JCOMMOPS

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Background

Ocean observation programmes are implemented nationally and collaborate internationally through dedicated panels. International coordination can improve efficiency of the national programmes between funding agencies, program managers or principal investigators, platform operators, data users, satellite data telecommunication providers, instrument manufacturers and data centres. This international coordination is required, under the Global Ocean Observing System (GOOS), the Global Climate Observing System (GCOS) and the Joint WMO-IOC Commission for Oceanography and Marine Meteorology (JCOMM). JCOMMOPS was developed in this context, with modest resources, two Technical Coordinators – (TC and gradually took form to become a near-operational structure.

Each international observing programme has its own specific requirements but there are many cross-cutting issues (e.g.: deployment opportunities, metadata management and information system development, generic international coordination issues, relationships with IOC and WMO etc).

Each JCOMMOPS TC focuses on his/her designated programme/s but at the same time, keep in mind the larger context in which they are implemented.

They share an infrastructure, develop tools in common, share ideas and are able to produce more together than they would do if isolated.

JCOMMOPS represents a bridge between the oceanographic and meteorological communities and keeps the day-to-day link with the platform operators and actors involved in such programmes.

Today, JCOMMOPS faces the challenge of strengthening its infrastructure, integrate the existing services better and eventually extend its operations to new observing systems.

Introduction

The JCOMM in-situ Operating Platform Support centre is the natural outcome of international coordination mechanisms which began in 1985 with the Data Buoy Cooperation Panel (DBCP). It was implemented in conjunction with the Argo Information Centre (AIC) in Feb. 2001, to develop the synergies that exist between the coordination structures that had been established under the WMO and IOC of UNESCO, for the DBCP, the Ship of Observation Team (SOT), and the Argo pilot project.

JCOMMOPS was formally established by JCOMM I in 2001.

Synergy was therefore achieved between these three global marine observational programmes to assist, at the international level, those in charge of implementing their National components.

JCOMMOPS is a component of the international coordination mechanism, which aims on behalf of JCOMM to:

- develop **synergies** between observing systems
- assist in the **planning**, **implementation** and **operations** of the observing systems
- **monitor** and **evaluate** the performance of the networks
- encourage **cooperation** between communities and member states
- encourage **data sharing**
- assist in **data distribution** on Internet and GTS
- relay users **feedback on data quality** to platforms operators
- provide **technical assistance** and **user worldwide support**
- act as a **clearing house** and **focal point** on all programmes aspects

More general information on http://www.jcommops.org

Chronology

Period 1987 to 1989	The first DBCP Technical Coordinator (David Meldrum), Toulouse France, Argos.
Period 1989 to 1993	The second TC DBCP recruited (Etienne Charpentier) and move to USA, Argos.
Period 1993 to 1998	DBCP TC moved back to France (Toulouse, CLS Argos).
Period 1998 to 2001	o DBCP TC was asked to also act as SOOPIP TC. o DBCP TC was asked (at OceanObs 99) to prepare a proposal to extend coordination activities to encompass Argo and particularly implement the IOC Resolution XX-6 requesting notification for floats that might drift into Member States Exclusives Economic Zones. o Argo panel agreed at its second meeting (Southampton, March 2000).
Period 2001 to Feb. 2006	o First Argo TC (Mathieu Belbeoch) recruited and establishment of the Argo Information Centre as part of JCOMMOPS. o JCOMMOPS developments effectively started o John Gould becomes Argo Director(Jan. 2003). o The AIC became a component of the Argo Project Office. o Proposal to JCOMM-II for SOOP coordination to be expanded to the Ship Observation Team SOT: including SOOPIP, VOS & ASAPP. (Halifax, Sept. 2005)
Period Feb. 2006 to Jul. 2006	Transitional period. TC/DBCP&SOT position vacant
Period July 2006 onwards	Third DBCP/SOT TC recruited (Hester Viola).

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Infrastructure

JCOMMOPS is funded through the following annual (or ad hoc) national voluntary contributions:

DBCP/SOT:
Australia, Canada, Europe (E-SURFMAR), France, Germany, Greece, Iceland, India, Ireland, Japan, Netherlands, New Zealand, Norway, South Africa, United Kingdom, USA.

Argo: Australia, Canada, China, India, Germany, France, United Kingdom, USA.

The IOC of UNESCO administers two specific trust funds according to three funding lines:

1. salary
2. travel/missions
3. Logistic contract with host, including a dedicated Hardware/Software budget

This last logistical funding line guarantees, as far as possible the independence of JCOMMOPS regarding its host institution and this is shared 50/50 by the two trust funds. Choices regarding the technologies used for the development of JCOMMOPS services are made by JCOMMOPS independently.
Flexibility and independence are key elements in the efficiency and success of the JCOMMOPS structure.

