Khatereh Azhdary Mamooreh¹

Azad

Azad

Oceanography

Atmospheric Science,

*Corresponding Author:

aagandomkar@iaun.ac.ir

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Amir Gandomkar^{2*}

Keivan Kabiri³

Najafabad, Iran

Najafabad, Iran

Islamic

Islamic

for

Iran

Prediction the thermal adaptability of coral Persian Gulf reefs to survive in climate change condition of 2099

Abstract

The climate change that lead to increasing sea surface temperature in Persian Gulf, is one of the main cause of coral reef bleaching events in Persian Gulf. The main aime of this study is to predict the requiered 1. Ph.D student, Department of adaptability of Perasian Gulf coral reefs in climate change condition of Geography, Najafabad Branch, 2099. The future climate condition including air temperature but not sea University, surface temperature of year 2099 were obtiand from HADCM3 global circulation model in senario A2 and downscaled using SDSM model to 2. Assistant Profissor, Department study area. Using correlation analysis and regression model the of Geography, Najafabad Branch, relationship between air temperature and SST were quantified based on University, current climate periode (1982-2017). Base on developed regression model we simulate the SST of Persian Gulf in climate change periode 3. Department of Marine Remote (2018-2099). The results indicated that in simulated future climate Sensing, Iranian National Institute under senario A2 the maximum of sea surface temperature rising and Tehran. occured in Aught and September months. In 2 mentiond months corals reefs in the Persian Gulf faced to the maximum thermal stress. The sea surface temperature will rising about 2 degree centigrade untill 2060 which is not criticaly lead to corals death. But after 2060 the SST will rising significantly and lead to critical bleaching and real risk to corals reefs in the Persian Gulf. The sea surface tempearature before 2060 will rising less than 2 degree centigrade but in after 2060 the HADCM3 model indicated that SST posetive anomaly will increase and therfore the corals reefs in the Persian Gulf will needed about 2 to 3 degree centirade thermal adaptability to survive afted 2060 climate condition.

> Keywords: Coral Reef, Climate Change, Sea Surface temperature, Pearsian Gulf.