An international partnership for global environmental observation

IGOS Integrated Global Observing Strategy

BULLETIN

September 1999 N°1

Editorial

On behalf of the partners of the Integrated Global Observing Strategy (IGOS), we are pleased to announce the formal launch of the IGOS Bulletin. This follows the decision of the third IGOS Partners Meeting held in June 1999 at FAO Headquarters in Rome.

Since the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992, which resulted in Agenda 21, an active process of structured coordination and synergistic convergence of global, regional and national efforts in environmental data collection, analysis and synthesis has increasingly gathered momentum. This is a very timely development in view of the rapidly increasing environmental information requirements of many programmes at national, regional and global scales, such as, for example, the international Conventions on Climate Change, Biodiversity and Desertification and Food Security related programmes.

The concept of an IGOS is a result of such an international effort. IGOS intends to unite the major satellite and surface-based systems for global environmental observations of the atmosphere, oceans and land. It is a strategic planning process, involving many partners, that links research, long-term monitoring and operational programmes, as well as data producers and users at technical and policy-making levels, in a framework that delivers maximum benefit and effectiveness.

IGOS focuses primarily on the observing dimension of the process of providing environmental information for decision-making. The strategy covers all forms of data collection concerning the physical, chemical and biological environments of the planet, as well as data on the human environment, on human pressures on the natural environment, and on environmental impacts on human well-being. It recognizes that data collection must be user driven, leading to information products that increase scientific understanding and guide early warning, policy formulation and decision-making for sustainable development and environmental protection.

The components of IGOS have considerable strategic importance, cutting across all observing activities. Major thrusts of IGOS, as it proceeds, will include: strengthening space-based and in situ linkages to improve the balance between satellite remote sensing and ground- or ocean-based observing programmes; encouraging the transition from research to operational environmental observations within appropriate institutional structures; improving data policies and facilitating data access and exchange; stimulating better archiving of data to build the long-term time series necessary to monitor environmental change; and increasing attention to harmonization, quality assurance and calibration/validation so that data can be used more effectively.

The IGOS concept was fully endorsed by the UNISPACE III Conference, held from 19 to 30 July 1999 in Vienna, and the views of the IGOS Partnership Forum, held during this Conference on 21 July, were incorporated in the Conference report. The Vienna Declaration on Space and Human Development, adopted by the UNISPACE III Conference, also stresses, *inter alia*, the importance of IGOS and calls for action to be taken "to develop and implement the Integrated Global Observing Strategy so as to enable access to and use of space-based and other Earth observation data" for protecting the Earth's environment and managing its resources.

The IGOS Bulletin will be published biannually. It is intended to keep the international community working in the field of Earth observation, environment and sustainability, including scientists, researchers, end users and various stakeholders as well as decision makers, well informed about the IGOS concept, process, policies, programmes and implementation mechanisms, as well as its progress and achievements. We sincerely hope that the bulletins would not only be a unique platform for exchange of views among various players, but also a useful source of information for all interested readers.

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THE OCEAN THEME
A PATHFINDER FOR IGOS IMPLEMENTATION

The IGOS Partnership has endorsed a new approach for IGOS implementation which utilizes thematic areas. With a view towards broadening IGOS to include the observing activities of all Partners, the themes concept was developed to provide a more coherent focus for the definition and implementation of IGOS. The fundamental underpinning of the theme approach is the acceptance that IGOS must establish priorities within broad theme areas; that the priorities must take account not only of the requirements of international programs but also those of national and regional programs and must be sensitive to major issues connected with international conventions; that IGOS must seek to exploit what already exists and seek to improve in incrementally; and that the definition and inclusion of in-situ requirements are vital to this process.

The oceans theme was identified as a pathfinder to demonstrate the concept and was recommended to move immediately into the implementation phase. NASA agreed to chair the Ocean Theme Team, which includes representatives from GOOS, CNES, ESA, ISRO, NASDA and NOAA. The Ocean Theme Team has drafted a preliminary report, which was presented to the IGOS Partnership meeting in June 1999.

