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IOC/INF-1163
Paris, 15 June 2001
English only

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

First Session of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy

First Session
Brussels, Belgium, 29 – 31 May 2001

Abstract

The First Session of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy was held in Brussels, Belgium between 29 and 31 May 2001 and attended by 21 Member States, as well as observers from ESA, EU, ICSU, IODE, SCOR and WMO. During its three days of deliberations the Group reviewed the results of the *ad hoc* Group of Experts (2000), discussions during the 33rd Session of the IOC Executive Council, the 16th Session of the IOC Committee on IODE, and been informed on the status of implementation of WMO Resolutions 40 and 25 as well as on the view of ICSU on data exchange policy. Participating Member States had also been given the opportunity to inform the Meeting on national policies. The Meeting then split into three sessional Working Groups: one dealing with the issue of a two-tier approach (as used by WMO Resolution 40, distinguishing between 'essential' and 'additional' data), and two dealing with the elements to be included in the revised policy statement. Reports of the groups were collated by the Chairman who prepared a composite statement for discussion. After substantial discussion, the First Session of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy prepared a draft statement for submission to the 21st Session of the IOC Assembly

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1. Opening

The Meeting was addressed by Dr Marc Luwel, Chief of Cabinet, Ministry of Education and Training, Flemish Government on behalf of Mrs Marleen Vanderpoorten, Minister of Education and Training of the Flemish Government. In his speech, Dr Luwel stated that the Flemish Government recognizes the importance of multilateral organizations such as UNESCO and its IOC, because these organizations give the impetus to many new developments and societal insights. The Flemish Government has demonstrated this view through (i) the strengthening of its cooperation with multilateral organizations, and particularly with UNESCO; (ii) a stronger participation in some activities of these organizations such as the ODINAFRICA project of the IOC; (iii) the creation of a new framework compatible with the principles of sustainable development to stimulate the development of dynamic and competitive knowledge-based societies.

Dr Luwel stressed the crucial importance of the Oceans and Seas as major components of the system 'Earth' and their enormous potential for humanity and the importance of easily accessible information, the exchange of which is simplified by modern technology.

The Meeting was then addressed by Mr. Frank Demeyere, on behalf of the Belgian Government Commissioner added to the Minister for Scientific Research, Mr. Y. Ylieff. Mr Demeyere explained that the joint hosting of the Meeting by the Belgian Federal and Flemish Government emphasized the importance that the various policy levels in Belgium attach to the issue of oceanographic data and information exchange. He referred to Chapters 31 and 40 of Agenda 21 where, *inter alia*, the following needs were identified: "(i) improvement of the communication and collaboration between the scientific and technological community on one hand, and the policy makers and the public at large on the other hand; (ii) improvement of the existing national and international mechanisms for the processing and exchange of information and the associated technical assistance. This should make it possible to make it possible to make information generated at the various levels available in an effective and just manner to all players while respecting national sovereignty and the laws pertaining to intellectual property rights.". Mr Demeyere closed by stating that, taking into consideration the importance of the IOC to the oceanographic and international community, each new policy statement accepted by the IOC on this issue will have an impact that extends far beyond the oceanographic community alone.

In his opening words the Executive Secretary IOC, Dr Patricio Bernal, pointed out that this Session was the beginning of a special process, as the issue of oceanographic data exchange policy is a complex one, that would probably take some time to resolve. Data policies are in a state of flux. Much concern has been generated around data sharing, and data protection. There are good economic reasons for sharing data. If Member States can agree on sharing primary data, then this will represent a considerable saving in cost as the same data collecting instruments do not have to be deployed twice for neighboring sites in neighboring countries. There are studies that demonstrate that the real economic value accrue with secondary and tertiary processing of primary data, in fact added value is created when the data are transformed in information and when information is tailored through specific products to specific users. In the Ocean there is also a factor of scale. Sharing of ocean data is the only way that remotely generated signals can be factored in local and regional models. No single region will be able to instrument a whole basin to marginally improve the accuracy of their local/regional prediction. That additional improvement will come only when all the basins are instrumented following a common strategy and when data are fully exchanged. During the past four decades the IOC has promoted a policy of open and free exchange of data. We are now attempting to revise this policy to, *inter alia*, make it compatible with WMO's Resolution 40, and also our own changing needs. Resolution 40 states that 'Members shall provide on a free and unrestricted basis essential data and products which are necessary for

the provision of services in support of the protection of life and property and the well-being of all nations' and 'Members should also provide the additional data and products which are required to sustain WMO Programmes at the global, regional, and national levels and, further, as agreed, to assist other Members in the provision of meteorological services in their countries'. The distinction between essential and additional data is important and it took WMO time and effort to clearly identify these. We now need to investigate how IOC can resolve these issues. The IOC is recognized by the United Nations as the focal point for ocean related services. It is therefore essential that the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy is successful in its deliberations.

In addressing the Meeting, Dr Angus McEwan, Chairman of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy, stated the significance of this present Meeting. Referring to the meeting of experts in May 2000, Dr McEwan recalled the widely divergent views of the experts at that time that kept the group from reaching consensus on a draft policy statement. He stated that a data exchange policy should be robust and dynamic, capable of responding to changes in technology such as the Internet. The rapid growth of the Internet in recent years has substantial impact on many aspects of research, data exchange and delivery of products and services, increasingly removing human intervention from the information flow process. To develop our data exchange policy we now have the WMO's Resolutions 40 and 25 models. These are good models because they address similar issues. However, it may not be appropriate to simply make adjustments as relevant to IOC, taking into consideration that these Resolutions were developed 6 years ago when technological changes were not as dramatic. With regard to operational oceanographic data exchange we have been able to witness an attitude change among several countries in the recent past towards a more open policy. In closing Dr McEwan concluded that this Session might not be able to complete its task in full during this Session but expressed the hope that substantial progress would be made.

2. Administrative arrangements

2.1. ADOPTION OF THE AGENDA

The Meeting adopted the Agenda as given in Annex I

2.2. CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

The Technical Secretary reviewed the arrangements of the Session and introduced the Provisional Timetable (Document IOC/IWG-ODP-I/1 Add.Prov.), Provisional List of Documents (Document IOC/IWG-ODP-I/4 prov.), and Working Documents. The final List of Participants is given in Annex IV.

3. Review of IOC's Data Policy

3.1. THE CURRENT IOC DATA POLICY

The Chairman of the Group, Dr. Angus McEwan, provided an overview of the issues relating to the current IOC Data Policy and reiterated the Terms of Reference of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy.

