

**INTERGOVERNMENTAL  
OCEANOGRAPHIC  
COMMISSION (IOC)**  
(of UNESCO)

**WORLD  
METEOROLOGICAL  
ORGANIZATION**  
(WMO)

**UNITED NATIONS  
ENVIRONMENT  
PROGRAMME**  
(UNEP)

**INTERNATIONAL  
COUNCIL OF  
SCIENTIFIC UNIONS**  
(ICSU)

**INTERGOVERNMENTAL COMMITTEE FOR  
THE GLOBAL OCEAN OBSERVING SYSTEM  
(I-GOOS)**

**STRATEGY SUB-COMMITTEE**

**THIRD SESSION**

GENEVA, 27-29 JANUARY 1997

**FINAL REPORT**

## GENERAL SUMMARY OF THE WORK OF THE SESSION

### 1. ORGANIZATION OF THE SESSION (agenda item 1)

#### 1.1 Opening of the session (agenda item 1.1)

1.1.1 The third session of the I-GOOS Strategy Sub-committee (SSC) was opened by the chairman of I-GOOS, Prof. M. Glass, at 0930 hrs on Monday 27 January 1997 in the WMO headquarters building, Geneva. Prof. Glass welcomed SSC members and introduced Mr R. Landis, Director of the WWW Department of the WMO Secretariat.

1.1.2 On behalf of the Secretary-General of WMO, Prof. G.O.P. Obasi, Mr Landis welcomed participants to the meeting, to WMO and to Geneva. He recalled the important role already played by the SSC in GOOS planning, including in particular the development of the GOOS Strategic Plan, and noted that the finalization of this plan, the development of the GOOS handbook, and preparations for I-GOOS-III and future agreements meetings were major items for the present meeting. Mr Landis then referred to the recent meeting of the Interagency Sponsors Group for the Global Observing Systems (GOOS, GCOS and GTOS, the G3OS), and the proposals made there for harmonizing and better coordinating the G3OS. He indicated that the SSC should carefully review these proposals, with a view to making recommendations on them to I-GOOS and the GOOS sponsors. Finally, he assured the meeting of the full support of the Secretariat in its work and wished participants a successful meeting and an enjoyable stay in Geneva.

1.1.3 The list of participants in the meeting is given in Annex I.

#### 1.2 Adoption of the agenda (agenda item 1.2)

1.2.1 The meeting adopted its agenda on the basis of the Provisional Agenda, with some small modifications. It was also agreed to suppress most of the sub-items in the final report, since these were more in the nature of guidance for the discussion than separate issues. The agenda adopted is given in Annex II.

#### 1.3 Working arrangements (agenda item 1.3)

1.3.1 The SSC agreed its hours of work and other arrangements necessary for the meeting. The documentation was introduced by the Secretariats.

### 2. STATUS AND ROLE OF THE SSC (agenda item 2)

2.1 The SSC noted the revised terms of reference and membership which had been provided to it by I-GOOS-PS-II (Washington, D.C., May 1996), which emphasised the advisory role of the sub-committee and the requirement for enhanced coordination with J-GOOS. In this context, it further noted the agreements made at the GOOS Sponsors Meetings (September and November 1996) concerning I-GOOS/J-GOOS interaction and coordination, and welcomed the fact that the chairman and vice-chairman of J-GOOS were now members of the SSC. The SSC recognized that many of the difficulties to date in properly coordinating and managing GOOS development had stemmed from a lack of communication and consultation between I-GOOS and J-GOOS. It therefore supported the new concept of an overall "executive" steering committee for GOOS.

2.2 In this context, the SSC noted with interest the proposals made by the recent meeting of the Interagency Sponsors Group for the Global Observing Systems (the G3OS, Geneva, January

1997), in particular concerning the harmonization of structures and terminology within the three systems, with each to have their own overall Steering Committee, and with the possibility of an eventual single intergovernmental body for the three systems. The meeting also emphasised participation by the G3OS in discussions on an integrated global observing system, as well as coordination, as appropriate, in international and intergovernmental meetings. In line with these proposals, and in the interests of improving the structure and coherence of GOOS planning and implementation, the SSC formulated a proposal for an amended committee structure for GOOS. This proposal, with accompanying rationale, is given in Annex III. The SSC recommended the proposal for consideration by the sponsors, J-GOOS and I-GOOS, and noted that the proposal also took account of the possibility of an eventual joint intergovernmental body for G3OS. It reiterated the continuing importance of the role of an intergovernmental body for GOOS, and the support which the Steering Committee should provide to the intergovernmental process, which was where final decisions concerning GOOS form, structure and implementation would be taken.

### **3. REVIEW OF GOOS DEVELOPMENTS SINCE SSC-II (agenda item 3)**

3.1 Under this agenda item, the Sub-committee reviewed the main outcome of : the third session of the Joint Scientific and Technical Committee for GOOS (Paris, 23-25 April 1996); the second Planning Session of the IOC-WMO-UNEP Committee for GOOS (Washington, DC, 16-17 May 1996); the Preparatory Meeting on a Sponsors Group for the Global Observing Systems (GCOS, GOOS and GTOS) (Geneva, 15 October 1996). It further noted the relevant decisions of the WMO and IOC Executive Councils.

