MODELLING AND FORECASTING RAINFALL FOR BULAWAYO PROVINCE (ZIMBABWE) USING TIME SERIES ANALYSIS

Tendai Makoni & Kelly Mandivenga
Department of Maths and Computer Science
Great Zimbabwe University
ZIMBABWE

ABSTRACT

Rainfall modelling is important to all farmers in the world, therefore modelling and forecasting rainfall is vital. The first difference of the monthly average rainfall data obtained from the Bulawayo Meterological Office is stationary and is used in the fitting of an ARIMA model. The Box Jenkins approach is used in the fitting of the ARIMA model. The ACF and PACF of the differenced rainfall data is used to determine the lags. An ARIMA (2,1,1) model fits well to the Bulawayo rainfall data. RMSE, MAE and MAPE supported this model. Future forecasts for 7 months from the model indicate that Bulawayo province will receive an average rainfall. The Ministry of Agriculture may advise farmers to plant crops which require low rainfall such as sorghum.