

## IGOS Coral Reef Theme

The Integrated Global Observing Strategy (IGOS) is a strategic planning process that links satellite and surface-based observing systems, research, monitoring and operational programs, data producers and users, in a way that helps determine observation gaps and identify the resources required to fill observation needs. The IGOS Partnership includes the Global Observing Systems and their international sponsoring agencies, the world's space agencies through the Committee on Earth Observation Satellites, and major international research programs (see [www.igospartners.org](http://www.igospartners.org)). The partners organize their strategic planning around themes, such as oceans, the global carbon cycle, atmospheric chemistry, and the water cycle.

Recognizing the urgency of problems facing coral reef ecosystems around the world, the IGOS Partners recently approved work on a Coral Reef Sub-theme as the first step in the development of an IGOS Coastal Theme. The coastal area presents special challenges for both remote and *in situ* observations because of the land-water and air-water interfaces. Yet, new technologies including hyperspectral instruments and advanced data processing may now make it possible to collect large-scale data about reef health and to build long-term time series. There is an urgent need to explore how these technologies could improve observations of coral reefs, and to coordinate and integrate space-based and *in situ* observing programs in support of management action. The Coral Reef theme report will make strategic recommendations to encourage such action.

A theme team representing space agency and user organizations<sup>1</sup> is being assembled, co-led by Arthur Dahl of the United Nations Environment Program (UNEP) and Al Strong of the USA's National Oceanographic and Atmospheric

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The theme team will explore the potential of observing systems to:

- quantify the global extent and distribution of coral reefs;
- quantify the loss of coral reefs and associated ecosystems over time;
- document the health of coral reef ecosystems;
- monitor changes in coral reef ecosystems over time;
- provide early warning and monitoring of major stress events;
- supply improved data on stresses and risks coral reefs face from land-based sources and human uses;
- document large-scale and long-term phenomena important to the productivity and maintenance of coral reefs;
- develop a classification and mapping method for reef habitats;
- generate observational products of immediate use to coral reef and coastal zone managers and users; and
- provide evidence of the effectiveness of marine protected areas for conserving coral reefs.

To prepare the Coral Reef theme report, the team will:

- inventory the relevant existing observational activities and research programs (remote sensing and *in situ*);
- identify the observational techniques best able to meet the objectives defined above;
- develop specifications for a set of observational products optimizing different user requirements;
- define partnership roles and responsibilities for implementation of the report;
- identify potential resources for implementation of the theme proposals;
- relate the Coral Reef Theme to other themes and programs.

Administration (NOAA). The latest work plan is available at [www.unep.ch/coral/igoscr.htm](http://www.unep.ch/coral/igoscr.htm)

For the observing systems and space agencies, the Coral Reef Theme report will propose a specific set of observational requirements corresponding to the special needs of the coral reef and coastal research/management communities. It will review the usefulness of various sensors, image processing techniques, resolutions, and sampling frequencies for collecting relevant data or imagery in shallow coastal waters with coral reefs. It will provide the basis for coordinating existing operational and research observing programs for coral reefs and for linking them to major user programs such as the International Coral Reef Action Network (ICRAN). It will recommend remote sensing products meeting the objectives of the coral reef community, and stimulate wider use of such products for coral reef research, protection, and management.

Strategic planning will support the development of the Global Coral Reef

Monitoring Network (GCRMN), as well as data management mechanisms such as ReefBase and the United Nations Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC), and provide inputs to coral reef assessment processes and coral reef management action through the International Coral Reef Action Network (ICRAN) and other activities.

These will all benefit from the improved integration of space-based observations into their work. It is expected to take a year to complete the report for submission to the IGOS Partners in 2003. Once a theme report is accepted by the IGOS Partners, it will serve as a guide to commitments.

\*The themes team includes representatives from National Oceanic and Atmospheric Administration (NOAA), the Florida Keys National Marine Sanctuary, the International Geosphere-Biosphere Programme (IGBP), Intergovernmental Oceanographic Commission (IOC), Global Ocean Observing System (GOOS), United Nations Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC), Reef Check, Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), The National Center for Caribbean Coral Reef Research (NCORE), The University of Newcastle-upon-Tyne, ICLARM - The World Fish Center (ICLARM stands for the International Centre for Living Aquatic Resources Management), École Pratique des Hautes Etudes - CNRS, Australian Institute of Marine Science (AIMS), the Convention on Biological Diversity Secretariat, Global Coral Reef Monitoring Network (GCRMN) and the International Coral Reef Action Network (ICRAN).

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