08-09. The GOOS Regional Council must seek its secretariat and activities funding from within the GRAs, by approaching the GRA supporting agencies directly, not through the GPO. In the recent years the GOOS Global module has proven an invaluable asset to the global climate change debate by providing scientific support for the UNFCCC. The Argo network has rewritten our understanding of the upper 2000 meters of the world oceans. It, like most coastal observation networks, is expensive and continues to be funded through research proposals. It is up to the GRAs, through regional councils and member states, to effectively implement the GOOS systems. To grow and sustain the observation systems we must link operational observations with research programmes. We should not always require a transition from research to operations. The system should support both at once.

GOOS outreach and communication efforts must be enforced, working together to integrate the system helps to communicate value and increases sustainability. However we must be aware that too much synergy can be negative, when it creates a larger, less defined and more complicated system which costs participants more to be involved in than it returns in value. To avoid this we must deliver value to the participants to cooperate and avoid being everything to everyone. If we add too much to the system we will not be able to sustain the backbone of the system. The GCOS succeeds in this regard by the identification of the essential climate variables providing focus and clarity to the GCOS mission. In addition to key variables of the observing system the value of technology development, capacity building and engagement of the user community cannot be neglected.

The committee discussed how the GOOS should move forward in the community of other high visibility observing system initiatives, such as GEOSS. GOOS is not well recognized by the satellite observing system communities which dominate GEOSS at this time. GOOS should more aggressively move forward to establish itself as the “Ocean component of GEOSS”. GOOS does not need more complicated structures, it needs to pull partners together by concentrating on societal benefits which manifest value for key users.

2.3 WMO STRATEGIC PLANNING FOR GRAS, BY EDGARD CABRERA, WORLD METEOROLOGICAL ORGANIZATION (WMO).

Edgar Cabrera, World Meteorological Organization, JCOMM, presented the WMO Contribution to GOOS Regional Alliances. The WMO is expanding and building a global strategy to move observations from instrument to information users. The GRAs should be beneficiaries and contributors to this system of services. Regional Marine Demonstration Projects (e.g. West Africa) are testing the integration of the systems and delivery of products to users in the marine sector. A major push to provide this emphasis for WMO is the new WMO Information System, WIS. The WIS is intended to improve services and information delivery through a more flexible network system which will incorporate new technologies and internet methods and interfaces with the traditional WMO Global Telecommunications System, the GTS. The WIS recognizes and works with the proliferation of systems which have grown up spontaneously around the world, catalysed by simple internet availability. National Centres, NCs, will retain autonomy, while working well with the WIS and thereby providing managed, regionalized communication networks. Further information about the WIS may be accessed through the WIS reference document site: http://www.wmo.int/pages/prog/www/WIS-Web/home.html.

The committee warned that the WMO's choice of name for the WIS may cause difficulties. If it is to be a global integrating system, is it wise to name it after just one of the organizations which will be involved? Does this indicate a propriatory ownership by WMO, which may cause political difficulties for acceptance? Rather choose a name which encourages the happy idea of encouraging data sharing.

2.4 IOC SECRETARY PRESENTATION BY PATRICIO BERNAL, ADG IOC

Patricio Bernal, ADG IOC reported on IOC and support of the GRAs. The IOC works on behalf of and through the action of member states. The commission acts according to the resources made available for the commission by the member states. The commission does not finance activities through other means. The IOC budget specifies only coordination and promotion activities and has no budget to sustain operational activities, which are financed through individual state programmes. That said, the IOC coordination activities are in order that all states may benefit from ocean science and services. In particular IOC activities are related to policy support. The IOC is looking for the way forward. Since 1992, when GOOS was conceived, we have changed the way of global observation systems. This enabled the UNFCCC and greatly influenced climate change perception. When planning the GOOS the climate system came first and was central to development of GOOS. The next phase of GOOS development will depend upon the GRAs which are in place to initiate the coastal observation systems. The development of coastal GOOS using the centralized model which gave us the climate module, does not work. GOOS needs the GRAs and systems established by the initiative of regions. Early GRAs were regional articulations of the global GOOS initiated from the centre outwards. An example is the buoy system off of South America. It integrates with the global system, but regional needs recognize the role of the ocean data in improving precision of regional climate and weather forecasts. The value to the regional economy can be measured in millions of dollars. A clear demonstration of these benefits must be transmitted to the political authorities. The Friday ministerial will concentrate on climate change, sea level elevation change and present the case for regional demand for data which can drive the GRAs. Demonstration projects are key to this communication. Seed funding can demonstrate usefulness and benefits to society and make the case for institutional support. The funds are there, and can be accessed through delivery of information products with clear use to coastal area properties and the social fabric. The ability of the IOC to plan at this level is very weak. The GRAs must justify regional plans and execute implementation. The GOOS Regional Council will be a very important contribution to GOOS. The IOC needs to be able to image how information will travel across levels and regions. IOC planning for the next biennium is underway. The IOC will review structures of its subsidiaries at the next IOC assembly in June 2009. Structures such as those that exist between IOC and WMO have been very successful, but others are burdened by the intergovernmental mechanisms. The GRAs and the GRC are far better mechanisms to coordinate smaller scale regional issues.

F. Gérard, chair I-GOOS, noted that so many people are dealing with the same ocean coordination activities that we might be lost. The success of GRAs is the ability to think at the project level. So GRAs should focus on regional projects and should be able to coordinate bodies that can be contracted to aid that effort. Without that ability we could be lost in the sea of many organizations. The GEOSS may not know about GOOS and IOC. The GEOSS and IOC appeal to two different communities. GEOSS is driven by state agencies, while IOC appeals to the UN intergovernmental agenda. Nevertheless we must inform this other community. GEOSS is an overarching infrastructure. IOC is well known in that arena. The lower detailed levels of GEO

activity may be a better place for GOOS and GRA experts to become engaged in GEOSS planning.
The representative of SEA-GOOS noted that our projects should satisfy local needs. This is best to attract funds. A project to determine changing risk of floods due to changing rise in sea level could be very useful and very expensive. The dialogue with decision makers has not been easy for them to understand. We need simpler language to explain our technical interest to elicit their political will.

2.5 NEW COOPERATION MECHANISMS, WORK PROJECTION AND COMMON PRODUCTS WITHIN GRAS BY JULIAN AUGUSTO REYNA MORENO, IOC BOARD

Julian Augusto Reyna Moreno, the meeting chair and IOC board member, demonstrated the value of cooperation mechanisms between GRAs by highlighting the common problems of coastal flooding. In Cartagena Columbia, a UNESCO World Heritage site, the sea regularly inundates the low lying parts of the city. The ramparts of the ancient city are under attack and modern parking garages and roads are flooded during rain storms and by coastal sea level changes. The inhabitants of Cartagena and many other similar cities continue economic development in these endangered locations. The processes are not well enough understood to sustain these developments and people continue to move into the areas where real estate values continue to climb. In addition low lying areas with impoverished populations have been displaced by continual flooding. Similar problems exist in most of the GRA areas, including the Pacific Islands, where up to 100,000 people inhabit low islands of only three square kilometres. The motivation for the GRAs to share expertise and experiences with these problems is great. GRASP and IOCARIBE-GOOS are working together on coastal erosion issues, effectively doubling our research budgets toward these problems. OCEATLAN, IOCARIBE-GOOS and GRASP share participation on this work. Bi-lateral and three way MOUs have formed an effective strategy increasing cooperation for South America. GOOS-Africa has had good experiences sharing the satellite imagery from the ChloroGIN programme between GRAs. These coastal mapping programmes are very good crossing projects for the GRAs.

2.6 REVIEW OF PICO-I MEETING BY JOSE H. MUELBERT AND PAUL DIGIACOMO, CO-CHAIRS PICO

José H. Muelbert and Paul DiGiacomo, co-chairs of Panel for Integrated Coastal Observations (PICO) presented a summary of the history and status of PICO, review of the PICO-I meeting and activities anticipated for the near future. GOOS is comprised of two components: an open ocean component advised by the Ocean Observations Panel for Climate, OOPC, and a coastal component, implemented through member states cooperating through GOOS Regional Alliances. The Coastal Ocean Observations Panel, COOP, wrote the Integrated Strategic Design Plan (Report No. 125 – 2003) which describes a framework for how the community of nations can address coastal issues of mutual concern. The Implementation Strategy (Report no. 148 – 2005) mapped the establishment of the regional coastal ocean observing systems (RCOOSs) and the Global Coastal Network, which eventually became the GRA system. An important concept of provisional common variables with standards and protocols forms the unification of the coastal systems. Following the submission of the recommended actions for implementation the COOP dissolved itself and passed responsibility for oversight and guidance to the GOOS Scientific Steering Committee, GSSC. To focus attention on coastal issues the 3rd GOOS Regional Forum requested the GSSC to form the PICO from GSSC membership, while acknowledging the key role independent GRAs would play in development and implementation of the GOOS coastal

component. The PICO interfaces GOOS with other coastal programmes, such as the GEO Coastal Zone Community of Practice, CZCP, GTOS, IGOS and GCOS.
PICO's Terms of Reference set out their primary mission: to provide technical advice needed for scientifically sound implementation; liaise with relevant scientific and technical organizations; provide expertise and advice to the GSSC on development of operational elements of the Coastal module; advise GSSC regarding capacity building needs; update actions plans and implementation strategy; organize periodic assessments of coastal GOOS progress. Recommendations from PICO included a plea for cooperation with the GRAs to inventory projects and programmes occurring in their coastal waters which would be of benefit to the coastal GOOS.
GOOS-Africa questioned whether the provisional common variables list had been updated in light of technical advancements and changes in priorities since they were devised. The PICO is addressing updates of the variable lists in light of climate change priorities and lessons learned.
EuroGOOS pointed out experiences with pilot projects which were seen to delay implementation of systems. European pilot projects stress identification of local best practices and expansion from small scale to regional operational products.
GRAs members acknowledged the valuable service PICO performs by interfacing with the GEO through the CZCP. The very size of GEO has created a communication challenge, which PICO should seek to address for GRA participation in GEO. CZCP is looking to the GRAs to be in the GEO community. PICO should represent GRAs in CZCP workshops, in particular the upcoming West Africa GEO workshop which will emphasize the issues of coastal flooding.

