

Editorial

IGOS partnership: further development and new mechanisms

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Since its creation in June 1998, IGOS Partnership activities have been rapidly and successfully developing, adopting a progressive approach through a "Theme process". Successful achievements have been reached for the Ocean theme (report published in January 2001), the Global Carbon Cycle and Global Atmospheric Chemistry themes are well under way and, at the 8th meeting of the IGOS Partnership held on November 8, 2001 in Kyoto, the Global Water Cycle and the Coral Reef sub-theme (as the first component of an expected IGOS Coastal Theme) were approved. A proposal for a Geological Geophysical Hazards theme is also currently under preparation for submission to the forthcoming IGOS-P meeting.

However, in view of the diversity of the IGOS initiatives and the need to demonstrate that the IGOS process rapidly leads to effective results in terms of observation strategies and systems, it was felt necessary to revise the IGOS structure and management approach to make the IGOS Process more efficient. FAO/GTOS' article on p.4 illustrates some of the - not unexpected - growing questions which IGOS-P has experienced. But we remain persuaded, like the authors, that Partnership has got off to a good start. On the basis of contributions from several IGOS Partners, new mechanisms have been adopted for the IGOS structure and procedures for IGOS-P Themes and other activities.

1- IGOS-P Structure and Management

The IGOS-P Plenary has decided the following main elements for the new structure:

- IGOS-P meetings are convened once a year, normally in the middle of the year in association with G3OS meetings.



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- A co-chairmanship system is adopted with immediate effect after IGOS-P8. One Co-Chair is the CEOS Chair, while the other Co-Chair is nominated by consensus among the other Partners. Each Co-chair is nominated for a period of one year.
- An active IGOS-P Secretariat is maintained by the participating agencies on a "best effort" and "no exchange of funds" basis.
- Information needs of international conventions will be a permanent feature of IGOS-P meeting agendas. The first Co-Chairs are ESA and UNESCO.

2- IGOS-P Theme Process

The need is felt by Partners to structure the process for the identification, selection and implementation of themes based on perceived priorities towards the development of an integrated global observing strategy.

Proposals for a Theme should be based on a sound set of observational requirements developed and documented by the various IGOS Partners and clearly specify the objectives, roles and responsibilities of participants, milestones, evaluation criteria to assess progress and, lastly, resources required to support the implementation of the Theme.

A Theme proposal will be transmitted to IGOS-P Secretariat and Co-Chairs for validation and circulation to Partners for approval at the next IGOS-P meeting; the implementation of a Theme will be subject to regular assessments of activities and progress as well as reporting at least annually to IGOS-P meetings through the IGOS-P Secretariat; particular attention will be given to the coordination with secretariats of relevant international environment Conventions to ensure the full exploitation of the Theme results. Theme Report content and publication will have to be agreed by the Partners.

3- IGOS-P Promotional Activities

IGOS-P activities are not limited to the Theme Process but also include promotional activities to develop awareness about IGOS. An ad-hoc Visibility Group has been set up focussing on the preparation for the World Summit for Sustainable Development (WSSD) in Johannesburg, South Africa.

Promotional activities include production of brochures, regular bulletins, dedicated communications, support to special events and conferences (such as WSSD, COP meetings). ■

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OCEAN THEME - STATUS OF IMPLEMENTATION

by Eric J. Lindstrom, NASA Headquarters and Colin P. Summerhayes, International GOOS Office



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The Ocean Theme report was published in January 2001 and moved into a phase of implementation and further development. This note is intended to report on progress in moving the IGOS Ocean Theme forward. Considering the immense task outlined in the Ocean Theme in terms of satellite and in situ programs, and the short amount of time that has passed since completion and dissemination of the report, it may be presumptuous to expect a significant change in status over a single year. However, many positive developments and actions have emerged over the last year that may to various degrees be attributed to IGOS articulation of an Ocean Theme. A few highlights follow.

Following on from the successful TOPEX/Poseidon and Jason-1 precision altimetry missions mounted jointly by NASA and CNES, four agencies have agreed to cooperate on a precision altimetry mission to follow-on from Jason 1 (successfully launched in December 2001). To further the Ocean Theme desire to assure continuity of precision altimetry into the future, NOAA and EUMETSAT have joined NASA and CNES in supporting the development of the next mission. It will serve as the bridging mission as we transition precision altimetry to an operational status with long term support from NOAA and EUMETSAT. The Ocean Theme has influenced development of a SeaWinds follow-on (NASA, NASDA), and of salinity missions (NASA, ESA/CNES). WMO is now encouraging the use of research satellite data as well as operational satellite data in developing products through the Global Observing System of the World Weather Watch.

