

Editorial

IGOS: LESSONS LEARNT, 1998-2001

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CEOS/SIT Chair

“What is IGOS?”
This question is systematically raised in the IGOS Bulletin. Is it what one of my friends, doubtful about its usefulness, once qualified as "an instrument aimed at recycling the vacuum" ? Just another bureaucratic layer in the international arena ? Or a real synergistic tool set up to help facing worldwide environmental issues ?

To set the scene, it is appropriate to quote Robert S. Winokur, my predecessor as SIT Chair who did so much for the whole IGOS process, who concluded his thoughts published in the IGOS Bulletin n°2 (March 2000) with : "IGOS is still evolving, but is providing a mechanism for governments to work together to promote sharing and more effective use of resources during a time when there is a pressure to provide data and information to address critical science and policy issues on a global scale".

IGOS is indeed a very ambitious endeavor, based on a pragmatic approach which calls upon several fundamental ideas: **partnership, users needs, data availability, best efforts, transitioning from research to operational, implementation, visibility.**

Its first, essential achievement is in the partnership itself. User-oriented international organizations, responsible for in situ data collection, together with national or regional space agencies, have been able to overcome "cultural" as well as "institutional" differences, and have developed over a very short time scale a real and efficient partnership, yielding several major initiatives called "Themes".



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The "theme crop" is rich and beautiful. In less than three years agreement has been reached amongst the IGOS partners to initiate activities on a collection of worldwide issues (Ocean, Carbon Cycle, Atmospheric Chemistry, Water Cycle, Geophysical hazards) driven by needs expressed by users and calling for a transitioning from research and development to operational.

What lessons can we draw from the young life of IGOS?

- Things have moved very fast and have influenced the internal process of each agency, inducing new practices and eventually impacting on the selection processes of new programs; however "time must be given to time" to allow the Themes to reach full implementation. The initial pace will inevitably slow down, but this should not be perceived as a lack of interest or a loss of momentum.
- The "best efforts" approach works well and this has to do with the fact that all agencies and organizations are represented at senior level; however IGOS still visibility needs to be

improved both in the international arena and at the basic level of research and applications institutes.

- The combined efforts of agencies and organizations yield more than the sum of their individual contributions; however there is still a long way to go before we come up with truly integrated observing systems. We have to "think differently" in designing future observing systems, which should not be seen as the simple juxtaposition of independent elements. We have to do better with less, to do differently our respective tasks, to change our practices, and to accept the challenge to share our work for the mutual benefit of all partners.

A significant IGOS merit has been to improve understanding between the space data providers, the in situ data providers and the users. A side effect is my own conversion from the first category into the second and third altogether. Do miracles exist ? ■

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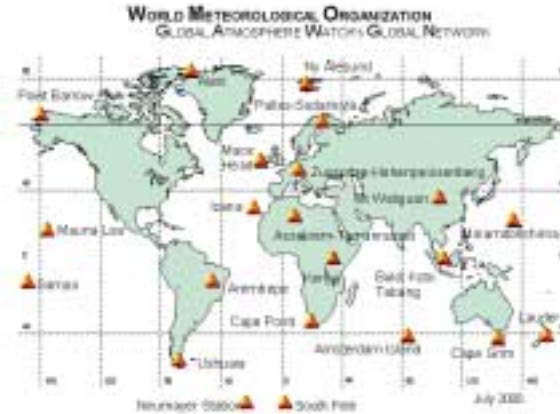
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NEW IGOS THEME: IGACO

(Integrated Global Atmospheric Chemistry Observations)

by Frédéric Delsol, Director of the Atmospheric Research and Environment Programme Department, WMO



Predicting the rate and nature of future climate change and its associated impacts depends upon determining the current and projected composition of the atmosphere. Atmospheric chemistry observations document the state of the atmosphere and thus help understand the processes that govern its composition and together they provide the basis for assessing the potential for future change. The present observing network is made up of ground based network in particular WMO/GAW and satellites systems, all operating outside a formal framework.

