

عنوان مقاله:

Investigating the Linkage between Precipitation and Temperature Changes in Iraq and Greenhouse Gas Variability

محل انتشار:

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خلاصه مقاله:

In this study, the homogeneity of annual precipitation and temperature in Iraq were examined for the periods ۱۹۸۱-۲۰۱۰ and ۱۹۷۱-۲۰۱۰, respectively in terms of Greenhouse Gases (GHGs) and their link to climate change. Observational data of precipitation and temperature were provided by Iraqi meteorological stations along with information on GHG concentrations from the Emission Database for Global Atmospheric Research (EDGAR V۴.۳.۲). The homogeneity characterisations of both precipitation and temperature were undertaken, noting that precipitation was homogeneous over the period of study, whereas, temperature, on the other hand, had breakpoints for the meteorological stations investigated. The Mann-Kendall test was performed to determine the trend and magnitude of changes in climate conditions. The time series for precipitation showed a significant decline trend in six stations. However, temperature had a slight trend throughout the period of study. The annual time series of GHG emissions in Iraq and the link with the country's climate was also investigated in this study indicating that the time series of N₂O and CO₂ increased over time, but CHF decreased over the same period. The correlation coefficient values of both temperature and GHG were substantial and were found to increase in the southern stations, given the abundance of intense heat and industrial activities, while the relationship between GHG and precipitation were found to be low. Accordingly, GHG emissions have a direct link with the climatic conditions in Iraq due to the development and contribution of various industries, oil refineries, pollutants and population growth that contributed towards climatic change in Iraq.

کلمات کلیدی:

Iraq, Precipitation, temperature, homogeneity, Greenhouse, Mann-Kendall, climate change

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