Action 1 *Engage the GEO/GEOSS process through the CZCP and other mechanisms. Make it clear that GOOS is the ocean component of GEOSS.*

Action 2 *GRAs to review the recommendations contained in GOOS Report #148 and provide guidance to PICO concerning their priorities.*

2.7 LME PROJECTS AND THEIR CONTRIBUTIONS TO GOOS, BY NED CYR, CHAIR US GOOS

Ned Cyr, chair US-GOOS, reviewed Large Marine Ecosystem, LME, projects and their contributions to GOOS efforts. Seventy LMEs have been designated across the world's oceans. LMEs are coastal ecosystems, containing a significant majority of the world's fisheries. These over stressed coastal regions geographically overlap with the GRA designations. The Global Environment Facility, GEF, has funded management and assessment projects within the LMEs to a total of more than $200 million, with as much as $1 billion mobilized in matching and related funding. The LMEs emphasize five modules: Fish & Fisheries; Pollution & Ecosystem Health; Productivity; Socioeconomics; and Governance. LME products, observations and indicators are very similar to GEOSS, GOOS and GRA objectives and core variables, albeit with an emphasis on living resources and ecosystems. It is clear that with such overlapping objectives, geographic extent, techniques and limited resources the LMEs and the GRA activities must leverage one another. Examples of possible leverage activities were given, including oceanographic surveys, contaminant monitoring, biodiversity surveys, CPR/UOR transects and remote sensing. Capacity building is also an important goal of both LMEs and GOOS programmes. Suggested objectives to further LME – GRA cooperation were given:

Action 3 *Facilitate awareness and communications between the GRA and LME communities through global or regional workshops or other mechanisms.*

Action 4 *Initiate contact between co-located GRAs and LME projects where it's not already occurring.*

Action 5 *Transfer the lessons learned from the successful GOOS-Africa - Benguela LME Program collaboration to other regions.*

The discussion emphasized that GOOS and GRAs should be involved with the initial planning of the LMEs in order to better coordinate future cooperation. Ambitious goals of the LMEs and GRAs in services, products and contributions may stretch already limited resources of some GRAs. The GRAs must concentrate on usable products which would have an impact on the region and be useful to the LMEs.

2.8 DEVELOPING SYNERGY BETWEEN LMES AND GRAS, BASED ON GOOS-AFRICA'S EXPERIENCE BY GEOFF BRUNDRIT, CHAIR GOOS-AFRICA

Geoff Brundrit, chair GOOS-Africa, described the cooperation between the Benguela Current LME and the GOOS-Africa GRA. The Benguela LME had a $38M budget, with the GEF allocating half and the three participating countries providing matching funds for the other half. Before the GEF releases its contribution a full strategic action programme is composed. The national governments must agree to the plan before the funding begins. Now that the Benguela programme is finished, and the initial objectives realized, the remaining objective is how will the programme be continued? The GOOS model may provide part of that answer for the LMEs. The LMEs cooperate with GOOS to their advantage in receiving variables and observations they could not get without GOOS. GOOS participants bring different expertise than the abilities of the fisheries practitioners who dominate the LME process. Integration of satellite remote sensing into LME studies is an example of the GOOS contributions to LMEs. On the other hand the GOOS and the GRAs stand to benefit from the LME experiences with biological data observations. The GRAs should become involved in the LME planning to include observation system sustainability by nations into the objectives of the LMEs. An LME legacy would become a permanent political body, a commission, to implement the operational eco-system approach. Within the Africa LMEs capacity building is an important legacy which GOOS can readily participate in.

2.9 GOSIC, ENABLING DATA AND INFORMATION EXCHANGE FOR GRAS, BY CHRISTINA LIEF, NOAA.

Christina Lief, Programme Manager of Global Observing Systems Information Center, GOSIC, NOAA/NESDIS/NCDC, reviewed the status of the GOSIC data portal. The concept of GOSIC is that it will provide a single portal to access data, metadata and information for GOOS, as well as GTOS and GCOS. The GRAs should also be included and GOSIC welcomes any contributions to the portal offered by the GRAs. The GOSIC site interfaces to the data access tools created by the GOOS, GTOS and GCOS programmes and their partner providers. By request of the GTOS secretariat, a Data Access Matrix was designed to provide a common entry to these many data sets. The Data matrix, which reveals the essential climate variables, is very popular with users. GOSIC is seeking to expand its support of GRAs. Each GRA has a data access page which should be examined and updated by the GRAs themselves. The GOSIC will develop a GRA users Forum to enable better communication and sharing between members of the GRAs. The GOSIC supports

the PI-GOOS, PI-GCOS and Pacific HYCOS with support of Joomla content management systems for their web pages (http://PI-GCOS.org http://PI-GOOS.org http://Pacific-HYCOS.org.

Action 6 *GOSIC to develop a Web-Forum for communications.*

Action 7 *GOSIC requests GRAs to examine their individual GRA pages and verify.*

Action 8 *Further develop the GOSIC web portal to be organized by regions and targeted at end product users. For GOSIC to consider.*

Action 9 *GRC secretariat task to keep up to date web portal information on GRAs.*

Action 10 *Develop a newsletter with information about GRA activities on a regular basis. Based on inputs to the GRA Web-Forum (see 7).*

2.10 ODIN CONTRIBUTIONS TO GRAS BY RODNEY MARTINEZ, ODINCARSA

Rodney Martinez Guingla, Regional Coordinator ODINCARSA, reviewed ODIN's contributions to GOOS Regional Alliances. The International Oceanographic Data and Information Exchange has been working with meeting the needs of users of oceanographic data since 1961. IODE's Ocean Data Information Networks, a network of 76 data centres, are primary means that IODE brings this expertise to the regions. The 2003 IOC oceanographic data policy requires that "Member states shall provide timely, free and unrestricted access to all data...". The data policy is key to interoperability between data centers and users and is a basis to constructive capacity building programmes. The ODINs are regional data centers, and provide capacity building linking training, equipment and operational support. The great advantage of the ODIN is that it will become self sustained. ODINs can help GRAs with capacity building, data quality control, national data infrastructure and developing products such as marine atlas, database development and other services. ODINAFRICA has organized sea level observation programmes and aided integration with the GTS network. The ODINCARSA network of institutions has, after seven years, motivated and trained persons, shared expertise across Latin America and the Caribbean, shared the vision of end to end capacity building. The training has produced a valuable network of people. The Southeast Pacific data and Information Network in support to Integrated Coastal Area Management, SPINCAM, Centro Internacional para la Investigación del Fenómeno de El Niño, CIIFEN and Caribbean Marine Atlas, CMA, are IODE inspired programmes delivering products and information to users in Central and South America. After several years we must assess our progress working together, and state our new expectations within a dynamic and complex international political and economical framework. Despite international efforts to implement GOOS in the regions, nothing will happen without the economic and political support from governments and realistic and feasible implementation plans.

2.11 ARCTIC ROOS, BY HANS DAHLIN, EuroGOOS CHAIR.

Hans Dahlin, director of EuroGOOS, presented an update on the plans to develop a sustained regional ocean observation system in the Arctic. EuroGOOS attempted to form an Arctic GRA in 2005, but were rebuked by both the ICES and the I-GOOS. The political atmosphere around the Arctic is such that claiming any sort of regional authority over the ocean will not be acceptable. An alternative strategy is to emphasize the need to organize Arctic issue studies, not the Arctic *per se*. Organized around this principle the Arctic ROOS was established by an MOU between Arctic research institutions as an informal association whose members seek to foster Arctic

cooperation on the GOOS. A large suite of Arctic observation systems has been identified and coordination begun. The Sustained Arctic Observing System, SAON, with Arctic Council member states as owners, has progressed further and seems to be the preferred instrument to develop the observation system, as the sustained legacy of the International Polar Year, IPY. The next steps for development of the Arctic ROOS will be to support SAON by demonstrating the necessity of a sustained Arctic observation system by: continuing with existing activities; furthering the GMES implementation plan through the MyOcean project; developing a plan for required sustained ocean monitoring; develop the new activity plan for Arctic ROOS.

3 REPORTS BY GOOS REGIONAL ALLIANCES AND GOOS NATIONAL COMMITTEES

A representative of each GRA made a brief presentation highlighting the progress in their respective regions since the Third Forum (South Africa, 2006). Reports emphasized developments in regional observing systems and interactions with other GRAs and national programmes. Links to reports submitted by each GRA previous to the Forum and corresponding Power Point presentations are listed in Annex III.

IOCARIBE-GOOS	Guillermo Garcia. Montero, co-chair of IOCARIBE-GOOS
GRASP	Mario Alberto Palacios Moreno
OCEATLAN	Janice Trotte, on behalf of Adm. Andrés Roque di Vincenzo
US GOOS	Ned Cyr
PI-GOOS	Paul Eastwood.
NEAR GOOS	Shao Hua Lin
IOGOOS	Alphonse Dubi
SEA-GOOS	Somkiat Khokiattiwong
EuroGOOS	Hans Dahlin
Black Sea GOOS	Valery Eremeev
MedGOOS	Kostas Nittis
GOOS-Africa	Geoff Brundrit
WAGOOS	Nick D'Adamo

Participants of the Forum agreed that advancements made by the individual GRAs are impressive and that regional ocean observing systems have demonstrated their worth time and time again. However most also stressed the need for greater support by member states and more coordination between GRAs leading to international support mechanisms. Political support will be translated into fiscal support only when value of the ocean observing system can be demonstrated by user demand for the information, products and services. Products and identification of user needs should be a high priority of all GRAs and a point where cooperation between GRAs would be most useful. The experience of several GRAs is that by providing some level of simple data products, sea level, winds, waves, a user base can be built which comes to rely upon the systems. Several GRAs expressed a need to consolidate on unified data policies and data interchange standards. Several are in use: IODE's, ODINs; IOOS DIF; EuroGOOS GMES, SEPRISE and MyOcean. Where possible the GRAs should collaborate on this issue.