Dr. McEwan summarised the features and limitations of the present policies:

- *IOC Resolution 1.9 (1961):* is out of date. It does not contemplate modern technology. Responsibility is placed with WDCs. Concerns only to 'open ocean' and 'declared' programmes;
- *IODE Rec IODE-XIV.6 (1993).* 'Full and open sharing a fundamental objective'. It defines issues of management but not of content. It presumes withholding. Formally relates to 'Global Science Programmes';
- *WMO Resolution 40 (1995)*: Defines 'essential' data, and includes all *in situ* observations of the marine environment but in the context of safety and life at sea. Provides for 'Free and unrestricted' use for research and education. Concerns all data exchanged under WMO auspices. Has detailed consideration of commercial use and re-export
- *EuroGOOS Policy (2000)* Modelled on Res 40. Relates to EuroGOOS members, with liberal exchange between them. Acknowledges rights of originator, allows free access for research and education, rules access for data obtained with public funds, stresses transparency.

He noted that there was at present no overarching policy; policies gave scant consideration of likely implications of the Internet (of which examples already evident) and operationalization of marine data.

The Chairman then proceeded with comparing the characteristics of meteorological and oceanographic data as an aid in considering whether WMO Resolution 40 could be used as a template in defining IOC's policy.

Referring to Document IOC/IWG-ODP-I/6 (Issues in the formulation of a policy for the public exchange of oceanographic data and data products) the Chairman enumerated issues for which there appears to be a spirit of agreement:

- The need for an oceanographic data policy
- Existence of data of universal value and importance, over-riding sectoral interest
- The value of encouraging data-gathering and exchange
- The increasing capability to generate economically- and socially- useful products from data
- A premium on 'immediate' access of some data-types
- The potential lead of the ocean community in policy and the flow-on in other environmental areas
- Research and education should not be inhibited
- The best overall value of data is severely and proportionally limited by the limitation or cost of its availability.

He further identified issues that required special attention:

- Policy must accommodate the rights of the data provider
- Commercialization and cost-recovery are facts of life
- Participation is not cost-neutral. How to reconcile economic cost and capacity to pay?
- The rights of originators:
    - Research and education
    - Commercial, industrial, territorial use
    - Inclusion/exclusion clauses?
- Centralized holdings and 'agents'; Autonomy
- Research and subsequent operational use

- Where in product development does proprietary interest override?
- The Internet will move the goal-posts in barely imaginable ways.
- Should policy attempt to provide a 'template' for future developments?

He finalized by referring issues related to scope:

- To apply only to IOC programmes and activities?
- Coastal/open ocean
- Classification by intended use?
- Should policy distinguish operational/non-operational/research?
- Publicly funded activities
- Discounting the future. The need for a policy now.
- Compatibility with other programmes/restrictions

3.2. REPORT ON THE MEETING OF THE AD HOC GROUP ON OCEANOGRAPHIC DATA EXCHANGE POLICY

The Chairman invited the Chairman of the *Ad hoc* Working Group on Oceanographic Data Exchange Policy, Dr. David Pugh, to summarize the proceedings of the Group that met between 15 and 17 May 2000 in Paris.

Dr. Pugh reported that the meeting had been attended by a number of experts involved in the provision, management or use of oceanographic data. He stated that the meeting had resulted in a number of positive results, especially a report (IOC/INF-1144rev) that had compiled, in its annex, a comprehensive overview of policies from a variety of organizations. In this regard Dr. Pugh thanked Dr Ferris Webster, representative of ICSU, who had contributed a substantial part of this annex.

He then referred to the extensive discussions during the meeting that had led to the drafting of a 'Draft IOC Data Policy Statement', attached to this report as Annex 5.

He recalled that about half of the paragraphs had been agreed upon but that substantial discussions had ensued on issues such as commercialisation, re-export and other conditions (which are printed in italics) and it had not been possible to reach consensus on the statement in full.

3.3. REPORT ON DISCUSSIONS DURING THE 33RD SESSION OF THE IOC EXECUTIVE COUNCIL

The Technical Secretary provided a brief overview of the discussions related to ocean data policy during the 33rd Session of the IOC Executive Council. The Executive Council had noted that the increased collaboration between IOC and WMO through JCOMM called for compatibility between the data policies. The Executive Council had thanked the *ad hoc* Working Group for its accomplishments but had concluded that this matter would need the attention of an Intergovernmental Working Group, composed of representatives from Member States of the Executive Council. The Executive Council had thus established the Group, defined its terms of Reference and elected Dr Angus McEwan as Chairperson of the Group.

These Terms of Reference are attached to this report as Annex 6.

The Meeting noted that it would be preferable for WMO and IOC to have compatible and complementary data exchange policies but the Meeting noted that it would be unlikely for WMO to amend its Resolution 40 in the short term, taking into consideration the development and adoption of that Resolution had been a lengthy and arduous task.

3.4. REPORT ON DISCUSSIONS DURING THE 16TH SESSION OF THE IOC COMMITTEE ON IODE

The Chairman invited Mr Ben Searle, Chairman IODE, to report on the discussions on ocean data policy during the 16th Session of the IOC Committee on IODE, held in Lisbon, Portugal, 31 October – 8 November 2000.

Mr. Searle reported that the matter of IOC's Oceanographic Data Exchange Policy had been discussed at length during IODE-XVI. The Committee had expressed concerns over a number of restrictions as included in the statement drafted by the *ad hoc* Working Group. The Committee had also been informed that such a change to the IOC policy could have repercussions on the cooperation between IOC and the ICSU World Data Centres-Oceanography.

The IODE Committee had therefore decided to identify the consequences of such restrictions on oceanographic programmes and data centres and had prepared Recommendation IODE-XVI.5 (IOC Oceanographic Data Exchange Policy), attached to this report as Annex 7.

The Meeting noted that the discussions during IODE-XVI had concentrated on delayed-mode data but had not addressed operational oceanography data. However, in view of JCOMM, IODE would now also become more involved in operational oceanography data. The Meeting was also informed that a JCOMM Expert Team on Ocean Data Management would be set up. This Team will involve IODE experts and will coordinate delayed mode/operational data management within the framework of JCOMM.

IODE-XVI had also identified the need to expand the scope of IODE data management activities by changing to a decentralized structure involving both NODCs and research institutions with data management responsibilities.

