Air Quality Analysis and prediction in Tamil Nadu

INTRODUCTION

To predict the AQI, MLR and supervised machine learning technique were used. Various quantitative indices were used to assess the performance. Second, to forecast the AQI in the future, the ARIMA time series model was used. Both models were found to be highly accurate and efficient in forecasting the AQI [3].

DATASET

Basic data visualization

Introduce to basic setup of folder, install pandas , matplotlib , seaborn (using pip for Python package), Anaconda is a good choice if you are using Windows (or even Mac, Linux). …

Basic use of those tools (clean, explore, plot, interpret)

Work with a CSV file from Airnow.gov.

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COLUMNS USED

- When analyzing air pollutants manually, both spectrometry (absorption spectrophotometry, atomic absorption spectrometry, and ICP emission method), which is widely used, and chromatography (gas chromatography and liquid chromatography) are given in detail as examples as follows.

LIBRARIES USED

- Abstract. Prediction of air pollution index may help in traffic routing and identifying serious pollutants. Modeling of the complex relationships between these variables by sophisticated methods in machine learning is a promising field.

TRAIN AND TEST

Air quality monitors are outfitted with sensors designed to detect specific pollutants. Some use lasers to scan particulate matter density in a cubic metre of air, while others rely on satellite imaging to measure energy reflected or emitted by the Earth..

Data Collection

We find that fine particulate pollution dominates the pollution mix across India with virtually all sites in northern India (north of 23.5°N) exceeding the annual average PM10 and PM2.5 national residential ambient air quality standards (NAAQS) by 150% and 100% respectively, and in southern India (south of 23.5°N)

REST OF THE EXPLANATIONS

ALGORITHMS USED

A great number of technologies and instruments both for sampling and determination of the concentration levels of different components of air pollution are used. These include chromatography, infrared spectroscopy, fluorornetry, spectrophotometry and atomic absorption spectroscopy.

