



Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

Coastal Ocean Observations Panel GOOS Users' Forum

Second Session
Trieste, Italy
5 and 6-8 June 2001



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ABSTRACT

This report presents a summary of the topics discussed at the second GOOS Users' Forum and the second meeting of the Coastal Ocean Observations Panel (COOP). The objectives of the GOOS Users' Forum was to: (i) seek user input to the design and implementation process of the coastal module of GOOS; (ii) raise awareness of the coastal GOOS module among stakeholders, decision makers, industry and scientists in the Adriatic Sea region. Background information on current observing activities and monitoring projects in the Adriatic Sea were presented. The Forum participants also discussed the setting up of an Adriatic Sea COOP pilot project dealing with the modelling of the mesoscale circulation and its relation to pollution and the Adriatic ecosystem. The objective of the COOP session was to review the draft of the integrated strategic design plan for the coastal module of GOOS. The plan will integrate the strategic design plans developed by three former "coastal" design panels under GOOS, i.e. Coastal GOOS, HOTO, and LMR and establish a design framework for an observing system for all aspects of the coastal seas. Several draft chapters of the integrated plan were presented and a plan was developed for finalizing the remaining components of the plan prior to the third session of COOP.

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A - GOOS USERS' FORUM

2nd Session, 5 June 2001

The GOOS Users' Forum for the Adriatic Sea was held in Trieste, 5 June 2001. The local organizing committee was formed by Nadia Pinardi (Italy), Serena Fonda-Umani (Italy), Alemka Malej (Slovenia) and Nenad Smodlaka (Croatia). The final agenda of the meeting is given in the Annex I and the list of participants is provided in Annex II.

The Forum was opened by Worth Nowlin, Chairman of the GOOS Steering Committee who welcomed the participants on behalf of the sponsors of GOOS – the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the International Council for Science (ICSU). In his welcoming remarks he informed that the Food and Agricultural Organization (FAO) and the International Geosphere and Biosphere Programme (IGBP) now also sponsor the Coastal Ocean Observations Panel (COOP), which are very encouraging. Following this he provided the participants of the history of GOOS and its major steps in the past ten years. Thorkild Aarup of IOC completed the overview and informed about the design process of the coastal module of GOOS and the role of the GOOS Users' Fora. In the design of the coastal module of GOOS, COOP is seeking user input to the design and implementation process by starting its meetings with a GOOS Users' Forum. The Fora serves as a mechanism for interacting with stakeholders and to derive information about user requirements. It also provides an opportunity for COOP members to learn about regional capacity building needs. Finally he acknowledged the financial support for the meeting, which had been provided by FAO, the French IOC committee, the Government of Holland, ICSU, IOC, the Marine Biology Laboratory of Trieste, National Institute of Geophysics and Volcanology, the Office of Naval Research (US), UNEP, UNESCO's Regional Office for Science and Technology for Europe (ROSTE), University of Bologna, and the US C-GOOS office at the Horn Point Laboratory of UMCES.

Following the opening remarks Silvana Valerga gave a presentation on the activities of the Mediterranean component of GOOS (MedGOOS) (more information on MedGOOS is available at http://ioc.unesco.org/goos/MedGOOS_mtg.htm). MedGOOS has recently received funding under the 5th Framework Programme for a concerted action in support for research infrastructures and marine research facilities. ("Mediterranean network to Assess and upgrade Monitoring and forecasting Activity in the region" (MAMA)). This proposal involves institutions from all the countries in the Mediterranean. It aims to enhance and upgrade the research infrastructure needed to provide the knowledge for long-term, viable management strategies for the protection of the Mediterranean ecosystem, within the framework of the GOOS and with a focus on the needs for the sustainable use of coastal areas.

Tom Malone, co-chairman of the COOP, described the design philosophy COOP has followed and provided as an example of a COOP pilot project the Coordinated Adriatic Observing System (CAOS) in the Adriatic Sea. This project has defined four major sectors of environmental problems connected to the sustainable management of this coastal area, the anoxia and mucilage events, the fisheries and the eutrophication.