3.5. REPORT ON WMO'S RESOLUTIONS 40 AND 25 AND THEIR IMPLEMENTATION

The Chairman invited the Representative of WMO, Mr Peter Dexter, to report on Resolutions 40 and 25 and their implementation. Mr Dexter recalled that free and unrestricted exchange of data had been a fundamental principle for both meteorology and oceanography since the establishment of WMO. However, during the past decade some conflicts had evolved with regard to commercialisation. In order to resolve these, WMO had developed a comprehensive policy and practice for the exchange of meteorological and related data and products, which was adopted unanimously by twelfth congress in 1995 . This Resolution has been successful as a compromise. In order to monitor its implementation and impact an advisory group had been established. This Group met at the end of January 2001. It made the following observations:

- The policy and practice on the free and unrestricted exchange of meteorological and related data and products as contained in Resolution 40 (Cg-XII) have continued to be applied in a generally satisfactory manner, despite some difficulties encountered. The commitment to make Resolution 40 (Cg-XII) work continues to hold;
- The group felt that there was no perceivable signal at present that Resolution 40 (Cg-XII) has influenced, either in a positive or negative manner, the flow of data and products measured in the above way. Nonetheless there had been some indication of increased willingness to make more data and products available in the period after the adoption of Resolution 40 (Cg-XII);

- Several Members had included in their notifications information on new data and products they would be making available on the GTS for the first time following adoption of Resolution 40 (Cg-XII);
- The meeting re-emphasized the importance and continued need to assess the effectiveness and impact of Resolution 40 (Cg-XII) on the availability of data and products and, in particular, the quantity of essential and additional data and products exchanged on the GTS;
- The group felt that Resolution 40 (Cg-XII) which was adopted unanimously embodies an appropriate compromise. The principle of free and unrestricted exchange ism upheld while providing ample practical safeguards and guidance.
- The group felt that there have been political, legal, economic, social, scientific and technological developments which have a bearing on the implementation of Resolution 40 (Cg-XII),.... These include globalization, alternative services delivery, commercialisation, cost-recovery, and the Internet'
- However, the group felt that a suitable approach for now would be to leave the Resolution 40 (Cg-XII) in force and to address relevant concerns in some other way...;

With regard to Resolution 25 (hydrological data), the Commission on Hydrology (CHy) confirmed that it was not possible to draw up lists of data which might be exchanged under Resolution 25 (Cg-XIII) similar to the data listed in Annex 1 of Resolution 40 (Cg-XII), but a more general description of the types of data concerned could certainly be provided...

IOC participated in the meeting of the group and had reported on relevant developments. The group had expressed its hope that IOC would succeed in maintaining its existing policy of full and open sharing of oceanographic data, thus ensuring consistency with the WMO policy as expressed in Resolution 40 (Cg-XII). It further considered that a number of major issues addressed by WMO in its data exchange practice would not necessarily arise with regard to oceanographic data exchange.

The (IWG) Meeting was informed that it had been difficult to quantify the impact of Resolution 40 on the flow of data and products on the GTS. However, the WMO/CBS was in the process of developing new assessment procedures which, it was hoped, would lead to more accurate evaluations in the future.

3.6. REPORT ON ICSU'S VIEW

The representative of ICSU, Prof. Ferris Webster, informed the meeting that ICSU had changed its name from 'International Council of Scientific Unions' to 'International Council for Science' two years ago. It is an NGO dealing with international science issues outside governmental systems. ICSU is a Partner of IOC in various projects and programmes such as WCRP (WOCE, CLIVAR), IGBP (JGOFS, LOICZ) and joint sponsor of GOOS (with IOC) and GCOS. ICSU is also responsible for the global network of nearly 50 World Data Centres, including the WDCs-Oceanography. As such a close relationship has existed for many years between ICSU and IODE.

The representative stated that IODE is seen by ICSU as an outstanding example of sharing data for research. No other discipline has such an extensive system dedicated to data and information management. ICSU is proud to be part of this system. The World Data Centres and ICSU believe in full and open exchange of data for scientists in all countries for the benefit of human kind. The representative expressed his organization's concern with regard to the part of WMO Resolution 40 restricting re-export of data. ICSU believes that this will impede scientific research as scientists have always shared data with each other. Scientists need to publish and wish to publish data on the World Wide Web. There is concern that according to WMO Resolution 40, web publishing may be seen as re-export. The

representative stated that, due to Resolution 40, some data centres had already removed some data sets with restrictions from their servers. He also called for ensuring that any new policy should not be too narrow and should be flexible in order to deal with changes in technology.

4. National statements of policy and position

The delegate of Germany, Prof. Dieter Kohnke, reported that his country supports the general principle of free and unrestricted exchange of oceanographic data. All data collected within the framework of the Global Ocean Observing System (GOOS) must be exchanged "without charge and with no conditions on their use". This will also include data from the Argo programme. Data that are exchanged internationally without conditions should also be provided for commercial purposes under the same conditions. It should however be possible to attach conditions to specific sets of research data. The delegate commented that this may actually have a positive effect on the availability of data as it might bring data sets into the international system that would, under the current policy not allowing restrictions, not be submitted. Germany recommends that the IOC Assembly should formally endorse the part of WMO Resolution 40 that refers to oceanographic data.

The delegate of Canada, Dr. Savi Narayanan, informed the meeting that an attitude change is taking place in Canada. She noted that so far, the IODE system has concentrated mainly on physical data, but will have to expand its activities, because of programmes such as GOOS, to include other important categories such as biological, fisheries and chemical data. It was recognized that (IODE) data centres can not have the required capacity or resources to deal with all categories. Canada has solved this by implementing a distributed system of data centres with the Canadian NODC (MEDS) playing the leading role. MEDS continues to be directly responsible for many of the key data types while selected regional data centres in governmental research laboratories are given the responsibility for certain types of data.In the latter case MEDS plays a coordinating role. Internationally MEDS will continue as the 'window' to Canadian data.

With regard to data exchange policy the delegate reported that all data were available on a "free and open access" basis, once entered into the system. However, some restrictions were allowed related to (i) individual scientists (permitting exclusive rights to the scientists for a limited period); (ii) third parties (eg oil companies); (iii) commercially important data (eg bathymetry data, data with legal implications). Nevertheless Canada supports the fudamental principle of "free and open" exchange of oceanographic data.

The delegate of Belgium, Dr. Edward Vanden Berghe, reported that Belgium has not yet formulated a national policy but has taken the opportunity of the IWG as an occasion to study the issue at the national level. The delegate stressed the need to support the "full and open" exchange of oceanographic data. He pointed out that the strongest argument in favour of such a principle is that data acquires value through use. Nevertheless he called attention to factors that work against totally free and open exchange: (i) privacy and confidentiality of data: in order to enable scientists to publish results, they should be granted exclusive rights to the data for a certain period starting on the date when the data become available in processed form; (ii) proprietary rights and restrictions imposed by the data provider. This should apply only to data that were not collected through public funds; (iii) commercialization of data: gains from the commercialization of data may be used for cost recovery. However it was felt that the disadvantages of commercialization of data outweigh the advantages. Fees and royalties could nevertheless be applied to derived products; (iv) recovery of marginal costs: whereas the current IOC policy allows for the charging to the requester, a marginal cost for the retrieval, processing, copying an shipping of data, it was pointed out that such cost may not be marginal for users in developing countries. Furthermore the term 'marginal' is open to wide interpretation. It was recommended that, if maintained in the revised policy, some

guidelines be prepared for the calculation of the 'marginal costs'; and (v) raw data of insufficient quality: it was recommended to ensure, especially in the case of operational data, that some preliminary quality control be applied, prior to making data available to avoid flooding of the system with low-quality data.

