Time series analysis of surface ozone monitoring records in Kemaman, Malaysia.

ABSTRACT

Time series analysis and forecasting has become a major tool in many applications in air pollution and environmental management fields. Among the most effective approaches for analyzing time series data is the model introduced by Box and Jenkins, ARIMA (Autoregressive Integrated Moving Average). In this study we used Box-Jenkins methodology to build ARIMA model for monthly ozone data taken from an Automatic Air Quality Monitoring System in Kemaman station for the period from 1996 to 2007 with a total of 144 readings. Parametric seasonally adjusted ARIMA (0,1,1) (1,1,2)12 model was successfully applied to predict the long-term trend of ozone concentration. The detection of a steady statistical significant upward trend for ozone concentration in Kemaman is quite alarming. This is likely due to sources of ozone precursors related to industrial activities from nearby areas and the increase in road traffic volume.

Keyword: ARIMA; Seasonal variation; Surfaze ozone.