

Impacts of cold-water intrusion on coral reef ecosystems at Nanwan Bay of southern Taiwan

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This study under the support of the Kenting National Park Headquarters, conducted an on-line real time monitoring system of the water quality in coral reef ecosystem of the Nanwan Bay, southern Taiwan. The monitoring parameters include temperature, salinity, conductivity, dissolved oxygen, pH, turbidity. The monitoring provides useful information to the scientific community, serves as records of contamination events and baseline data for environmental conservation. Results showed that On-line real time monitoring have also helpful explanation for natural episodic events (e.g., cold water intrusion) in this coral reef ecosystem. We have also compared the physiological stress responses Induced by fluctuating temperature regime of upwelling and constantly elevated temperature in *Pocillopora damicornis*. The study is to establish the early warning systems for the conservation of coral reefs. After reviewing the CREWS and related references, we propose to use DHW (Degree Heating Weeks) as the indicator of coral bleaching. The program is not only successfully fitted in the bench top simulation, but also has a successful application in field work. The on-line real time monitoring results with emphasizing on the short time scale, e.g., hours to days, effects on coral reef ecosystem has also been discussed in this study.

Keywords: cold-water intrusion, coral reef; ecosystems, bleaching