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Sea Surface Temperature Study of the Water Bodies Affecting Iran, During 1854-2008

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Abstract

Regarding the role of water bodies and their sea surface temperature (SST) in providing humidity of weather systems affecting Iran, SST time series of main regional water bodies including Caspian, Mediterranean, Black, Oman, Red Sea and Persian Gulf are analyzed in this researchover the period of 1854 to 2009 (155 year). The Extended Reconstructed sea surface temperature (ERSST) data set in 2×2 latitude/longitude resolution, which was provided by the National Oceanic and Atmospheric Administration (NOAA), are used in this study. Results of current research over the period under study showed that the maximum annual increasing rate of SST has been occurring in the Oman Sea by 0.0049 T°C (around 0.5 T°C per 100

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years). Red Sea, Persian Gulf and Mediterranean Sea by 0.0028, 0.0027 and 0.0019 have other remaining maximum annual increasing rates of SST. Increasing trends of SST are statistically significant in four mentioned water bodies. But at the same period, amount of trends in Caspian and Red Seas were very low and statistically not significant. Analysis of the SST also reveals that the increasing rate in the most recent 25 years is multiplicities overall water bodies. Maximum increasing SST rate is detected to be in the Caspian Sea. Mann-Kendal test is then applied over SST time series for finding abrupt change in the dataset. We found that the abrupt change in annual SST has been occurring in 1981, 1954, 1972, and 1980 in time series of Persian Gulf, Oman, Red and Mediterranean Seas, respectively.

Keywords: Climate Change, Regional water bodies, Sea surface temperature, Trend, Iran.

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