The delegate stressed the need to make metadata available always, even in those cases where data access restrictions applied. He also called for the continuation of the NOP system, announcing planned measurements and campaigns, as a means to avoid duplication of data-collecting efforts.

Whereas the Internet's World Wide Web provides data centres with an effective and low-cost means to provide data services, it was pointed out that users with no or low-bandwidth Internet connectivity should not be ignored.

The delegate of Cuba, Mr Guillermo Garcia Montero, informed the meeting that his country has not yet defined a national oceanographic data exchange policy, despite several years of effort. He stated that, although there are a number of institutional ocean and coastal research programmes in his country, only for the national scientific programme there exists the obligation to share data and information. Bearing in mind the importance of regional and global programmes, the delegate also called on reional programmes to apply the principle of full and open exhange. He also recalled WMO Resolution 40, adopted by WMO in 1995, and pointed out that caoacity building was, and is, essential in the imlpementation of that Resolution.

The delegate of Nigeria, Dr. Larry Awosika, expressed his country's great interest, as a maritime State, in oceanographic data and information, since a large part of its economic resources originate from the marine environment. Nigeria believes that sustainable management of marine resources requires an understanding of data and information on oceanographic processes not only within national jursidiction but also beyond. Nigeria believes that free flow of oceanographic data and information should ensure effective monitoring of the health of the oceans and subsequently sustainable management of the global ocean. Nigeria therefore supports all efforts that will guarantee free flow of data and information and accordingly supported WMO Resolution 40. Nigeria supports national and global research initiatives to collect, process and interpret oceanographic data and information as well as a policy that will ensure free and unrestricted exchange of oceanographic data and information. Nigeria does not support commercialization of oceanographic data and information. Nigeria stresses the need for a policy that is consistent to the IOCEA-V declaration (May 2000) on free and unrestrcited exchange of oceanographic data and information (also included in IOC.INF-1144rev).

The delegate of Russia, Mr Nick Mikhailov, informed the Meeting that the national policy of the Russian Federation is based on a number of federal laws. On the basis of these laws the Russian federation supports the fundamental principle of full and open exchange of oceanographic data. However, these good principles cannot always be strictly followed as they may conflict with real practises. Therefore, the delegate stated that the IOC data polciy should reflect: (i) the rights of data providers/originators; (ii) commercial, industrial, territorial uses; and (iii) national security.

He stated that the main principles of WMO Resolution 40 and IOC's existing data policy are not different but that there is some diversity in the specifics. Referring to the fact that the Russian NODC is based at the Russian Meteorological service, he therefore called for an approach integrating the IOC and WMO principles.

The delegate of Kenya, Dr. Johnson Kazungu, informed the meeting that Kenya presently does not have a national oceanographic data exchange policy. Most of the

oceanographic data sets for open ocean and coastal waters originate from international programmes (and are obtained through the IODE system). Nationally collected data are generated by only a few government agencies and are often available only for a fee. Others are not available in electronic form. Most private research initiatives do not feel obliged to share data. Capacity to manage the data in terms of trained human resources and equipment are often lacking.

The delegate called to not only define an international policy for the exchange of oceanographic data, but also to address the needs of developing countries with regard to human and infrastructure capacity to acquire and manage data, essential for national development.

The delegate of Japan, Mr. Satoshi Sato, pointed out that observation data on various ocean phenomena and the ocean ecosystem are not reproducible. Accordingly oceanographic data collected within the framework of IOC programmes should be treated as common property of IOC Member States and as common property of human kind. IOC should ensure the long-term availability of data and results of IOC programmes to all. It was with this in mind that the IOC established its IODE programme, promoting the exchange of oceanographic data among member states on the basis of "full and open sharing". Japan therefore feels that this principle should be maintained. Nevertheless, the rights of the data originator should be recognized including the right to exclusive use for a set period to allow publishing of research results.

The delegate of Greece, Dr. Efstathios Balopoulos, reported that, during the past decade, Greece has participated in a large number of international projects related to oceanographic data management, within the framework of international organizations such as the IOC and the European Union. Within the framework of these projects the existing policy of IOC promoting free and unrestricted exchange of data was fully adopted by all participating countries and some very important data products were produced that are internationally considered as powerful tools for the marine science community.

The delegate stated that, although acknowledging that oceanographic data exchange is a complex issue, any changes to the existing policy may create problems, especially for the partners of the IODE network of data centres. Greece also believes that a commerce-driven policy will adversely affect the ability, especially for developing countries, to fully collaborate in, and benefit from, large scale international oceanographic programmes. Greece therefore wishes to reinforce Recommendation IODE-XVI.5 supporting the continued free and open exchange of ocean data and requesting to take into account the impacts associated with potential changes to the existing policy.

The delegate of the United Kingdom, Dr. David Pugh, explained that his country's government has central Departments and Agencies which operate as trading funds. He recalled his country's trend toward operational agency independence during the 1990s, which had encouraged charging users for products and services, applying market rules. However, it was subsequently found that the perceived markets often did not exist and that best use of data could not be achieved by charging for them. Under pressure from the user communities a re-assessment was made which resulted, in September 2000, in a different policy. Data are now considered a driver in a knowledge-based economy. As from April 2001, 'Raw' data, collected at Public expenses, shall be provided over the World Wide Web on a 'free access to all' basis, within and outside the United Kingdom (users do need to register). Nevertheless two exceptions were defined in the marine area:, for the Meteorological Office and for the Hydrographic Department. These are subject to ongoing discussions.

The delegate of Sweden, Mr Hans Dahlin, stated that, for a small country like Sweden, which shares its sea areas with several neighbouring countries, extensive international data

exchange is increasingly important. In our area there is also a long experience of exchange of oceanographic data and products.

Sweden has decided to follow WMO Resolutions 40 and 25. Sweden will support any IOC Data Policy which is built on the same principles as these WMO Resolutions. Sweden feels that it is urgent to state an IOC Data Policy to be able to efficiently implement international conventions and Agenda 21 in the marine area as well as IOC programmes such as GOOS.

