

Program Overview

The Coral Reef Targeted Research & Capacity Building for Management (CRTR) Program has been established to address fundamental information gaps in our understanding of coral reef ecosystems, so that management options and policy interventions can be strengthened globally.

Its goal is to:

"Build scientific capacity necessary to provide the information needed for management and policy, so that coral reef ecosystems under threat from climate change and multiple human stressors can be sustained for current and future generations".

In achieving this, the Program's targeted research framework will systematically define those information gaps and prioritise them in order of strategic importance to management, so that resulting information and tools developed can lead to credible outcomes.

Remote Sensing

Remote sensing is a technology-driven practice and until now, the remote sensing of coral reefs has been conducted on an ad hoc basis with little consistency or general insight into its limitations.

Recent remote sensing research has improved the detail of reef habitat maps.

The interpretation and uses of these products for management and measuring and evaluating biodiversity has received relatively little attention.

Without a generic understanding of the limitations of reef remote sensing, the technology may continue to be oversold or deployed for unrealistic management objectives thus resulting in an inappropriate use of financial resources.

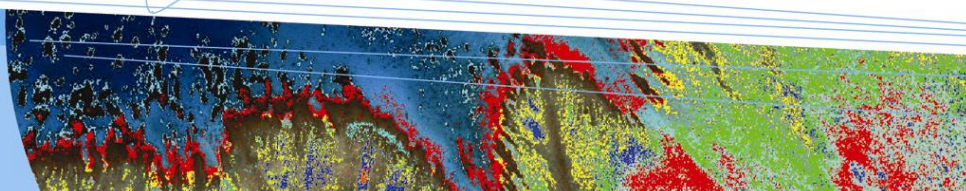
The RSWG under the Chair of Dr Peter Mumby (University of Exeter, U.K) will be developing a wide range of remote sensing tools that uses satellite, airborne, acoustic and in-field data.

The Group will evaluate the limitations of coral reef remote sensing by combining radiative transfer modelling and field experiments, to provide tools to identify various coral reef habitats and the extent of living coral and algae. New indicators of stress on reefs are also being developed from satellite-based observations of sea surface temperature, wind speed and solar insolation.

Objectives

In achieving this, the RSWG will be focusing on four key areas:

1. Creation of decision-support and analysis software for monitoring the health of coral reefs using remote sensing.



2. Development of methods to detect changes in coastal environment.
3. Application of remote sensing to the inventory, monitoring and management of biodiversity.
4. Creation of an Ocean Atlas and tools to manage coral bleaching.

Through these objectives, the RSWG aims to:

- Provide better information for managers by developing and testing the tools necessary to measure and monitor the status of coral reef ecosystems at multiple spatial and temporal scales.
- Improve the use of spatial information by developing the application of remote sensing products for conservation science and spatial decision-making.
- Critically examine the cost-effectiveness of new methods to ensure that the best use of information

Importance to Management & Policy

To manage coral reefs sustainably, practitioners and scientists require a vast array of spatially-explicit information. Spatial data is required for the design of effective networks of Marine Protected Areas (MPA), and the establishment of monitoring programs for the health of coral reefs. Remote sensing products can provide an early warning system of major sources of coral stress. However, reefs are complex systems, affected by multiple natural and anthropogenic processes which operate across many scales. Remote sensing provides the only practical means to measure and quantify impacts at meaningful, and often large, spatial scales.

Developments in remote sensing will improve the cost-effectiveness of coral reef management. Costs will be reduced by allowing some routine monitoring tasks to be carried out remotely and field monitoring will be less intensive because of better stratification of sampling based on expected levels of stress. The effectiveness of management will improve through:

- better warning of impending stresses
- identification of areas which are less likely to experience high stress.

Such sites may then be designated for special management.

Decision-making will also improve through access to more detailed and useful information on the state of marine resources. For example, if changes in marine resources can be identified accurately, managers have greater credibility to affect mitigative or remediative policies. Similarly, more detailed information on the distribution of key nursery habitats for fisheries species will improve spatial decision-making, increasing the chance that such the full life history of such species can be managed effectively.

Further Information:

Further information on the Remote Sensing Working Group can be obtained from:

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Membership

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CRTR Project partners include the Global Environment Facility (GEF), World Bank (WB), The University of Queensland (UQ), United States National Oceanic and Atmospheric Administration (NOAA), UNESCO-Intergovernmental Oceanographic Commission (IOC/UNESCO) and approximately 50 research institutes & other third parties around the world.

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