On the in situ side, subscription to the Argo profiling neutrally buoyant float array increased to near full level in 2001 and

implementation reached the 10% level. Chances are now high that a fully implemented (3000 float) program will be place as planned, and able to complement the global coverage of sea level provided by the combined alimeter/tide gauge network within the 2003-2005 time frame.

Ocean state estimation activities utilizing these data sets are developing under the auspices of the Global Ocean Data Assimilation Experiment (GODAE). The number of analysis products available in near-real-time will grow significantly over the next year. Significant progress has been enabled through provision by the US Navy of a dedicated GODAE server at Fleet Numerical, in Monterey. This will provide access to GODAE data and a range of GODAE products. Other servers are expected to come on line soon. A GODAE Strategic Plan has been published, and an Implementation Plan has been drafted. A GODAE High Resolution Sea Surface Temperature (SST) Project is underway to develop high resolution SST data sets and products using all available remotely sensed and in situ data.

The implementation of the in situ elements of the Ocean Theme is now taking place through the newly formed Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), an intergovernmental body that held its first meeting in Iceland, mid 2001. JCOMM will facilitate integration of the pre-existing in situ observing elements described in the Ocean Theme report.

Much still needs to be done. On behalf of the UN Framework Convention on Climate Change, GCOS has analysed the requirements for in situ ocean observations in support of climate, and finds the present system still inadequate for accurate monitoring of climate change.

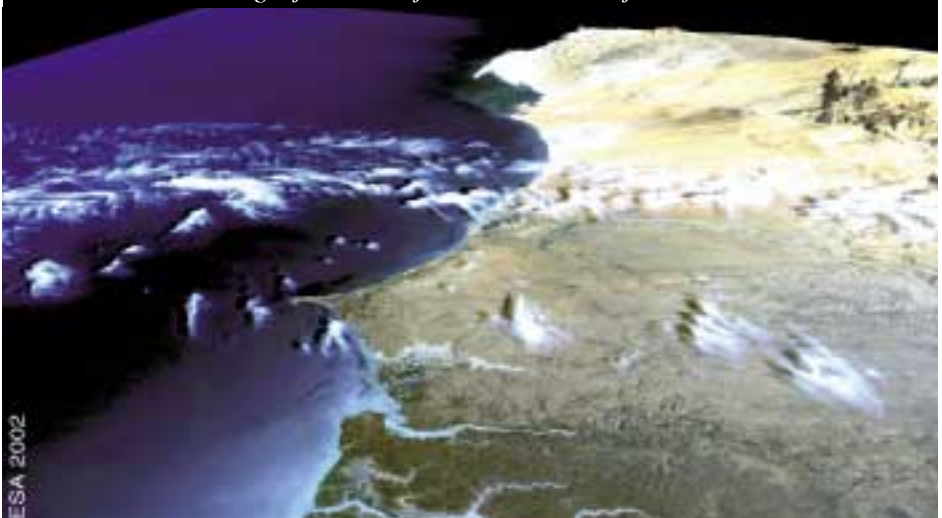
Among the new developments now being planned to meet the requirements of the Ocean Theme, we see the beginnings of an ocean observing system for carbon (covered by both the Ocean Theme and the Integrated Global Carbon Theme), and the development of a global network of ocean time series stations for measuring ocean variability at fixed points. In addition, the GOOS Steering Committee has encouraged development of a comprehensive review of ocean data management, including all aspects of transmission and communication, recognizing that much can be improved in this area. This work will be tied to that being carried out by CEOS's WGISS.

Finally, GOOS has been developing fast at the regional level, the main new developments being the funding of a major development of GOOS in the Mediterranean (under MedGOOS) by the European Commission, the development of an Indian Ocean GOOS, which will hold a major conference in Mauritius during the first week of November 2002, and the development of a Strategic Plan for GOOS in the Caribbean.

In the interests of better communication and coordination between the space and the in situ observing communities a CEOS representative was appointed to attend the international GOOS Steering Committee and to serve intersessionally as a conduit for coordination of plans.

