

Al-Kitab Journal for Pure Sciences ISSN: 2617-1260 (print), 2617-8141(online)





Rainfall Repercussions: Assessing Climate Change Influence on Iraq Precipitation Patterns

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Keywords:

Citation: Al-Muhyi AH, Aleedani FY, Albattat MQ, Badr				
JM. Rainfall Repercussions: Assessing Climate Change				
Influence on Iraq Precipitation Patterns. Al-Kitab J. Pure Sci.				
[Internet]. 2024 Apr. 08 [cited 2024 Apr. 08];8(1):92-103.				
Available from: <u>https://doi.org/10.32441/kjps.08.01.p9</u> .				

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Article History				
Received	01 Feb.	2024		
Accepted	15 Mar.	2024		
Available online	08 Apr.	2024		

variability,

drier

years,

Rainfall

deforestation, heterogeneity, temporal.

Abstract:

The unequal spatial and temporal distribution of precipitation, exacerbated by climate change, has received significant attention. Rainfall is pivotal for crop growth and environmental health, crucial in the water cycle, and essential to replenishing surface water sources vital for drinking water supplies. Consequently, understanding this phenomenon is critical for future planning. Evaluating spatial and temporal variations in rainfall is essential for the effective management of water resources. This study employs a statistical analysis of rainfall data from 16 rain gauge stations to identify annual rainfall trends, Linear Regression Equations, Coefficients of Determination (R²), Precipitation Concentration Index (PCI), and Rainfall Variability Index (RVI). The findings of the study come to show as the PCI has indicated strongly irregular rainfall concentration in Iraq. RVI identifies 2017 and 1983 as notably dry years, while 2018 stands out as a particularly wet year within the 40-year period from 1980 to 2019. RVI also highlights that normal rainfall years predominate, with very dry years ranging from 2 to 13, dry years from 3 to 11, wet years from 1 to 7, and very wet years from 6 to 10 within the study period.

Keywords: Rainfall variability, drier years, deforestation, heterogeneity, temporal.

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