3.2 During the ensuing discussion, special attention was given to the problems encountered with the GOOS Coastal Module. The Sub-committee noted the holding of a workshop on the topic (Miami, FL, 24-28 February 1997). It recalled that, at the G3OS cosponsors meeting, the representative of GTOS had expressed the wish that the GOOS Coastal Module would form a joint panel with GTOS in order to avoid duplication of efforts between the two observing systems on common topics. This question should be dealt with at the workshop with the representative of UNEP, as should be the question of the relationship between the Coastal Module and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

3.3 The sub-committee expressed the wish that the workshop would allow for a better definition of the framework within which the coastal module would operate, as well as the constraints applying to its design and content. In this regard it noted that the report of the meeting held in the USA in December 1996 on this topic might serve as a useful resource document for the GOOS coastal workshop in Miami. The sub-committee believed that the various GOOS modules should first prepare strategic designs comprising measurements addressing the integrated requirements of identifiable user communities. The scope of the modules would become evident once these requirements had been addressed and incorporated into the strategic design.

#### 4. IMPLEMENTATION ACTIVITIES (agenda item 4)

##### 4.1 IGOSS, IODE, DBCP, etc. (agenda item 4.1)

4.1.1 The SSC noted with interest a presentation by the Secretariats on current activities within the DBCP and IGOSS, in particular in support of GOOS and the implementation of the joint GOOS/GCOS ocean climate module. It supported and encouraged this work for the operational coordination and management of long-term networks of drifting buoys and ship-of-opportunity XBT lines, which were recognized as being important components of GOOS. At the same time, it noted the significant, on-going contribution of research activities to these networks, and accepted that a fully implemented GOOS would almost certainly always include some such activities, and that in this context the *operational* aspect of GOOS referred more to requirements, international coordination, uniform observational and QC standards, etc than to complete operational funding and maintenance of networks.

4.1.2 The SSC recognized the critical importance of the dedicated technical/operations coordinators to both the DBCP and IGOSS, and noted with concern the possibility that the IGOSS operations coordinator might not be maintained after June 1997. It strongly urged both Member States and the Secretariats to make every effort to ensure the continuation of this position.

4.1.3 Finally on this item, the SSC noted with appreciation the offer by the Russian Federation to run an XBT line from St. Petersburg to the Antarctic, provided the probes were made available from elsewhere. It requested that this offer be conveyed to the forthcoming meeting of the IGOSS SOOP Implementation Panel.

##### 4.2 Regional activities (agenda item 4.2)

4.2.1 Under this agenda item, the Sub-committee was presented with updates on NEAR GOOS by Prof. Taira, EuroGOOS by Prof. Glass, on the GOOS capacity building activities by Dr. Stel and on activities in the Black Sea, by Dr V. Ryabinin.

##### *North-East Asian Regional GOOS*

4.2.2 The development of the North-East Asian Regional GOOS continues, as a demonstration case on a regional approach to GOOS in the WESTPAC region. There has been much progress made on the project in 1996, and most importantly the starting of the NEAR-GOOS data exchange. The Co-ordinating Committee for NEAR-GOOS held its first session in Bangkok, Thailand, from 4 to 6 September 1996. The committee was established as a management body, to review periodically the project, starting in 1996. During the session, the committee completed the Implementation Plan and prepared an Operations Manual. In accordance with the latter, the NEAR-GOOS data exchange started via Internet. The committee however agreed it had to continue to review the Operations Manual. Main databases of the system are maintained by the Japan Meteorological Agency (JMA) and the Japan Oceanographic Data Centre (JODC). Furthermore, as the main "entry" to the project, a NEAR-GOOS homepage was established within the GOOS homepage. The committee agreed to organize a training course for the WESTPAC region with the support of Japan, with a view to widening NEAR-GOOS experience and involving more WESTPAC countries in GOOS. The second session of the Co-ordinating Committee will be held in May 1997.

4.2.3 NEAR GOOS started, in October 1996, to operate a real-time data base at the Japan Meteorological Agency and a delayed mode data base at the Japan Oceanographic Data Centre. The oceanographic data obtained in the NEAR GOOS area, viz the Japan Sea, Yellow Sea and East China Sea, surrounded by China, Japan, Korea and Russia, will be reported over the GTS or directly through e-mail to the real-time data base. The data are freely accessible. They are to be transferred to the delayed mode data base after 30 days, where they are also accessible to registered users.

4.2.4 The Fisheries Agencies of Japan, the Japan Meteorological Agency, the Hydrographic Department and Universities have agreed to report the data obtained from their observational ships. Distribution of the operational manual of NEAR GOOS is now planned.

4.2.5 A research group of the Japanese Universities has submitted a plan to monitor the volume transported by ocean currents by using submarine cables and to forecast sea conditions by making best use of daily mapping of temperature, salinity and currents, which is expected to be an important NEAR GOOS product.