Action 11 *Individual GRAs to investigate how the USGOOS Data Management Architecture might be applied.*

Action 12 *GRC to coordinate with the GRAs a common implementation plan based on the previously approved Coastal GOOS Implementation Strategy.*

Action 13 *GRC should help to establish centers of capability, such as the modeling centers. (Example of specialized responsibilities of institutions in the Australian OS.)*

Action 14 *GRAs gather information on projects and programmes occurring in their coastal waters which would be of benefit to GOOS and would contribute to GEOSS societal benefits.*

4 FORMATION OF GOOS REGIONAL COUNCIL (GRC)

The issue of the formation of the GOOS Regional Council was brought before the Forum. The GOOS secretariat summarized the history of the formation of the GRC.

The idea of a "council" has rapidly emerged from the GRA fora. But, although the general idea of having a body formally gathering all GRAs not only for exchange of experiences, but also for proposing and following actions, it has been difficult to define the place and role of such a council within the IOC-UNESCO legal framework. Recall the discussions during the Cape Town Forum before proposing a mandate *ans modus operandi* to I-GOOS-VIII. The conclusion was that establishing a council shall be an initiative from GRAs which are not all official IOC bodies, as part as a bottom-up process to develop GOOS. For this reason the IOC assembly "noted that the GOOS Regional Alliances constitute a GOOS Regional Council to advise I-GOOS regarding their collective needs." In the same resolution the Assembly gave some important strategic directives implicating the GOOS Regional Alliances, such as the implementation of the GOOS coastal network, the establishment of alliances for the Polar Regions, etc. Not being an official structure of IOC, the network of regional alliances has important degrees of freedom, with a high degree of responsibility towards the IOC and beyond IOC, towards GEOSS. IOC will never be a parent body to the GRC. This means that the future of GOOS is entirely in the hands of its actors all around the world, that the GRAs and the GRC will be judged from their initiatives and results.

The GRC was extensively discussed at the III GRF in Cape Town, 2006. During the third GRF, F. Gérard, chair of I-GOOS, reported that a proposal for a GOOS Regional Council (GRC) was also put forward at the Second Forum to coordinate development of GRAs that contribute to and benefit from GOOS and to represent the interests of GRAs as a group to the I-GOOS and the sponsors of GOOS. However, the Seventh Session of IGOOS (Paris, 4–7 April 2005) did not endorse the Terms of Reference of the proposed GRC. There was need to revise these Terms of Reference for the consideration of the I-GOOS at its Eighth Session (Paris, 13–16 June 2007).

The creation of the proposed GRC and its institutional status, whether or not as a Primary Subsidiary Body of IOC (i.e. created by the IOC Assembly or Executive Council) or as a Secondary Subsidiary Body of IOC (i.e. created by I-GOOS), and the proposed Council's terms of reference, were to be discussed by I-GOOS at its Eighth Session.

The chairman of I-GOOS proposed a structure linking the GRAs with the I-GOOS. The key question was "What place and role for GRAs within the legal framework of GOOS and IOC?". He introduced the concept of GOOS development through Regional Ocean Observing Systems

(ROOS) to be implemented through the GRAs under the guidance of I-GOOS. The web-link to F. Gérard's presentation (including the related GRA-GOOS organisational diagram) is provided in Annex III.
Further discussion at the 3rd GRA Forum suggested:

A global body, such as the proposed GOOS Regional Council, is needed to: ensure timely exchange of data and information; establish priorities for capacity-building; and represent GRAs as a group to I-GOOS and other global, international bodies, as needed.

JCOMM-GSSC-GRA Task Team recommended that the GRC should advise I-GOOS and JCOMM on GOOS-wide policies and procedures for developing an integrated coastal-global system. It is noted that the Task Team has not made recommendation as to how the linkage between I-GOOS and the proposed GRC should be set up in legal terms. If I-GOOS creates a GRC it would *de facto* make the GRC a Secondary Subsidiary Body of the IOC. If the GRC is created outside of I-GOOS and IOC it would in essence become a body with responsibilities for GOOS but outside the umbrella of I-GOOS.

Other comments on the GRC from throughout the III GRF:

- The proposed GRC coordinates GRA contributions to the GCN and Global Module of GOOS, and represents GRAs to the GSSC, IGOOS etc.
- The GRC should present GRA candidate programmes to the GSSC for identification, and transition to operations;
- All GRAs thus recognized should nominate a representative to serve on the proposed GOOS Regional Council (GRC);
- The GRC (if created) should elect a chairperson to serve as an ex-officio member of the I-GOOS Board;
- The terms of reference for the proposed GRC should be developed based on recommendations from the Third Forum.

The I-GOOS VIII was presented the document, *I-GOOS-VIII-10-GOOSRegionalCouncil.pdf* which requested IGOOS to decide on three proposals. Proposals A and B concerned recognition of GRAs and were enacted; Proposal C was about the GRC.

At I-GOOS-VII (Paris, France, 4-7 April 2005), it was proposed to establish the GOOS Regional Council as a formal body under I-GOOS. However, I-GOOS-VII did not agree to formally constitute a GRC, but did agree that the relationship between I-GOOS (intergovernmental) and the GRAs (not intergovernmental) needed clarification, especially on the subsidiary status of GRAs with respect to the intergovernmental governance provided by IOC and WMO through I-GOOS. Discussions about the formal status of the GRC *vis-à-vis* I-GOOS have continued since I-GOOS-VII. These discussions have take place in the light of the Implementation Strategy for the Coastal Module of GOOS, adopted in 2005, the work of the JCOMM-GSSC-GRA Task Team set up by the GSSC in March 2006, and the deliberations during the third GOOS Regional Forum. Based on these discussions the I-GOOS Board proposed to constitute the GOOS Regional Council as a group of experts under I-GOOS.

Member states expressed reservation concerning possible non-governmental representation in an intergovernmental body. The I-GOOS-VII Committee noted the formation of a GOOS Regional Council at the 2nd GOOS Regional Forum and made these decisions concerning the GRC:

Decision 8: I-GOOS recognized the formation by the GRAs of the GOOS Regional Council, and accepted the Terms of Reference as amended.

Decision 9: I-GOOS requested all recognized GRAs to nominate a representative to serve on the GOOS Regional Council (GRC).

Decision 10: I-GOOS noted that the I-GOOS chair may invite the chairperson of the GRC to the I-GOOS Board.

At IOC-XXIV, Resolution XXIV-7 says, in part:
"Further noting:
(iv) That the GOOS Regional Alliances have constituted a GOOS Regional Council to advise I-GOOS regarding their collective needs".

This does not mean that the IOC or I-GOOS created the GRC as any sort of body related to IOC or UNESCO. This leaves all responsibilities up to the GRAs and does not commit support as usually allocated to subsidiary bodies. I-GOOS may invite the chairperson of the GRC to the Board meetings.

4.1 DISCUSSION OF THE GRC AT THE IV GRF

The GRC formation work group presented a list of recommendations for the GRC and proposed a list of actions to be undertaken by a constituted GRC.

- The Terms of Reference accepted by the I-GOOS VIII are in no need of immediate amendment;
- An expansion of the tasks for the GRC might be useful, but GRC is already justified;
- GRC should create a biennium Action Plan for the Council;
- GRC should assure progress on tasks assigned by the 2008 GRA Forum;
- GRC advises the IGOOS Board on GRA contributions to GOOS.

KEY PRINCIPLES FOR THE GRC:

- Self Funding;
  but there are issues with some GRAs.
- chairperson candidates must be identified;
- Host organization of the chairperson will host the GRC meeting.
- Inaugural chairperson.

PROPOSED ACTION LIST FOR THE GOOS REGIONAL COUNCIL

1 Creation of the GRC:
   i. All GRAs thus recognized should nominate a representative to serve on the proposed GOOS Regional Council (GRC);
   ii. The GRC (if created) should elect a chairperson;
   iii. The terms of reference for the proposed GRC should be developed based on recommendations from the Third Forum and accepted by I-GOOS VIII.
2 GRC will create a biennium Action Plan and oversee its implementation by the GRAs;
3 The proposed GRC coordinates GRA contributions to the GCN and Global Module of GOOS, and represents GRAs to the GSSC, IGOOS etc;
4. The GRC should present GRA candidate programmes to the GSSC for identification, and transition to operations;

5. Complete an inventory to identify other global, regional or national initiatives and programs that will allow GRAs to leverage resources, and to avoid duplication: examples: LMEs, IWRM, HYCOS, UNEP Regional Seas Programs;
6. Maintain a dialogue intersessionally to progress GOOS implementation at regional level;
7. GRC should revisit the coastal GOOS implementation plan;
8. Complete an inventory of national, regional and international development partners, and identify how GOOS priorities align with their development objectives;
9. Work across GRAs to develop products that increase GOOS visibility, to enable GRAs to achieve sustained national and regional support (Example: GRASP ocean analysis bulletin for SE Pacific Region);
10. Develop a sustained and funded GRA communication and education strategy that builds on existing IOC initiatives: examples: IODE (Ocean Teacher) and UNESCO-Bilko, Ocean Portal, SEREAD;
11. The GSSC to work with the GRAs through the GOOS Regional Council to establish criteria for recommending to JCOMM the non-physical variables to be included in a list of "pre-operational" assets to be coordinated by JCOMM;
12. Problems and Issues for the GRC: Make a list of those that restrict the operation and effectiveness of the GRC and pass them on to the IOC through IGOOS or their member states.

The chairs of the GRAs were invited to discuss the formation of the GRC. As the GRC needs no further input from I-GOOS or the IOC to be "constituted" the GRC could be initiated by nominating and electing members and a chairperson and accepting or revising the ToR.

Some GRA representatives expressed reluctance to form a GOOS Regional Council. Developing countries would be burdened by supporting yet another committee with its requirements of attendance of additional meetings and extra reporting duties. Funding this activity could be an onerous responsibility for developing countries which are having difficulty funding the observations systems themselves. A lack of intergovernmental status and therefore a lack of member state mandated support would make this a weak and underfunded activity. It was noted that the GRC will be independent of the GOOS Paris office and that GOOS Programme Office has been directed by the I-GOOS not to provide monetary support. Funding for the GRC will be raised from within the GRAs.

Other GRAs anticipated positive progress would follow the establishment of the GRC. The value of the GRC would be proven by its actions. The GRC would greatly aid coordination with the GEOSS process as well as strengthen coordination within GOOS. GRAs need the reinforcement of the GRC to advance collaborative projects. Discussions at previous GRA fora have adequately demonstrated that the GRC would strengthen the GRA system and facilitate sharing of resources between GRAs and foster better North–South cooperation.

