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Validation of CMIP6 climate model output performance with observational data of Makran banks

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ABSTRACT

The climate of the planet is being changed, and its major consequences are directed towards the coastal areas, especially the coastal cities. On the other hand, using the output data of climate models requires evaluating its accuracy against observational data. The purpose of this research was to evaluate the accuracy of CMIP6 climate models in Makran coast. In order to investigate the climate conditions in the coast of Makran, 11 Climate models were used in CMIP6 planetary circulation output during the period of 1985-2014. The observational meteorological data including the sum of monthly rainfall, monthly average parameters of air temperature, air humidity, maximum temperature, minimum temperature, wind speed and air pressure of corresponding time period from two synoptic stations of Makran coast (Chabahar-Jask) were used. were The results showed that precipitation, wind and humidity had very weak correlations and cannot be a suitable criterion for model selection. But the set of average, minimum and maximum temperatures as well as air pressure had sufficient correlation. Nash-Sutcliffe (NSE), normalized root mean square error (NRMSE) and Kling-Gupta (KGE) indices also confirmed these results. According to the mentioned investigations and calculation results, six models including FGOALS, MPI-ESM1, CanESM5, MRI-ESM2, EC-EARTH3, IPSL-CM6A, ACCESS-ESM (in no particular order) were selected as the best models among the 11 models determined at the beginning of the research. Thereafter, two ensemble models were introduced using arithmetic mean and independence weighted mean (IWM) method in which the weighted mean model showed better results.

Keywords: *Humidity, Chabahar, Jask, Model,.Gulf of Oman. CMIP6*

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