### *EuroGOOS*

4.2.6 The main achievements of EuroGOOS during 1996 are as follows:

- (a) a major EuroGOOS meeting was held in the Hague, Netherlands, gathering managers, scientists, industrials and politicians. A broad understanding of what EuroGOOS was and could provide was reached and widely accepted. A Dutch initiative to put EuroGOOS on the European ministerial agenda was announced and welcome. A publication of the papers presented is being prepared, and is expected to occur at the end of 1997;
- (b) The preparation of regional European Test Cases in the Arctic, the Baltic and Mediterranean seas, and on the European shelf was continued. In order that all possible institutions may participate in the Test Cases, EuroGOOS is now open to organizations of European countries belonging to EU, ESF and the Council of Europe;
- (c) A new activity was considered in the field of basin-scale (Atlantic) and global operational oceanography;
- (d) A working group on capacity building and another one on the socio-economy of EuroGOOS were established;
- (e) A "Strategy for EuroGOOS" document was published and a plan is presently being prepared;
- (f) A EuroGOOS poll was organized, which indicated members' intention to also act in the southern Atlantic and in the field of capacity building.

### *Capacity building*

4.2.7 Dr. Stel informed the Sub-committee about the most recent developments with respect to capacity building activities within IOC and GOOS. The GOOS CP Panel has more or less established its membership, although nominations from Malta, Japan and SOPAC are still missing.

On the 17 January, a small brainstorming meeting was organized in Bremen, Germany, to develop an outline of an overall IOC/TEMA/CB strategic plan. Once the plan is developed, a similar, more focussed plan will be prepared for GOOS. The basic idea is to make a "package" of activities (to be implemented in some IOC regions), for which funding will be sought from national and international donors. The package should also include funding for management and co-ordination at the global and regional levels.

4.2.8 A series of GOOS capacity building workshops is planned. The first one took place already in November 1996, in conjunction with the session of the regional Committee for IOCINDIO, in Goa, India. The workshop emphasized the importance of the coastal module (pollution, resources). The second one will take place from 11 to 15 March 1997 in Mombasa, Kenya. The result of this "*LOICZ-related partners in marine science programme for Eastern Africa*" workshop should be a five-year workplan in a ten-year scope. Scientific co-operation is the nucleus of this plan, together with country-specific capacity building activities. Participants will come from four European and five Eastern African countries, as well as IOC, UNEP and national donors. A third workshop is planned for the 1997 summer in Malta. Other workshops are planned for the SOPAC and South America region.

4.2.9 Finally, Dr. Stel expressed concern to the fact that there was no focal point for CB in the IOC GOOS Support Office.

#### *Black Sea*

4.2.10 Dr Ryabinin informed the sub-committee of current developments under the IOC Regional Sub-Committee for the Black Sea, including the establishment of a project on development of marine and oceanographic services in the region. Restoration of the marine observing network, preparation of an inventory of data (metadata), models, etc. are envisaged within the project. The sub-committee noted this information and considered that the project could potentially develop in cooperation with the Mediterranean pilot project of EuroGOOS.

#### 4.3 GxOS *in situ* observations meeting (agenda item 4.3)

4.3.1 The Director of the Joint Planning Office for GCOS, Dr T. Spence, reviewed the outcome of the meeting on *In situ observations for the Global Observing Systems*, co-organized by GCOS, GOOS and GTOS and held in Geneva in September 1996. The meeting addressed the **in situ** components of atmospheric, oceanic and terrestrial observing systems. A special session considered the role of **in situ** observations in calibration/validation of satellite and other remote sensing observations. The meeting adopted several recommendations affecting ocean observations in particular, as well as coordination among the three systems. For the latter, the need was stressed for close cooperation among the systems on common issues such as principles, prioritization and implementation, which the SSC fully supported.

#### 4.4 CEOS (agenda item 4.4)

4.4.1 The Director of the JPO for GCOS reviewed recent developments with regard to an integrated global observing system, and the establishment by CEOS of groups to consider affiliate requirements in a coordinated fashion. He urged a stronger role to be played by GOOS in these activities. The SSC supported this view, and urged the GSO to make every effort to ensure strong GOOS representation and input to these activities in the future, in particular at the first meeting of the analysis group in Darmstadt in February 1997. GOOS had been invited to participate in

the first meeting of the CEOS Strategic Implementation Team, Irvine, Ca, USA, in February 1997. The SSC noted with appreciation that Dr McEwan would attend this meeting.

#### 4.5 Other (agenda item 4.5)

4.5.1 Under this item, the SSC was informed of the proposal made by the president of the WMO Commission for Marine Meteorology that CMM might eventually be cosponsored by IOC, in order for it to more effectively deal with its expanding role in coordinating, regulating and managing marine monitoring systems and the provision of marine services, and also to allow an eventual rationalization and consolidation of the present diverse approach to such activities. It further noted the recommendation of the JSTC for GCOS, that consideration be given to a cosponsored CMM undertaking the role of implementation body for the GOOS/GCOS ocean climate module. These proposals were to be considered in depth by the forthcoming CMM session (Havana, March 1997), which was expected to recommend continuation of the detailed studies on the subject, and the eventual presentation of a single concrete proposal for consideration by the governing bodies of WMO and IOC.

4.5.2 The SSC recognized the potential merits to GOOS of such a joint implementation body, but at the same time noted the complexity of the task and the practical difficulties in combining sometimes very disparate disciplines and practices. It therefore gave cautious but positive support to the proposal and the continuation of the studies now underway, and requested that GOOS be kept closely informed of progress.