The Ocean Theme Team report is a call for concerted action. It underscores the GOOS vision of developing and maintaining global ocean observing tools for a permanent global ocean observing system. It also provides an excellent opportunity to build on the work of two of the demonstration projects of the Committee on Earth Observation Satellites Strategic Implementation Team (CEOS SIT). It folds together the IGOS-related portions of the Global Ocean Data Assimilation Experiment (GODAE) and the Ocean Biology Projects, bringing together disparate pieces, thereby demonstrating the utility of IGOS for oceans. It attempts to consolidate recent scientific gains in in-situ observing, remote sensing, ocean model development and data assimilation into an ongoing, robust ocean observing system. The report provides first recommendations to the IGOS Partnership–critical areas for action to assist in developing the capability for global operational oceanography. The ultimate goal is to set IGOS on a course to provide systematic long-term high-quality measurements for ocean surface topography, ocean surface vector winds, ocean color and sea surface temperature. Other measurements and experimental developments contributing to a global ocean observing system are to be considered in later work. The report outlines short (1-2 year), medium (2-5 year) and long-term (5-20 year) implementation goals for IGOS to support its development of an integrated ocean observing strategy.

The IGOS Partnership has endorsed the concept of "themes" to implement IGOS. "Oceans" was selected as an initial pathfinder theme, and is in the process of drafting and refining its report to the Partners. While the work of the Ocean Theme Team is not yet complete, its successful progress to date has demonstrated its viability as a model for other themes the Partnership may wish to implement.

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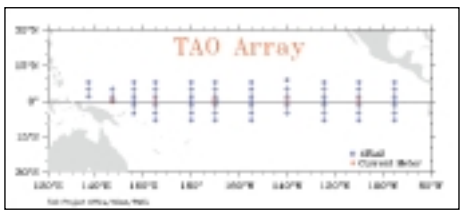
The Ocean Theme Team is currently revising its report based on a joint workshop with GOSSP (Global Observing Systems Space Panel) in August 1999. The workshop examined requirements and capabilities for ocean observation in light of specific needs such as seasonal-interannual climate forecasting, improved marine weather prediction, and improved scientific understanding of marine ecosystems. Draft recommendations from the Ocean Theme Team to the IGOS Partnership were assembled and will be incorporated into the report. These recommendations will include some requests for immediate action by the IGOS Partners and some ideas for action over the medium and long term to facilitate development of an integrated ocean observing system. The joint meeting with GOSSP provided an excellent opportunity to focus the ocean theme agenda and to develop its usefulness as a pathfinder activity.

The Ocean Theme Team will present a revised report to the CEOS Plenary and IGOS Partnership meetings in Stockholm, November 1999. Response to theme team recommendations and commitment to action by the Partners is expected in early 2000, roughly one year after inception of the theme effort.

WCRP AND IGOS

As the first successful global observing system was built up by the World Meteorological Organization (WMO) through its World Weather Watch (WWW) and, as space agencies can now deliver global, quality-controlled data sets for the atmosphere and the surface, co-operation between WMO and space agencies through CEOS is vital for IGOS and WCRP. However, several of WCRP's major successes are related to new observation networks stimulated by WCRP itself: Firstly, the Tropical Atmosphere Ocean (TAO)- Array of the Tropical Ocean/Global Atmosphere (TOGA) project allowed, for the first time, physically-based El Niño predictions up to several seasons ahead with major benefits for many countries. Secondly, the profiling Lagrangian drifters, measuring upper ocean dynamic and thermodynamic structure, developed by scientists for the World Ocean Circulation Experiment (WOCE) and the precise measurement of ocean surface topography from space available for WOCE have shown the technical feasibility of a global ocean observing system, but have also opened the door to new exciting applications (ocean weather forecasting, global seasonal climate variability predictions, detection of climate change).

The World Climate Research Programme (WCRP) is both a creator and one of the strongest users of meteorological and oceanographic data. Thus, it has a strong interest in a truly global climate observing system encompassing three-dimensional time series in the atmosphere and the oceans as well as full coverage of land surface parameters. In other words: WCRP strongly supports an Integrated Global Observing Strategy (IGOS).



For WCRP, the most urgent need is the continuation of these networks since they are also the prerequisite for the answer to a major climate research question: What are the physical mechanisms creating decadal time-scale variability and is it at least partially predictable? Co-operation with WMO, a strengthened IOC of UNESCO and CEOS is essential for success. Furthermore, both the GODAE project (Global Ocean Data Assimilation Experiment) and WCRP's CLIVAR (Climate Variability and Predictability) need it to demonstrate the applications mentioned above.

Another major research question is related to a new experimental satellite sensor package. Because the sensitivity of the global climate system to external forcing is mainly depending on cloud feedback, WCRP's Global Energy and Water Cycle Experiment (GEWEX) requested me to write to the major space agencies asking for sensors allowing the measurement of three-dimensional distribution of cloud water and ice. All agencies have responded favourably. With the new data sets, expected in several years, the projection of anthropogenic climate change will become less uncertain. Since such a new observing system will also improve medium-term weather forecasting, seasonal climate anomaly predictions and the attribution of causes of climate change, I dare to forecast that it will become part of the Global Climate Observing System (GCOS).