Many GRAs argued the inevitable necessity of forming the GRC and the history of prior approval of the GRC. The GRC recommendations and task list were met with general approval. It was noted that the GRA "club" already exists, as the convening of the four GRA fora attests. It has been difficult for the GOOS coastal module to move forward. The GOOS is a system built up in a special way, based on UN principles of consensus agreement and mutual aid. The only way forward is with international cooperation. The GRAs are purposefully not intergovernmental in order to be flexible. The maturity of the GRAs is now evident, as the remarkable presentations have demonstrated. It is time for the GRAs to stand on their own feet as the organization they already comprise.

The chairperson suggested that on this day a complete consensus will not be achieved on the establishment of the GRC. On this day, those GRAs which can commit to the GRC process could agree to the ToRs and announce their membership and approval. The chairperson of EuroGOOS and the chairperson of MedGOOS agreed to serve as co-chairs of the GOOS Regional Council and preside over this period of initialization. Other GRAs would be invited to consider their involvement with the GRC over the next several months and report their decision. The chair recognized these GRAs which immediately approved the GRC: MedGOOS, EuroGOOS, GOOS-Africa, Black Sea GOOS, US GOOS and PI-GOOS.

Action 15 *We establish the GOOS Regional Council today, with the volunteers [MedGOOS, EuroGOOS, GOOS-Africa, Black Sea GOOS, US GOOS, PI-GOOS] acting as a core group. MedGOOS and EuroGOOS will take joint responsibility to coordinate the process. The other GRAs can join as soon as they have agreement, preferably within two months (by Jan 31, 2009).*

Action 16 *GRC Terms of Reference will be reviewed by the GRC and adapted to the new framework.*

Action 17 *GRC to propose standard reporting procedures to the GRAs.*

5 CLOSURE

The action items which arose through out the Forum were compiled and discussed. The GOOS Regional Council will be tasked with the duty of attending the progress on the action items. The resultant action items are provided in the List of Actions and are located throughout the text of the report with the discussions which engendered them.

The chairperson thanked the participants for their efforts on behalf of the GRAs and GOOS. The chairperson also thanked the local hosts, CPPS and GRASP, for their support and hard work convening this Forum. M. Palacios formally closed the Forum at 17:30 pm, on Thursday, November 27, 2009.

6 LIST OF ACTIONS

ANNEX 1
AGENDA

DAY 1: 25 November 2008
Plenary Session 1

1. Opening Ceremony

1.1 Welcome Note to Guayaquil
1.2 Welcome Address by the chair of IOC, *Javier Valladares*
1.3 Opening Remarks by the ADG of IOC, *Patricio Bernal*
1.4 Introduction of documents and agenda, *Thomas Gross*, GOOS Programme Office (GPO).
1.5 Logistics by the Ecuadorian GRASP Coordinator, *Galo Garzon Lopez*, INOCAR Director
1.6 Review of Objectives and Outputs of the Forum
1.7 Results of previous GOOS Regional Forums
1.8 Summary of Progress since the last Forums
1.9 Introduction to GOOS Regional Council (GRC).

2. Programme Reports

2.1 Review of the Implementation Strategy for the Coastal module of GOOS, *François Gérard*.
Determine and compare priorities with PICO recommended actions.

2.2 GOOS Strategic Planning for GOOS Regional Alliances (GRAs), *Keith Alverson*, GPO.
I-GOOS, GSSC and PICO have ambitious goals for the GRAs and the GOOS coastal module. The IOC Medium Term Strategic Plan and Biennial 2008-2009 Strategic Plan set the Main Lines of Action, milestones and interactions with other IOC programmes which guide implementation of GRA support. Direct support from UNESCO, though the GPO, of GRA activities is limited to planning and organizational meetings and the activity support by GPO personnel. Additional GRA activities are supported through extra-budgetary sources, derived from the member states and the GRA organizations themselves. The GPO's role in assisting GRAs to solicit and obtain extra budgetary support through connectivity to the international community will be discussed.

2.3 WMO Strategic Planning for GRAs, *Edgard Cabrera*, World Meteorological Organization (WMO).
WMO/IOC cooperation has been fundamental to the growth of GOOS and GRAs. WMO priorities will support oceanographic-meteorological products of value to WMO and GOOS goals. GRAs play a vital role in providing regional and local expertise, data collection and dissemination of observation products. Mechanisms to support joint development and deployment of “operational products” will be of great importance to the strengthening of GRA Alliances and Networks of collaborative efforts

2.4 IOC Secretary Presentation, *Patricio Bernal*, IOC ADG.
Describe coordination and support mechanisms of the IOC for increasing the support of GRAs by increasing the involvement of users of the “operational products” issued by the GRAs. The IOC programmes work with academic institutions, national centres and international programmes to coordinate needs, capacity building and strengths of the member states and their regional associations.

2.5 New Cooperation Mechanisms, Work Projection and Common Products within GRAS: GRASP experiences with new mechanisms and instruments of international cooperation between IOCARIBE-GOOS and OCEATLAN. Memorandum of Understanding between these GRAs have formed “Horizontal and Complementary Level” and been advantageous to the development of international regional cooperation. The value of these bilateral and trilateral agreements between other GRAs and other cooperative mechanisms, such as the UNESCO IOC Perth Regional Programme Office experience in the context of the office

being a facilitator, coordinator and sponsor of four GRAs (IO, SEA, PI and WA GOOS) will be discussed.

2.6 Review of PICO-I Meeting, *José Muelbert*, PICO co-chair

2.7 Follow on to III GRA Forum on LME Cooperation.

2.7.1 The LME Concept, its development and contributions to GOOS, including GOOS Ecological Objectives, *Ned Cyr, Paul Digiacomo* and *José Muelbert.*

2.7.2 Developing Synergy between LMEs and GRAs, based on GOOS-AFRICA's experience, including the outcome of the two previous Pan-African Meetings, *Geoff Brundrit*

2.9 GOSIC - Enabling Data and Information Exchange for GRAs, *Christina Lief*, NOAA. The Global Observing Systems Information Centre provides support and an efficient mechanism for presenting GRA data, metadata, information and products under a single portal.

2.10 ODIN Contributions to GRAs and Cooperation between IODE & GOOS, *Rodney Martinez*, Coordinator ODINCARSA

DAY 2: 26 November 2008
Plenary Session 2

3. Working Groups

3.1 Plenary introduction to the objectives and expected outputs of Working Groups

3.2 Breakout Session 1

3.3 Progress Report of Working Groups

4. GRAs and Observation Systems

4.1 GRA Presentations

GRAs are requested to report on:

- "Strategic Alliance Plan, 4 to 8 years"
- "Alliance Activities Plan, Biennial (2 years)".
- Actual situation and prospective.
- Programmes for regional monitoring of core coastal variables (COOP implementation strategy).

GRAs should report on work toward:

1) Establishing User's Forums to engage user groups and identify regional needs, priorities, etc.

2) Compiling and maintaining data bases on variables being monitored in each region.

3) Compiling information of legal mandates, regulatory or statutory requirements relevant to GOOS.

4.1.1 Presentation of GRASP chair Representative *Gonzalo PEREIRA PUCHY*

4.1.2 Presentation of IOCARIBE-GOOS co-chairs *Guillermo Garcia MONTERO /Doug WILSON*

4.1.3 Presentation of OCEATLAN Technical Secreatariat *Janice TROTTE*

4.1.4 Presentation of US-GOOS chair *Ned CYR*

4.1.5 Presentation of PI-GOOS chair representative *Paul EASTWOOD* (SOPAC)

4.1.6 Presentation of NEAR-GOOS chair *Shao Hua LIN*

4.1.7 Presentation of IOGOOS chair Representative *Alphonse DUBI*

4.1.8 Presentation of SEA-GOOS chair *Somkiat KHOKIATTIWONG*

4.1.9 Presentation of EuroGOOS chair *Hans DAHLIN*

4.1.10 Presentation of Black Sea GOOS chair *Valery EREMEEV*

4.1.11 Presentation of MedGOOS chair *Kostas NITTIS*

4.1.12 Presentation of GOOS-Africa chair *Geoff BRUNDRIT*

4.2 Developing Regional Oceanographic Observation Systems:

4.2.2 Arctic ROOS, by *Hans Dahlin*, EuroGOOS chair.

4.2.2 WAGOOS (Western Australia ROOS), by *Nick D'Adamo.*

Report on the range of Western Australian GOOS-relevant programs, projects and future plans, including the IMOS (Australian Integrated Marine Observing System).

4.3 Information on emerging GOOS Regional Initiatives:
Interactive discussions on lessons learned and challenges for GRAs including Scientific and Technology gaps and Fund raising strategy

DAY 3: 27 November 2008
Plenary Session 3

5. Final Working Group Reports and Discussions

5.1 Final Report of Working Groups

5.2 Panel Discussions
Plenary discussions of the objectives, outputs, results and recommendations.

6. IV GRA Forum Actions

6.1 GOOS Regional Council:
Terms of Reference, Objectives, Support, economic aspects, Functions, Relation with GRAs and forms of election and participation. GOOS Regional Council Aids to GOOS and GRAs organization and results. Approval of "GOOS Regional Council": Comments. (Vote for approval). "GOOS Regional Council" Strategic Plan and Biennial Plan of Activities.