### 5. GOOS PLANNING (agenda item 5)

5.1 Under this item, presentations were first made to the SSC on the following, in order:

- . proposals by the GOOS sponsors for a one-day meeting on *Current perspectives on GOOS*, to take place on 25 June 1997, just prior to I-GOOS-III and as partial preparation for a ministerial meeting on GOOS in 1998; this meeting was to involve essentially a presentation of the draft document *The Realization of GOOS* (see below);
- . the draft *GOOS principles*, prepared for the SSC by Dr G. Needler;
- . the outline of *The Realization of GOOS*, as initiated by J-GOOS and now being prepared by a consultant, Dr P. Ryder under the direction of a J-GOOS/I-GOOS steering group.

5.2 The SSC strongly supported the concept, preparation process and outline for the *Realization of GOOS* document, as presented by Dr Ryder, and expressed its appreciation to him for the work accomplished to date. Some specific comments were offered at the session, and SSC members were encouraged to send additional comments directly to Dr Ryder. The SSC further requested that its members should individually be included from now on in the development and refinement process for the document. The SSC also proposed that a more appropriate title for the document would be *The Realization of GOOS: Priorities for Action*.

5.3 The SSC agreed on the importance of having a set of guiding principles for GOOS, and expressed its appreciation to Dr Needler for the draft proposals which he had developed for these principles. Following some discussion, in particular on the type of principles required and their form of presentation, the SSC finally agreed the initial sets as given in Annex IV, which should be reviewed by J-GOOS-IV and subsequently presented to I-GOOS-III for adoption.

5.4 The SSC strongly supported the need for an extensive consultative process in the refinement and eventual adoption of the *Realization of GOOS: Priorities for Action*, to involve all potential GOOS interest groups including heads of national agencies. It also agreed that the convening of a high level commitments meeting in 1998, to include this document as a centre point, was essential. However, the process of arriving at such a meeting would be long and delicate, must be fully thought through, and should also involve GCOS. In this context, the SSC recognized that the process of entraining governments in GOOS was already underway, and that the package to be presented at the high level meeting should be carefully constructed and focussed, so as to facilitate to the extent possible the commitments process, which may involve the joint ocean climate module as an immediately realizable goal.

5.5 At the same time, however, the SSC questioned whether the timing of the proposed special June 25 meeting was appropriate, in view of the doubts surrounding the preparation needed, the incompleteness of the documentation, and other aspects. The SSC therefore recommended to the GOOS sponsors:

- (a) That the proposed June 25 meeting be abandoned as a separate event, but that the presentations planned (including those on the *Realization of GOOS: Priorities for Action*, the *GOOS Principles*, and the *Strategic Plan*) become a central feature of I-GOOS-III;
- (b) That the invitations to I-GOOS-III particularly highlight these presentations, encourage appropriate representation and also encourage initiation of preparations at the national level for the 1998 ministerial meeting;
- (c) That following I-GOOS-III, the draft *Realization of GOOS: Priorities for Action* be sent to heads of agencies of Member States of all the GOOS cosponsors, for review and input and to ensure that they played, and were seen to play, a full role in the GOOS planning process;
- (d) That a procedure be developed leading towards multinational commitments to GOOS components during 1998. The procedure should, as appropriate, include a statement of objective (i.e. to have nations make commitments to GOOS in 1998) and specify a procedure (i.e. activities and a timetable) for prior consultations with representatives of governments and other agencies likely to engender such commitments. Consideration might be given to establishing an implementation group to ensure that these activities are executed in such a manner that the objective will be fulfilled in 1998;
- (e) That this activity is coordinated with G3OS, to achieve maximum support for all systems; e.g. specifically with GCOS in respect to the ocean climate module;
- (f) That GOOS should assist in developing plans for the *participants meeting on GCOS*, which was agreed by the JSTC for GCOS, and should participate, as appropriate, with GCOS and GTOS. This meeting will be based on *The Climate Agenda* of the sponsoring organizations of GOOS.

5.6 The SSC next reviewed the complete draft *GOOS Strategic Plan*, preparation of which had been initiated at SSC-II. In doing so, the following points were noted:

- . the draft needs considerable editing to make it internally consistent and coherent;

- . the *Strategic Plan* and the *Realization of GOOS: a Plan for Action* should each be self-contained, but complementary and non-contradictory;
- . the section on module development must be more closely and directly linked with the needs assessment section;
- . the plan should be consistent with the *GOOS Principles* as agreed at the meeting; it should also be consistent with any amendments to the GOOS structure, such as that proposed in Annex III;
- . as a strategic plan, some parts (e.g. the module plan) should be made more prescriptive rather than purely descriptive;
- . the assessment of needs may be made somewhat broader than simply economic; e.g. include reference to the GPA requirements.

5.7 The SSC agreed that the document should be finalized by the incoming Director of the GSO, in time to be distributed at least one month before I-GOOS-III, for review at the national level and eventual adoption at the session. A draft of the plan should also be made available to J-GOOS-IV. It was further agreed that the final adopted plan should eventually be presented in an attractive and readable format, including colour photographs, and to this end should probably be published professionally. It requested the GSO to make suitable arrangements for such publication.