Further climate parameter time-series not measured either with full coverage or with adequate accuracy, but needed both for predictions and climate change detection are: Sea-ice thickness, mass budget of ice sheets, upper soil wetness, water vapour in the upper troposphere, flow over the sills in the northern North Atlantic. Technical solutions exist, thus rapid implementation can be seen as the proof for a convincing IGOS, to which WCRP is ready to contribute strongly.

Hartmut GRASSL
Director of WCRP (as of 1 October 1999, Professor of Meteorology University of Hamburg, Director at the Max Planck Institute for Meteorology)

WHAT IS IGOS ?

The Integrated Global Strategy unites the major satellite and surface based systems for environmental observations of the atmosphere, oceans and land.

- It is a strategic planning process to identify the current resources to fulfill observation needs and to determine observation gaps.
- It intends to cover all forms of data collection and is based on the recognition that must be user driven.

- It represents the convergence of interests from several partners: the G3OS and their sponsors, coordinating the in situ component, CEOS, which has taken the lead in developing the space component; and the global change research programmes and research funding agencies, which will help increase scientific understanding.

for further information, refer to:
http://www.igospartners.org

FROM COP-4 TO COP-5

The Fourth Session of the Conference of Parties (COP4) to the UN Framework Convention on Climate Change (UNFCCC) held in Buenos Aires in November 1998, inter alia, called on Parties to take actions to improve the global observing systems for climate to meet the basic needs of the convention. The Global Observing Systems partners in IGOS have a key role to play in this regard.

The GCOS Secretariat, on behalf of the global observing systems for climate, has concentrated on three areas highlighted by the COP; progress will be reported to the Fifth Session (COP5) which will be held in Bonn, Germany in October 1999.

Reporting by Parties:

GCOS has developed draft Guidance for reporting by the Parties on systematic observations as a part of their national communications to COP. If the draft GCOS guidance is adopted by COP5, it will greatly facilitate the preparation of integrated global information as well as providing a better basis for ascertaining the needs of developing countries.

Intergovernmental process to address priorities and funding issues:

The GCOS Secretariat has worked with representatives from a number of interested nations and organisations to respond to COP4's desire that an intergovernmental process be established for addressing the priorities for action to improve global observing systems for climate in relation to the needs of the Convention and for identifying financial support. The next step being considered is a meeting of these representatives in february 2000 so that a report on a possible process can be presented to the COP..

Implementation:

A preliminary report to COP5 will highlight deficiencies in several key areas of the global climate observing systems. It will propose to hold a series of regional implementation meetings to identify the specific needs of the Parties in the region as well as deficiencies in regional networks. These needs could be assembled into specific projects and taken to funding agencies such as the Global Environmental Facility (GEF). COP4 decided that the GEF should provide funding to developing countries to build capacity to participate in global observing networks.

In summary, the COP process provides the IGOS partners a means to identify the observational needs and to develop the integrated global observing capabilities for climate that support the UNFCCC.

GCOS Secretariat

News

UNISPACE III

The UNISPACE III Conference (Vienna 19-22 July 1999) encouraged IGOS Partners to continue the development of and implementation of IGOS. At the occasion of the International Forum on the Integrated Global Observing Strategy : into the Next Millennium, six recommendations were endorsed to support the establishment of the IGOS Partnership and to urge the Partners together with the space agencies to develop related common initiatives to move rapidly into implementation. (refer to UN document: A/conf.184/C.1/L.47).

WMO and IOC

UN agencies WMO and IOC jointly established, last spring, a new high-level intergovernmental body for oceanography and marine meteorology. The new body will integrate observation of the Earth's atmosphere and oceans as related to marine meteorology. Its work is expected to lead to improved maritime safety services and new meteorological and oceanographic services to enhance the protection and management of the marine environment. The first JCOMM meeting is planned for spring 2001.

Disaster Management

ESA and CNES announced at Unispace III their intention to establish a charter in order to facilitate provision of space based data to local authorities in time of disaster.

Meeting Calendar

	1999			2000										
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
IGOS Partners		▲ Stockholm			▲ IGOS *TCI*				▲ Geneva					
G3OS Sponsors									▲ Geneva					
CEOS		▲ Stockholm												▲ Brazil
SIT				▲ Paris					▲ Geneva					
COP5	▲ Bonn													

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