6.2 Other IV GRA Forum Action Items

6.3 Discussion / Recommendations

6.4 Integration

6.5 Adoption of the Forum Report

6.6 Closure of the Forum

ANNEX II
LIST OF PARTICIPANTS

I. GRA Chairs or Representatives

GOOS-AFRICA
Geoff BRUNDRIT
Professor Emeritus
Oceanography Department
University of Cape Town
Private Bag, Rondebosch
7700 Cape Town
South Africa
Tel: +27 (21) 7862308
Email: oceangeoff@iafrica.com

US GOOS
Ned CYR
Chief, Marine Ecosystems Division
National Oceanographic Atmospheric Administration
1315 East-West Highway
Silver Spring MD 20910
United States
Tel: (1 301) 713 23 63
Fax: (1 301) 713 18 75
Email: ned.cyr@noaa.gov

EUROGOOS
Hans DAHLIN
Swedish Meteorological and Hydrological Institute
Folkborgsvägen 1
SE-601 76 Norrköping
Sweden
Tel: +46 11 495 83 05
Fax: +46 11 495 80 01
Email: hans.dahlin@smhi.se

IO GOOS
Alfonse DUBI
Associate Professor and Director
Institute of Marine Sciences
University of Dar es Salaam
Mizingani Rd.
P.O. Box 668
Zanzibar
Tanzania
Tel: 255 - 24 -223 0741/223 2128
Fax: 255 24 223 30 50
Email: dubi@ims.udsm.ac.tz

PI-GOOS
Paul EASTWOOD
Secretariat of the Pacific Islands Applied Geoscience Commission
Private Mail Bag GPO
Suva
Fiji
Tel: +679 3381377 ext 293
Email: paul.eastwood@sopac.org

BLACK SEA GOOS
Valery EREMEEV
Professor
Oceanological Centre of NAS Ukraine
2, Kapitanskaya St.
Sevastopol
99011
Ukraine
Tel: +3 8 0692 54 41 10
Fax: +3 8 0692 54 41 10
Email: director@ibss.iuf.net

IO CARIBE
Guillermo GARCIA MONTERO
Director, Acuario Nacional de Cuba,
Presidente, Comité Nacional Oceanografio
Avenida 1ra y calle 60, Miramar Playa,
Habana
Cuba
Tel: +537-203-6401 al 06
Fax: +537-209 2737
Email: guillermog@acuarionacional.cu

SEA GOOS
Somkiat KHOKIATTIWONG
Phuket Marine Biological Center
Department of Marine and Coastal Resources
51 Dhidate Road
P. O. Box 60
PHUKET
83000 THAILAND
Tel: + 66 76 391128
Fax: + 66 76 391127
Email: skhokiattiwong@gmail.com

NEAR GOOS
Shao Hua LIN
Director Honor
National Marine Data and Information Service
93 SOA., Liu Wei Rd.,
P.O. Box 705
Hedong District
300171 Tainjin City
China
Tel: +86 22 2401 0803
Fax: +86 22 240 10926/ +86-22-24010820
Email: shlin@mail.nmdis.gov.cn

MED GOOS
Kostas A. NITTIS
Research Director
Hellenic Centre for Marine Research/Institute of Oceanography
46.7 Kur Athinon Souniou Av.
19013, Anavysos
Greece
Tel: +30 22910 76400
Fax: +30 22910 76323
Email: knittis@hcmr.gr

GRASP
Gonzalo PEREIRA PUCHY
Secretary-General, CPPS
Permanent Commission for the South Pacific
Av. Carlos Julio Arosemena, KM 3
Ed. Classic, 2 piso
Guayaquil
Ecuador
Tel: +593 4 222 12 02
Email: gpereira@cpps-int.org

II. GOOS SPONSORING ORGANIZATIONS

Intergovernmental Oceanographic Commission (IOC)
Patricio BERNAL
Assistant Director-General, UNESCO
Executive Secretary, IOC
1, rue Miollis
75032 Paris Cedex 15
France
Tel: +33 1 45 68 39 83
Fax : +33 1 45 68 58 10
Email : p.bernal@unesco.org

Javier VALLADARES
Chairman, IOC
Dirección de Relaciones Internacionales
Ministerio de Ciencia, Tecnología e Innovación Productiva
Av. Córdoba 831 Piso 4°
(C1054AAH) Buenos Aires
Argentina
Email: javieravalladares@yahoo.com

Julian Augusto REYNA MORENO
Vice Chair, IOC
Capitán de navío
Comisión Colombiana del Océano
Carrera 54 No. 26-50, PISO 4 CAN
Bogota D.C.
Colombia
Tel: +571 3158520 - 3158214
Fax: +571 3158217
Email: oceano@cco.gov.co

World Meteorological Organization (WMO)
Edgard CABRERA
Chief, Ocean Affairs Division
Applications Programme Dept.
World Meteorological Organization (WMO)
7 bis, avenue de la Paix
CH-1211 Geneva 2
Switzerland
Tel: +41 22 730 82 37
Fax: +41 22 730 81 28
Email: ecabrera@wmo.int

III. CHAIRPERSONS OF I-GOOS, JCOMM, IODE, OOPC, PICO

François GERARD
CGEDD-51
Tour Pascal B
92055 La Défense Cédex
France
Tel: +33 1 4081 2388
Email: francois.gerard@developpement-durable.gouv.fr

Hector SOLDI
Presidente del Directorio
Instituto del Mar del Perú
Av. Laguna Grande 1291
Casa Nro 6
Urb. Las Lagunas de la Molina - La Molina
Lima 12
Peru
Tel: +51 1 4293931
Fax: +51 1 6250802
Email: presidencia@imarpe.gob.pe

Rodney MARTÍNEZ
Scientific Coordinator
International Research Center on El Niño (CIIFEN)
Ciudad Celeste, Urb. La Estela,
Mz 2 villa 27
Ecuador
Tel: 59342514770
Fax: 59342514771
Email: guillito5@yahoo.es

Jose MUELBERT
PICO co-chair
Instituto de Oceanografia
Universidade Federal do Rio Grande
Caixa Postal, 474
Rio Grande RS
96201-970
Brazil
Tel: +55 53 3233 6513
Fax: +55 53 3233 6601
Email: docjhm@furg.br

IV. PARTICIPANTS AND EXPERTS

Galo GARZON
Director
Instituto Oceanográfico de la Armada del Ecuador
Ave. 25 de Julio, (Avenida de la Marina)
via Puerto Nuevo.
Base Naval Sur 5940
Guayaquil
Ecuador
Tel: + 893 4 2481 300
Email: direccion@inocar.mil.ec

Affonso MASCARENHAS
Director
International Research Center on El Niño (CIIFEN)
Escobedo 1204 y 9 de Octubre
Guayaquil
Ecuador
Tel: +593 4 251 47700
Email: a.mascarenhas@ciifen-int.org

Luis MORALES
Jefe Dpto. de Ciencias del Mar
Instituto Oceanográfico de la Armada
Ave. 25 de Julio, (Avenida de la Marina)
via Puerto Nuevo
Base Naval Sur 5940
Guayaquil
Ecuador
Email: lmorales@inocar.mil.ec

Christina LIEF
GOSIC Program Manager
NOAA NESDIS National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville NC 28801-5001
United States
Tel: +1-828-271-4101
Fax: +1-828-271-4022
Email: Christina.lief@noaa.gov

Mario Alberto PALACIOS MORENO
Scientific Director
Permanent Commission for the South Pacific
Av. Carlos Julio Arosemena, KM 3
Ed. Classic, 2 piso
Guayaquil, Ecuador
Tel: + 593 4 2221 202
Email: dircient@cpps-int.org

Luis SERRATO URREGO
Scientific Affairs Direction Assistant
Permanent Commission for the South Pacific
Av. Carlos Julio Arosemena, KM3
Ed. Classic, 2 piso
Guayaquil, Ecuador
Tel: + 593 4 2221 202
Email: lserrato@cpps-int.org

Rodolfo SABLICH
Head, Technical Office
Direccion de Hidrografia y Navegacion
Avenida Gamarra No. 500, Chucuito, Callao
Peru
Tel: +51 1 6136746
Fax: +51 1 613 6759
Email: rsablich@dhn.mil.pe

Jose SANTOS
Coordinador Investigacion
Ecuador
Tel: (5934)2269450
Fax:
Email: jlsantos@espol.edu.ec

Leila ZAMBRANO ZAVALA
Physical Oceanographer
Instituto Oceanográfico de la Armada del Ecuador
Ave. 25 de Julio, (Avenida de la Marina)
Base Naval Sur
Guayaquil
Ecuador
Tel: +593 4 248 1300
Fax: +593 4 248 5166
Email: spondylus1@inocar.mil.ec

Luis BURGOS
Investigador
Instituto Oceanográfico de la Armada del Ecuador
Ave. 25 de Julio, (Avenida de la Marina)
Base Naval Sur
Guayaquil
Ecuador
Tel: +593 4 248 1300
Fax: +593 4 248 5166
Email: lburgos@inocar.mil.ec

Eduardo ZAMBRANO
Oceanographer
Instituto Oceanográfico de la Armada del Ecuador
Ave. 25 de Julio, (Avenida de la Marina)
Base Naval Sur
Guayaquil, Ecuador
Tel: +593 4 248 1300
Fax: +593 4 248 5166
Email: nino@inocar.mil.ec

Marco SALINAS HARO
Director
Direccion General de Intereses Maritimos
Av. Amazonas y Cordero
Quito, Ecuador
Tel: +593 2 2508 909
Fax: +593 2 2563 075
Email: marsalin7@hotmail.com

Leonardo SAENZ HARO
Inspector Contaminación
Dirección General de la Marina Mercante
Elizalde 101 y Malecon
Guayaquil, Ecuador
Tel: +593 4 2320 400

Bulmaro RODRIGUEZ ROMAN
Asesor Asuntos Internacionales
Direccion General de la Marina Mercante
Elizalde 101 y Malecon
Guayaquil, Ecuador
Tel: +593 4 2320 385
Email: asuntos_internacionales@digmer.org

Rodney MARTINEZ GUINGLA
Coordinador Cientifico
International Research Center on El Niño (CIIFEN)
Escobedo 1204 y 9 de Octubre
Guayaquil
Ecuador
Tel: +593 4 251 47700
Email: r.martinez@ciifen-int.org

Rosa YCAZA OLVERA
Tecnico Hidrometeorologo
Instituto Nacional de Meteorología e Hidrología
9 de octubre 429 y Chimborazo
Guayaquil, Ecuador
Tel: +593 4 2428 827
Email: ycazapil@yahoo.com

Victor BORBOR CORDOVA
Profesional
Instituto Nacional de Meteorología e Hidrología
9 de octubre 429 y Chimborazo
Guayaquil, Ecuador
Tel: +593 4 2428 827
Email: abel_borbor@yahoo.com

Cristina RECALDE CORONEL
Tecnico B
Instituto Nacional de Meteorología e Hidrología
Av. 25 de Julio y Pio Jaramillo
Guayaquil, Ecuador
Tel: +593 4 2428 827
Email: abel_borbor@yahoo.com

