

**THE PERSPECTIVES AND COMMITMENTS OF
THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE
TO CYCLONE RESEARCH**

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The Australian Institute of Marine Science is committed to research in four general program areas. The first is Coastal Processes and Resources; the second, Reef Studies; the third, Organism-Environment Interaction; and the fourth, Marine Systems and Oceanographic Processes. Cyclones provide an opportunity to study aspects of the environment within all four of these major programs, allowing stresses on the different components to be investigated at a level that could never be achieved by man-made manipulation.

AIMS sees its role as providing scientific investigation and interpretation of phenomena which may occur and in making this information available to management authorities for their use. AIMS is not a management authority. Its skills and its expertise lie in scientific investigation and other organisations are skilled in the various facets of interpretation of data for management purposes. In this respect, AIMS will always be happy to work with the Great Barrier Reef Marine Park Authority (GBRMPA), the James Cook University of North Queensland (JCU), and other agencies to maximise the benefits that can be obtained in immediate field access after cyclonic events.

Despite the close co-operation between AIMS, the University and the Authority, with respect to studies such as the impact of cyclone Winifred, it is possible that we could improve our efficiency for future events by making better known to local authorities and to other agencies - such as the Joint Tropical Trials and Research Establishment (JTTRE) at Cowley Beach - our willingness to be involved in such studies.

One major problem which may exist for future studies is the ability to provide the most rapid forms of transport in the shortest possible intervals to ensure that field operations can be achieved. We should also move to nominate one agency as the co-ordinating agency, and identify a responsible individual therein to initiate the necessary processes to ensure the necessary rapid response.

Cyclone Winifred has led to scientific results which require follow-up investigation after the disturbance and in the event of future cyclonic disturbances. With mangroves, Tom Smith and his colleagues have begun to understand the importance of threshold wind velocities on mangrove systems, but more work is needed to confirm the importance of this phenomenon in explaining the difference in effects on mangroves between cyclones Kathy and Winifred, for example. Studies on biochemical effects by Mark Sandstrom require more detailed analysis in future events; the ability to detect the difference between terrestrial and marine science of organic matter in surface sediments is very important in interpreting the impact of cyclonic events on different terrestrial and marine communities.

Leads have been obtained to indicate the relative abundance of marine algal hydrocarbons at different parts of the reef and suggest algal gradients, but this work again requires follow up studies. With respect to studies of oceanographic conditions, the work of Miles Furnas and Alan Mitchell has shown spectacular differences in light levels and also in nutrient levels in the water column after a cyclone, as compared with normal conditions, and give a clear indication of the reason for plankton blooms as well as a prediction of the length of time for which they may occur.

Other studies have differentiated between the impact of oceanographic conditions, the effects of rainfall, the effects of fresh water and tidal variation on the marine environment, and models have begun to be constructed by Lance Bode and Eric Wolanski.

Dramatic effects on quite massive corals in reefs in the path of cyclone Winifred were observed, and will merit further investigation, particularly in an environment where we are looking forward to the development of offshore structures for tourism in the Great Barrier Reef Region.

It is equally important to study the impact on coral associated organisms from such massive disturbances, and we were fortunate in this case in that the passage of cyclone Winifred was over an area which had been previously surveyed in the crown of thorns starfish survey, conducted under Peter Moran's general supervision.

It is important that AIMS, the Marine Park Authority, James Cook University, and the other agencies do have the organisational facility to respond quickly to massive disturbances such as those represented by cyclones, and it is hoped that all people who are at this seminar would see merit in approaching the Government for provision of special funds which can be accessed over the shortest possible time period to allow us to investigate and obtain a better understanding of the results of the impact of cyclonic disturbances.