We feel that the Ocean Theme of IGOS has had a positive impact on community planning and has helped to increase confidence in future directions. It has allowed a wide variety of agencies, groups, and ocean observing activities to proceed forward under a common vision. Requirements will be reviewed again in early 2003. ■

First Envisat - Meris image of the coast of Mauritania - West Africa - 03-19-2002 ©ESA 2002.





A MAJOR STEP TOWARDS OPERATIONALITY: JASON -2 AND OSTM

The need for the continuation of precise non-sun synchronous orbit altimeter data has been clearly expressed by the ocean user community, for example through the requirements of the Global Ocean Data Assimilation Experiment (GODAE), and the Integrated Global Observing Strategy Partnership (IGOS-P).

In response to these needs, CNES, EUMETSAT, NASA and NOAA have agreed an exchange of letters for the joint implementation of the Jason-2 satellite as part of an Oceanographic Surface Topographic Mission (OSTM).

With a nominal launch date in 2005, and a nominal 5 year life, the primary objective of Jason-2 will be to ensure that the global user community continues to receive altimetry data on an operational basis, with

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the unique accuracy, continuity and coverage of the U.S.-French satellites Topex/Poseidon and Jason-1. The data will support operational activities in marine meteorology, seasonal forecasting and oceanographic services. It will also support the monitoring of the climate through its contribution to the description and understanding of the ocean circulation and variability on all scales. To meet this need, the satellite will be an Earth orbiting satellite in a 66° orbit equipped with a radar altimeter and other instruments to directly measure sea surface elevation along a fixed grid of sub-satellite groundtracks.

Data from the satellite will include real time wind /wave observations with an accuracy of better than 2m/s (or 10%), an orbit accuracy of better than 50cm and a

range accuracy of better than 4.5cm. In addition, higher precision products, based on a better understanding of the actual orbit restitution will be available on a three and a thirty-day basis, and all data will be archived and available to the science community.

The OSTM mission is also an important element in the context of the overall altimetry data needs. In addition to the precise non-sun synchronous altimetry data from Jason-2, ERS/Envisat satellites are providing high-inclination sun synchronous data. Merging the data from these two systems provides maximum synergy for applications such as ocean mesoscale circulation. A long-term objective (post 2010) is to have a single global altimetry system, supported by at least Europe and the USA, covering both the non-sun synchronous and the sun synchronous orbits. ■



THE IGOS PARTNERSHIP: A GTOS AND FAO PERSPECTIVE

by Jeff Tschirley, Bob Scholes and He Changchui¹

Since the "historic" meeting which took place at ICSU headquarters in Paris 1998, the IGOS partnership has dedicated considerable time to issues such as visibility, criteria for new members, guidelines for themes, informing policy groups (e.g. international conventions, the CSD, the WSSD) and developing themes.

A primary determinant of IGOS success will be the ability of the partnership to deliver concrete results to defined users, especially in the policy community. Two key areas are:

- filling gaps in key *in situ* and satellite observations, and
- generating products that lead toward new understanding and insight into managing the forces behind global change.

So far, the main way of achieving this has been through the development of themes. At present 5 themes are either endorsed or under active consideration - Atmospheric chemistry, Carbon, Coastal, Oceans, and Water. To ensure that these lead to outputs

which are useful to the global change community, the following issues could usefully be addressed by IGOS:

■ **Science vs. policy:** Ideally, these two elements should be compatible and complementary. However, at present the themes have a predominant focus on scientific and research issues; the policy dimensions are often vague and undefined. There is need for closer collaboration with key "policy" groups.

■ **Resources:** One constraint on progress within IGOS arises from the principle of "best effort" which is embodied in the agreement to form the partnership. In practice it means that participation is voluntary and subject to prevailing resource limitations. When considering a new theme, there is need to ensure in advance that the financial requirements for developing it can be met. Lacking this, some themes will fail to be adequately developed.

■ **Focus:** A proliferation of themes runs the risk of diluting the achievement of IGOS objectives. The partnership may need to pause and assimilate its experience so far and to concentrate on further developing

existing themes that it considers of high priority.

■ **Balance:** Without doubt there is considerable imbalance among the partners in terms of resources, disciplinary focus, work culture and mandates. The result is that "weaker" partners are unable to participate and contribute to IGOS at the same level as the "stronger" partners. This impedes closer collaboration and more effort is needed to overcome this barrier.