The delegate of Ukraine, Dr. Alexander Suvorov, informed the meeting that his country, over many years, has collected substantial volumes of data in the Black Sea, Mediterranean, Indian Ocean, Eastern and Tropic Atlantic and Pacific Ocean. Furthermore during the past decade Ukraine has participated in numerous international and regional programmes and projects related to the creation of integrated oceanographic databases. These programmes and projects were possible thanks to the IOC policy based on "free and open" exchange of oceanographic data and they didn't conflict with national practises and laws. Ukraine stresses that the IOC policy which is directed to a free and open exchange of oceanographic data is a successful and useful policy and that it is appropriate to support it in the future.

The delegate of Australia, Ms. Kim Finney, informed the meeting that his country has not yet defined a national oceanographic data exchange policy but that Australia supports the principle of "free and open sharing" of oceanographic data. However, Australia, like Belgium and Canada, would like to see provision for a period of exclusive use to allow for scientific publication. Australia also supports the approach of a decentralized data management structure, as described by the delegate of Canada.

The delegate of France, Mr.Elie Jarmache, informed the meeting that his country has not yet defined a national oceanographic data exchange policy, but that France has specific rules for public data. Ocean data, collected by public institutions are considered as public data and are made available free, albeit with some exceptions in the case of data related to national security.

The delegate reported that, since the adoption of WMO's Resolution 40, the seven national agencies dealing with oceanographic data have been brought together in an inter-agency working group. This working group looked at the various categories of data such as biotic data, environmental data, geological data, bathymetric data, etc. and found that many of these categories were already covered by some rules at the national or European level. He also noted that the WMO Resolution 40 has a certain 'grey' area distinguishing between meteorological and ocean data. It will be necessary to better define the limits of each. With regard to the 'public' data, the delegate pointed out that whereas the 'availability' of public data is accepted, access may not necessarily be free. Some marginal cost may be applicable.

The delegate of Portugal, Prof. Mario Ruivo, informed the meeting that his country has not yet defined a national oceanographic data exchange policy. Portugal welcomes the shift within IODE from a centralized national data management model, focusing mainly on physical oceanography data only, to a decentralized national network covering many more areas. The delegate informed that Portugal is in the process of applying this model. However, traditions and culture made it a difficult process and for this reason a national group of experts had been established as a focal point for ocean data management matters. With regard to a revision of the IOC data policy, Portugal recommends to proceed slowly, concentrating initially on guidelines rather than a formal instrument at intergovernmental level. The delegate expressed his concern over the initiative of EuroGOOS to 'adopt' its own data policy, whereas this was the prerogative of Governments.

The delegate further stated that in Portugal, any data acquired with public funds must be made available with as an exception data related to national security. For meteorological data Portugal follows WMO Resolution 40. In the case of oceanographic data, where relations between national institutions such as research organizations and universities are not clearly defined, the situation is currently unclear.

The delegate of the United States of America, Dr. Stanley Wilson, stressed that his country supports the existing IOC/IODE policy – full and open exchange of all oceanographic data – as stated during the 33rd Session of the IOC Executive Council. The United States further endorses Recommendation IODE-XVI.5, as well as the statement of ICSU during the current meeting. The delegate stated that we have an obligation to make all oceanographic data, collected at taxpayer expense, full and openly available to the public, with no restrictions. In this regard the delegate provided a few examples:

- Data from the 67 TOGA TAO moorings across the Equatorial Pacific
- Global surface vector wind field from QuikSCAT every day
- Surface topography from the U.S./French TOPEX/Poseidon mission
- Sea surface temperature from the polar-orbiting met sats
- Sea level from the ~200 tide gauges around the U.S. coasts
- Even data from our PORTS installations which are cooperatively funded with the private sector
- NMFS fisheries stock surveys

With the exception of the fish stock surveys, the United States makes all the above data available in near real-time on the Internet. The United States does not make available fish catch records received from fishermen; these are data we did not pay to collect; but on the other hand, we make summary tabulations available to the public. For data collected as a result of proposals funded by national funding agencies, there is a period of exclusive use granted to the investigator; after that however, the data are made publicly available. While we accept these two restrictions, there is a restriction we do not accept—prohibiting the redistribution of data by scientists. If a scientist who acquires and utilizes data for his research cannot share the data upon which his analysis is based, how can his colleagues check his work and evaluate his conclusions?

With regard to cost recovery the delegate inquired whether there is any evidence available to show that the proceeds from oceanographic data sales amount to a significant fraction of the cost of the collection of those data, thus making cost recovery indeed viable.

The delegate further reported that the Argo investigators have agreed—up front—to a full and open data policy, with no period of exclusive use, and in real time for operational use. The "time series" investigators, led by Bob Weller and Uwe Send in their initial meeting last week in Woods Hole, are planning fixed-observing locations as a complement to Argo; they are in the process of agreeing to the same policy.

The delegate closed by stating that the real issue is not whether to make data available or not and with what restrictions, but rather the application of data once they have been made available. He recommended a focus on building partnerships between the government, academics, and private sector—to identify data products to derive, how to apply them to the solution of societal problems, and to do so in a timely manner to be of operational interest. The longer we take to address the issue of data availability, the longer we will take to understand the value of oceanographic data and products to society. The longer it will take to understand that value, the longer it will take for oceanography to grow into the mature discipline that it deserves to be.

On the issue of cost recovery several delegates stated that the overhead cost associated with managing payments for oceanographic data sets far outweighed the revenue generated by such transactions. This was not the case with some meteorological data.

The delegate of Spain, Dr. Demetrio de Armas, informed the Meeting that Spain has not yet defined a specific oceanographic data exchange policy but that during the last decades, different Spanish research institutions have participated in a large number of international projects within the framework of organizations such as IOC, ICES, UNEP and the European Union or global programmes such as WOCE, JGOFS, CLIVAR, GLOBEC, etc, collecting and managing large volumes of data and following the existing data policies of those international bodies.

The delegate stated that Spain recognizes that the marine science community requires international commitment to make available quality data sets and that the free and unrestricted access to a wide spectrum of data sets is a fundamental principle for research and education communities, enhancing the socio-economic development of the community and promoting the sustainable management of the marine environment. He expressed his country's full support to the current IOC Data Exchange policy based on "full and open" access to quality ocean data and related information.

5. Issues for consideration in the re-formulation of an IOC policy

The Chairman introduced this item by tabling a document providing some elements that could assist the Meeting in drafting a report for submission to the upcoming IOC Assembly.

It was recalled that WMO Resolution 40 had been developed as a compromise to protect perceived commercial interests. However it was now observed that not all of these commercial interests had materialized.

