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Suggestions on the Future of the IODE Programme

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This document provides a personal perspective of the present state of IODE operations and some suggestions on changes. It is intended to be used in the discussions to be held by the sessional working group on the Future of the IODE programme.

1 Background

Document 19 of this meeting (IODE-22) provides a comprehensive description of the IODE organization, history, and objectives. It also poses a number of important questions. This document is an assessment of IODE that includes a personal assessment of the environment surrounding IODE and the issues that IODE faces. Finally it provides suggestions of how IODE might alter its operations and as suggest provides possible answers to some of the questions posed in Document 19.

2 Present IODE Environment

In the past there were a few international projects (FGGE, MODE, WOCE) and these seldom overlapped in time. Now there are many more (Argo, OceanSITES, TIP, SDN, OBIS) and in more disciplines than simply physical oceanography. All of these have data management components or are data management programmes outright and have strong commonalities with IODE operations. Programmes initiated from the research community may have contributions from IODE members, but IODE is not the automatic choice for data management leadership for these programmes. Large data management programmes are sometimes national in scope (e.g. IMOS in Australia, IOOS in the US) or regional (SeaDataNet supported by the EU). In both cases NODCs often receive funding for data management activities for these projects and that supplements their national budgets. In these cases, the work they perform may not have direct contributions to IODE programmes.

OceanObs'09 published a framework for ocean observations that has data management needs identified. These lie in the realm of IODE yet IODE does not appear to be part of the “solution”.

GCOS has published an Implementation Plan which shows the reliance on certain IODE projects to support its objectives. These and many more of the ocean related

activities to support GCOS/GOOS could be met by IODE if appropriate efforts were focused to do so.

SeaDataNet is a leader in standards development because they are needed to unify the European data systems. The US and Australia are also pursuing integrated data systems that rely on adopting standards in their operations. All these are developing independently of IODE even though IODE members are taking part.

In particular, work for SeaDataNet is the priority of European members of IODE because of EU financial drivers.

GEO/GEOSS is creating the RCN which is stepping into IODE data management territory. Although IODE has been asked to participate it is not clear how IODE's participation will translate into concrete actions.

JCOMM has organized the real-time components of marine data collection and data management. So far the cooperation with IODE has been adequate, but improvements are always possible. Dealing with data in real-time in support of operational oceanography – the analogue of meteorological forecasting – is a strong focus for many nations. The commonalities of managing data in real-time or delayed mode means we must cooperate with JCOMM to build a seamless data management system.

The ICSU WDS evolution is a point of overlap with IODE. Although there is some agreement that IODE will speak for ocean data centres, there is still much uncertainty on how this will play out. IODE can take the lead in this development by developing a strong position and actions to demonstrate its role in the WDS.

Whereas IODE operations used to be tied to exchanging data on magnetic tapes through the mail, telecommunications and computer technologies have made electronic data exchange a reality as soon as data become available. This is embraced in many ways by IODE members but it does not translate to a unified IODE approach. What is more, individual researchers now have tools that allows them to make data available as they please, without the IODE "middleman". As well, the many international programs are encouraging quick release of the data they collect. The unifying objectives of IODE have an important role to play in preventing the chaos of individual data management actions, if members can rise to the challenge.

3 Present IODE Issues

Funding from IOC/UNESCO is very low and is unlikely to rise in the near future. IODE relies on members to commit their own resources to assist IODE to meet its objectives. The present state of IODE funding owes a huge debt to Flanders for providing and securing funding for the IODE Project Office and the capacity building resources placed there. The hazard is that Flanders will drive all the real work that IODE accomplishes. This funding is renewed every 5 years, and a danger is that Flanders may decide to terminate its funding at some point. This will result in a severe reduction on the capability of IODE to perform in any capacity.

National funding for data management is always lean and in present austere times, is under pressure. Justifying spending national funds on international goals for what is often perceived as altruistic purposes is difficult to justify. International projects/goals must show concrete linkages to and payoffs towards national goals. IODE needs to do better in explaining how a strong participation in IODE initiatives can result in these payoffs.