Fanny FRIEND MONTESDEOCA
Técnico
Instituto Nacional de Meteorología e Hidrología
Av. 25 de Julio y Pio Jaramillo
Guayaquil, Ecuador
Tel: +593 4 2428 827
Email: fannyfriendm@yahoo.com

Telmo DE LA CUADRA FRIAS
Investigador Pesquero
Instituto Nacional de Pesca
Letamendi 102 y La Ría
Guayaquil, Ecuador
Tel: + 593 4 2401 776
Email: tdelacuadra@inp.gov.ec

Freda SOLANO CHIRIBOGA
Investigador Pesquero
Instituto Nacional de Pesca
Letamendi 102 y La Ría
Guayaquil, Ecuador
Tel: + 593 4 2401 776
Email: fsolano@inp.gov.ec

Maria LUZURIAGA VILLARREAL
Investigador Pesquero
Instituto Nacional de Pesca
Letamendi 102 y La Ría
Guayaquil, Ecuador
Tel: + 593 4 2401 776
Email: mluzuriaga@inp.gov.ec

Monica PRADO ESPAÑA
Investigador Pesquero
Instituto Nacional de Pesca
Letamendi 102 y La Ría
Guayaquil, Ecuador
Tel: + 593 4 2401 776
Email: mprado@inp.gov.ec

Manfred ALTAMIRANO GALLEGOS
Subsecretario
Ministerio del Ambiente
Tel: 593 9 96803849

Manuel SANTANDER VILLAO
Técnico Ambiental
Ministerio del Ambiente
Cdla. La Saiba Mz H, Villa 6
Guayaquil, Ecuador
Tel: 593 9 94010408
Email: mo_santandervillao@hotmail.com

Andres PAZMIÑO
Asesor Tecnico
Comision Nacional del Derecho del Mar
Av. 25 de Julio, via Puerto Maritimo
Guayaquil, Ecuador
Tel: 593 9 91757815
Email: apazmino@inocar.mil.ec

Jonathan CEDEÑO
Investigador
Escuela Superior Politecnica del Litoral
Km. 30.5 via Perimetral
Guayaquil, Ecuador
Tel: +593 4 2269468
Email: jcedeño@espol.edu.ec

Jose OLMEDO
Decano Facultad del Mar
Universidad del Pacífico
Km. 1,5 via a la Costa
Guayaquil, Ecuador
Tel: + 593 4 2738 773
Email: pinguino.olmedo@gmail.com

Jaime MOCHA
Asesor Juridico
Comuna Valdivia
Tel: + 593 9 90962173
Email: jaimemocha@hotmail.com

Jimmy PESANTEZ
Msc Alumno
Universidad de Guayaquil
Cdla. Peñon del Rio, mz. B17
Guayaquil, Ecuador
Tel: +593 4 2860 232
Email: jimmypesantez@yahoo.de

Cosme LEON CAJAMARCA
Estudiante Post Grado Derecho Ambiental
Universidad de Guayaquil
Los Esteros Mz 20ª # 143
Guayaquil, Ecuador
Tel: +593 4 2490 314
Email: cjorgeleonc@hotmail.com

Javier BARRAGAN
Estudiante Post Grado Derecho Ambiental
Universidad de Guayaquil
Guayaquil, Ecuador
Tel: +593 9 93567880
Email: javier_sbr@hotmail.com

Luis CENTENO ROQUE
Estudiante Post Grado Derecho Ambiental
Universidad de Guayaquil
Myrtos 630 y Ficus
Guayaquil, Ecuador
Tel: +593 9 6030778
Email: bulgaro97@hotmail.com

V. IOC Regional Offices

Nick D'ADAMO
Offier in Charge, IOC Perth Regional Programme Office
C/- Bureau of Meteorology
P.O. Box 1370
West Perth, Western Australia
6872 Australia
Tel: +61 8 9226 2899
Fax: +61 8 9226 0599
Email: nick.d'adamo@bom.gov.au

Janice ROMAGUERA TROTTE
Head, IOC Rio de Janeiro Regional Office
Representante OCEATLAN
Diretora de Hidrografia e Navegação
Rua Barão de Jaceguay s/no
Ponta da Armação
Niterói - Rio de Janeiro
24048-900 Brazil
Tel: +55 21 2189 3013
Fax: +55 21 2189 3088
Email: janice.trotte@terra.com.br

VI. GOOS PROGRAMME OFFICE

Keith ALVERSON
Head of Section, Ocean Observations and Services
Intergovernmental Oceanographic Commission of UNESCO
1 rue Miollis
75732 Paris cedex 15
France
Tel: +33 1 45 68 40 42
Fax: +33 1 45 68 58 13
Email: k.alverson@unesco.org

Thomas GROSS
Programme Specialist
Intergovernmental Oceanographic Commission of UNESCO
1 rue Miollis
75732 Paris cedex 15
France
Tel: +33 1 45 68 39 92
Fax: +33 1 45 68 58 12
Email: t.gross@unesco.org

ANNEX III
LIST OF DOCUMENTS

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

Document Code	Title	Responsible	Agenda item	By when
WORKING DOCUMENTS				
GRF-IV/1.3	Provisional List of Participants	Secretariat	All	(web)
GRF-IV/1.4.1	Provisional Agenda	Secretariat	All	(web)
GRF-IV/1.4.2	Provisional Timetable	Secretariat	All	(web)
GRF-IV/1.4.3	Provisional list of Documents (this document)	Secretariat	All	1 NOV
GRF-IV/1.8	Review of GRF-III Actions Recommendations	Secretariat	1.8	1 NOV
GRF-IV/1.9	GOOS Regional Council Proposed Terms of Reference	Secretariat	1.9	1 NOV
GRF-IV/2.1	Review of the Implementation Strategy for the Coastal module of GOOS	F. Gérard	2.1	1 NOV
GRF-IV/2.2	GOOS Strategic Planning for GRAs	K. Alverson	2.2	1 NOV
GRF-IV/2.3	WMO Strategic Planning for GRAs	E. Cabrera	2.3	1 NOV
GRF-IV/2.4	IOC Report on Regional Coordination	P. Bernal / J. Valladares	2.4	1 NOV
GRF-IV/2.5	New Cooperation Mechanisms between GRAs	GRASP	2.5	1 NOV
GRF-IV/2.6	Review of PICO-I Meeting	J. Muelbert	2.6	1 NOV
GRF-IV/2.7	The LME Concept, its Development and Contributions to GOOS including GOOS Ecological Objectives	N. Cyr / P. DiGiacomo / J. Muelbert	2.7	1 NOV
GRF-IV/2.9	GOSIC report	C. Lief	2.9	1 NOV
GRF-IV/2.10	ODIN Contributions to GRAs	R. Martinez	2.10	1 NOV
GRF-IV/3.1	Introduction WG1: Regional Modelling Centers	GRASP	3.1	1 NOV
GRF-IV/3.2	Introduction WG2: Climate Change Mitigation and Adaptation Strategic Planning for GRAs	GRASP	3.2	1 NOV
GRF-IV/3.3	Introduction WG3: Operational and Research Model Products	GRASP	3.3	1 NOV
GRF-IV/3.4	Introduction WG4: Progress, Priorities and Plans for Coastal Module of GOOS	PICO	3.4	1 NOV
GRF-IV/3.5	Introduction WG5: Maximizing Effectiveness of National Resources for Observing Systems in Developing Countries	P. Eastwood / G. G. Montero	3.5	1 NOV

Document Code	Title	Responsible	Agenda item	By when
GRF-IV/4.1.1	GRASP Strategic Plan and Activities	M. Proaño Silva	4.1	1 NOV
GRF-IV/4.1.2	IOCARIBE-GOOS Strategic Plan and Activities	G. Garcia Montero / D. Wilson	4.1	1 NOV
GRF-IV/4.1.3	OCEATLAN Strategic Plan and Activities	A. Roque di Vincenzo / J. Trotte	4.1	1 NOV
GRF-IV/4.1.4	US GOOS Strategic Plan and Activities	N. Cyr	4.1	1 NOV
GRF-IV/4.1.5	PI-GOOS Strategic Plan and Activities	C. Pratt / P. Eastwood	4.1	1 NOV
GRF-IV/4.1.6	NEAR-GOOS Strategic Plan and Activities	S. H. Lin	4.1	1 NOV
GRF-IV/4.1.7	IO GOOS Strategic Plan and Activities	A. Dubi	4.1	1 NOV
GRF-IV/4.1.8	SEA-GOOS Strategic Plan and Activities	S. Khokiattiwong	4.1	1 NOV
GRF-IV/4.1.9	EuroGOOS Strategic Plan and Activities	H. Dahlin	4.1	1 NOV
GRF-IV/4.1.10	Black Sea GOOS Strategic Plan and Activities	V. Eremeev	4.1	1 NOV
GRF-IV/4.1.11	MedGOOS Strategic Plan and Activities	K. Nittis	4.1	1 NOV
GRF-IV/4.1.12	GOOS-Africa Strategic Plan and Activities	G. Brundrit	4.1	1 NOV
GRF-IV/4.2.1	Arctic ROOS Strategic Plan and Activities	Hans Dahlin	4.2	1 NOV
GRF-IV/4.2.2	WAGOOS strategic plan and recent Australian ocean observing and application developments	N. D'Adamo / R. Steedman / G. Meyers / P. Dexter	4.2	1 NOV
GRF-IV/6.2	GRF-IV Proposed Action Items	Secretariat	6.2	28 NOV
PRESENTATIONS				
GRF-IV/1.8 PPT	Actions from the GRF III for consideration by GRF IV	Secretariat	1.8	5 DEC
GRF-IV/1.8 PPT	Review Actions III GRA Forum	Secretariat	1.8	25 NOV
GRF-IV/1.9 PPT	GRC Formation Introduction	Secretariat	1.9	25 NOV
GRF-IV/2.1 PTT	GOOS Implementation Strategy through GRAs	F. Gérard	2.1	5 DEC
GRF-IV/2.2	GOOS Strategic Planning	K. Alverson		12 DEC
GRF-IV/2.3 PPT	WMO Contribution to GOOS Regional Alliances	E. Cabrera	2.3	5 DEC
GRF-IV/2.5 PPT	Coastal Sea Level Issues for GRAs	J. A. Reyna Moreno	2.5	5 DEC
GRF-IV/2.7.1	LME Projects and their Contributions to Global Ocean Observing Efforts	Ned Cyr	2.7.1	5 DEC
GRF-	Panel for Integrated Coastal	J. Muelbert	2.7.2	5 DEC