Nadia Pinardi then introduced a newly funded project named 'ADRICOSM' (ADRIatic sea integrated Coastal areas and river basin Management system pilot project). This project involves a number of national and international institutions in Croatia, Italy, and Slovenia. The major aims of the project are: (i) to demonstrate the feasibility of near real time coastal current forecasts; (ii) to carry out the implementation of a river basin and wastewater management system in an Adriatic test site; and (iii) to develop the integration of the river system with the coastal current forecasting.

The Italian Ministry of Environment was represented by Massimo Avancini who described the state of the coastal areas of the Adriatic Sea. This assessment is done on the basis of various coastal monitoring networks of the Regional Environmental Agencies around the Italian coastlines.

Romano Pagnotta reported results from a five-year project called PRISMA I and II (Programma di Ricerche. Mare Adriatico) which investigated the basic processes of the Adriatic Sea circulation and its biogeochemical cycles.

Dov Rosen informed about MedGLOSS, a long-term monitoring network system for systematic sea-level measurements in the Mediterranean and Black Seas. MedGLOSS aims to get the most out of the present tide-gauge network systems in the region and to expand/upgrade it where appropriate. In that context he described how the Split harbour (Croatia) sea level station recently had been upgraded.

Danilo Degobbi presented a synthetic review of research projects, based on a regional collaboration, involving Croatian, Italian, and Slovenian scientists, mainly focused on the study of the mucilage phenomenon, as well as of the man impact on the Adriatic basin (ASCOP, Alpe-Adria, Osservatorio Alto Adriatico, MAT, CAOS, ADRICOSM).

The following speakers, Nenad Smoljaka and Alenka Malej, presented Slovenian and Croatian national monitoring projects of the coastal waters of the eastern Adriatic Sea and how these observation activities now are linked with the Italian monitoring networks.

Nadia Pinardi presented the results of the 'Mediterranean Forecasting System Pilot Project-MFSPP'. This project was funded by EU and provides weekly, during its operational phase, 10-day forecasts of currents at the Mediterranean basin level and develops numerical models for the Adriatic Sea that can be used in future forecasting activities.

Michelle Giani presented the on-going project 'Mucilagginie in Adriatico e Tirreno-MAT', which monitors for the Italian Ministry of Environment the state of the system in terms of mucilage aggregates and tries to develop an early warning system of the mucilage evolution.

The morning session was concluded by the presentation of Pierre-Marie Poulain of the NATO-ONR activities in the Adriatic Sea.

The afternoon round table session was opened by a brief summary of the morning presentations. The past ten years have seen major international programmes in the Adriatic Sea advancing knowledge of oceanographic and ecological processes. In the beginning, monitoring was for process-oriented studies only, but projects now design prototype permanent monitoring systems that advance toward environmental predictions and integrated management of coastal areas.

The following discussion identified some of the scientific/technological and operational gaps. These are related to fishery issues, land derived pollution monitoring and mitigation planning, upgrade of technology for automated monitoring and predictions. It was found timely to start the creation of a framework for the sustained support of the prototype environmental monitoring programmes in the area. It is recognized that products should be made available to a wide user community and consideration should be given to the conversion of this part of the research into services.

Nadia Pinardi announced that the Adriatic national Environmental Ministers are heading an Adriatic-Ionian initiative to coordinate efforts in the area. The third round table of this initiative was held in Split, 24 May 2001. The recommendations were:

- (i) to raise the necessary awareness of the problems related to the climate change in the Adriatic-Ionian basin;
- (ii) to seek financial support for the proposed projects in the years to come to guarantee the integration of environmental considerations in sector policies such as transport, tourism, agriculture, industry and energy;
- (iii) participating States; to support the joint work towards development of a Unit for Environmental Protection of the Adriatic-Ionian Sea region.

The participants of the GOOS Users' Forum finally recommended:

- to build a sustained observing system for the Adriatic Sea based on the programmes that have set the scientific foundations for detecting and predicting environmental changes and consequences in the area;
- to develop mechanisms to effectively transfer relevant aspects of research programmes to an operational mode;
- to conduct a MedGOOS Pilot Project that will be a proof of concept of the CAOS design principles to make more cost effective use of existing infrastructures, knowledge and data.

