Air Quality

REQUEST FOR PROPOSAL
RFP #: TS – F1.H2

TITLE: Ozone
CLOSING DATE AND TIME: SEPTEMBER 4, 2020 @ 5:00 PM

Ozone Forecast: TS – F1.H2

Background and Purpose

By responding to this Request for Proposal (RFP), the Proposer agrees that s/he has read and understood all documents within this RFP package.

Submission Details

Responders to this RFP should supply:

- A business report up to 5 pages (not including cover page or table of contents), including any supporting plots and tables.
- The commented code (in a separate file) used to produce the results.
- Both files should be uploaded to Moodle by September 4, 2020 @ 5:00 PM.

The report should address **all points described in the "Objective" section** below.

Objective

A local medical facility, hence foreword will be known as 'the client', has requested the assistance of an outside vendor to investigate the Air Quality at the Millbrook School station located in Wake County, North Carolina. For this report, the client is interested in understanding models for average monthly Concentration of Ozone in the Wake county area. The deliverables for this proposal include:

- Creation of a monthly ESM forecast withholding the last 17 months (12 months for a validation data set and 5 months for the test data set).
- Creation of easy to read and interpret visualizations of the following:
    - Actual Ozone values overlaid with the trend/cycle component for the training set.
    - Actual Ozone values overlaid with the seasonally adjusted Ozone values for the training set.
    - For the trend/cycle and seasonal breakdown, indicate whether classical or STL decomposition was used and why this technique was chosen.
    - Time Plot of the predicted versus actual for the validation and test data.
- The client's analysts are open to either additive or multiplicative ESM's.
- The client uses Mean Absolute Percentage Error (MAPE) in calculating the accuracy of its forecasts. Report this measure for the 5 months of forecasted Ozone values for the test data. The client is open to other measurements in addition to the MAPE as long as they are clearly stated and supported.

Data Provided

- The data is provided in a csv format. The variables contained within this data set are:

Date - Date of the observation (in days)
Source -usually AQS (Air Quality System)
Site ID – unique ID for the given monitoring station
POC – Parameter Occurrence Code (used to distinguish different instruments that measure the same parameter at the same site)
Daily Max 8-hour Ozone Concentration– The measurement of interest
Units – Units in which daily measurements are recorded
Daily AQI – The daily Air Quality measurement
Site Name– Name of the site in which data was recorded
Daily Obs Count
Percent Complete
AQS Parameter Code
AQS Parameter Description
CBSA Code
CBSA Name
State Code – State code (37)
State – State (NC)
County Code – County Code (183)
County – County (Wake)
Site Latitude and Site Longitude of where the measurement was taken