

Impact of Climate Change on Coral Reefs Degradation at West Lombok, Indonesia

ABSTRACT

Coral reefs are one of the ecosystems that provide economic and environmental benefits to coastal communities in Indonesia. However, coral reef ecosystems are also one of the ecosystems threatened by climate change at the local scale. The waters of North Sekotong, West Lombok, Indonesia, are a tropical coastal system with beautiful coral reefs and marine ecosystems. Coral reef damage has been widespread in this area due to increased water temperatures. Increased water temperature results in coral reef degradation. Field surveys were conducted on May 23-28, 2016, in collaboration with the Marine and Coastal Resources Research and Development Center, Ministry of Marine Affairs and Fisheries, and coral reef mapping using Landsat 7 and Landsat 8 during 2002 - 2016 as well as processing monthly sea surface temperature (SST) data from the AquaModis and Oi SST V2 satellites and daily SST data from the NOAA Coral Reef Watch satellite. Changes in coral cover area were compared with temperature changes due to climate change. The increase in temperature creates a hotspot phenomenon in the coral reef ecosystem, resulting in coral reef degradation. The results showed that coral reefs in this area have degraded by 17.55% or 78.21 Ha from 455.68 Ha (2002) to 367.46 Ha (2016), with a degradation rate of 2.8 Ha/year in 2002 - 2014; 8.1 Ha/year (2014 - 2014) and 36 Ha/year (2015 - 2016) caused by an increase in SST which caused a hotspot phenomenon with a high enough intensity that there was an increase in temperature in 2016 which reached 9.77oC.