B - COASTAL OCEAN OBSERVATIONS PANEL

2nd Session, 6-8 June 2001

1. OPENING

Tom Malone, co-chairman of the Coastal Ocean Observations Panel (COOP) opened the meeting at 9 am. He welcomed everybody and informed that the other co-chairman of COOP, Tony Knap, was not able to attend the session due to a last minute scheduling conflict. He also thanked Serena Fondi Umani, Paola del Negro, Claus Falconi, Chiara Larato and Elena Barberi for the fine meeting arrangements they had made.

Tom Malone reviewed the agenda of the meeting and provided a brief introduction to the COOP, its charge and its terms of reference (see also: <http://ioc.unesco.org/goos/COOP.htm>).

Following that Tom Malone provided a brief summary of developments that had taken place since the 1st Session of COOP (15-17 November 2000, Costa Rica):

Alfonso Botello had been named COOP representative to the GOOS Capacity Building Panel. A GOOS document entitled GOOS Capacity Building Implementation Strategy is available in print (GOOS report no. 106, IOC/INF-1160; http://ioc.unesco.org/goos/docs/GOOS_106_CB_Impl_Strat.pdf).

An ocean carbon theme report is under development for the Partners of the Integrated Global Observing Strategy (IGOS). This initiative is lead by Douglas Wallace, University of Kiel and Maria Hood, IOC. It was suggested that COOP should make their requirements known to the working group and vice versa.

At the third meeting of the GOOS Steering Committee, Geoff Holland, Chairman of the GOOS Capacity Building Panel, had suggested that a UN general agreement on a coastal observing system should be developed. Following the GSC-III meeting the IOC officers had agreed to raise the issue at the 2nd meeting of the United Nations Open-ended Informal Consultative Process (United Nations, New York, USA, 7-11 May 2001). However, there was no progress at the meeting on a UN general agreement, and it was clear that strong support from Member States would be needed. One way to get this would be to produce a general statement of purpose that could be endorsed by the 21st IOC Assembly in July 2001. It was agreed that Tom Malone would draft such a statement and that it would be brought to the next session (28-30 June 2001) of the Intergovernmental Committee for GOOS (I-GOOS) with the aim of getting I-GOOS endorsement so that a resolution would be taken forward to the 21st IOC Assembly (4-13 July 2001).

The importance of regional building blocks for the global coastal module of GOOS was again emphasized. The major components being (i) the regional seas conventions; (ii) the regional fisheries bodies; and (iii) national and regional GOOS programmes. The regional observing components provide a distributed framework which can serve the objectives and stated goals of existing global conventions. As such it would be useful to have a compilation of the data and information requirements needed to monitor success or failure of the conventions and their associated plans of actions.

Finally a résumé was provided of the organization of the Integrated Strategic Design Plan (see Chapter 6 in COOP I report; GOOS Report No. 95; <http://ioc.unesco.org/goos/docs/doclist.htm>).

2. IMPLEMENTATION ISSUES

G3OS and IGOS meetings

Worth Nowlin briefly reported on the Sixth Session of the Sponsors Group for the Global Observing Systems (G3OS), which met on 31 May 2001 in Paris. Some of the major actions from the meeting were: (i) to include the Global Observing System (GOS) of the WMO World Weather Watch; and (ii) to establish a working group consisting of the project office directors of each of the observing systems also been formed to revise and update the Terms of Reference for the G3OS. The focus issues for the TOR revision are: (a) inclusion of other observing systems; (b) relation to IGOS-P; (c) relation to conventions and other international thematic programmes; (d) capacity building; (e) ensuring a balance between *in situ* and satellite observing systems and programmes; (f) outreach and visibility activities. The draft meeting report is available at <http://www.igospartners.org/>.

Worth Nowlin reported on the meeting of the partners in the Integrated Observing Strategy (IGOS) in Paris on 1 June 2001. Some of the major actions were: (i) approval of the draft report on "Data and Information Systems and Services" (DISS) and a set of DISS principles (see <http://ioc.unesco.org/igospartners/igosdiss.htm>); (ii) the Ocean Theme Report (available from <http://www.igospartners.org/>) was approved and it was decided to update and review the Ocean Theme Report at a suitable interval (e.g., 3 years); (iii) new IGOS themes are underway (Integrated Global Carbon Observation Terrestrial Carbon Observation Theme; Integrated Global Atmospheric Chemistry Observation Theme; Water Cycle Theme); (iv) the Strategic Implementation Team of CEOS reported that progress being made by CEOS member agencies in response to the challenges set out in the Ocean Theme Report. Examples with respect to the space component are: a proposal for a Sea-Winds follow-on (NASA,

NASDA); salinity missions (NASA, ESA/CNES); and the Topex/Poseidon-Jason continuity (EUMETSAT, CNES, NASA and NOAA). The full meeting report is available at <http://www.igospartners.org/>.