The IGOS (Integrated Global Observing Strategy) Partnership provides the ideal forum for developing and implementing a strategy for ensuring the cost-effective provision of the requisite data. This is the fundamental rationale underlying the formulation of a new IGOS Theme, namely the "Integrated Global Atmospheric Chemistry Observations" or IGACO Theme.

The proposed new theme was submitted and endorsed at the last session of IGOS Partnership meeting last June in Paris as a means for ensuring the long term availability of essential data. This Theme considers all relevant chemical species as well as the physical and meteorological observations required to properly interpret the observations. Its aim is to support the provision of data essential to detect and predict climate change associated with changes in atmospheric composition.

The specific objectives of the IGACO Theme are to provide a framework:

- to support the formulation of decisions necessary to ensure the long term continuity and spatial comprehensiveness of the full spectrum of atmospheric chemistry observations (and associated meteorological parameters) needed to support:
- the monitoring of atmospheric composition parameters related to climate change and environmental conditions;
 - the research required to improve understanding of Earth processes so that observations can be properly interpreted and climate and air quality evolutions predicted;
 - the estimation of the exposure of populations to air pollution on a global, regional and local scale.
- to assure the most effective use of available ground and space-based resources within an integrated framework for global atmospheric chemistry observations (and associated meteorological parameters) by establishing priorities for upgrading existing and/or establishing new systems.

The project will build upon the now completed report of the CEOS Ozone "Pathfinder" Project (WMO/GAW Report Number 140) and develop a strategy for the integrated provision of atmospheric chemistry observations (and associated meteorological parameters) required to realise the above objectives, taking into consideration:

- The user requirements of the scientific community, meteorological services,

environmental agencies, and international assessment groups.

- Existing (and planned) measurement programmes from space, ground, balloon and aircraft.

Roles and Responsibilities:

An IGACO Co-ordinating Group has been established which includes initially:

- Chair – G. Brasseur (IGAC/IGBP)
- V. Mohnen (WMO/GAW-QA/SAC)
- M. Proffitt (WMO/GAW)
- J. Gille (NCAR)
- H. Kelder (KNMI)
- M.-L. Chanin (WCRP/SPARC)
- J. Langen (ESA for CEOS)
- E. Hilsenrath (NASA for CEOS)
- Y. Ogawa (NASDA)
- C. Schwela (WHO)

Additional members will be appointed to the Co-ordinating Group to represent other IGOS Partners and/or important user groups. Several consultative workshops will be organised to consult the wider community .

Linkages

Two existing IGOS Themes would be linked to the proposed IGACO Theme, namely those addressing oceans and carbon: The Integrated Global Carbon Observation Theme/ Terrestrial Carbon Cycle Theme and the Ocean Theme. Care will be taken to ensure that the IGACO complements the endeavours of these other two themes.

Milestones:

A final draft report describing the various stages of the process, including commitments by the participants, identify missing components of the system and measurements which are lacking, and finally describing the method of assessing the success of implementation will be distributed for extensive review and comments to the IGOS Partners and other interested parties by the end of 2002. After completion of this process the document will be published as a joint CEOS-WMO report and the implementation phase initiated. ■



"GEOHAZARDS": TOWARDS A NEW IGOS THEME

by Professor John van Genderen, Chairman IGOS Geohazards Theme Ad-Hoc Working Group

THE IGOS PARTNERSHIP "THEMES" CONCEPT IS STARTING TO TAKE SHAPE. FOLLOWING ON FROM THE VERY SUCCESSFUL "OCEAN" THEME, SEVERAL OTHER THEME PROPOSALS ARE IN VARIOUS STAGE OF DEVELOPMENT OR IMPLEMENTATION. These include the "Integrated Global Atmospheric Chemistry Observations (IGACO)" Theme, the "Integrated Global Water Cycle Observation (IGWCO)" Theme and the "Integrated Global Carbon Observation/Terrestrial Carbon Cycle" Theme. At the initiative of UNESCO and ICSU, an IGOS sponsored meeting was held in Paris in May 2000 to assess the support for an integrated geological/geophysical ("Geohazards") theme. As a result of the positive response, an IGOS Geohazards Ad-Hoc Workshop Group was established to prepare the Geohazard Theme Proposal.