The authors agree that the progress made so far through IGOS is a good start. At the same time, we think there is value to be found in concentrating more intensively on the concrete products that may arise from the implementation of the themes. This may involve adjustment in the way that IGOS presently works but it will be the major measure of our success. ■

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INVOLVEMENT OF IGOS IN WSSD

by Josef Aschbacher (ESA) and Robert Missotten (UNESCO)

1- The 2002 Earth Summit

The World Summit on Sustainable Development (WSSD) will take place from 26th August, till 4th September 2002 in Johannesburg. It will gather the world's Heads of States and Governments, UN Agencies and Major Groups to assess and review progress made in relation to the decisions taken at the 1992 UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil.

Particular attention will be given to the status of the implementation of Agenda 21 adopted in Rio as well as to the Rio Declaration on Environment and Development and the UNCED-related conventions. Since Rio, progress has been accomplished but despite initiatives from governments, international organisations, civil society groups and individuals, more, much more needs to be done, especially in support to Sustainable Development.

In Johannesburg the re-affirmation of political commitments to the Rio Principles and full implementation of Agenda 21 associated with a viable Programme for the Further Implementation of Agenda 21 is expected.

2- How IGOS can support Sustainable Development?

Today, everyone agrees that there is a need for adequate information at various scales, from local to regional and global, for understanding the Earth system and its processes, the causes and consequences of environmental changes and, in turn, support Sustainable Development. This requires international co-operation on a global scale, which led in 1998 to the definition, development and implementation of the Integrated Global Observing Strategy.

Since then, IGOS Partners have been closely involved in the work of the UN Framework

Convention on Climate Change, the Intergovernmental Panel on Climate Change and the UN Conference on the Exploration and Peaceful Uses of Outer Space in order to ensure that observing systems are properly considered when defining strategic goals and concerted actions.

Recently, the UN Secretary General's Report on Implementing Agenda 21 specifically referred to IGOS and in particular to the contribution of space Earth Observation satellites in providing vital information for the three pillars of sustainable development namely Social, Economical and Environmental. Examples of fields for which this information is of particular importance include:

- Poverty eradication by ensuring food security and developing sustainable agriculture
- Protection and management of natural resources by combating desertification, preserving forest resources, protecting and managing ocean and coastal resources
- Provision of early warning for natural disasters and information for disaster reduction
- Assessment of environmental effects of climate change
- Sustainable development of Developing Countries in particular small island developing States and Africa, both economically and environmentally vulnerable.

3- IGOS involvement in WSSD

The involvement of IGOS Partners in WSSD includes the organisation and/or the participation to numerous preparatory activities for the Summit as well as the participation at the Summit itself. This covers four main generic activities, namely:

- 1) The participation /organisation of regional and sub-regional meetings.

- 2) The participation /organisation of thematic meetings.
- 3) The participation to the PrepCom meetings organised by the Commission on Sustainable Development .
- 4) The participation at the Summit itself as a specialised organisation of the UN system or an Observer.

The level of involvement varies between the different IGOS Partners. Brochures and informative material for display and distribution at WSSD are being prepared by most of the Partners. Side events, information stands and exhibitions, press conferences during WSSD are also under consideration.

It should also be noted that a number of space agencies have been working through their national or regional delegations as well as through CEOS for the formulation of position papers to be delivered at WSSD.

4- Conclusion

The World Summit will offer a unique opportunity for organisations responsible terrestrial and space observing systems to convey, at the highest political level, strong messages about the high potential and already successful achievements provided by the combination of in-situ and space-derived information in support to Sustainable Development.

The role of IGOS and the benefits resulting of the Partnership should be further recognised and encouraged with a view to provide operational services in support to Sustainable Development. WSSD should also encourage organisations responsible for observing systems (in-situ and space-based) to ensure their long-term continuity through a global co-operation. ■

Meeting Calendar

	2002							
	Mai	Juin	Juil	Août	Sept	Oct	Nov	Déc
IGOS partners G3OS sponsors and IGOS Themes	IGOS P-9 ▲ G3OS Paris	▲ GODAE Biarritz/France						
Others		▲ Prep Com IV Jakarta Indonésie			▲ WSSD Johannesburg South Africa		▲ CEOS Plenary ESA/ESRIN Frascati/Italy	