Extensive discussion ensued with regard to applying a two-tier approach, as used in WMO Resolution 40, distinguishing between 'essential' and 'additional' data, with arguments being used both for and against such approach. Some participants supported the two-tier approach stating that this would enable governments to categorize data into the 'additional' category and thus make them available, with restrictions as necessary, and also left them the option to move some to the 'essential' category at any time. Others opposed the approach stating that different restrictions and different categories used in different countries would make matters very difficult for data centers.

A number of interventions were made with regard to whether the policy should cover only open ocean data or also territorial waters, data of the EEZ etc. This revealed substantial divergence of opinion between the Member States. National policies in this regard differed sometimes due to the differing responsibilities for data types in different countries; whether data are collected by government agencies only, by the private sector or through partnerships. The Meeting agreed that, as a minimum, data collected within the framework and/or contributed as part of IOC programmes should be available for exchange. Guidance would be useful for other data.

6. Sessional working groups to (re)define IOC Oceanographic Data Policy

In order to discuss the way forward in more detail it was decided to establish three sessional working groups: one on the issue of the two-tier approach, and two for the discussion on the elements to be included in the revised policy statement. Reports of the

groups were then collated by the Chairman, who prepared a composite statement for discussion.

7. Adoption of statement for submission to the 21st Session of the IOC Assembly

After substantial discussion, the First Session of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy prepared the following draft statement for submission to the 21st Session of the IOC Assembly, recommending that this statement be submitted, for guidance, to IOC Subsidiary, technical and Regional Bodies, as well as to WMO, ICSU and other appropriate organizations and programmes, and to legal advisers:

Towards an IOC Oceanographic Data Exchange Policy

The Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy, at its First Session, noted the needs of Member States to:

(i) Provide free and open access[1] to data[2] that are collected, produced or exchanged as part of programmes conducted in association with IOC;

(ii) Freely contribute data and metadata from all sources to the IOC/IODE system to gain maximum benefit from the coordination of observing systems and the integration of data gathered, creating a truly global observing network in order to contribute to monitoring and forecasting the present and future state of the planet;

(iii) Submit to the appropriate IOC/IODE data centres or suitable national archive linked to the IOC/IODE system, all publicly funded data and encourage the submission of data that may have a withholding period or other restrictions, with minimal delay;

(iv) Where restrictions need to be applied on access to nationally acquired data relevant to IOC programmes, submit all metadata to the appropriate IOC/IODE data centre or suitable national archive linked to the IOC system, to facilitate the exchange of metadata and to expedite its rapid inclusion in international inventories;

(v) Assist in building national capacity to manage oceanographic data and information and to develop relevant products and services.

The Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy, at its First Session, recommended that the following 'elements' be adopted as a basis on which the oceanographic data exchange and archival policy of the IOC will be formulated:

(i) All oceanographic data and their metadata which are capable of contributing to the beneficial public use and protection of the ocean environment, resources, protection of life and property and for the prediction of weather and climate shall be freely and openly[1] accessible;

(ii) The IOC should promote, through its programmes and Member States, the reciprocal value and benefits of free and unrestricted exchange of data and metadata;

(iii) Data available from IOC programmes should have no re-export restrictions;

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[1] Freely and openly accessible means being made at available without restriction at a charge no more than the cost of reproduction and delivery.
[2] 'data' consists of observation data, derived data and gridded fields

(iv) Data and metadata should not be delayed or withheld deliberately and arrangements for their timely transmission should be implemented using the most appropriate technology;

(v) The IOC/IODE system of data centres should be developed as the main repository for the long term preservation of data, metadata and related information. Data collected by IOC programmes should be preserved by IOC/IODE data centres and are provided with the understanding that (i) will apply;

(vi) Member States shall work to enhance the capacity in developing countries to participate and benefit fully from the exchange of oceanographic data and products through IOC's Training Education and Mutual Assistance (TEMA) programme and other mechanisms;

(vii) IODE, GOOS and (other) programmes of IOC will work with data contributors to ensure that data can be accepted into their systems and meet quality requirements;

(viii) IOC Programmes will, where appropriate, identify their requirements for data on which no conditions of access apply (in conformity with (i)) and also identify further data and products to be made available to which the originator may attach conditions.

The Intergovernmental Working Group on IOC's Oceanographic Data Exchange Policy, at its first session, recommended that all the above recommendations and content be regarded as informal working information with no official status, to be submitted for guidance to IOC Subsidiary, Technical Bodies, WMO, ICSU and other appropriate organizations and programmes, and for review by the IOC Assembly. The response from these bodies will provide guidance for the further development of the Policy at a second session of the Intergovernmental Working Group.

8. Closure

In his closing remarks the Chairman thanked the delegates for their hard work that had enabled consensus on the statement 'Towards an IOC Oceanographic Data Exchange Policy', presented in 7, above.

The Chairman thanked the Governments of Belgium and Flanders for their substantial financial and in-kind support that had made it possible to organize this Session. Referring to the excellent conference facilities and services the Chairman expressed his special gratitude to the support team (Mr. Adrien Vannier, Mrs. Ingrid Dobbelaere) and the interpreters.

The delegate of Greece, Dr Efstathios Balopoulos, on behalf of the participants, thanked Dr Angus McEwan for his excellent work as Chairman of the Meeting, stating that this had enabled the Meeting to reach consensus in such a difficult matter. He expressed the hope that Dr McEwan would be prepared to continue his role in the Intergovenmental Working Group.

The First Session of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy was closed on 31 May 2001 at 17h00.

Annex I

Agenda

1. Opening

2. Administrative arrangements

3. Review of IOC's Data Policy

   3.1 The current IOC Data Policy
   3.2 Report on discussions during 20th Session of IOC Assembly
   3.3 Report on the Meeting of the ad hoc working group on oceanographic data exchange policy
   3.4 Report on discussions during 33rd Session of IOC Executive Council
   3.5 Report on discussions during 16th Session of IODE
   3.6 Report on WMO's Resolutions 40 and 25 and their implementation
   3.7 Report on ICSU's view

4. National statements of policy and position

5. Issues for consideration in the re-formulation of an IOC policy

6. Sessional working groups to (re)define IOC Oceanographic Data Policy

7. Adoption of statement report for submission to the 21st Session of the IOC Assembly

8. Closure

Annex II

Addresses

1. Address by Dr. Marc Luwel, Kabinetschef, Ministry of Education, Flemish Government

Mr. Chairman,
Mr. Executive Secretary,
Distinguished Delegates,
Ladies & Gentlemen,

It is an honour and a pleasure to welcome you all on behalf of Mrs. Marleen Vanderpoorten, the Flemish Minister for Education and Training to this first and important session of the Intergovernmental Working Group of the IODE programme dealing with the Ocean Data Exchange Policy.

