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Exploration of Classic Models of Precipitation in Iran: A Case Study of Sistan and Baluchestan Province

Authors : Mohammad Borhani, Ahmad Jamshidzaei, Mehdi Koohsari

Abstract : The study of climate has captivated human interest throughout history. In response to this fascination, individuals historically organized their daily activities in alignment with prevailing climatic conditions and seasonal variations. Understanding the elements and specific climatic parameters of each region, such as precipitation, which directly impacts human life, is essential because, in recent years, there has been a significant increase in heavy rainfall in various parts of the world attributed to the effects of climate change. Climate prediction models suggest a future scenario characterized by an increase in severe precipitation events and related floods on a global scale. This is a result of human-induced greenhouse gas emissions causing changes in the natural precipitation patterns. The Intergovernmental Panel on Climate Change reported global warming in 2001. The average global temperature has shown an increasing trend since 1861. In the 20th century, this increase has been between (0/2 ± 0/6) °C. The present study focused on examining the trend of monthly, seasonal, and annual precipitation in Sistan and Baluchestan provinces. The study employed data obtained from 13 precipitation measurement stations managed by the Iran Water Resources Management Company, encompassing daily precipitation records spanning the period from 1997 to 2016. The results indicated that the total monthly precipitation at the studied stations in Sistan and Baluchestan province follows a sinusoidal trend. The highest intense precipitation was observed in January, February, and March, while the lowest occurred in September, October, and then November. The investigation of the trend of seasonal precipitation in this province showed that precipitation follows an upward trend in the autumn season, reaching its peak in winter, and then shows a decreasing trend in spring and summer. Also, the examination of average precipitation indicated that the highest yearly precipitation occurred in 1997 and then in 2004, while the lowest annual precipitation took place between 1999 and 2001. The analysis of the annual precipitation trend demonstrates a decrease in precipitation from 1997 to 2016 in Sistan and Baluchestan province.

Keywords : climate change, extreme precipitation, greenhouse gas, trend analysis
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