DESIGN AND DATAFLOW

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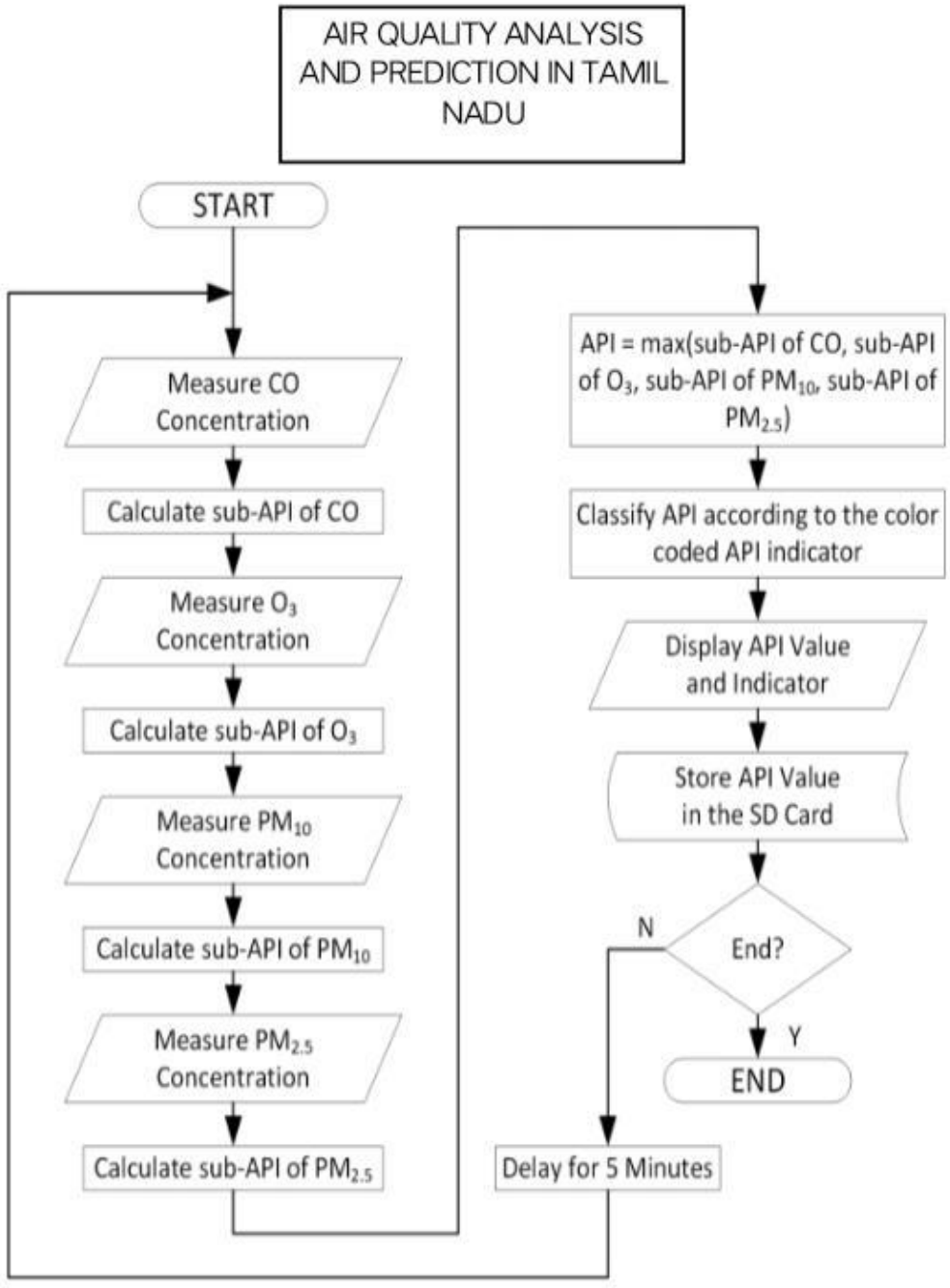
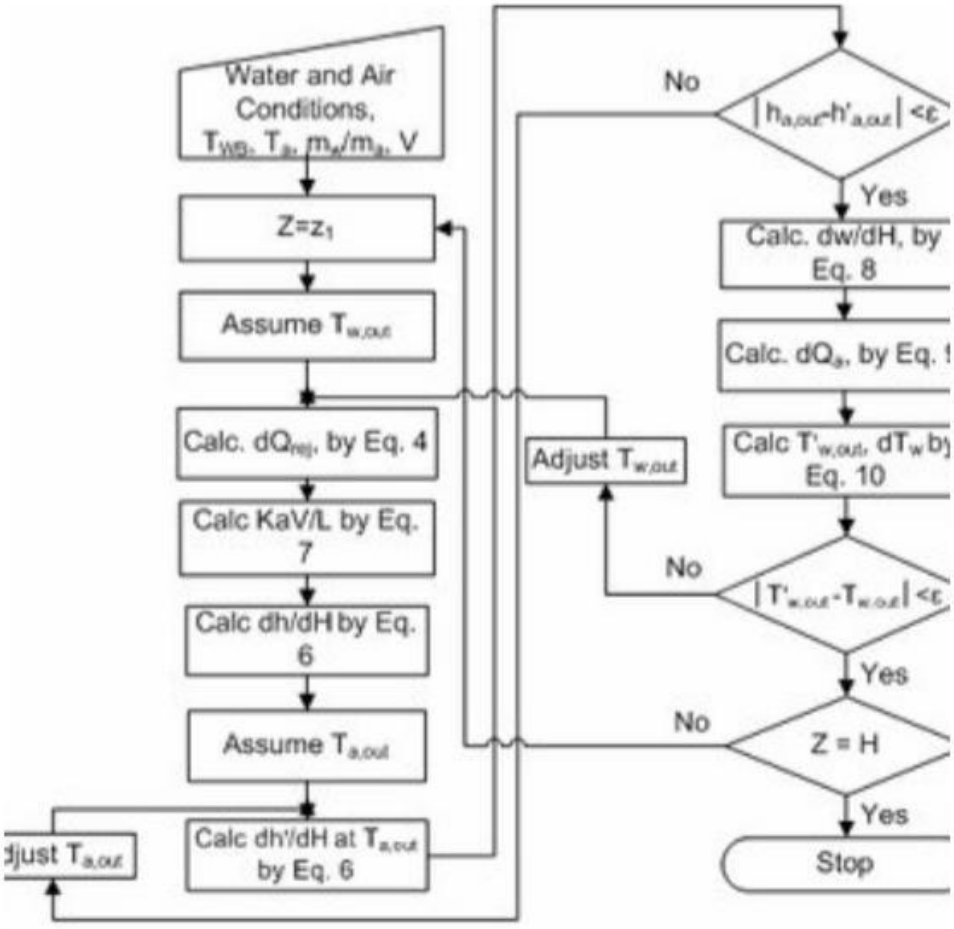
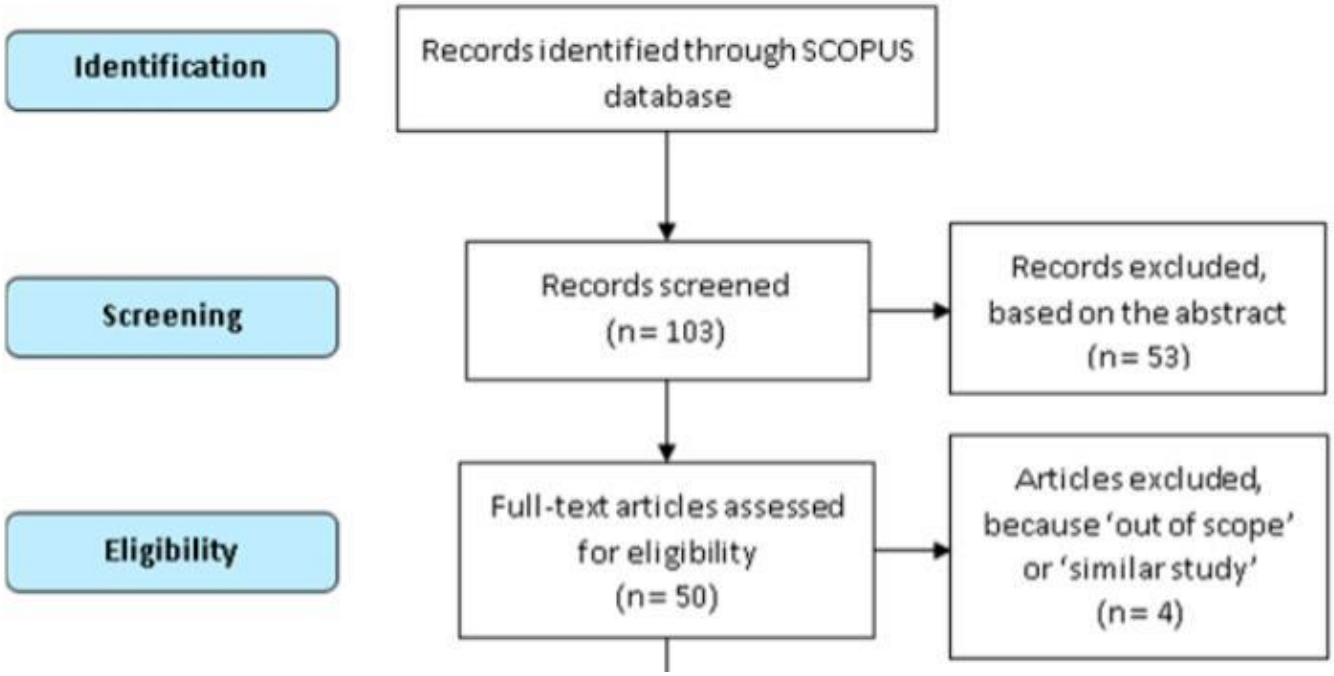