Our willingness to host this IOC activity in Brussels - and as I say 'our', I mean the Belgian Federal Government, as well as the Flemish Government, underlines the great interest of the Belgian authorities for important issues of information handling & data acquistition and exchange.

The Flemish Government recognizes the importance of multilateral organizations, such as UNESCO and IOC, because these organizations give the impetus to many new developments and societal insights.

This initiative meets several of the Flemish Goverment's policy priorities:

- Firstly, the strengthening of its co-operation with multilateral organizations and particularly with UNESCO,
- A stronger participation in a selected number of activities of these organizations. For example, Flanders supports the establishment of an Ocean Data and Information Network in Africa, known as ODINAFRICA programme, and finally
- The creation of a new framework compatible with the principles of sustainable development to stimulate the development of dynamic and competetive knowledge-based societies.

Ladies and Gentlemen,

Oceans and seas represent the major component of the system 'Earth'. They drive global processes such as the Water and Carbon cycles and the Climate. Moreover, they are the source of a significant proportion of the world's economic activities.

We have to address sensitive issues such as the limitations of living resources and increasing conflicts between different activities, for example, fisheries, offshore hydrocarbon exploitation, shipping and seaside recreation.

The oceans represent an enormous potential for humanity. Sustainable use of these marine resources, the protection of the marine environment and the provision of reliable ocean and marine-based services are vital to our quality of life.

The oceans are not the property of nation states and international organizations but they belong to all human beings. The complexity of the marine system requires new forms of

dialogue; a dialogue based on sound information. Although we substantially increased our knowledge of the oceans over the last decades, much has still to be understood.

Ladies and Gentlemen,

Sound decision-making requires well-documented scientific and technical information. Decision-makers rely on scientists for collecting and interpreting relevant data. These data and research results must be easily accessible.

The use of the information technology offers huge possibilities to set up integrated databases and to easily exchange information. One the challenges is to give scientists in each country access to these data and to stimulate exchange of information and scientific collaboration.

This will not be an easy task but the experience the Intergovernmental Oceanographic Commission has gained over the last 30 years may contribute to reach this goal. It will be beneficial for the oceanographic research and for the community at large.

I wish you a fruitful meeting and I am convinced that your discussions will produce a draft resolution encompassing fair regulations and endorsed by all parties concerned.

Ladies and Gentlemen, I thank you for your attention.

2. Address Mr. F. DEMEYERE, on behalf of the Belgian Federal Government Commissioner added to the Minister for Scientific Research, Y. Ylieff

Mr. Executive Secretary, Mr. Chairman, distinguished delegates, ladies and gentlemen, it is a pleasure for me to welcome you here today in the name of the Federal Government Commissioner and the Federal Minister of Scientific Research to the first session of the working group on IOC's oceanographic data exchange policy.

In welcoming the workgroup to Brussels, a collaborative initiative of the Belgian Federal and Flemish governments, we wish to emphasise the importance that the various policy levels in our country attach to the issue of exchange of data and information.

For the Belgian Federal government, this initiative is related to the policy priorities of our Government, which considers that the structures of the United Nations are the instruments par excellence to deal with problems requiring international collaboration. We are grateful to the IOC for taking us up on our offer to host this workshop in Brussels.

Ladies and gentlemen, in a world characterised by increasing globalisation and the interrelation of issues, the exchange of data and information is a key element encountered at all levels, from experienced policy makers at the national and international level to the research community, to the organisations at the base and the public at large.

The technological evolution (or revolution) that has characterised our society during the last decades makes access to information technology increasingly easier and offers enormous possibilities for the storage, quality assurance and exchange of data and information as well as for the generation of spinn-offs.

It also has a number of side effects, including the following:

- the reinforcement of the information gap between various parts of society (old and young, rich and poor, urban and rural, ...) and especially between North and South

- the growing concern of data owners to protect the investment that they have made, which in some cases leads to measures that limit accessibility.

Atmosphere, biosphere and oceans, however, constitute an integrated system that transcends national borders. In order to deal with our earth in a sustainable way and in order to understand better the various components and the manner in which these interact and evolve, it is necessary to collect and analyse data in all parts of the world.

In this context, the availability and accessibility of this information remains an absolute prerequisite, not in the least from the perspective of the sustainable development of our society.

In this context I wish also to refer to chapters 31 and 40 of Agenda 21 where, among other things, reference is made to the following needs:

- improvement of the communication and collaboration between the scientific and technological community on the one hand, and the policy makers and the public at large on the other hand.

- improvement of the existing national and international mechanisms for the processing and exchange of information and the associated technical assistance. This should make it possible to make information generated at the various levels available in an effective and just manner to all players, while respecting national sovereignty and the laws pertaining to intellectual property rights.

Ladies and gentlemen, the policy change in the area of the exchange of data and information is not a simple task. It is a process that takes time.

Taking into consideration the importance of the IOC to the oceanographic community in particular and within the international community in general, I believe that each new policy statement accepted by the IOC on this issue will have an impact that extends far beyond the oceanographic community alone.

I wish you success during your activities and hope that they will lead to a draft statement that is agreeable to all parties present.

Ladies and gentlemen, I thank you for your kind attention.

The Federal Government Commissioner for scientific research

Y. Ylieff

Annex III

List of Working Documents

WORKING DOCUMENTS

1 prov.	Provisional Agenda
1 Add. Prov.	Provisional Timetable
3	Draft Summary Report (to be prepared during Session)
4 prov.	Provisional List of Documents
5 prov.	Provisional List of Participants
6	Issues in the Formulation of a Policy for the Public Exchange of Oceanographic Data and Data Products

INFORMATION DOCUMENTS

IOC/INF-1144rev.	Meeting of the *ad hoc* Working Group on Oceanographic Data Exchange Policy (Paris, France, 15-17 May, 2000)
EC-XXXIII/3	Thirty Third Session of the Executive Council (Paris, 20-30 June 2000)
IOC-XX/3	Twentieth Session of the Assembly (Paris, 29 June – 9 July 1999)

Annex IV

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Annex V

DRAFT IOC DATA POLICY STATEMENT
(as prepared by the Meeting of the *ad hoc* Working Group on Oceanographic Data Exchange Policy, UNESCO Headquarters, Paris, France, 15-17 May, 2000)

It is a fundamental principle of the IOC that there shall be free and unrestricted [1] sharing of all ocean data and related information [2].

