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GOSIC
(Global Observing Systems Information Center)

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Background

The distributed nature of the G3OS data and information systems is best served by a single entry for users. This central source, the Global Observing Systems Information Center (GOSIC), provides basic user services explaining the G3OS data system and providing an overview of the data and information that are available. In addition, GOSIC offers a search capability, optimized for G3OS data centers, which facilitates access to a worldwide set of observations and derived products.

GOSIC is accessible on the World Wide Web at:

<http://www.gos.udel.edu>

GOSIC is currently in the third year of development, with support from the US National Oceanic and Atmospheric Administration and the US National Aeronautics and Space Administration, in what has been described as a pilot activity. It is located at the Graduate College of Marine Studies of the University of Delaware, USA. As is consistent with a pilot activity, GOSIC is still under development. In spite of potential system changes, GOSIC should:

- o Provide for searches for data and information across all participating G3OS data centers using the Internet.
- o Return results regardless of the data format, or where the data are located.
- o Provide results back in a standard easy-to-read, easy-to-understand format.
- o Allow users to determine the type and quality of the data through documentation provided by the participating data centers.
- o Allow users to obtain datasets.

GOSIC will not be a repository for data. Rather, it will maintain a database of metadata (information about the datasets that are available in the three programs) and will point to the data centers where the data and information can be obtained. GOSIC will not create or modify the presentation of data. To the extent that it is known, the program that was the source of data and information will be identified.

The system has four main features.

- The dataset registry consists of a directory-level catalogue of historical and operational datasets that have been identified as a component of one of the three observing systems. The registry is based on the fields and structure of the NASA Global Change Master Directory (GCMD). It will be operated by NASA, on behalf of GOSIC, thus serving both the G3OS and NASA user communities. It will feature both GOSIC and NASA views of the contents. Thirty-one records for datasets identified by GTOS have been entered to prove the concept. More entries will be developed in the remainder of this year in a joint project with the Committee on IODE to test data-entry software being developed to serve IODE, NASA, and GOSIC.
- Data-flow diagrams are used to represent the operational observing system components for the G3OS that have been established to provide data into the future. These data-flow diagrams identify all participating centers that are involved in the data management and show the flow of the data from collection to final archival. The diagrams have hotlinks that allow the user to connect to the various centers; view the data, products, and services available; and then download or order data or products. By the end of the year there will be test entries for most of the initial operating systems of GCOS and GOOS. The future of this feature of GOSIC is based on the willingness of the participating scientific, operational, and research centers to maintain certain simple web pages and data files on line for access by GOSIC as part of their responsibilities as a G3OS center. These responsibilities need to be negotiated when a G3OS center is being established.
- Models for the development and distribution of information useful for data-flow monitoring are being developed as part of the data-flow diagrams to automate much of the work of the data coordinators in monitoring and troubleshooting the data-flows to ensure the systems are working. This part of the project is at an early stage. It also depends on the willingness of centers to maintain a few simple files on line for access by GOSIC.
- Documentation of the observing systems is also being implemented in GOSIC for on-line access. This information includes design of the networks, scientific requirements, data management plans and strategies, users and their requirements, etc.

Future plans

Though a university environment is a good one to try out new ideas, GOSIC must ultimately support an international operational system. At some point the Centre needs to evolve from an developmental experiment into an operational activity. GOSIC is being developed with the idea that at some point it will be transferred to an operational organization.

We believe that GOSIC needs a further period of about five years to make the point. That is, by 2005, the function should be fully transferred to an operational entity. In the interim, funding is currently being sought for an additional three-year period (2001-2003). During a follow-on two-year period the hope is to work with an agency or institution that will take over the GOSIC operation. The five-year period should be time enough to identify such an agency and allow that agency to develop plans, seek funding to support them, and work with GOSIC to carry out the transition.

Making GOSIC operational as a permanent operational center will be more than a matter of transferring software and databases. The process will involve several steps over two years with some level of parallel operation for 6 months or more in the second year. The steps that will be required might be as follows.

- Conduct a detailed review of software and personnel requirements with the agency or agencies that are considering taking on the project as a permanent responsibility. (This probably should happen early in the third year of the second development project in order that the agency can make a good decision as to whether they in fact still want and can dedicate the resources to running GOSIC on a long-term basis.)
- Develop and implement a transition plan that:
 - (a) Documents changes to the system that must be made for any reason before the software, databases, and documentation are transferred.
 - (b) Reviews in appropriate detail the documentation of the system for adequacy and completes any upgrades where necessary.
 - (c) Trains agency personnel in maintenance and operation of the system.
 - (d) Transfers and installs copies of the software and databases to the agency and tests that the system operates properly.
 - (e) Effects a changeover of primary operations from the University to the agency.
 - (f) Provides some form of partial or total parallel operation for a sufficient period of time to ensure that the system is working in the agency before it is discontinued at the University.
 - (g) Provides for a more or less formal acceptance of the system after a suitable period of operation by the agency and cessation of support from the University.

The transition plan should be developed and implemented during the first year of the 2-year turnover phase. During the second year there would be only a low level of parallel operation at the University which would primarily provide advice and support for problems encountered.

Cooperation with other organizations

Several existing national and international organizations deal with global data collection, analysis, and exchange. To the extent possible, G3OS will be built on or within the programs of these organizations. Examples include the World Weather Watch of WMO, the IGOSS and IODE programs of IOC, the Global Change Master Directory of NASA, and the IGBP-DIS.

These existing programs are generally designed to deal with all data of a specific type that are available for national and international distribution or exchange. G3OS data will be a subset of these data that have been collected, analyzed, and documented with special care and which will have arisen from observational networks that have been designed for a specific purpose. These data and products will require management procedures and data and information dissemination schedules and content that differ from those available now from the existing systems. Where possible, GOSIC will work with the existing systems to design and develop systems that are compatible so that appropriate G3OS and GOSIC functions can be implemented within the existing systems to their benefit in the future.

In a related activity, Katherine Bouton is being supported through NASA to serve as a data coordinator for both the Climate Variability and Predictability Experiment (CLIVAR) and G3OS. She divides her time between the CLIVAR Program Office in Southampton, UK, and the group at the University of Delaware. G3OS and CLIVAR have many common data-system needs that can most efficiently be met by a common approach. A common Data Coordinator will help to insure that both systems can benefit.

Oversight

The issue of oversight of GOSIC is raised in Document 23 for this meeting, "Data and Information Management—Future of JDIMP". Any one of the options presented in that paper (Section 5.2) would work. From the GOSIC point of view, the most effective choice might be the creation of a group of experts of some kind to work closely with GOSIC in further developing G3OS data systems.

GOSIC has been working to develop ideas on how an information center could best serve the needs of the G3OS. Now that many of the ideas have been developed and demonstrated and have received support, it is time for closer contact with the development of the data management systems in the three observing systems. The meeting is requested to discuss the various options and make suggestions on how best to proceed.

GOSIC personnel are prepared to participate as appropriate in working with the G3OS Steering Committees, Science Panels, and Secretariats in developing new mechanisms and content, and for guiding the development of the data and information systems.

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