IODE operations have direct and often immediate benefits for some members (e.g capacity building). It is not coincidental that this is where Flanders funds go. Other

IODE work and discussions often do not have a significant or immediate (short-term) impact on national operations. This means work to support IODE takes a back seat to national priorities and hence work for IODE is done on “bootlegged” time (time taken from national activities or time that is spent outside of normal office hours). Consequently, results are delayed and sometimes do not meet expectations.

IODE has a few international projects (e.g. GTSPP, GOSUD, OBIS) that demonstrate the value of global collaboration These are strongly reliant on national funding and convincing national agencies that participation is in the national interest is not always easy. Members that are users of the outputs of these programmes need to voice their support to the contributing nations, and use these as examples of benefits that accrue by contributing their own resources to IODE.

Some IODE members are part of international projects that have national support (such as Argo). A number of these projects are funded through the ocean research community. Sometimes, participating NODCs receive funding for their participation. But these programmes are seldom discussed directly or at a sufficient level of detail at IODE meetings. These are important projects that are defining data management operations and IODE needs a prominent place in them.

The IOC review of IODE done a few years ago was supportive of IODE operations. But IODE needs to do more to demonstrate its relevance to IOC and to nations. Just as JCOMM is developing metrics for its operations, IODE needs the same. It needs to provide this information regularly and more frequent than every 2 years at IODE meetings. These metrics need to be carefully chosen to demonstrate the value of IODE programmes to IOC and to national programme managers.

JCOMM is playing a large role in the organization of data management for real-time operations. Operational oceanography is an expanding field in many countries. Of course, what is real-time data today, becomes historical data in a few years. JCOMM and IODE need to work very closely together to ensure that the data and metadata collected in real-time are to a standard that will support studies using historical data.

The Ocean Data Standards (ODS) project is important to IODE but is having trouble attracting attention and participation. Standards setting has always been a priority activity for IODE and has often justified national participation in IODE. Standards are essential for the exchange of data and information and this is even more true in today’s high technology world. But IODE is not the only place where standards are being pursued, nor should it be. The large international research and data management projects are doing this as well. IODE member participation in these projects are important and should be contributed to ODS so that the larger community can benefit from the lessons learned.

The Ocean Data Portal (ODP) project is IODE’s answer to the need to build a global distributed data system that would bring together the many web-based data services developed by the individual NODCs. Unless IODE is successful in this project, other players with other agenda will take over. Participation in ODS is low compared to the number of IODE members. Again, well-funded regional projects build such systems and extend to other regions. IODE needs to be intimately connected to these programmes so that marine data archives from all nations can present a common data and information resource.

In order to comply with the new ICSU WDS and close cooperation with WMO (and thereby JCOMM) IODE has established a Quality Management Framework. This Framework will include certification of IODE NODCs. This QMF can become recognized as a strength of IODE but for this to occur all NODCs need to take this on

board and actively work to ensure accreditation.

IODE has been active in working with the MIM community to define ways to link data and publications as is common in fields such as medicine. This is an important initiative that has potential rewards for IODE in that it may encourage increased data submissions. This needs greater participation to advance implementation.

4 Suggested Changes

Given the present environment and the issues outlined above, how can IODE and its members respond to ensure relevance in data and information management? Some suggested changes in operations both of the IODE Committee and in member activities are discussed here. It is hoped that these will be debated, some accepted, and perhaps a mechanism put into place, such as an ad hoc group, to study these and other suggestions further, and to make concrete proposals to members in a timely way.

1. Problem and Solution Sharing

IODE meetings do not exploit the experience acquired by members. The meeting should devote time for partnerships to develop or be supported between NODCs with similar problems to exchange ideas. Because time is limited at meetings, much of the hard discussions will take place outside of the meetings and in the intersessional periods. But the meetings should be used to bring together the interested parties to begin or continue discussions. Progress by these groups need to be reported at IODE meetings so that other NODCs can understand and join if appropriate.

2. Exploiting Experience

A number of IODE members take part in either regional or international projects that are not sponsored by IODE (an example is the organization of data management for Argo, OceanSITES or the SeaDataNet project). National programmes such as IOOS in the U.S. and IMOS in Australia are another kind of example. Valuable lessons are learned (e.g. importance of recording information on the type of pressure sensor in Argo floats), new ways to manage metadata (e.g. vocabularies, use of the CF convention) and new techniques for verifying data (e.g. checking data against first guess fields), among others, are all products of these programmes. These need to be brought to IODE and the practices spread throughout the community.