Promotion of the coastal module of GOOS

Julie Hall circulated a draft poster for Coastal GOOS and asked the participants to provide feed back and additional photos.

Recognition of pilot and demonstration projects

Tom Malone provided an introduction to this item. It is generally recognized that the coastal component of GOOS will develop along two tracks: (i) the building of an initial global network through the incorporation of existing elements that meet GOOS design requirements and (ii) the implementation of pre-operational pilot projects that demonstrate the utility and cost-effectiveness of the “end-to-end, user-driven” approach and contribute to the development of the global network and regional enhancements. In that respect, pilot projects are organized with focused objectives, and a finite lifetime that are expected to produce results that significantly benefit GOOS and the coastal component in particular. In this context Worth Nowlin reminded the panel that the Ocean Observations Panel for Climate (OOPC) look quite critically at projects and only examined projects with a substantial prospectus (incl. Plans and budgets).

The panel discussed this item and suggested some amendments which would address: (i) marketing; (ii) data exchange; and (iii) follow up/legacy. It was left for a sessional sub-committee chaired by Robert Bowen to produce a consolidate statement on pilot projects.

Implementation of Coastal GOOS: an emerging POGO-COOP collaboration

The Partnership for Observations of the Global Oceans (POGO) is an international network of major oceanographic institutions that was created in 1999. POGO's purpose is to promote a partnership of institutions, departments and their consortia involved in oceanographic observations, scientific research, operational services, education and training.

POGO can complement the efforts of GOOS in general. In particular, POGO can help to accelerate and coordinate the implementation of various elements of GOOS. There is also a shared interest in training, education and capacity building. These are clearly areas where POGO and GOOS can work together.

When it comes to COOP, we have to bear in mind that POGO has a global perspective, whereas COOP has a coastal focus. Many coastal issues are best dealt with at regional, or national levels, and POGO, with its limited resources, cannot at the moment afford to dilute its attention away from the global perspective. Therefore, the co-operation between POGO and COOP are perhaps best achieved in relation to issues that transcend the regional perspective. There are indeed several issues where POGO and COOP can find such common grounds. Some of these are listed below:

- setting up a common, global skeleton of key observations;
- setting common standards and protocols for core measurements;
- sharing methods for data archiving and data management;
- comparing “typologies” of ecosystems which transcend regional boundaries;
- providing boundary conditions for open-ocean models;

- sharing techniques of analyses and modelling.
- POGO and COOP also share common interests in enhanced observations of biological variables.

With respect to the use of remote sensing of ocean color for mapping biological variables such as phytoplankton concentration and primary production, the algorithms are best developed for open oceans, and are now being extended to the coastal waters. With respect to *in situ* measurement techniques, new techniques are perhaps best developed and tested in coastal waters, then migrated to open-ocean waters. Thus, when it comes to biological observations, there are several reasons why POGO and COOP should work together for the mutual benefit of both sides. More information about POGO is available at <http://www.oceanpartners.org>.

3. COORDINATION AND OVERSIGHT OF THE IMPLEMENTATION OF THE COASTAL GOOS MODULE

At this point in time it is not evident how implementation of COOP's plans will be overseen. There appear to be two options: (i) the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology; or (ii) an independent mechanism (i.e. Joint Commission for Coastal GOOS Implementation).

