

Assessment and monitoring of benthic habitats around the Kish Island using QuickBird satellite images during 2005 and 2008

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Abstract

Coral reefs health is strongly correlated with water temperature. Increasing the heat of water will causes the bleaching in corals which means decreasing in coral communities. Kish Island is located in the northern part of Persian Gulf and surrounded by some different types of coral reefs. This research was an attempt to utilize different kinds of remotely sensed data to evaluate and assess situation of coral reef communities in this area. A correlation between bleaching on corals and increasing the SST (Sea Surface Temperature) values has been observed. SST values have been collected from NASA database during 1985 to 2010 which are prepared using some different sources of satellite data such as NOAA Pathfinder (1985-2007) and MODIS-Terra (2000-present). Furthermore, two high spatial resolution QuickBird satellite images (2005 and 2008) have been employed to generate maps showing distribution and magnitude of coral bleached around the study area. Some in situ observation like scuba diving, snorkeling, and underwater photography have been performed to investigate the situation of coral reefs health directly. A meaningful correlation between increasing the water heat and

coral reef bleaching has been observed, so that monthly mean SST value more than 34.8°C in August 2007 has resulted a bleaching in corals during this month in the study area. This phenomenon was observable in both field observation and QuickBird satellite images, but in case of remotely sensed analysis, just those corals with high degree in bleaching were detected. Time offset between bleaching date (August 2007) and satellite image acquisition date (March 2008) has decreased the precession of mapping bleached corals but however, about 28% of them were detected using analysis on multi-temporal satellite images.

Keywords

Coral reef, Remote Sensing, Persian Gulf, Monitoring.