## **6. MODULE DEVELOPMENT (agenda item 6)**

6.1 The Sub-committee noted the written presentation prepared on the topic by the Secretariats. It recalled it had already discussed some of the points, such as the Coastal Module, the satellite data, etc. and did not feel it necessary to devote more time to this agenda item.

## **7. GOOS DOCUMENTATION (agenda item 7)**

7.1 GOOS handbook (agenda item 7.1)

7.1.1 The Sub-committee noted with interest the presentation by Dr. Ryabinin on the state of development of the GOOS handbook (the present outline of which is reproduced in Annex V) and his views regarding the future work to be undertaken in this regard, viz that completing the handbook would require one to one-and-a-half years for somebody working full time on it.

7.1.2 The Sub-committee first agreed that, given the *formal* nature of the handbook, material entered in it should be endorsed by I-GOOS. It secondly recognized that the handbook had to be made available both as a hard copy and in electronic form on the World Wide Web. Since by its very nature it was an evolving document, the problem of maintaining it had to be addressed. The Sub-committee considered this was the responsibility of the GSO.

7.1.3 More specifically, the Sub-committee recognized the great difference between parts one and two of the handbook, and within the latter the specific nature of chapter 5, which was likely to be regulatory and prescriptive and had to be prepared by various expert groups (e.g. those established by J-GOOS). It therefore decided to

(a) change the *parts* into *volumes*; and

(b) transform present chapter 5 of part two into a third volume.

7.1.4 Finally on this topic, the Sub-committee considered it was the responsibility of the GSO to estimate the work required for the handbook and to find ways and means of actually preparing (either by themselves or in finding the funds to hire a consultant to that effect) and issuing it, as well as to ensure its internal and external (i.e. *vis-a-vis* other GOOS publications) consistency.

## **8. PREPARATIONS FOR I-GOOS-III**

8.1 The SSC reviewed and agreed a draft provisional agenda for I-GOOS-III, in particular to include the various points as discussed under agenda items 2 and 5 above. This agenda is given in Annex.... The SSC recognized that recommendations agreed at the present meeting, with regard to GOOS structure, principles and the *Strategic Plan*, would be important action items for the session, and requested the GSO to prepare and distribute draft formal recommendations on these prior to the session, in order to properly focus attention of participants, suggest results and eventually streamline the meeting.

## **9. WORKPLAN FOR SSC (agenda item 9)**

9.1 While recognizing that, if the proposed GOOS restructuring was adopted by I-GOOS and the sponsors, the SSC would no longer exist after I-GOOS-III, the sub-committee nevertheless agreed that it was important to identify ongoing action items to be taken up by the new Steering Committee, to ensure continuity and no loss of momentum. A list of these action items should be prepared by the GSO, for the approval of I-GOOS-III.

## **10. CLOSURE OF THE SESSION (agenda item 10)**

10.1 In closing the meeting the chairman, Prof. Glass, noted the value of a small, focussed expert group such as the SSC, in being able to quickly and effectively tackle specific problems and propose solutions. He thanked all participants for their excellent input to what had been a very successful and productive meeting.

10.2 The third session of the I-GOOS Strategy Sub-committee closed at 1645 hours on Wednesday 29 January 1997.

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## ANNEX I

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**AGENDA**

**1. ORGANIZATION OF THE SESSION**

- 1.1 Opening of the session
- 1.2 Adoption of the agenda
- 1.3 Working arrangements

**2. STATUS AND ROLE OF THE SSC**

**3. REVIEW OF GOOS DEVELOPMENTS SINCE SSC-II**

**4. IMPLEMENTATION ACTIVITIES**

- 4.1 IGOSS, IODE, DBCP, *etc.*
- 4.2 Regional activities
- 4.3 GxOS *in situ* observations meeting
- 4.4 CEOS
- 4.5 Other

**5. GOOS PLANNING**

**6. MODULE DEVELOPMENT**

**7. GOOS DOCUMENTATION**

- 7.1 GOOS handbook

**8. PREPARATIONS FOR I-GOOS-III AND OTHER MEETINGS**

**9. WORKPLAN FOR SSC**

**10. CLOSURE OF THE SESSION**

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## GOOS STRUCTURAL RE-ORGANIZATION

The elements of restructuring have the following objectives:

1. To ensure the best planning and implementation of GOOS both scientifically and as a complex implementational challenge;
2. To simplify and reduce GOOS structures and eliminate ambiguities in the role of these structures;
3. To make the best use of the scientific and administrative talent volunteered by participating national organisations and supported by the GOOS sponsors and officers
4. To provide a robust model for the implementation of, and straightforward integration with other global observing systems.

### *Element 1: The GOOS Sponsors Forum (GSF).*

All GOOS sponsor organisations are brought together in a GSF composed of executive representatives of all the sponsors plus the Chairmen of I-GOOS and the GOOS Steering Committee (see below). The GSO Director participates as an observer. The Forum is chaired by the Executive Director of the primary custodian of GOOS (presently IOC). The Forum meets as occasion demands.