JCOMM is a recent merger the IOC/WMO committee on the Integrated Global Ocean Services System (responsible for upper ocean measurements, primarily physical) and WMO's Commission of Marine Meteorology (CMM) (responsible for marine meteorology). JCOMM was created to provide a coordination and management for the implementation of GOOS/GCOS and a range of other operational oceanographic and marine meteorological activities. JCOMM's terms of reference are to: (i) further develop the observing networks; (ii) implement data management systems; (iii) deliver products and services; (iv) provide capacity building to Member States; and (v) assist in the documentation and management of the data in international systems. JCOMM meet every four years and the first meeting was held in Iceland in June 2001. A number of operational observing programmes, in the GOOS Initial Observing System already reports to JCOMM. The International Oceanographic Data and Information Exchange programme of IOC (IODE) will not be part of JCOMM but will be strongly linked.

One of the major concerns, from a COOP standpoint of view, is that JCOMM with its proposed organization currently does not have any mechanisms in place to deal with non-physical measurements (biogeochemical and socioeconomic). Another aspect of this is that it may be a slow process for JCOMM to include and embrace such measurements as JCOMM only meets every four years.

The panel concluded that while JCOMM is not perfect, "it does provide a house to which you can add rooms". Additionally it was noted that IODE also is changing and may become a vehicle for management of non-physical data. Consequently it was decided to write and inform JCOMM that COOP did not want to create another oversight body. At the same time COOP recommended that, with the proper representation and structure, JCOMM could incorporate the coordinated implementation of the coastal module into its Terms of Reference/work programme. Specifically COOP recommended that: (i) the membership of JCOMM and its intersessional working structure fully represent the needs of the coastal module; and (ii) JCOMM work intersessionally to prepare for and begin implementation of the coastal module, including the required non-physical measurements, products and services.

4. THE COOP INTEGRATED STRATEGIC DESIGN PLAN: STATUS

The integrated strategic design plan for the coastal module of GOOS will incorporate and build on the strategic design plans which were finalized at the end of 2000 by each of the three former "coastal" design panels under GOOS, i.e. C-GOOS, HOTO, and LMR panels. These design plans are available from IOC and at <http://ioc.unesco.org/goos/doclist.htm>).

At the 1st Session of COOP, the Panel had agreed to a tentative outline of the integrated, strategic design plan for the coastal module of the GOOS (see pages 16 – 20) in GOOS Report No. 95; <http://ioc.unesco.org/goos/docs/doclist.htm>).

Several intersessional working groups had been in place since COOP I and had circulated draft chapters of the integrated strategic design plan, prior to the COOP II session. The working group chairs presented the following chapters on:

- Introduction & Design Framework (Malone)
- Applications (Guddal)
- An Integrated Systems Approach (Bowen)
- The Initial Subsystem for Observations & Selection of the Common Variables (Hall)
- Combining Observations and Models (Fogarty)
- Communications and Data Management Subsystem (Gajewski)

The panel discussed the draft chapters and provided suggestions and modifications to be incorporated in the final version of the integrated strategic design plan.

Following the plenary session the panel was organized into breakout groups that addressed chapters on measurements, data streams, and applications:

- Observing Subsystem & Models: Marine Services & Natural Hazards;
- Observing Subsystem & Models: Ecosystem Health and LMRs;
- Observing Subsystem & Models: Public Health.

At the end of the session the panel met in plenary to review the progress and discussed the timetable for finishing the plan. It was agreed that a first draft of all chapters should be supplied to Tom Malone by 1 August 2001, who would do the editorial integration and produce a complete document. This document would be circulated among the panel members prior to COOP III. At COOP III the final draft version of the plan is expected to be briefly discussed and reviewed. At COOP III it is also expected to be the discussions on the integrated implementation plan for the coastal module of GOOS.

5. VENUE FOR COOP-III

Vietnam was suggested as a venue for the 3rd Session of COOP and it was left for the Chairman and Technical Secretary in collaboration with Johannes Guddal and Michael Depledge to explore this suggestion and to develop the themes for the next GOOS Users' Forum.

6. CLOSING

In closing Tom Malone again thanked Serena Fondi Umani, Paola del Negro, Claus Falconi, Chiara Larato and Elena Barberi for all the excellent assistance they had provided throughout the meeting.