3. Commitments and Report on Actions

Every country places different requirements on its NODC. However, there is common purpose across most NODCs and where this exists, tangible performance targets should be set. It is important for IODE members to identify those activities of IODE that most closely align with national priorities, and then commit to actions in support of the international objective. Countries could commit to:

a) initial participation or increase its participation in ODP during the next intersessional period

b) submission of one or more standards to the ODSBP

c) staff serving on an evaluation committee for a standard.

d) providing documentation to the OceanTeacher digital library or providing to course development or instruction

e) leading or participating in projects to solve a problem common with other data centres.

f) representing IODE as needed on one of the committees where IODE participation is invited.

Once commitments are made, reporting must also be made. Members need to treat these commitments as equivalent to the work statements that they must provide to their supervisors at home. Each national report to IODE should review the commitments made, and the results against that commitment.

4. Links to the Research Community

Researchers are both contributors and users of the data held by NODCs. Their advice on how to maintain the integrity of the data should be sought. As example, national committees might be formed composed of leading researchers and data managers to discuss ways to improve data reaching archives and better archiving and dissemination methods. Such a committee serves two purposes. First, it opens communications between researchers and data managers, something that is absolutely important. Second, members exchange working solutions for collecting, assembling, archiving and disseminating data. As these solutions get passed along to other members of IODE, so the entire international collection of data and NODCs will benefit.

There are a number of high level scientific communities that advise IOC or other groups about what data are needed, what the characteristics of the data need to be, what needs archiving, and what dissemination methods are needed. OceanObs'99 and OceanObs'09 are examples as well as statements coming from OOPC and GCOS. IODE needs active discussion and response to these identified needs. Even more, direct IODE participation in these groups is highly desirable. This is how IODE can demonstrate its value to the international community and to national scientific staff.

5. Benefits of IODE Membership

Itemizing the broad benefits of participation in IODE is relatively easy, but too vague to convince a skeptical manager at home. IODE needs to work with each member to identify concrete examples that show what was gained by a member's participation in IODE. Participation in courses offered by IODE is an easy example. But, what are the gains to a country to participate in ODP or in the ODSBP process? What does a member coming back from an IODE meeting have to show for the time and expense of attending? Members can contribute their successful arguments and IODE should cache these for future reference and use.

6. How IODE Meetings Work

Do members think IODE meetings are spending time on the right topics? There is a large amount of documentation presented to participants, but the participation rate in discussions by attendees suggests that members may not have read, do not understand the purpose of the documents, or simply do not see the relevance to their national activities. This suggests that documents must be clear on what is the proposed action for the meeting. Likewise, members must be diligent in reading and debating all documents.

IODE meetings could be divided into 2 segments. In the first, groups with common problems can discuss activities and set goals for solution and reporting back to IODE. In the second, a plenary discussion of common objectives and standards that

impact all NODCs would be debated and actions resolved. With such a structure, it may be easier for participants to secure funding since alignment of national to international objectives will be more obvious. It may also allow meetings to be longer. Considering that travel to and from meetings is a large fraction of the cost or participation, a few more days does not add significantly to the cost.

7. Performance Metrics

The broad objectives of IODE should be translated to a set of performance metrics. These metrics need to be highly visible, relevant to national operations, and relevant to international data management activities. Members need to support the production of these metrics. If wisely chosen, the metrics at the international level can be used to translate to metrics that demonstrate the performance of individual NODCs. This makes the production of use to IODE members.

Needs identified by the research community can also identify needed metrics and reporting.

Actions for the IODE Meeting

If IODE is to be relevant in the present ocean data acquisition, management and dissemination environment, it needs to take action. IODE-22 should:

a) Discuss the ideas presented here, or other ideas of members.

b) Undertake concrete initiatives to make agreed changes in operations.

c) Put in place a mechanism(s) to refine the general ideas that have merit but whose details are not yet agreed to.

[end]