

ABSTRACT

. The study focuses on the impacts of climate variability and change on maize yield in Mt. Darwin District. The rainfall and temperature data for the period under study that is from 1992 to 2012 were obtained from Meteorological Services Department of Zimbabwe at daily resolution while crop yield data were obtained from Department of Agricultural, Technical and Extension Services (AGRITEX) and Zimbabwe Statistics Agency (ZIMSTAT) at seasonal/yearly resolution. In order to capture full rainfall seasons, a year was set to begin on 1 June and end on 31 July the next year. Yearly yield, temperature and rainfall data were used to compute time series analysis of rainfall, temperature and yield. The relationship between temperature, rainfall, quality of season (start, cessation, dry days, wet days and length) and yield was also investigated. The study also investigated the link between meteorological normal and maize yield. The study revealed that temperature is rising while rainfall is decreasing with time hence increasing risk of low maize yield in Mt. Darwin. Correlation between maize yield was higher using a non-linear ($R^2 = 0.630$) than a linear regression model ($R^2 = 0.173$). There was a very high correlation between maize yield and number of dry days ($R = -0.905$) as well as between maize yield and length of season ($R = 0.777$). We also observed a strong correlation between percentage normal rainfall and percentage normal maize yield ($R^2 = 0.753$). This was also agreed between rainfall tessiles and maize yield tessiles as 50 % of the seasons had normal and above normal rainfall coinciding with normal and above normal maize yield. Of the 21 seasons considered, only one season had above normal rainfall while maize yield was below normal. The study concluded that there is a strong association between meteorological normal and maize yield in a rain-fed agricultural system. Climate information remains crucial to agricultural productivity hence the need to train farmers to access the information and use it for the benefit of their activities.