The Forum exists to:

1. Define and reconcile the aspirations of the sponsoring organisations for GOOS
2. Receive and react to reports from the GSO Director and GSF and I-GOOS Chairmen on GOOS progress and problems
3. Endorse and if necessary define changes to the organisational structure;
4. Approve the selection of chairmen and members of the Steering Committee;
5. Endorse the Terms of Reference and rules for the organisational elements;
6. Address and apportion internal resourcing requirements;
7. Communicate informally to the executive offices of the sponsoring organisations.

### *Element 2: I-GOOS*

The role of I-GOOS as an intergovernmental forum for the implementation of GOOS on behalf of the Member States remains substantially the same. It receives and reviews reports and recommendations from the GOOS Steering Committee (GSC) requiring governmental response, and conveys the wishes and needs of the member states to the GSC and GSO for expert design, planning and execution. It may create its own subsidiary implementational bodies but should be discouraged from duplication or overlap with the other Elements. The possible integration of the I-GOOS function with the intergovernmental implementation of the other G3OS is recognised and can be accommodated if necessary as plans evolve.

### *Element 3: The GOOS Steering Committee (GSC):*

The GSC is created by expanding the functions of the present J-GOOS and subsuming the present roles of the I-GOOS SSC, so that it will be responsible not only for the scientific and technical planning of GOOS, but will also be the primary vehicle (together with the GSO) for making recommendations on the technical aspects of implementational planning, and otherwise advising and guiding the business of I-GOOS, including the preparation of plans, reports and proposals for plenary consideration.

In addition to its Chairman, membership will be approximately ten non-governmental appointees, six being senior representatives of the scientific and technical expertise required for GOOS and the remainder representative of the agencies and national and regional bodies ultimately responsible for GOOS implementation, but preferably bringing expertise in their own right. Representatives of the 'user community' may also be appointed on a needs basis. Initially at least, the membership will be drawn largely from the present J-GOOS and SSC. Attention should be given to a spread of regional and national representation.

With the support of the GOOS Director and the GSO, the GSC will be responsible for:

1. the generation of all GOOS plans
2. the commissioning of all ESG's (see below) and reviewing of their progress
3. ensuring the compilation of advisory documents, reports and recommendations to I-GOOS and the Sponsors

*Element 4: The Expert Subgroups (ESG's):*

Obviously the GSC will be unable to broaden its responsibilities without a change in modus operandi. This will be achieved by enabling the GSC to appoint ESG's to address specific scientific, technical, crosscutting or implementational tasks requiring discrete plans. The GSC will carefully define the TOR of each group when created and ensure that to the best degree possible, the group confines its attention to the subjects as defined. Tasks will normally be designed to ensure that the ESG's have a limited lifespan, concluded with the completion of an element of GOOS planning which, when approved by the GSC, will add to an overall GOOS Plan series.

This function will differ from the present Expert Panel arrangement in the following respects:

1. The tasks may not necessarily be organised by GOOS Module, but by technical content
2. The tasks will include specific implementational elements
3. The tasks will be more closely specified by the GSC.
4. The ESG's may function more independently of the GSC, although key personnel will be encouraged to participate as non-members in relevant parts of the GSC process.

As at present, ESG's may be appointed jointly with other programmes and planning bodies.

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## GOOS PRINCIPLES

### Design principles:

1. GOOS is based on a plan designed to meet defined objectives on the basis of user needs
2. The design will assume that contributions to GOOS will be long-term and systematic
3. The system design will be reviewed regularly
4. The design will allow for flexibility of technique.
5. The design will be directed towards global problems and/or those benefiting from global observing systems
6. The design will be based on the "end-to-end" concept where possible
7. A data policy will be specified
8. The design will take into account the existence of systems outside GOOS that can contribute to and/or benefit from GOOS
9. The plan will include quality assurance procedures.

### Principles of involvement:

1. National contributions to GOOS will recognise the need for compliance with the GOOS plan.
2. Contributions will be compliant with a defined GOOS data policy.
3. Contributions should reflect an intent for sustained observations.
4. Standards of quality will apply to GOOS contributions
5. Implementation will be effected using existing national and international systems and organizations where appropriate.
6. Participation in GOOS implies an undertaking to help less-developed countries to participate and benefit.
7. Incremental contributions to GOOS will be welcomed.
8. Participants will have full autonomy in the management of their contributions.
9. Contributing nations and organisations will reserve the right to determine and limit their contributions to GOOS.
10. Use of the GOOS 'label' implies conformity with the relevant principles of GOOS



**LAY-OUT OF THE  
GLOBAL OCEAN OBSERVING SYSTEM (GOOS) HANDBOOK**

*Contents*

*Preface*

*Glossary*

VOLUME I                      PURPOSE, PLANS AND ORGANIZATION OF GOOS

**1.                      BASICS OF GOOS**

**1.1                      Definition**

[to be taken from: “*Towards Operational Oceanography: the Global Ocean Observing System (GOOS)*”]

**1.2                      Overall benefits and importance**

[may be extracted from existing documents - just a general idea of benefits is needed here]

**1.3                      GOOS general objectives**

**1.4                      Decisions of major international organizations and fora with regard to GOOS**

[recommendations and resolutions showing official support at high level]

**1.5                      International treaties and agreements applicable to GOOS scope**

[show which important treaties, etc. GOOS serves to]

**2.                      PRINCIPLES AND POLICY OF GOOS**

**2.1                      Data and product policy**

**2.2                      Technology transfer and capacity building**

**2.3                      Regional development**

**3.                      GOOS ORGANIZATION**

**3.1                      GOOS sponsors**

[very short description]

**3.2                      GOOS management and development**

3.2.1                      List of resolutions and recommendations adopted by GOOS sponsoring organizations (IOC, WMO, UNEP and ICSU).