Document Code	Title	Responsible	Agenda item	By when
IV/2.7.2	Observation updated for GRF-IV			
GRF-IV/2.9 PPT	Enabling Data and Information Exchange for the GOOS Regional Alliances through the GOSIC Portal	C. Lief	2.9	5 DEC
GRF-IV/2.10 PPT	ODIN's Contribution to GOOS Regional	R. Martinez	2.10	5 DEC
GRF-IV/4.1.2 PPT	IOCARIBE-GOOS report for the IVth Forum	Doug Wilson and G. Garcia Montero	4.1.2	5 DEC
GRF-IV/4.1.6	OCEATLAN GOOS 2008	J. Trotte	4.1.6	5 DEC
GRF-IV/4.1.4 PTT	US GOOS: GRA Update and Prospective	Ned Cyr	4.1.4	5 DEC
GRF-IV/4.1.5	PI-GOOS Report	P. Eastwood	4.1.5	5 DEC
GRF-IV/4.1.6 PPT	NEAR-GOOS progress report and work plan in the near future	Coordinating Committee for NEAR GOOS	4.1.6	5 DEC
GRF-IV/4.1.7 PPT	Indian Ocean GOOS Report	A. Dubi	4.1.7	5 DEC
GRF-IV/4.1.9 PPT	EuroGOOS Report	H. Dahlin / P. Ehlers /P. Gorringe / S. Petersson	4.1.7	5 DEC
GRF-IV/4.1.10 PPT	Black Sea GOOS: Strategy Activities Prospects	V. Eremeev	4.1.10	5 DEC
GRF-IV/4.1.11 PPT	GOOS Development in the Mediterranean Sea: MEDGOOS & MOON Activities and Plans	K. Nittis	4.1.11	5 DEC
GRF-IV/4.1.12 PPT	GOOS-AFRICA Progress Report to GRA Forum 2008	G. Brundrit	4.1.12	
GRF-IV/4.2.1 PPT	Arctic ROOS - A developing regional operational system	H. Dahlin	4.2.1	5 DEC
GRF-IV/4.1.12 PPT	GOOS-Africa Progress Report to GRF IV	G. Brundrit, J. Ahanhanzo	4.1.12	5 DEC
BACKGROUND DOCUMENTS				
I-GOOS-VIII/10	Proposal to Form a GOOS Regional Council	Secretariat	1.9	Done (web)
I-GOOS-VIII/11	GOOS Regional Council (GRC) – Proposed Terms of Reference	Secretariat	1.9	Done
I-GOOS-VIII/12	GOOS Regional Policy	Secretariat	2.1	Done
GOOS-148	An Implementation Strategy for the Coastal Module of GOOS	Secretariat	2.1	Done
GOOS-159	Third GOOS Regional Forum Report	Secretariat	1.8	Done

ANNEX IV
LIST OF ACRONYMS

BS-GOOS	Black Sea GOOS Regional Alliance
CEOS	Committee on Earth Observation Satellites
ChloroGIN	Chlorophyll Globally Integrated Network
CIIFEN	Centro Internacional para la Investigación del Fenómeno de El Niño
CMA	Caribbean Marine Atlas
COOP	Coastal Ocean Observation Panel
CPPS	Comisión Permanente del Pacifico Sur
CPR	Continuous Plankton Recorder
CZCP	Coastal Zone Community of Practice
DIF	Data Integration Framework
EuroGOOS	European GOOS Regional Alliance
GCN	Global Coastal Network
GCOS	Global Climate Observing System
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
GOOS	Global Ocean Observing System
GOOS-Africa	Africa GOOS Regional Alliance
GOSIC	Global Observing Systems Information Center,
GPO	GOOS Project Office
GRAs	GOOS Regional Alliances
GRASP	GOOS Regional Alliance for the South Pacific
GRC	GOOS Regional Council
GRF	GOOS Regional Alliance Forum
GSSC	GOOS Scientific Steering Committee
GTOS	Global Terrestrial Observing System
GTS	WMO Global Telecommunications System
HYCOS	Hydrological Cycle Observing System
ICSU	International Council for Science
I-GOOS	Intergovernmental Committee for GOOS
IGOS	Integrated Global Observing Strategy
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IODE	International Oceanographic Data and Information Exchange
IO GOOS	Indian Ocean GOOS Regional Alliance
IOOS	Integrated Ocean Observing System (NOAA)
IPY	International Polar Year
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
LME	Large Marine Ecosystem
MedGOOS	Mediterranean GOOS Regional Alliance
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NCDC	National Climatic Data Center
NEAR-GOOS	North-East Asian GOOS Regional Alliance
NESDIS	National Environmental satellite, Data and Information Service
NOAA	National Oceanic and Atmospheric Administration (USA)

OCEATLAN	Southeast Atlantic Ocean GOOS Regional Alliance, Aliança Regional para a Oceanografia no Atlântico Sudoeste Superior e Tropical
ODIN	Ocean Data Information Network
ODINAFRICA	Ocean Data Information Network Africa
ODINCARSA	Ocean Data Information Network Caribbean and South America regions
OOPC	Ocean Observations Panel for Climate
PICES	North Pacific Marine Science Organization
PICO	Panel for Integrated Coastal Observastions
PI-GOOS	Pacific Islands GOOS Regional Alliance
PIRATA	Pilot Research Moored Array in the Tropical Atlantic
RCOOS	Regional Coastal Ocean Observing System
ROOS	Regional Ocean Observing System
SAON	Sustaining Arctic Observing Networks
SEA-GOOS	Southeast Asian GOOS Regional Alliance
SEPRISE	Sustained, Efficient Production of Required information Services
SEREAD	Scientific Educational Resources and Experience Associated with Deployment of Argo floats in the Pacific
SPINCAM	Southeast Pacific data and Information Network in support to Integrated Coastal Area Management
TOR	Term of Reference
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNFCCC	United National Framework Convention on Climate Change
UOR	Undulating Oceanographic Recorder
US-GOOS	United States GOOS Regional Alliance (IOOS)
WCRP	World Climate Research Programme
WESTPAC	IOC Sub-Commission for the Western Pacific
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization

ANNEX V
RESPONSES FOR APPLICATION TO GRC

Founding members accepted initiative to form GRC during the GRF-IV:

Med GOOS	Kostas Nittis
EuroGOOS	Hans Dahlin
GOOS-Africa	Geoff Brundrit
Black Sea GOOS	Valery Eremeev
US GOOS	Ned Cyr
PI-GOOS	Paul Eastwood.

Responses have been received before January 31st 2009 from:

NEAR GOOS Shao Hua Lin

NEAR GOOS Statement, by Shao Hua Lin, NEAR-GOOS chair:

"Because the NEAR-GOOS intergovernmental cooperation project was approved by IOC Assembly and directly coordinates with by IOC/WESTPAC, a discussion with all CC members with consultation of member state governments must precede formal acceptance of GRC. Initially, NEAR-GOOS, would desire to be invited as an OBSERVER to go to GRC meetings and other related activities as appropriate. NEAR-GOOS understands the need for cooperation with other GRAs. A detailed discussion will take place at the next CC meeting, Sept. 2009, which should lead to a final decision on the role of NEAR-GOOS within the GRC."

GRASP Mario Proaño Silva

Translation of Note Nr. 001/2009 from CPPS/GRASP, by Mario Proaño Silva, GRASP chair

"I am happy to contact you as chair of Global Ocean Observing System – GOOS of the South East Pacific – GRASP, to inform you that with the support of the General Secretariat of the Permanent Commission of the South Pacific – CPPS, the Technical Secretary of GRASP, we have completed a feasibility study for the participation of the Regional Alliance of South Pacific in the GOOS Regional Alliances Council. The study concluded that it is important and beneficial for GRASP to be a part of it.

Based on the above, I formally request of you GRASP affiliation in the GOOS Regional Alliances Council. This request meets the deadline (31st January 2009) fixed at the IV th Forum of GOOS Regional Alliances, held in this town last November."

Responses have not been received before January 31st 2009 from:

- IOCARIBE-GOOS Guillermo GARCIA MONTERO, co-chair of IOCARIBE-GOOS
- OCEATLAN Andrés ROQUE DI VINCENZO
- India Ocean GOOS Alphonse DUBI
- SEA-GOOS Somkiat KHOKIATTIWONG

In this Series, entitled

Reports of Meetings of Experts and Equivalent Bodies, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
2. Fourth Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans S. Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' ***(Also printed in Spanish)***
4. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
6. First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
7. First Session of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
8. First Session of the IODE Group of Experts on Marine Information Management
9. Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
11. First Session of the IOC Consultative Group on Ocean Mapping ***(Also printed in French and Spanish)***
12. Joint 100-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Format Development
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and lntercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica lnternacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica ***(Spanish only)***
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IODE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources ***(Also printed in French and Spanish)***
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Eighth Session of the IOC-UNEP Group of Experts on Methods, Standards and lntercalibration
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans ***(Also printed in French)***
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities ***(Also printed in Spanish)***
31. Second IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IODE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CCPS Working Group on the Investigations of 'El Niño' (***Also printed in Spanish)***
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
44. Third Session of the IOC-UN(OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and lntercalibration
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
47. Cancelled
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic ***(Also printed in French)***
54. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico ***(Also printed in Spanish)***
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping
59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications

60. Second Session of the IOC Group of Experts on the Global Sea-Level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Intercalibration
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series
67. Thirteenth Session of the IOC-IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans ***(Also printed in French)***
68. International Meeting of Scientific and Technical Experts on Climate Change and Oceans
69. UNEP-IOC-WMO-IUCN Meeting of Experts on a Long-Term Global Monitoring System
70. Fourth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
71. ROPME-IOC Meeting of the Steering Committee on Oceanographic Co-operation in the ROPME Sea Area
72. Seventh Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' ***(Spanish only)***
73. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico ***(Also printed in Spanish)***
74. UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
75. Third Session of the IODE Group of Experts on Marine Information Management
76. Fifth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
77. ROPME-IOC Meeting of the Steering Committee for the Integrated Project Plan for the Coastal and Marine Environment of the ROPME Sea Area
78. Third Session of the IOC Group of Experts on the Global Sea-level Observing System
79. Third Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
80. Fourteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
81. Fifth Joint IOG-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
82. Second Meeting of the UNEP-IOC-ASPEI Global Task Team on the Implications of climate Change on Coral Reefs
83. Seventh Session of the JSC Ocean Observing System Development Panel
84. Fourth Session of the IODE Group of Experts on Marine Information Management
85. Sixth Session of the IOC Editorial Board for the International Bathymetric chart of the Mediterranean and its Geological/Geophysical Series
86. Fourth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
87. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific
88. Eighth Session of the JSC Ocean Observing System Development Panel
89. Ninth Session of the JSC Ocean Observing System Development Panel
90. Sixth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
91. First Session of the IOC-FAO Group of Experts on OSLR for the IOCINCWIO Region
92. Fifth Session of the Joint IOC-JGOFS CO, Advisory Panel Meeting
93. Tenth Session of the JSC Ocean Observing System Development Panel
94. First Session of the Joint CMM-IGOSS-IODE Sub-group on Ocean Satellites and Remote Sensing
95. Third Session of the IOC Editorial Board for the International Chart of the Western Indian Ocean
96. Fourth Session of the IOC Group of Experts on the Global Sea Level Observing System
97. Joint Meeting of GEMSI and GEEP Core Groups
98. First Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
99. Second International Meeting of Scientific and Technical Experts on Climate Change and the Oceans
100. First Meeting of the Officers of the Editorial Board for the International Bathymetric Chart of the Western Pacific
101. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
102. Second Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
103. Fifteenth Session of the Joint IOC-IHO Committee for the General Bathymetric Chart of the Oceans
104. Fifth Session of the IOC Consultative Group on Ocean Mapping
105. Fifth Session of the IODE Group of Experts on Marine Information Management
106. IOC-NOAA *Ad hoc* Consultation on Marine Biodiversity
107. Sixth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
108. Third Session of the Health of the Oceans (HOTO) Panel of the Joint Scientific and Technical Committee for GLOSS
109. Second Session of the Strategy Subcommittee (SSC) of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System
110. Third Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
111. First Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate
112. Sixth Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting
113. First Meeting of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS)
114. Eighth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of "El Niño" ***(Spanish only)***
115. Second Session of the IOC Editorial Board of the International Bathymetric Chart of the Central Eastern Atlantic ***(Also printed in French)***
116. Tenth Session of the Officers Committee for the Joint IOC-IHO General Bathymetric Chart of the Oceans (GEBCO), USA, 1996
117. IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Fifth Session, USA, 1997
118. Joint Scientific Technical Committee for Global Ocean Observing System (J-GOOS), Fourth Session, USA, 1997
199 First Session of the Joint 100-WMO IGOSS Ship-of-Opportunity Programme Implementation Panel, South Africa, 1997
120. Report of Ocean Climate Time-Series Workshop, Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate, USA, 1997

121. IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS), Second Session,

Thailand, 1997

122. First Session of the IOC-IUCN-NOAA *Ad hoc* Consultative Meeting on Large Marine Ecosystems (LME), France, 1997

123. Second Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), South Africa, 1997

124. Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico, Colombia, 1996 ***(also printed in Spanish)***

125. Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange, Ireland, 1997

126. IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), First Session, France, 1997

127. Second Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 1998

128. Sixth Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1997

129. Sixth Session of the Tropical Atmosphere - Ocean Array (TAO) Implementation Panel, United Kingdom, 1997

130. First Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 1998

131. Fourth Session of the Health of the Oceans (HOTO) Panel of the Global Ocean Observing System (GOOS), Singapore, 1997

132. Sixteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), United Kingdom, 1997

133. First Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1998

134. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IOC/EB-IBCWIO-IW3), South Africa, 1997

135. Third Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), France, 1998

136. Seventh Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting, Germany, 1997

137. Implementation of Global Ocean Observations for GOOS/GCOS, First Session, Australia, 1998

138. Implementation of Global Ocean Observations for GOOS/GCOS, Second Session, France, 1998

139. Second Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Brazil, 1998

140. Third Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), China, 1998

141. Ninth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Ecuador, 1998 ***(Spanish only)***

142. Seventh Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Croatia, 1998

143. Seventh Session of the Tropical Atmosphere-Ocean Array (TAO) Implementation Panel, Abidjan, Côte d'Ivoire, 1998

144. Sixth Session of the IODE Group of Experts on Marine Information Management (GEMIM), USA, 1999

145. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), China, 1999

146. Third Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Ghana, 1999

147. Fourth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC); Fourth Session of the WCRP CLIVAR Upper Ocean Panel (UOP); Special Joint Session of OOPC and UOP, USA, 1999

148. Second Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1999

149. Eighth Session of the Joint IOC-JGOFS CO2 Advisory Panel Meeting, Japan, 1999

150. Fourth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Japan, 1999

151. Seventh Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1999

152. Sixth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 1999

153. Seventeenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), Canada, 1999

154. Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y el Golfo de Mexico (IBCCA), Septima Reunión, Mexico, 1998

IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA), Seventh Session, Mexico, 1998

155. Initial Global Ocean Observing System (GOOS) Commitments Meeting, IOC-WMO-UNEP-ICSU/Impl-III/3, France, 1999

156. First Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Venezuela, 1999 ***(also printed in Spanish and French)***

157. Fourth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), China, 1999

158. Eighth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Russian Federation, 1999

159. Third Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), Chile, 1999

160. Fourth Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS). Hawaii, 2000

161. Eighth Session of the IODE Group of Experts on Technical Aspects of Data Exchange, USA, 2000

162. Third Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 2000

163. Fifth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Poland, 2000

164. Third Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 2000

165. Second Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Cuba, 2000 ***(also printed in Spanish and French)***

166. First Session of the Coastal Ocean Observations Panel, Costa Rica, 2000

167. First GOOS Users' Forum, 2000

168. Seventh Session of the Group of Experts on the Global Sea Level Observing System, Honolulu, 2001

169. First Session of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), France, 2001 ***(also printed in French)***

170. Fourth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, Chile, 2001

171. First Session of the IOC-SCOR Ocean CO_2 Advisory Panel, France, 2000

172. Fifth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Norway, 2000 ***(electronic copy only)***

173. Third Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, USA, 2001 ***(also printed in Spanish and French)***

174. Second Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Italy, 2001

175. Second Session of the Black Sea GOOS Workshop, Georgia, 2001

176. Fifth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2000

177. Second Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Morocco, 2002 ***(also printed in French)***

178. Sixth Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Australia, 2001 ***(electronic copy only)***

179. *Cancelled*

180. Second Session of the IOC-SCOR Ocean CO_2 Advisory Panel, Honolulu, Hawaii, U.S.A, 2002 ***(electronic copy only)***

181. IOC Workshop on the Establishment of SEAGOOS in the Wider Southeast Asian Region, Seoul, Republic of Korea, 2001 (SEAGOOS preparatory workshop) ***(electronic copy only)***

182. First Session of the IODE Steering Group for the Resource Kit, USA, 19–21 March 2001

183. Fourth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), France, 2002

184. Seventh Session of the IODE Group of Experts on Marine Information Management (GEMIM), France, 2002 ***(electronic copy only)***

185. Sixth Session of IOC/WESTPAC Coordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2001 ***(electronic copy only)***

186. First Session of the Global Ocean Observing System (GOOS) Capacity Building Panel, Switzerland, 2002 ***(electronic copy only)***

187. Fourth Session of the ad hoc Advisory Group for IOCARIBE-GOOS, 2002, Mexico ***(also printed in French and Spanish)***

188. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IBCWIO), Mauritius, 2000

189. Third session of the Editorial Board for the International Bathymetric Chart of the Western Pacific, Chine, 2000

190. Third Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Vietnam, 2002

191. Eighth Session of the IOC Consultative Group on Ocean Mapping, Russian Federation, 2001

192. Third Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Lisbon, 2003 ***(also printed in French)***

193. Extraordinary Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Chile, 1999 ***(Spanish only; electronic copy only)***

194. Fifth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, France, 2002

195. Sixth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, South Africa, 2003

196. Fourth Session of the Coastal Ocean Observations Panel, South Africa, 2002 ***(electronic copy only)***

197. First Session of the JCOMM/IODE Expert Team On Data Management Practices, Belgium, 2003 *(also JCOMM Meeting Report No. 25)*

198. Fifth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2003

199. Ninth Session of the IOC Consultative Group on Ocean Mapping, Monaco, 2003 ***(Recommendations in English, French, Russian and Spanish included)***

200. Eighth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2003 ***(electronic copy only)***

201. Fourth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Greece, 2004 ***(also printed in French)***

202. Sixth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2004 ***(electronic copy only)***

203. Fifth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Argentina, 2005 ***(also printed in French)***

204. Ninth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2005 ***(electronic copy only)***

205. Eighth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), China, 2003 ***(electronic copy only)***

206. Sixth Meeting of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Spain, 2006 ***(also printed in French)***

207. Third Session of the Regional Forum of the Global Ocean Observing System, South Africa, 2006 ***(electronic copy only)***

208. Seventh Session of the IOC-UNEP-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2005 ***(electronic copy only)***

209. Eighth Session of the IOC-UNEP-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2006 ***(electronic copy only)***

210. Seventh Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Gabon, 2007 ***(bilingual English/French)***

211. First Meeting of the IOC Working Group on the Future of IOC, Paris, 2008 ***(Executive Summary in English, French, Russian and Spanish included)***

212. First meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 3–4 April 2008 ***(Executive Summary in English, French, Russian and Spanish included)***

213. First Session of the Panel for Integrated Coastal Observation (PICO-I), Paris, 10–11 April 2008 ***(electronic copy only)***

214. Tenth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), Paris, 6–8 June 2007 ***(electronic copy only)***

215. Eighth Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Paris, 21–25 April 2008 ***(bilingual English/French)***

216. Fourth Session of the Global Ocean Observing System (GOOS) Regional Alliances Forum (GRF), Guayaquil, Ecuador, 25–27 November 2008 ***(electronic copy only)***