It should be noted that the office environment provided by the actual host (CLS) are excellent.

Since July 2005, JCOMMOPS has benefited from one of the best offices in CLS and is given the appropriate visibility amongst other entities hosted by CLS.
See JCOMMOPS office photos in Annex. This is the third office space that JCOMMOPS has occupied since 2001.

Information System

The current Information System is the result of a six year effort, which began in 2001.
The system relies on three distinct servers, for which the hardware and software are gradually updated thanks to a 2 x $5000 budget each year. This budget just sufficient (in 2007) and incorporates mandatory software maintenance costs.

The JCOMMOPS website(s) is only one component of the JCOMMOPS Information System and targets international users. It is used routinely by the TCs to achieve various international coordination tasks which require accurate and up to date information management. It is the main tool of the clearing house role of JCOMMOPS; information is available to all, routinely, via many different products and services, and on demand. The system routinely assimilates information and metadata from many different sources (including manual input by the TCs), which are checked and re-distributed in various ways.

It is to be noted the strong link between JCOMMOPS, platform operators, GTS and Global or National Data Centres (e.g. Argo GDACs). The database link with Argos is essential in tracking the platform movements in real time and with the appropriate impartiality (IOC Res. XX-6).

Audience

JCOMMOPS users are international. They include actors from the marine meteorological and oceanographic communities, including operational agencies, research institutes and Universities, (inter)governmental or (inter)national agencies, platform operators, manufacturers and satellite data telecommunication providers. Experience has shown that JCOMMOPS could serve users globally if most JCOMMOPS communication is made via email and services offered via web tools, from almost anywhere in the world. European and African users do however benefit somewhat from JCOMMOPS' present location, regarding direct contact by phone. The JCOMMOPS monitoring system is updated at least twice a day (6 am and 6 pm UTC) to guarantee up to date information for all.

It must be noted that the primary users of JCOMMOPS information system are TCs. They use the information system for global coordination tasks, including day to day monitoring and user assistance.

Operations

The latest web configuration is designed to automatically re-launch a service that has failed, to improve reliability. However this does not cover all possible failures, so another procedure is required to approach the 24/7 services suggested. CLS IT support monitors many operations, hence, the main services provided on-line, particularly the website and mapping system, are now monitored 24/7 by CLS operators. If services are down, then operators see a warning message on their control screens and can apply the procedure to launch them again. This new procedure was tested and refined and JCOMMOPS services are now fully operational.
In 2007 one of the 3 servers was be replaced (6 years old). This permitted JCOMMOPS to set up the final and ideal architecture for its information system.

The goal is to design a near operational system for which the maintenance could be eventually be maintained by technical support staff, freeing up time for the TCs to work on wider issues.

Challenges

Activities

With two people working part time on JCOMMOPS developments, it took 4 years (whole intersessional period between JCOMM-I and JCOMM-II) to develop JCOMMOPS from scratch and bring its current level of service. In the last 2 years, the system was developed to the required level and most of development effort has been made on the new Argo Information Centre website, to fulfil the basic elements of the JCOMMOPS terms of reference.

Substantial effort is still required on the JCOMMOPS website and in general within the JCOMMOPS Information System in the *integration of all available products.*

One of the main challenges for JCOMMOPS is to provide the up-to-date and appropriate information regarding *deployment opportunities* and assist in the maintenance of the global networks. Deployment opportunity details come from multiple sources that need to somehow be synthesized. Many of these data sources are already handled by JCOMMOPS. One important source is in the planning (at a national or regional level) of global network implementation. The planning for Argo or SOOP one year in advance can be used by DBCP to plan deployments and vice versa.
This has been addressed for Argo, but this need further effort for DBCP and SOT.
To that end, some flexible and simple procedures have to be set up to permit platform operators to notify JCOMMOPS of their future deployment plans. JCOMMOPS then has to develop ways of synthesizing and presenting this data in a useful way. E.g. possibly with new tools such as a quarterly update via email, maps of areas where opportunities exist and were opportunities are sought, synthesising and reporting opportunities inherent in Research cruises plans, plus ship visits to moorings (OceanSITES, TIP etc) for maintenance

The JCOMMOPS TCs will need to maintain a strong and consistent link with platform operators (even when they change regularly) and be aware of implementation plans in advance. This problem is not really one of technology (e.g. website or database design) but is a challenge of capturing and then sharing information affectively between platform operators within each programme, then between programmes and also with other communities which may have deployments opportunities available. This, in part, requires tools developed by JCOMMOPS for communication and information sharing, but it also relies on the clarification and consistent efforts of National Focal points for platform operations, to gather information themselves but also to pass on that information to others, including JCOMMOPS.

