

Title:	Climate Changes and Trends in Rainfall and Temperature of Nablus Meteorological Station
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The available water resources in the West Bank, Palestine are limited and insufficient to meet the domestic and agricultural water demands. The climate in the West Bank is dominated by a high temporal and spatial variation. The characterization of climate changes in the West Bank is a preliminary step to assess the status of the water resources in terms of utilizable quantities. This will enable the development of an integrated framework to manage these resources. Rainfall and temperature magnitudes and patterns are of great importance to understand the climatic changes and trends in the West Bank. This characterization enhances the management and development of the water resources under climate change conditions. As a first step, a trend analysis of long-term rainfall and temperature data for Nablus Meteorological Station (NMS) was carried out. Nablus city has a Mediterranean semi-arid climate which characterized as hot and dry in the summer, mild and wet in the winter. This paper employs the fundamental statistical concepts and trend analysis to characterize rainfall and temperature data series for the period from 1975 to 2011 of NMS.

Abstract: In the analysis of rainfall, it was proved that rainfall of NMS is of high variability where the annual rainfall approximately varies between 335 and 1,400 mm with an average of 654 mm. The overall trend of rainfall is towards a wetter climate, with an estimated increase of about 48 mm in the entire studied period. Two period, averaging 600 mm and 697 mm respectively were detected from fluctuation in rainfall. The trend of the first period (1975-1991) is towards a drier climate, whereas the trend of the second period (1992-2011) is towards a wetter climate. Time series of the SPI depict that in 21 out of 36 years there was a drought in Nablus city while extreme drought did not take place during the last 36 years.

In the analysis of temperature, the temperature variability among years was proved, with a standard deviation of 0.8 oC and average of 18.4 oC. The annual mean temperature changes of NMS are characterized by a warming trend. Since 1975, there has been an increase in the annual mean temperature of about 1.8 oC/36 years (≈ 0.05 oC/year). The use of cumulative deviations detected two main periods in the temperature of Nablus city. A relatively cool period from 1975 until 1992 has been followed by the warm period on record from 1997 to present.

It was concluded that the changes in climate of NMS are considerable and largely affect the sustainable yield of the water resources in the West Bank.

Keywords: Climate changes; Rainfall; Temperature; Trend Analysis; Semi-arid; Water resources.