

Estimation of nutrient load via to the sea effect of nutrient enrichment on calcification of hard coral

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Coral reef degradation resulting from various types of stress such as nutrient enrichment and inflow of red sand in coastal waters is of increasing global concern. In general, tropical and subtropical seawaters are poor in nutrients and thus oligotrophic. Therefore, the above-mentioned stresses result in the decline of environments favorable to coral growth. Especially phosphate has been considered to possibly inhibit the formation of coral skeleton due to its ability to bind to calcium carbonate. Despite many studies about the effects of nutrients on coral, a clear consensus on how nutrients negatively affect coral still does not exist.

In this study, we estimated the nutrient load through groundwater to the coral reefs sea region of Okinawa through field measurement and numerical simulations, and investigated the effect of phosphate on in vivo skeleton formation of primary polyp for hard coral *Acropora digitifera*.

Keywords: nutrient Enrichment, groundwater, calcification of hard coral