1. Member States shall provide on a free and unrestricted basis those ocean data and products which are necessary for the provision of services in support of the protection of life and property and for the well-being of all peoples;
2. Member States shall also provide on a free and unrestricted basis ocean data and products, where relevant, which are required to sustain programmes and projects of IOC, including those undertaken jointly with other organizations, related to operational oceanography and ocean research at the global, regional and national levels and, furthermore, to assist other Member States in the provision of ocean services in their countries;
3. Member States should provide to the research and education communities, *[for their non-commercial activities]* [3], free and unrestricted access to all ocean data and products exchanged under the auspices of IOC;

[4. Respecting (2) and (3) above, Member States may place conditions on the re-export [4] *, for commercial purposes, of these ocean data and products, outside the receiving country or group of countries forming a single economic group;]*

[5. Member States should make known to all Member States those ocean data and products which have such conditions as in (4) above;]

[6. Member States should make their best efforts to ensure that the conditions placed by the originator on ocean data and products are made known to initial and subsequent recipients;]

7. Ocean data and their related information [5], collected by IOC programmes and ocean data from IOC cooperative programmes should be preserved [6] in the long term, through the IODE system.
8. Member States shall work to enhance the capacity in developing countries to participate and benefit fully from the exchange of ocean data and products, through TEMA and other mechanisms.

Notes

[1] 'Free and unrestricted': Non-discriminatory and without charge. "Without charge", in this context means at no more than the cost of reproduction and delivery, without charge for the data and products themselves.

[2] 'Data' : consists of observed and derived data including data generated by numerical models and created through data integration and assimilation.

[3] *[' Non-commercial activity': an activity which is not for profit and/or of which the results can be published in the open scientific literature.]*

[4] *['Re-export', in this context means to redistribute, physically or electronically, outside the receiving country, group of countries forming a single economic group, or regional and global data centres, directly or through a third party.]*

[5] *['Related information' consists of complete descriptions (metadata) to the level necessary to enable secondary users to make full use of the data].*

[6] 'Preserved': the data will be managed, made accessible, updated or improved in quality and maintained on media suitable for long-term archival.

Annex VI

Terms of Reference for the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy

1. Purpose

As a further step towards an IOC Oceanographic Data Exchange Policy:

To continue detailed discussions and assessments of existing agreements and practices, both within and outside IOC, with regard to the exchange of oceanographic and related environmental data and products, with a view to proposing to the IOC Assembly:

(a) a statement of the general IOC principles and policy with regard to oceanographic data exchange;

(b) a statement of recommended practices and associated institutional arrangements for the exchange of oceanographic data;

(c) a draft resolution for consideration by the Assembly.

2. Implementation

In pursuit of its task the Working Group shall:

(a) request all IOC Subsidiary, Technical and Regional Bodies for guidance with regard to IOC's Oceanographic Data Exchange Policy, with special attention to assessing the implications that adopting any proposed changes to the current policy may have on the effectiveness of their programmes;

(b) consult with WMO, ICSU and other appropriate organizations and programmes;

(c) give special attention to legal implications.

3. Composition

The intersessional Intergovernmental Working Group shall be open for participation to all Member States of the IOC Executive Council. The Working Group shall be headed by a Chairperson appointed by the Executive Council.

4. Financial implications

At least two meetings of the Working Group shall need to be organized. Standard costs of such meetings are estimated at not less than US$ 50,000/meeting (including translation and interpretation, secretarial cost, 40 participants). Additional allocations may be necessary to support participation of developing countries.

Annex VII

Recommendation IODE-XVI.5

IOC OCEANOGRAPHIC DATA EXCHANGE POLICY

The IOC Committee on International Oceanographic Data and Information Exchange,

Recalling the strong support from many delegates of the IOC Executive Council for the existing IOC/IODE Policy Statement on Ocean Data Management for Global Science Programmes, the basis of which is free exchange of and open access to data,

Further considering the potential negative impacts that a change in the existing policy may have on the exchange of oceanographic data and information, in particular:

(i) a decrease in the ability of the IODE system to provide the most comprehensive integrated regional and global oceanographic databases for regional and global assessments such as the reports of the Intergovernmental Panel on Climate Change, which serve as the basis of international treaties,

(ii) a divergence of data policy between IOC and the ICSU World Data Centres and the related possible departure of ICSU World Data Centres for Oceanography from the IODE system,

(iii) the creation of barriers to all countries, particularly developing countries, in acquiring the most comprehensive databases for local and regional use,

(iv) a limitation of access to data for research, educational, and training purposes,

(v) the imposition of additional responsibilities to monitor the flow of restricted data that cannot be supported with the limited resources of IODE data centres,

(vi) the creation of legal requirements that will discourage the exchange of data between IOC Member States.

Stresses its strong concern that a change to the existing IOC data exchange policy would severely limit exchange and access to data and place additional management and legal burdens and responsibilities on the IODE system and its data centres;

Reiterates its strong support for the existing data exchange policy based on free and open data exchange that has been used with considerable success since the establishment of the IOC in 1960;

Recommends that data having restrictions on their distribution continue to be sent to IODE data centres, but that these data will not be freely circulated until originators of these data give unambiguous permission for the unrestricted release of such data;

Urges the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy, in the formulation of its policy statement to be presented to the next session of the IOC Assembly, to take into account the position of the IOC Committee on IODE on the continued free and open exchange of ocean data and of the many serious impacts associated with potential changes to the existing policy.

Annex VIII

List of Acronyms

CLIVAR	Climate Variability and Predictability
EEZ	Exclusive Economic Zone
GCOS	Global Climate Observing System (WMO-ICSU-IOC-UNEP)
GLOBEC	Global Ocean Ecosystem Dynamics
GOOS	Global Ocean Observing System (IOC-WMO-UNEP-ICSU)
IGBP	International Geosphere-Biosphere Programme A Study of Global Change (ICSU)
ICES	International Council for the Exploration of the Sea
ICSU	International Council for Science
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCEA	IOC Regional Committee for the Central Eastern Atlantic
IODE	International Oceanographic Data and Information Exchange
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
JGOFS	Joint Global Ocean Flux Study (SCOR/IOC)
LOICZ	Land-Ocean Interaction in the Coastal Zone (IGBP)
MEDS	Marine Environmental Data Service (Canada)
NGO	Non Governmental Organization
NMS	National Meteorological Service
NODC	National Oceanographic Data Centre
PORTS	Physical Oceanographic Real-Time System (NOS, USA)
TAO	Tropical Atmosphere Ocean Array (TOGA)
TEMA	Training, Education and Mutual Assistance (IOC) – Capacity Building in Marine Sciences, Services and Observations
TOGA	Tropical Ocean and Global Atmosphere (WCRP)
UNEP	United Nations Environment Programme
WCRP	World Climate Research Programme (WMO-ICSU-IOC)
WDC	World Data Centre
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment (WCRP)