Air Quality

REQUEST FOR PROPOSAL
RFP #: TS – F1.H3

TITLE: Particulate Matter Forecast ($PM_{2.5}$)
CLOSING DATE AND TIME: SEPTEMBER 25, 2019 @ 5:00 PM

PM$_{2.5}$ Forecast: TS – F1.H3

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 25, 2019 @ 5:00 PM.

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

Objective

The EPA (hereafter the "client") is seeking proposals for understanding and predicting average monthly PM$_{2.5}$ levels at the Millbrook School station in Wake County, NC. The scope of services includes the following:

- Evaluation of the data to handle further time series modeling:
    - Check the stationarity of the average monthly PM$_{2.5}$ levels including trend and/or random walks; the analysts recommend using the Augmented Dickey-Fuller tests up to lag 2 tests for the results, however, you are welcome to suggest other techniques as long as the reasons are clearly stated and supported.
    - What strategies (if any) should the client take to make the data stationary (the EPA would like to consider only non-seasonal options at this time)?
    - Does the stationary time series exhibit white noise? Provide evidence on whether it does or does not have white noise and the implications for future ARIMA modeling.

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 Measurements – The measurement of interest

Units – Units in which daily measurements are recorded

Daily AQI – The daily Air Quality measurement

Site – Name of the site in which data was recorded

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