ANNEX I

AGENDA FOR THE GOOS USERS' FORUM

5 June 2001

Hotel Savoia Excelsior
Riva del Mandracchio 4,
34124 Trieste, Italy

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|-------------|--|
| 9:00-9:30 | Opening Session
W. Nowlin, Chairman of GOOS
T. Aarup, IOC/GOOS representative |
| 9:30-9:45 | “MedGOOS and EuroGOOS”
S. Vallergera, Director, IMC, Oristano, Italy |
| 9:45-10:00 | “COOP and CAOS”
T. Malone, Director, Horn Point Laboratory, University of Maryland,
USA |
| 10:00-10:15 | “The new international project ADRICOSM”
N. Pinardi, Associate Professor, University of Bologna, Italy |
| 10:15-10:30 | “Initiatives and activities for the protection of the coastal marine
environment of the Adriatic Sea”M. Avancini, Division Director,
Servizio Difesa Mare per la protezione dell'ambiente marino e costiero
in adriatico, Italian Ministry for the Environment, Roma, Italy |
| 10:30-10:45 | “PRISMA I and PRISMA II results”
R. Pagnotta, Senior Scientist, IRSA-CNR, Roma, Italy |
| 10:45-11:15 | Coffee Break |
| 11:15-11:30 | “MedGLOSS in the Adriatic”
D.S. Rosen, Senior Scientist, IOLR, Haifa, Israel |
| 11:30-11:45 | “Alpe-Adria Project results”
D. Degobbi, Senior Scientist, Rudjer Boskovic Institute, Rovinj,
Croatia |
| 11:45-12:00 | “Interreg Trieste”
S. Fonda-Umani, Director, Laboratorio di Biologia Marina, Trieste,
Italy |
| 12:00-12:15 | “Interreg Veneto”
S. Rabitti, Director, Istituto di Biologia del Mare-CNR, Venezia, Italy |
| 12:15-12:30 | “Croatian national projects”
N. Smolaka, Director, Rudjer Boskovic Institute, Rovinj, Croatia |

12:30-12:45	“Slovenian national projects” A. Malej, Director, Marine Biological Station, Piran, Slovenia
12:45-13:00	“Mediterranean Forecasting System” N. Pinardi, Associate Professor, University of Bologna, Italy
13:00-13:15	“Mucillagini in Adriatico e Tirreno-MAT” M. Giani, Senior Scientist, ICRAM, Chioggia, Italy
13:15-13:30	“Adriatic Circulation Experiment” P. Poulain, Senior Scientist, OGS, Trieste, Italy
13:30-15:00	Lunch break
15:00–16:30	Round Table Development of an Action Plan for COOP Adriatic Pilot Project Moderators: Pinardi, Fonda, Malej, Smolaka, Malone Opening Talk: “Synthesis of the results and the GOOS-COOP Adriatic perspective”
16:30–16:45	Coffee break
16:45–18:30	Discussion

ANNEX II

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ANNEX III

AGENDA FOR THE COASTAL OCEAN OBSERVATIONS PANEL MEETING

Wednesday, 6 June 0900-1730

Morning (0900 - 1200, Break at 10:30)

1. PLENARY: ORGANIZATION OF THE MEETING

- 1.1 OPENING (IOC, AARUP)
- 1.2 WELCOMING REMARKS (HOSTS, ORGANIZING COMMITTEE)
- 1.3 ADOPTION OF THE AGENDA (Malone, Knap)

2. PLENARY: REPORTS OF THE CO-CHAIRS

- 2.1 GSC-IV: THE INTEGRATED DESIGN PLAN FOR COOS (MALONE)
- 2.2 PROPOSED WORKPLAN 2001-2002 (Knap)

3. PLENARY: IMPLEMENTATION ISSUES

- 3.1 PROMOTION OF COOS (Hall)
- 3.2 RECOGNITION OF PILOT AND DEMONSTRATION PROJECTS (Knap)
- 3.3 COORDINATION AND OVERSIGHT OF COOS IMPLEMENTATION (Malone)
- 3.4 IMPLEMENTING COOS: AN EMERGING POGO-COOP PARTNERSHIP (Shubha)

LUNCH (1200 - 1300)

Afternoon (1300 - 1730, Break at 1500)

4. PLENARY: REPORTS FROM INTERSESSION WORKING GROUP CHAIRS (REPORT ON STATUS AND IDENTIFY AREAS THAT NEED WORK)

- 4.1 INTRODUCTION & DESIGN FRAMEWORK (Malone)
- 4.2 APPLICATIONS (Guddal)
- 4.3 AN INTEGRATED SYSTEMS APPROACH (Bowen)
- 4.4 THE INITIAL SUBSYSTEM FOR OBSERVATIONS & SELECTION OF THE COMMON VARIABLES (Hall)

