

## ANALYSING THE RAINFALL AND TEMPERATURE VARIATION IN LAST 20 YEARS FOR DERA ISMAIL KHAN District

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### Abstract

Pakistan is one of those countries highly exposed and vulnerable to climate change. The country has experienced many several droughts, floods and storms over the last decades. The main focus of this study is to find out the weather variation in D.I Khan. To this end, we worked on a 20 years (1996-2015) dataset of minimum temperature, maximum temperature and rain fall from Regional Meteorological Center Peshawar (RMC). Data of meteorological elements of the station DI Khan, like maximum temperature, minimum temperature, mean temperature and rainfall for the last twenty years (1996-2015) was averaged and then analyzed for 2 spans of 10 years by using statistical methods, like Deviation from Normal, Percentage Deviation from Normal, Correlations, Coefficient of Determination or  $R^2$ , Mean Median, Mode and STDEV. The monthly average rainfall result shows that there was no large excess rainfall recorded in any month during last 20 years from (1996-2015) and the average annual precipitation in DI Khan measured over a period from (1996-2015) is about 302.1 mm. The maximum precipitation is recorded in the months of July 69.7mm and August 69.4mm over a period of last twenty years. The average monthly temperature in D. I. Khan shows a relatively hot period from June until September with mean maximum temperature exceeding from 38.0 °C. In winter the average monthly temperature drops below 20.0 ° C in December and January. In monthly minimum temperature the coldest month is January whereas the daytime temperatures will generally reach highs of around 19.0 (°C). At night the average minimum temperature drops down to around 4.0 (°C). In recent times the lowest recorded temperature in January has been 2.5 (°C) in year 2007. The annual mean maximum temperature in DI Khan measured over a period from (1996-2015) is about 36.1(°C). The annual amount of temperature received is normal. The maximum / hottest temperatures are recorded in the months of Jun, July and August with average maximum temperatures 40.1 (°C), 38.4 (°C) and 37.4 (°C) respectively over a period of last twenty years. The maximum temperatures during summer season remained between 38.0(°C) to 40.0(°C) and 22.0(°C) to 19.0(°C) in winter season. The highest maximum temperature has been recorded in the month of June, 2014 with 42.6 (°C). On the bases of twenty years' study period, on meteorological parameters, (temperatures and rainfall) from (1996-2015) it has been calculated that there was no significant variation in weather climate was observed in DI Khan region. The annual percentage departure from normal rainfall and annual departure from normal minimum and maximum temperatures are showing normal behavior.