AIR QUALITY ANALYSIS AND PREDICTION IN TAMIL NADU
START
Measure CO Concentration
Calculate sub-API of CO
Measure O_3 Concentration
Calculate sub-API of O_3
Measure PM_{10} Concentration
Calculate sub-API of PM_{10}
Measure $PM_{2.5}$ Concentration
Calculate sub-API of $PM_{2.5}$
API = max(sub-API of CO, sub-API of O_3, sub-API of PM_{10}, sub-API of $PM_{2.5}$)
Classify API according to the color coded API indicator
Display API Value and Indicator
Store API Value in the SD Card
End?
N
Y
END
Delay for 5 Minutes


Water and Air Conditions, T_{WB}, T_g, m_w/m_a, V
$Z=z_1$
Assume $T_{w,out}$
Calc. dQ_{rej}, by Eq. 4
Calc KaV/L by Eq. 7
Calc dh/dH by Eq. 6
Assume $T_{a,out}$
Calc dh'/dH at $T_{a,out}$ by Eq. 6
djust $T_{a,out}$
No
$|h_{a,out}-h'_{a,out}| <\varepsilon$
Yes
Calc. dw/dH, by Eq. 8
Calc. dQ_a, by Eq. 1
Calc $T'_{w,out}$, dT_w by Eq. 10
Adjust $T_{w,out}$
No
$|T'_{w,out}-T_{w,out}| <\varepsilon$
Yes
No
Z = H
Yes
Stop


Identification
Records identified through SCOPUS database
Screening
Records screened (n= 103)
Records excluded, based on the abstract (n= 53)
Eligibility
Full-text articles assessed for eligibility (n= 50)
Articles excluded, because 'out of scope' or 'similar study' (n= 4)