[Only resolutions and recommendations in force are to be given here.]

3.2.2                      Terms of reference and composition of main (permanent) GOOS bodies

- 3.2.3 List of *ad hoc* and temporary Committees, Working Groups, Panels, etc. of GOOS and their terms of reference.
- 3.2.4 Contacts of major GOOS-related programmes and organizations

**3.4 GOOS strategic plan**  
[Only brief reference is needed here]

**4. GOOS MODULES**

[Description of:

each module objective(s) and expected economic benefits;  
current problems (worldwide, regional, local) pertinent to the module;  
existing ways of module products use for various purposes (e.g. for mitigation of a problem) and socio-economic benefits resulting from GOOS module activities;  
corresponding requirements in terms of measured (analyzed, predicted) elements including requirements in terms of spatial and time resolution, accuracy, forecast range, way of presentation, real time availability, etc.]

- 4.1 Climate monitoring, assessment and prediction**
- 4.2 Monitoring and assessment of marine living resources**
- 4.3 Monitoring of the coastal environment and its changes**
- 4.4 Assessment and prediction of health of the ocean**
- 4.5 Marine meteorological and oceanographic operational services**

**5. OVERALL GOOS DATA AND PRODUCTS REQUIREMENTS**

[List(s) of variables, including observations, hindcasts, analyses, forecasts, model simulation results and their relevance for GOOS modules objectives. This shows what is totally needed to meet GOOS objectives in each module. Important point: GOOS modules (section 4) specify what they need to provide their part of services. Some data requirements and products may overlap among the modules. For example, sea surface temperature may be needed by all modules. So, a joint list of data and products is required. Actual provision of data and products is to be made in GOOS outside the module structure.]

**6. INTERRELATION TO OTHER INTERNATIONAL MONITORING PROGRAMMES**

[Some GOOS observational requirements may be met by other programmes. So, there is no need for duplication of activities, but there is a need to describe co-operation with such programmes]

- 6.1 World Weather Watch**
- 6.2 GCOS**
- 6.3 GTOS**
- 6.4 Remote sensing programmes**
  - 6.4.1 CEOS
- 6.5 Others**

- 7. INTERRELATION TO OTHER INTERNATIONAL RESEARCH PROGRAMMES**  
 [Some GOOS data and product requirements may be met by other programmes. So, there is no need for duplication of activities, but there is a need to describe co-operation with such programmes]
- 7.1 WCRP**
- 7.2 IGBP**
- 7.3 Others**
- 8. DATA EXCHANGE SYSTEMS USABLE FOR GOOS PURPOSES**  
 [Actual code forms and other technical details such as WMO GTS protocols should not be given under this section, otherwise the document will be difficult to handle. However, description of principles is needed with exact references to existing guides and manuals.]
- 8.1 WMO GTS**
- 8.1.1 Purpose, structure, capabilities
- 8.1.2 Data exchange formats
- 8.2 IGOSS Telecommunication Arrangements**
- 8.3 INMARSAT**
- 8.4 ARGOS and Low Earth Orbiting Satellites (LEOS)**
- 8.5 IOC-IODE data management (including GTSP)**
- 8.6 Use of Internet**
- 8.7 Others**
- 9. GOOS CAPACITY BUILDING**
- 9.1 TEMA**
- 9.2 Others**
- 10. LIST OF VALID IMPORTANT PUBLICATIONS ON VARIOUS ASPECTS OF GOOS**  
 [with cross-reference to corresponding sections of the GOOS Handbook]

- 1. EXISTING INTERNATIONAL SYSTEMS/BODIES THAT CONTRIBUTE TO GOOS**

[The section shows which “components” of GOOS provide data and products listed in part I, sections 4 and 5. *Scientific expert panels are identifying the observations needed, which are not necessarily those presently being taken. Data from well-established operational programmes are*

*incorporated into GOOS to the extent that the data are needed to answer questions addressed by GOOS.]*

**1.1 IGOSS Ship-of-Opportunity Programme**

**1.2 GLOSS**

**1.3 The TAO Array**

**1.4 Data Buoy Co-operation Panel**

**1.5 Others (when implemented and accepted)**

**1.6 Regional components of GOOS**

1.6.1 NEAR-GOOS

1.6.2 EuroGOOS

**2. NATIONAL GOOS ACTIVITIES**

**2.1 Countries participating in GOOS**

[co-ordinating organization or person, national contacts]

**2.2 Major national efforts or events of importance to GOOS.**

**3. INFORMATION ON MOST IMPORTANT DEVELOPMENTS IN GOOS-RELATED ACTIVITIES**

[new high quality products, results of most important studies of importance to GOOS as a whole]

**4. EXAMPLES OF AVAILABLE GOOS PRODUCTS**

[list of products with  
name  
short description  
provider  
mode of access  
(user) evaluation, if available]

**5. REFERRED STATEMENTS ON USER NEEDS**

[This feedback seems to be important for GOOS development. User requirements are to be placed here along with their evaluation of some existing GOOS products. This section should facilitate exchange of important news on GOOS products.]

