Modeling Monthly Rainfall(mm) in India's Coastal states using Vector Autoregression (VAR)

Understanding and forecasting rainfall patterns in coastal states is crucial for various sectors, including agriculture, water resource management, and disaster preparedness. The purpose of this project was to model monthly Rainfall (mm) in 5 states on the west coast of India using a multivariate Vector Autoregressive time series model. VAR time series models incorporate past values of all the variables involved by treating them as endogenous (Lütkepohl, 2013). Monthly Rainfall for 5 states (Kerala, Lakshadweep, Karnataka, Goa, Maharashtra) was obtained from “open government data (OGD) platform India”. The optimal lag was chosen using Alkaline Information Criterion (AIC) and Bayesian Information Criterion (BIC) after which the model was fit using historical monthly rainfall (mm) from 1970 to 2016. It was determined that the VAR (2) model was most promising. Moreover, the model was utilized to predict rainfall values in each state for the year 2017, with actual rainfall observations compared against forecasted values. A R shiny Web app was also created to supplement the project with monthly and annual rainfall visualizations.

Lütkepohl, Helmut. "Vector autoregressive models." *Handbook of research methods and applications in empirical macroeconomics*. Edward Elgar Publishing, 2013. 139-164