Thursday, 7 June 0830-1730

Morning (0830 - 1200, Break at 1030)

- 4.5 COMBINING OBSERVATIONS AND MODELS (Fogarty)
- 4.6 COMMUNICATIONS AND DATA MANAGEMENT SUBSYSTEM (Gajewski)
- 4.7 BUILDING AND SUSTAINING THE COASTAL COMPONENT OF GOOS (Knap)

5. WORKING SESSION A

5.1 DISCUSS SELECTIONS OF THE COMMON VARIABLES & CHARGE TO THE WORKING GROUPS

LUNCH (1200 - 1300)

Afternoon (1300 - 1730, Break at 1500)

5.2 BREAKOUT GROUPS (MEASUREMENTS, DATA STREAMS, AND APPLICATIONS)

5.2.1 APPLICATIONS & AN INTEGRATED APPROACH

5.2.2 OBSERVING SUBSYSTEM & MODELS: MARINE SERVICES & NATURAL HAZARDS

5.2.3 OBSERVING SUBSYSTEM & MODELS: ECOSYSTEM HEALTH AND LMRS

5.2.4 OBSERVING SUBSYSTEM & MODELS: PUBLIC HEALTH

Friday, 8 June 0830-1600

Morning (0830 - 1200, Break at 1030)

6. PLENARY: REPORTS FROM SESSION A BREAKOUT GROUP CHAIRS, GENERAL DISCUSSION

7. WORKING SESSION B: BREAKOUT GROUPS (DATA COMMUNICATIONS AND MANAGEMENT, AND BUILDING-SUSTAINING COOS)

7.1 COMMUNICATIONS NETWORK AND DATA MANAGEMENT

7.2 BUILDING & SUSTAINING COOS

LUNCH (1200 - 1300)

Afternoon (1300 - 1600)

8. PLENARY

8.1 SESSION B REPORTS FROM BREAKOUT GROUP CHAIRS, GENERAL DISCUSSION

8.2 INTERSESSION ACTION PLAN (WRITING ASSIGNMENTS)

9. COOP-III (TIME, VENUE)

ANNEX IV

LIST OF ACRONYMS

CAOS	Coordinated Adriatic Observing System
CEOS	Committee on Earth Observation Satellites
C-GOOS	Coastal Panel of GOOS
CMM	Commission on Marine Meteorology (of WMO)
CNES	Centre National d'Etudes Spatiale (France)
COOP	Coastal Ocean Observations Panel
ESA	European Space Agency
EUMETSAT	European Organization for the Exploration of Meteorological Satellites
FAO	Food and Agricultural Organization
GCOS	Global Climate Observing System
GLOBEC	Global Ocean Ecosystem Dynamics
GLOSS	Global Sea Level Observing System
GOOS	Global Ocean Observing System
GOOS-IOS	GOOS-Initial Observing System
GSC	GOOS Steering Committee
GTOS	Global Terrestrial Observing System
G3OS	Sponsors Group for the Global Observing Systems
HOTO	Health of the Oceans
ICSU	International Council for Science
IGBP	International Geosphere - Biosphere Programme
I-GOOS	Intergovernmental Committee for GOOS
IGOS	Integrated Global Observing Strategy
IGOS-P	Integrated Global Observing Strategy Partnership
IGOSS	Integrated Global Ocean Services System
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IODE	International Ocean Data and Information Exchange programme
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
LMR	Living Marine Resources
LOICZ	Land-Ocean Interactions in the Coastal Zone
MedGOOS	Mediterranean regional GOOS
NASA	National Aeronautics and Space Administration (USA)
NASDA	National Space Agency of Japan
NATO	North Atlantic Treaty Organization
NOAA	National Oceanic and Atmospheric Administration (USA)
ONR	Office of Naval Research
OOPC	Ocean Observations Panel for Climate
POGO	Partnership for Observation of the Global Ocean
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Cultural and Scientific Organization
WMO	World Meteorological Organization
WWW	World Weather Watch (WMO)