**6. CALENDAR OF GOOS RELATED EVENTS**

**6.1 Meetings, symposia**

**6.2 Key recent publications**

[This volume should give clear understanding of how observations are made, what are the steps of their processing, what kinds of products are available, what is their temporal and spatial scale and resolution, what is corresponding accuracy. This section should be based on GOOS scientific plan. It is one of the most difficult and time consuming parts of the document preparation work.]

1. **PHYSICAL VARIABLES (SURFACE FIELDS, SEA SURFACE TOPOGRAPHY, UPPER LAYER FIELDS, SEA ICE, DEEP OCEAN FIELDS, ACOUSTICS, OPTICS, ETC.)**
  - 1.1. **Methods and techniques of observations**
    - 1.1.1. *In-situ* observations
    - 1.1.2. Remote sensing
  - 1.2. **Data quality control, analysis, assimilation**
  - 1.3. **Prediction of physical variables of ocean state**
  
2. **CHEMICAL VARIABLES (NUTRIENTS, DISSOLVED GASES, PETROLEUM, SYNTHETIC ORGANICS, HERBICIDE/PESTICIDE, SURFACE CO<sub>2</sub> FLUX, SILICATES, TRACE METALS, ARTIFICIAL RADIONUCLIDES, PHARMACEUTICALS, ETC.)**
  - 2.1. **Methods and techniques of observations**
  - 2.2. **Data quality control, analysis**
  - 2.3. **Prediction of chemical variables of ocean state**
  
3. **BIOLOGICAL VARIABLES (HUMAN PATHOGENS, BIO-EFFECTS, BIOMASS, MARINE HABITAT DESTRUCTION, ALGAL TOXINS, FISH STOCKS, MARINE DEBRIS, ETC.)**
  - 3.1. **Methods and techniques of observations**
    - 3.1.1. *In-situ* observations
    - 3.1.2. Remote sensing
  - 3.2. **Data quality control, analysis, assimilation**
  - 3.3. **Prediction of biological parameters of ocean state**
  
4. **VARIABLES DESCRIBING COASTS AND SHELF ZONE (RATE OF COASTAL EROSION, ACCUMULATION, COASTAL SEDIMENTS, SEDIMENT TRANSPORT, ETC.)**
  - 4.1. **Methods and techniques of observations**

4.1.1. *In-situ* observations

4.1.2. Remote sensing

**4.2. Data quality control, analysis, assimilation**

**4.3. Prediction of coastal state variables**

**5. VARIABLES DESCRIBING SEA BED, OCEAN GEOPHYSICS (BATHIMETRY, GRAVITY, MAGNETICS, SOIL STRATA, COMPOSITION, ETC.)**

**5.1. Methods and techniques of observations**

**5.2. Data quality control, analysis, assimilation**

## ***ANNEXES***

*A1. List of organizations related to GOOS*

*A2. List of programmes and projects of importance to GOOS*

*A3. Acronyms*

**INTERGOVERNMENTAL  
OCEANOGRAPHIC  
COMMISSION**

**WORLD  
METEOROLOGICAL  
ORGANIZATION**

**UNITED NATIONS  
ENVIRONMENT  
PROGRAMME**

**Third Session of the IOC-WMO-UNEP Committee  
for the Global Ocean Observing System  
Paris, 25-27 June 1997**

**PROVISIONAL AGENDA**

- 1. OPENING**
  - 2. ADMINISTRATIVE ARRANGEMENTS**
    - 2.1 ADOPTION OF THE AGENDA
    - 2.2 DESIGNATION OF A RAPPORTEUR
    - 2.3 CONDUCT OF THE SESSION
  - 3. REPORT BY I-GOOS CHAIRMAN, J-GOOS CHAIRMAN AND DIRECTOR OF GOOS SUPPORT OFFICE ON INTERSESSIONAL ACTIVITIES**
  - 4. CURRENT PERSPECTIVES OF GOOS**
    - 4.1 PRINCIPLES
    - 4.2 STRATEGIC PLAN
    - 4.3 ACTION PLAN
    - 4.4 MODULE DEVELOPMENT
  - 5. THE INTEGRATED GLOBAL STRATEGY: REVIEW OF THE G3OS SPONSORS PROPOSALS AND CONSEQUENT RECOMMENDED STRUCTURAL CHANGES IN GOOS GOVERNING BODIES**
  - 6. PREPARATION OF HIGH-LEVEL MEETING FOR 1998**
  - 7. CAPACITY BUILDING**
  - 8. ESTABLISHMENT OF POSSIBLE SESSIONAL WORKING GROUPS ON ITEMS 5, 6, 7**
  - 9. CONSIDERATION OF REPORTS FROM SESSIONAL WORKING GROUPS**
  - 10. PLAN OF ACTION FOR 1997-1998**
  - 11. ELECTION OF CHAIRMAN AND VICE-CHAIRMEN**
  - 12. NEXT SESSIONS OF THE I-GOOS**
  - 13. ADOPTION OF THE REPORT**
  - 14. CLOSURE OF THE SESSION**
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