Pr. J. Van Genderen

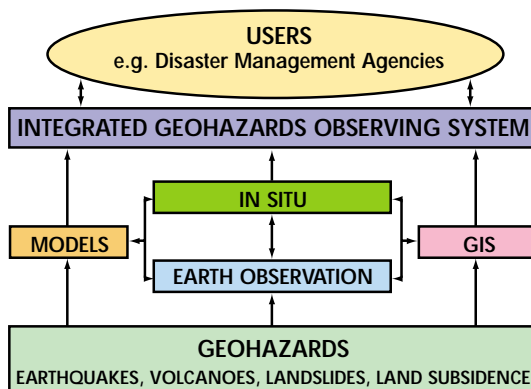


Figure 1: the IGOS-P Geohazards "integrated" concept.

Objectives

The goal of this IGOS-P Geohazards Theme Proposal is to investigate and develop integrated technologies that will greatly enhance the operational capabilities of end users agencies at national, regional, local government levels for disaster management and decision-making using multiple earth observation systems, in situ-measurements, spatio-temporal databases, geological / geophysical models, and geospatial information analysis.

The specific objectives of this Geohazards Theme are:

- To investigate current status, present and future end users needs and potential of national regional and local government operations related to the geospatial supported disaster management and decision-making.
- To develop a strategy and integrated technologies for utilizing existing, planned, and future geospatial information from satellites and in situ-sources.
- To develop and integrate earth observation data, in-situ spatial data

organization, spatio-temporal data modeling and analysis a GIS for a global, integrated geohazards observing system.

- To make use of crosscutting Earth Observation technologies for the various geohazards covered by this theme, such as differential InSAR, thermal IR, etc.

Current status and planned activities

On 2-3 May, the International Council of Science (ICSU) and the Division of Earth Sciences of UNESCO hosted an IGOS-P Geohazards Theme Meeting in Paris to ascertain the interest and support for this initiative. As a result of this meeting, an IGOS Geohazards Theme Ad Hoc Working Group was established, under the chairmanship of Professor John van Genderen of ITC, The Netherlands with some 20 experts and end user agencies from a dozen organizations around the world.

This IGOS Geohazards Theme Ad Hoc Working Group was charged with the responsibility of producing the Geohazards Theme Proposal for presentation to the IGOS Plenary Meeting in June 2002.

The first IGOS Ad Hoc Working Group Meeting has just taken place. Figure 1 gives a schematic of the overall concept. The objective is to produce a much more detailed and integrated methodology for all the four geohazards included in this IGOS Theme, particularly stressing the operational aspects and end users requirements, in terms of data needs, "standard" products, etc.

At present the IGOS Geohazards Theme Ad Hoc Working Group is in the process of involving still more end user agencies' inputs to ensure the relevance of the final Geohazards Theme Proposal. Whilst there is plenty of expertise on the earth observation / remote sensing aspect, more experts and organizations are being sought for the in-situ measurement systems (e.g. GPS, other seismic, geophysical, thermal networks), for modeling the crustal deformations and processes involved in the four geohazards being considered, for GIS aspects (historical databases, spatio-temporal aspects, etc.), and above all for integration aspects of these various technologies into one Integrated Global Geohazards Observing Strategy. ■

IGOS INTERNATIONAL SCIENTIFIC WORKSHOP "GEOHAZARDS: THE IGOS INTEGRATED APPROACH"
Hosted by ESA-ESRIN, Frascati, ITALY
21-23 January 2002

All members of IGOS and other organizations, agencies, experts interested in the geological hazards of earthquakes, volcanoes, landslides and land subsidence are invited to participate in this Workshop. Many end-user agencies will discuss issues of data requirements, data gaps integration of Earth observation data with in-situ measurements, models and GIS for establishing an integrated geohazards global observing system. A maximum of 100 participants will be accepted for participation, so book your place early! For further information, contact:

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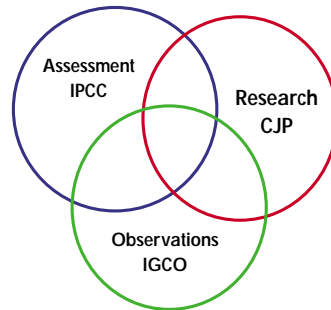
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IGOS-P AT THE CROSSROADS: THE PROMISE AND THE CHALLENGE

by Will Steffen, Executive Director, IGBP

IGOS-P is an exciting concept launched at the right time. It has enormous potential to contribute to the solution of global environmental problems. In fact, observation can be viewed as one of a minimum of three fundamental activities - observation, research and assessment - that are required to tackle a global environmental problem. All are necessary; they should be complementary and interacting. The carbon challenge is a good example. As shown in the figure, the well-known IPCC (Intergovernmental Panel on Climate Change) process provides excellent assessments of our current understanding of the carbon cycle; the recently launched Carbon Joint Project of IGBP, IHDP (International Human Dimensions Programme of Global Environmental Change) and WCRP provides an international research approach, and the Integrated Global Carbon Observation (IGCO) strategy, under development within the IGOS-P framework, provides the third pillar needed to address the carbon challenge.



The Carbon Challenge

Assessment, research, and observations are necessary, complementary and interacting components of tackling the carbon question at the international level.

IPCC = Intergovernmental Panel on Climate Change;

CJP = Carbon Joint Project (IGBP, IHDP, WCRP);

IGCO = Integrated Global Carbon Observation strategy.

For IGOS-P to reach its considerable potential, it has developed a number of important qualities that allow the various Partners to bring their skills and interests to bear on a common problem:

- **Informality.** Operating on the principles of 'best efforts' and with no obligatory financial arrangements, IGOS-P uses an informal approach to its business to define and approach observational issues. However, a creeping tendency towards bureaucracy

could easily and quickly destroy the advantages of informality.

- **Status of Partners.** The most important feature of the IGOS Partnership is that every Partner sits at the table on an equal basis. This generates a feeling of common ownership of the process and products of IGOS-P. Efforts to classify Partners may be useful in understanding and communicating the IGOS-P concept, but any move towards stratifying the Partners as to status or rights would destroy IGOS-P.
- **Ongoing relationship between the research**

and observation communities. A third important feature is that IGOS-P provides a platform for ongoing interaction between the 'user' and 'producer' communities, replacing the earlier approach of 'give us your requirements and we'll go out and do the observations'. In fact, words and phrases such as 'users', 'providers' and 'user requirements' should fade away from our collective vocabulary. Instead, the Partnership should evolve towards the goal of a single community that designs, builds and maintains effective, integrated global observation systems.

The challenge of communicating IGOS-P to a much broader audience is already being met by the Visibility Group. But visibility without substance is dangerous and can easily be counterproductive. The IGOS-P communication campaign will be successful in the long run only if it is built on a solid base of demonstrable achievement and value-adding.

IGOS-P is at a crossroads: the next few years are critical. The Partners must be able to show that the IGOS-P process is leading to more integrated observation strategies and ultimately systems, to more efficient and complementary use of resources, and to much more effective ongoing interaction between the observation user and producer communities. The ocean and carbon themes will be important test cases. The challenge is great but it can be met if all of the Partners keep the vision and promise of IGOS-P at the forefront of their thinking and actions. ■

Meeting Calendar

	2001		2002						
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
IGOS partners G3OS sponsors	▲ IGOS P-8 Kyoto							IGOS P-9 Paris ▲ G3OS ▲ Paris	
IGOS Themes Teams			▲ GEOHAZARDS International Scientific Workshop Frascati						
CEOS/SIT	▲ CEOS Plenary 15 Kyoto								
Others	▲ COP 7 Marrakech		▲ CSD10 Prep Com II New-York	△ IGCO NASDA Tokyo		▲ CSD10 Prep Com III New-York			