In the future JCOMMOPS aims to provide services that would answer the question:
"How can we deploy the required instruments at the required time/space resolution to fill the gaps identified?"

Infrastructure

While JCOMMOPS gains from its present situation within a relatively large organisation (modern facilities, possibility to train students etc) it does require dedicated secretariat support (for administration, communication etc...) and more dedicated I.T support (system administration and technology development support) to allow the TCs to concentrate more on programme coordination and on the analysis and development of value-added products.
At the moment, JCOMMOPS is responsible for supporting the Information System.
CLS provides space for servers, Database Administration (Oracle), internet connectivity and bandwidth, backups or servers and PCs, email server and an email distribution list

application. Everything else is installed, maintained and operated by JCOMMOPS staff members. In case of serious problems JCOMMOPS is assisted by various experts working at CLS, as CLS can benefit from the TCs expertise in different fields.

Relocation of JCOMMOPS:

Regarding the information system set up within CLS, purchased and developed with JCOMMOPS funds (though possibly legally the property of CLS), different options will need to be given for this in the case of a relocation of the JCOMMOPS office, such as: to retain the system (or some elements) at CLS and eventually subcontract its maintenance or recreate the same infrastructure at the new location, or perhaps re -design the whole system in the new host infrastructure. Each option has its advantages and disadvantages. The first one is cheap, and wouldn't require much effort at start-up, and will keep the database link with the Argos system. The need to interact directly on the servers is marginal; particularly if they servers are hosted by a organisation with 24 hour support. The second and third options would involve a cost (not determined here) and would complicate the real-time link with Argos database (to be discussed with Argos) but will be an excellent opportunity to improve the design and start on a new basis. In this case the initial system would be maintained to sufficiently overlap with the new system to ensure a smooth transition.

Extension of JCOMMOPS to support additional observing systems
The difference in the current services offered within JCOMMOPS for Argo and DBCP/SOT can be easily explained by amount of time dedicated by TCs on each programmes. It is accepted that Argo which benefits from a full time TC has more advanced products and services than either DBCP or SOT. It should be noted that when the TC DBCP role was extended to encompass SOOP, the JCOMMOPS Information System had not yet been implemented. This system requires attention and adds a substantial extra workload on TCs agenda. The expansion to support SOT will also add tasks to the DBCP/SOT TC's workload.

With this in mind, it would be difficult for JCOMMOPS to extend its support any further without additional resources, if the support is to be effective and beneficial, plus properly integrate the services provided to all of the observing programmes (this problem already exists in supporting the existing programmes). This includes international coordination as well as technical and secretarial support.

Proper international coordination can't be made without attending programmes meetings and visit key international partners, which takes up a significant amount of TC's time today. It is possible that in the process of extending JCOMMOPS the travel schedule for staff would be even fuller, which has implications on workload and the budget.

"What kind of effort would be required to manage OceanSITES at JCOMMOPS?"

This question was informally asked of JCOMMOPS recently. Ocean SITES is a DBCP action group and its data management is being built on the Argo model. JCOMMOPS already manages moorings information. The OceanSITES ship lines and moorings maintenance cruises are sources of deployment opportunities. Considering these existing links or transversal issues and also the complementary natures of OceanSITES and DBCP/Argo/SOT, this initiative would be a welcome addition to JCOMMOPS. In addition this would extend JCOMMOPS expertise to new observations system (biogeochemical, geophysical, etc). In reading available reports and white papers on

http://www.oceansites.org/ ("100 scientists, 60 institutions, 22 countries...moorings, ships, 64 multi disciplinary stations equipped with dozen of sensors ...") JCOMMOPS sees the opportunity to improve international technical coordination, including specific implementation, instrumentation and data management issues. It is to be noted that JCOMMOPS has already established some links with some OceanSITES mooring maintenance cruises (e.g. Cape Verde, TENATSO site) to plan future float or buoy deployments. OceanSITES and new observing systems that could be monitored by JCOMMOPS, would directly take benefits from the existing infrastructure and experience, for which the DBCP, SOT and Argo panels have been contributing in the last 6 years.

The feeling is that there is a need at JCOMMOPS to handle all Ship related products, services, information and metadata one ensemble: including SOT ship observations, Research Cruises and research observing programmes, information about TIP/OceanSITES maintenance cruises. JCOMMOPS will cooperate with the institution in charge of the POGO research cruise database to be developed within the SEADATANET project. Providing information on coming research cruises is vital for global network implementation. International technical coordination of ship related platforms is seen as a full time role and will allow many synergies to be developed. As with other programmes, this would involve a dedicated mission budget in order to establish and further develop the required contact points

In 2007-2008 JCOMMOPS discussed informally with WMO, IOC, JCOMM, DBCP, SOT, and AST co-chairs the possibility to start OceanSITES coordination.
It has been suggested that the TC DBCP could work on OceanSITES while Argo TC would work on SOT.

This would mean that :

- JCOMMOPS would provide support to Argo, DBCP, SOT and OceanSITES:

- the DBCP TC would spend 70% of time on DBCP matters and 30% of time on OceanSITES

- the Argo TC would spend 70% of time on Argo and 30% on the Ship Observations Team.

- JCOMMOPS will gain an additional half-time employee.

This proposal relies on additional resources being provided to JCOMMOPS, to employ the extra IT person. This additional person would assist both TCs (and JCOMMOPS as a whole) alleviating some of the work load on IT related tasks, such as web information system developments and routine information management tasks.

Hence some new Terms of Reference are proposed for the Technical Coordinators (see annex). They take into account as well the growing responsibilities of the Argo TC in developing and operating JCOMMOPS.

⇨ The AST is invited to discuss the new ToR for the Argo TC. This is an opportunity to define new activities or priorities for the Argo TC.

Argo JCOMM and JCOMM-OPSC
In September 2007 a joint WMO-IOC circular letter invited the WMO/IOC Members/Members States to host an International JCOMM Observing Programme Support Centre that would be an extension of the existing JCOMMOPS Centre operations to new observing systems. 15 responses were received by the deadline of Nov. 15 2007, including (by alphabetical order):

1   CCO   Columbia
2   CPO   USA
3   CLS   France
4   DHN   Peru
5   FMI   Finland
6   ICTP-OGS   Italy
7   IFREMER France
8   INCOIS India
9   IMA   Trinidad & Tobago
10   NDBC   USA
11   NMDIS China
12   NOCS   UK
13   NORI   Republic of Korea
14   SNET   El Salvador
15   VLIZ   Belgium

This positive result demonstrates the good international visibility and high interest of JCOMMOPS activities.

The JCOMM secretariat (and the two co-presidents P.Dexter and J.L Fellous) is currently preparing an analysis of these, based on the criteria given in the announcement and call for letters of intent.
By April 11 2008, a short list of suitable candidates should be defined by the secretariats and a larger committee should be formed for the final decision, including at least the chairs or representative of all bodies currently funding the support centre.

Response by JCOMM co-presidents to Argo TC question: "How Argo could be recognized as a true JCOMM program?"
The AST and JCOMM have been cooperating informally for a number of years now, and not the least through the joint operations of JCOMMOPS. It could be the appropriate time for Argo to move the relationship forward to a more formal level, while of course preserving the independence of operations of the AST, similarly to the other parts of the observing systems.

JCOMM strongly encourage moves towards a closer engagement between JCOMM/OPA and Argo. JCOMM has been developing a systems approach to the long-term ocean observing system, where all the different components, managed by their different "platform oriented" bodies, are being integrated as key elements of an overall composite ocean observing system. A critical part of this approach has been and will be JCOMMOPS/OPSC. The development of a closer, and perhaps more formal, relationship between the AST and JCOMM/OPA, can only help in this process.

From the perspective of Argo, such a development can also offer substantial advantages: enhanced visibility for Argo and the AST, in particular amongst the national agencies which largely represent Member States on the governing bodies of WMO and IOC; as a side benefit from this, hopefully assistance towards the long-term sustainability of the array; opportunities for closer coordination with other elements of the composite system; etc.

⇨ The AST is invited to provide feedback to JCOMM on the suggested selection process for the OPSC and on the future relationship Argo-JCOMM.

Conclusion

JCOMMOPS is open to all extensions and changes in its operations based on the requirements of its existing communities and will also be pleased to assist further communities, which are implementing global ocean observing systems. The optimal size and

services offered by JCOMMOPS should reflect the requirements of the JCOMM observing programme participants, the possible expansion and relocation of JCOMMOPS is seen as a good opportunity to assess and review these requirements in order to provide the best possible support for JCOMM members. In the meantime however, JCOMMOPS is continuing to plan future activities and improve its operations in line with requirements of its existing panels Argo, DBCP and SOT.

References:

JCOMMOPS background and status
http://www.jcommops.org/doc/jcommops/JCOMMOPS-background-and-status.pdf
(E.Charpentier, M.Belbeoch)

ANNEX

JCOMMOPS' Office in Toulouse, France: