Estimation of Carbon Monoxide through Algorithms over India

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ABSTRACT

Carbon monoxide has denoted as an odourless, monotonous, and bleak gas that outcomes from unfinished deflagration of organic matter. (CO) procreates from defective car engines, hearth, unfinished deflagration of agricultural materials, and other industrial furnaces at high temperatures. The motive of the current study is : (a) Analyze the pollution accompanied

(CO) surface mass concentration in India, (b). measuring the trend of (CO) before lockdown and lockdown during. By analyzing the MERRA-2 model satellite, used scale 3, on India from February to April 2020 (especially during the Non-lockdown & lockdown period). Used the method of "Natural Break", classification. Results show the monthly avg. (COSMC) of West Bengal, Jharkhand, Odisha, & Chattishgarh, have undergone spatial-temporal changes, the high COSMC value of East India clearly shows the characteristics of harmful particulate nitric acid and carbon molecules in coal fields, steel industry, and thermal power plants. In the final data, February to April is the Max-Min value (680-66.7 ppbv). the average and period of lockdown dominate, The study is useful for the comparative analysis of CO concentration lockdown during and non-lockdown situations. There have explained in detail the concentration values of CO determines the average value of 3 months, and proved that by the Logarithmic Algorithm and Standard Deviation Method, how much change is being faced with respect to the period of lockdown, And during.

Keywords: Image classification; Remote sensing; Concentration of CO; Interpolation

INTRODUCTION

Carbon monoxide is the nature of pollutants, while hydrocarbon naturally fuels (natural gas (LPG, HPG), benzine, and diesel) are deflagrated. The corresponding amount of CO produced depends on the combustion efficiency. (CO) is a noxious poisonous gas. It's poisonous at stages of only 0.1% (1000 ppm). Its toxic derives from its capability to tag transition metals as the iron established at the center of a haem molecule. Table-1 exhibit is useful for a discontiguous term of reduction, as oxidation, the averse of reduction you only need to find out half the facts [1].

Table 1: Reduction & Oxidation level of CO.

Reduction	Oxidation
Loss of oxygen	Gain of oxygen
Gain of hydrogen	Loss of hydrogen
Gain of electrons	Loss of electrons
Decrease in O.N.	Increase in O.N.

There is table no.1:- Shows the reduction and oxidation model level of Carbon Monoxide analysis, which is work with according to each chemical particle. There have analyzed

(COSMC) satellite data, through ground data, using various mathematical algorithms (Image Analysis Tool in R-Studio) . Through these satellite data, will estimate about, how Carbon Monoxide level are spread in the atmospheric troposphere especially in the major concentration level existing life layer, due to this effect human health are being very critical situation. Atmospheric (carbon-monoxide) is a major trace gas that has an important preponderance in climate change and atmospheric chemistry, with an apparent radiative power of 0.024 Wm-2 and an indirect radiative power 0.23 Wm-2. The two major resources of (CO) are rooted on biomass burning and fo-ssil fuel deflagration (Jindal, Pooja, et al., 2020), and the oxidation molecules of hydrocarbons in troposphere, and the major sink of (CO) is oxidation by OH radicals. (Li and Liu et al. 2011) has performed a (CO) decreasing trend analysis in few Chinese mega cities using atmospheric surface observations over 10 years. Have reported a dropping in (CO) concentration statistical value in the United States and Europe, respectively, again using in-situ

observations, Satellite data has also proven the decreasing trend of carbon monoxide (CO) over much of the Earth (Warner et al. 2013; Worden et al. 2013). India is a developing country, which is moving towards development every day. But the reason of the high manufacturing industry and heavy use of naturaly fossil product deflation, has led to issue of carbon mon-oxide. The burn of stubble is also one of the cause for enhances in carbon mon-oxide in the month of February in India. The carbon-monoxide gaseous fraction as determined in the formulaic form works-

$$CuO \ (s) + CO \ (gas) \ Cu \ (s) + CO_2 \ (gas),$$
$$CuO \ (s) + C \ (s) \ Cu \ (s) + CO \ (gas)$$
$$C \ (s) + O_2 \ (gas) \ 2 \ CO \ (gas) \ C \ (s) + O_2 \ (gas)$$
$$+ CO_2 \ (gas) + C \ (s) \ 2 \ CO \ (gas)$$
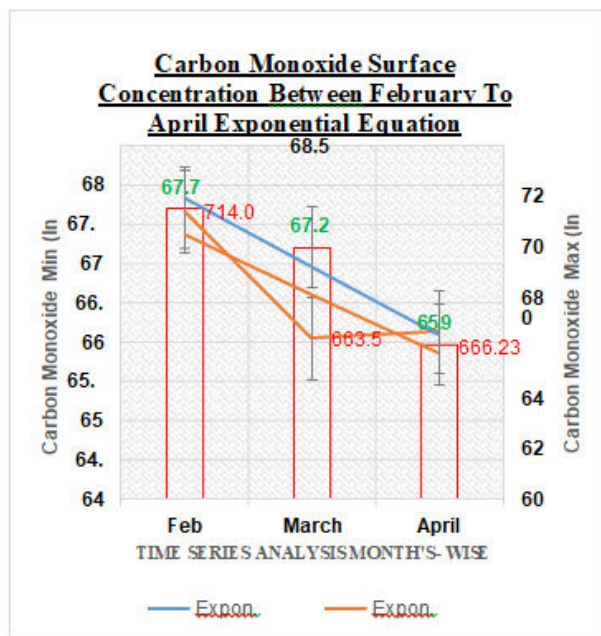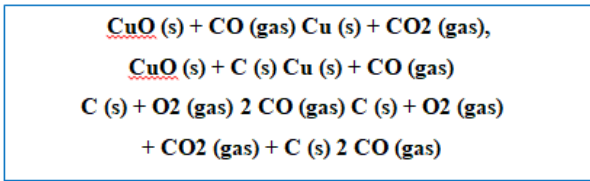
The subsequent reactions are all occurring during this simple experiment. But, as being vivid this tetrahedral complex dissolves the simplicity into its constituents. The brain and heart are the extremely impressive body organs in CO venoming because they come out with a high percentage of oxygen. The sign of symptoms is growth successively with the enhancement of (CO) in blood and regression dependent upon the expulsion of (CO) by the blood. Possible symptoms are exhibited by the. A person is headache, weariness, vomiting, staggering, divagation, unconsciousness, etc. With the enlargement

Within the concentration of (CO) in blood, the sign of symptoms transforms on account of soft to intense. Axis of reference carbon mon-oxide stages within the blood are laid down by the innate making of the gas by the catabolism of hemoglobin and other heme-inclusive compounds attached to the intake of inferior ambient carbon mon-oxide levels. Carbon mon-oxide is an efficiency of health threat. The general man-made resources are motor conveyance, industrial manufacturing

activities, heating energy, and burned ash. The overall emission of carbon mon-oxide imperecptibility contributtion to the global heating from regulate of tropo-spheric ozone concentration. Exposure to prominent stages of CO decreases the blood's capability to take away oxygen to body organs (Heart and Brain), thereby due to headaches and memory loss issues. Conveniences to metering CO, NOx, and O3 are too confined in India thereby manufacturing confined data from rural and suburban domains submitted a vast ejection list of air pollutants in Delhi for the period 1990 to 2000 and adduced that the carriage area shared >80% of NOx (nitric oxide), CO(carbon monoxide), and VOCs (volatile organic compound), also intimated in their research paper report that CO is the main pollutant getting from the transport areas, sharing 90% of total pollution emissions. This is what we have tried to find out during lockdown and before lockdown occur situation. (CPCB) Central Pollution Control Board has intimated in their report that vehicular share of the ovderall urban (atmospheric air pollution) in Delhi (NCT) (Sikary, Asit Kumar, et.al., 2017) and Mumbai is almost 76 to 90% for CO, 66 to 74% for NOx, 5 to 12% for SO2, and 3 to 12% for PM. CO and NOx pollution emissions through vehicle transport in Delhi were established to be 284 and 130 (mg/km2), seriatim [2-10].

Table2: Blood level of carboxyhemoglobin react in human body.

Blood level of carboxyhemoglobin (%)	Signs and symptoms
> 10%	Headache; impaired vigilance; decreased exercise capacity; angina with coronary artery disease
> 20%	Throbbing headache; giddiness; deterioration of judgement, calculation and manual dexterity
> 30%	Severe headache; nausea and vomiting; weakness.
> 40%	Tachypnea; tachycardia; obtundation; myocardial injury
> 50%	Respiratory failure; coma; convulsions; death

Table no.2, are shown the reactions that occurred in the human body by the carbon monoxide, there have also determined level-wise signs and symptoms, which are increased according to the level of CO in the body. Which states are produced CO and nitric oxide poisoning in the atmosphere, where are being created bigger problem form human being such as Respiratory Failure, Coma, Convulsion, Vomiting, and weakness, etc, more description we have declared in the table no.2. When CO levels are spread in the human body about >50% can face death and coma. By the way, we have analyzed overall India, but we have mostly focused on the 4 states, Jharkhand, West Bengal, Odisha, and Chaatishgarh. Because especially those regions are

generated by the pollution through of mine and coal fields. Due to the problem of pollution, the health sector is affected day by day. There has been tried to analysis over whole Indian sub-continent region, and which place is generating most CO level in the concentration area of atmosphere? Which algorithms are provided authenticated results whether Logarithmic or Correlation and Regression model Algorithm? Where are being generated a huge amount of CO level? Which algorithms are provided authenticated results? In this research, we have analyzed all algorithms circulation data achieved pristine results. The logarithmic result is showing about according to passing time the CO level is reducing due to the lockdown period. How CO levels are spread in the atmospheric troposphere especially in the major concentration level and how its existing life layer? Mostly CO levels are increased according to industrialization, especially East India regions, as well as also assisting for increasing CO level diverse section of India, ie. Central India, East India, Western India, Northern India and Southern India. Next one which regions are generating CO level in the concentration area of the atmosphere? We have already mentioned this question. But even then, discussed especially the Jharkhand region, where found a huge amount of coal, magnesium, and iron mines field [11].

The purpose of present perusal is to primarily enumerate whether the various parameter manner established in the literature to apprize (CO) concentrations based on invigilated (CO) data in India is sufficiently accurate. The second objective is to extant a manner adequate of endowing an average monthly concentration (CO) over a period of 3 months of invigilating. In this study, various fields of perusal, together with the metering manner & analysis of the months from February to April, are used, which are submitted in portion 4. Then, outcomes of studies on analysis founded concentration (CO) calculations in India, and the manner offered for calculating the average monthly concentration of (CO) founded on the monthly metering period submitted in portion 4 [12].

DATA SOURCES AND METHODOLOGY

The overall methodology, there have used satellite sensor data, which are from NASA (Earth Data), MERRA-2 Model. The dataset of MERRA-2 AMIP consists of a 10-member ensemble of free-running stimulus with the GEOS atmospheric data model. The model version at one time accompanied set area boundary situations, is consisted identically to the GEOS datasets model maked use of in the MERRA-2 reanalysis dataset products. The simulations were execution appointing a (c180L72) assortment of the cubed-sphere grid and resulted output fields area are interpolated to a 0.5° latitude by 0.625° longitude grid cover, The 10-member ensemble offers information on the natural variations transformation implicit in any free- running model simulation. The M2-AMIP model ensemble and some aspects of its works are documented in a very GMAO Technical Memorandum GMAO. The file specifications are available at GMAO Office Note. Monthly mean data each of the ten ensemble members and daily data [13].

Figure1: Methodology Chart of Estimation of Carbon Monoxide through Algorithms.
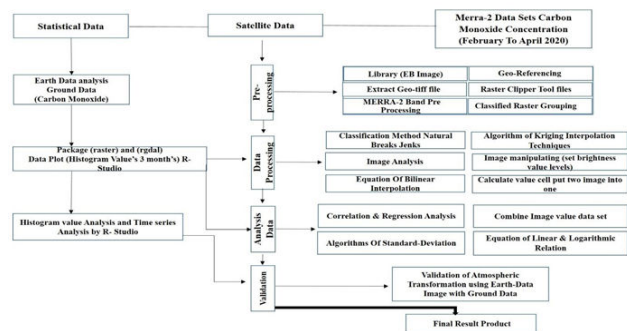
As there have in figure no.1 if you want to show, step by step through this there will accrss about your methodlogy chart, that explains all our activities in this research paper. First of all, there have download satellite and stastical data form the this site observations (EARTHDATA) Which was related 3 months (Feb-April).

Then process the gound data by the assist of R-Studio language Stastical software (Open Source), for the processing used the package (Raster) and (rgdal), produced histogram plots as well as, time series analysis plots, For the pre-processing there have used R-studio Library tool (Ebimage), after that help of this tool band processing in MERRA model-2 data. For georeferancing and extract gro-tiff file used the Q-GIS software (Open Source), then through of shapefile clip the satellite data using the tool of (Raster Clipper Tool) in R-Studio. After this processing there have runned the classified raster grouping in Q-GIS. Then next step applied Data Processing, used the classification method "Natural Break Jenks" for significane pixcel value, and used kriging interpolation method for uses vector points with known values to estimate value at unknown locations to create a raster surface covering whole regions, transform near neighbourhood equation and then used billinear interpolation, and last there have calculated value of cell put two image ito one, help of R-studio. Third step is analysis data, There have investigated to analyze Correlation and Regression Statistical Algorithm Analysis Models using Carbon Monoxide Satellite Data Compared with Logarithmic Analysis Methods Over Indian Sub-Continent using satellite data during the lockdown period, because which time period all over the world, occurred several changes in our atmosphere. That's why there are analyzed various satellite data, which are related to different-2 properties and nature, some data achieved daily wise and some monthly is based on the following: Firstly, Using the In situ observations (EARTHDATA) to develop training data set for Carbon Monoxide Concentration Analysis information. Than we have used standard deviation for achieving sutable result in my reseach, therefore, we used regression and coorelation method, known the result we have reseived form QGIS and R-Studio software, it's a geniune, the method of coorelation are describe about month's data differentiate [14].

Study Area

In the current situation, NO2 is analyzed in Indian region. Studies have been done for diverse domains to perceive the behaviour of scaling in diverse section of India, ie. Central India (20° North, 74° East 28° North, 86° East), East India (20°

North, 86° East 30° North,98° East), Western India (20° North, 68° East) 28° North, 74° East), Northern India (28°North, 72° E. 38° North, 84° East) & Southern India (8° North, 72° East 20° North, 86° East)(Jindal pooja et.al., 2019) [15].

Figure 2: Study regions.
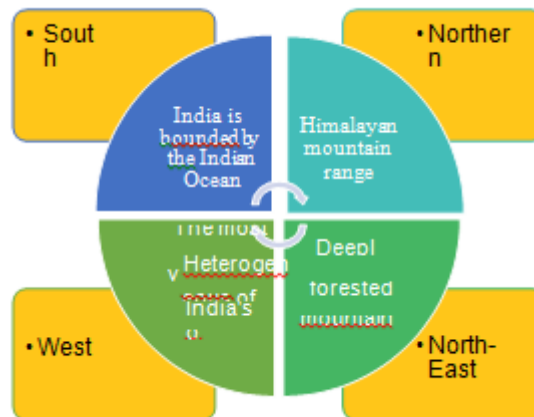
Before the presenting about the study topic, need to know what is the geography and climate transformation of the Indian regions India lies on the Indian Plate, the northern part of the Indo-Australian Plate, whose continental crust forms the Indian subcontinent. But now a time the indo-Aus. India is established north of the equator amid 8°4' to 37°6' north latitude & 68°7' to 97°25' east longitude. India is the seventh-biggest land country in the entire world, with a complete area of India's 3,287,263 square kilometers (1,269,219 sq. m). Measurements of India's part measures 3,214 km (1,997 mi) from north-south and a pair of,933 km (1,822m) From east-west. It's a border of land 15,200 km (9,445 m) and a coast bank line of seven, 15516.6 km (4,671 m). The Ganga river stream is the longer river source in India. The Ganga–Brahmaputra River stream system take-up extreme of north, central, and east India, whereas the Deccan Plateau take up the major part of south India. Kanchenjunga, in the Indian region of Sikkim, is the higher site spot in India at 8,586 meter (28,169 ft) and the world's third-higher peak. In the India's climate across series to equator in the far south, to alpine (highest mountain) and tundra region occurs in the upper regions of the great Himalayas. The India's climate, the winter season occurring from November to February The winter months are Dec-Jan in whole year's when temperatures (heat) avg. in situ 10–15 °C in the north-west; temperatures (heat) increase as one gain near to the equator, head around 20– 25 °C in main-land India's south-east. In the pre-monsoon or summer season lasting to March-May, In the Indian western and southern region areas, the warmest month is April and the beginning of May and for northern of India, the May is the warmest month. In the month of May, Temperatures increase avg. almost 32–40 °C in most of the interior. it increases the heat. In the June to September monsoon season, This monsoon season is ascendancy by the moist southwest summer monsoon, which lightly spreads out to the whole of the country beginning in late May or early June Monsoon.

Rains begin to back from North India at the starting of October. In general, South India gets extreme rainfall. Season of post-

monsoon lasting from October to November, October and November are often cloudless in the northwest of India. Tamil Nadu state gets extremely of its yearly rainfall in the northeast monsoon season. Although there is a lot of concentration of nitrogen oxide in all the regions, there are some places in India that increase nitrogen oxide rapidly, among them Punjab, Haryana, Delhi and Uttar Pradesh of North India. Being the banks of the Ganges, it has developed rapidly in Industrialisation and at the same time, it has increased dangerous gas as well. The same reason has also been seen in Eastern India, especially in West Bengal, Orissa, Jharkhand, Chattisgarh, which too has seen an increase in nitrogen due to the opening of coal mining, electric plants, nuclear reactors and big industrial companies from the multiplicity of rivers. Regarding this, the medium of satellite image in section 4 results Shown from, the diverse domains of the monitoring regions are exhibited in Figure 2. Apart from these regions, average analysis has also been studied across India [16].

Figure 3: Study area: central, eastern, western, northern and southern part of India.
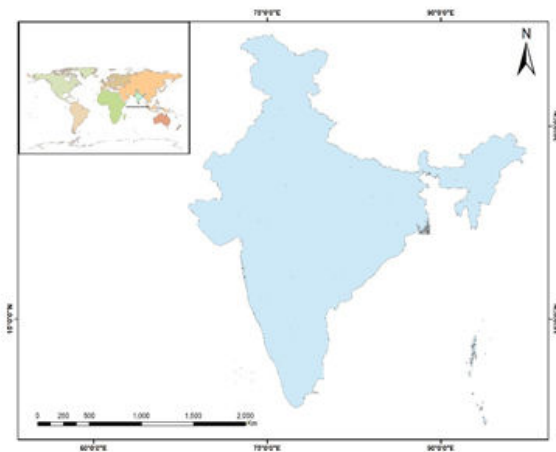
RESULT AND DISCUSSION

Carbon monoxide has analysed at the surface mass concentration, assist of satellite data and statistical data as shown in Figure 5. Seeks to express the carbon monoxide surface mass concentration area of the entire India region via satellite images from before the lockdown period in February There have determined the surface concentration according to range level.

So there are expressed various level, which are described regions-wise estimation. There are very Safe Carbon Monoxide Level Range Value (100.66 - 67.71 ppbv units) covering the area of Jammu & Kashmir, Sikkim, Arunachal Pradesh, Uttarakhand, Himachal Pardesh, Western Rajasthan, Gujarat Kutch Rann, and the coastal areas of Andhra Pradesh, Tamil Nadu. in the troposphere because analyzed satellite data show that the layer's concentration levels are very well located The space where carbon monoxide is not generated by gaseous chemical reaction particles is mostly partially covered through snow, forest and white raan, areas free of pollution molecules (Lipman, Grant et al. 2006). Now, the safe carbon monoxide level range values

(141.21 - 100.66 ppbv units) in the region of North Punjab, South Uttarakhand, Saharanpur UP, Rajasthan, MP, Jharkhand, Chhattisgarh, Maharashtra, Karnataka, Andhra Pradesh, Kerala, Tamil Nadu, Telangana North Bengal (Jalpaiguri) are included, Darjeeling, and Kocha Bihar regions), Assam (Lower, Central and Upper Assam), Meghalaya (covering both the Garo and Khasi regions), Nagaland, Manipur and Mizoram, a place that is produced by chemical particles of carbon monoxide gases. Aerosolic chemicals that do not react directly there [17].

Table3: (CO) cardiotoxic & both cardiac failure and myocardial ischemia in humans after acute in- toxication.

Physical Properties of (CO)	Value
Colour	Very flammable, burning in air with bright blue flame.
Formula	**CO.** Although each molecule of CO has one carbon atom and one oxygen atom, it has a shape similar to that of an oxygen molecule (two atoms of oxygen), which is important with regard to its lethality. Indeed, it is Similar to **two other gases** necessary for life as we know it.
Melting point	-205.0° C
Boiling point	-191.5° C
Density	1.250 g/liter at 0° C, 1 atm; 1.145 g/liter at 25° C, 1 atm
Density (gas)	0.968
Solubility in water at	0° C, 1 atm 3.54 ml/100 ml 25° C, 1 atm 2.14 ml/100 ml
Soluble in some organic solvents	Ethyl acetate, methyl chloride, acetic acid; about 7 times more soluble in methanol and ethanol than in water.
Flammable limits in air	12-75 ol. %.

But it occurred less carbonic atoms, there is mostly partly covered through desert regions and Dense Forest, That region is free of pollution molecules. But there are some Carbonic particles coagulated conglomerate particles, which are very harmful to human lungs, skin, and kidneys). As well as when the Industrial processes that produce carbon monoxide include: metal production, power supply, mining (metal ore and coal), food production, extraction of oil and gas from land or sea, chemicals, lime production, cement, gypsum, and concrete production, and oil refining. That gaseous formation is being coagulated in the atmosphere layer especially in the troposphere and consists of that situation around the earth's climate. Moderate Carbon Monoxide level range value (219.79 – 141.21 ppbv unit) are included area's Punjab, Haryana, East-West UP,

Bihar, North Bengal, Jharkhand, Odisha, Chattishgarh, Tripura, Gujarat Mumbai, Delhi, and Maharashtra. That place sufar lots of gaseous particularly CO chemical particles, which are generated from Stubble burning to Punjab, and Haryana region because there have an image that time period, that time was cutting the crops, which fume are moving towards winds circulation and reaching to whole UP, Bihar, as well as West Bengal also. Unsafe Carbon CO range value (361.73 – 219.79 ppbv unit) are included area's Jharkhand (Jharia (Largest), Bokaro, Dhanbad, Giridih, Karanpura, Ramgarh, and Daltonganj) (www.geo.hunter.cuny.edu) and West Bengal (Ranigunj (Oldest coalfield in India). That place is recognized as a coalfield and thermal power, that plants are generating carbon monoxide pollution in higher quantities. Especially in the Jharkhand & southwest Bengal region plants, which are generated by carbon monoxide atomic particles? There are estimated very unsafe carbon monoxide level range value (714.04–361.73 ppbv unit) finds as Jharkhand & West Bengal. That place is also known as the coal block & iron industry, which

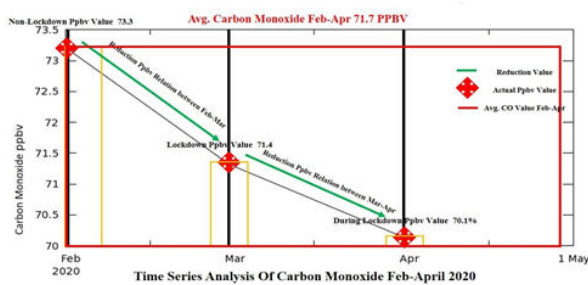**Figure 4:** Variation the time series analysis of (CMSMC) Feb to April.

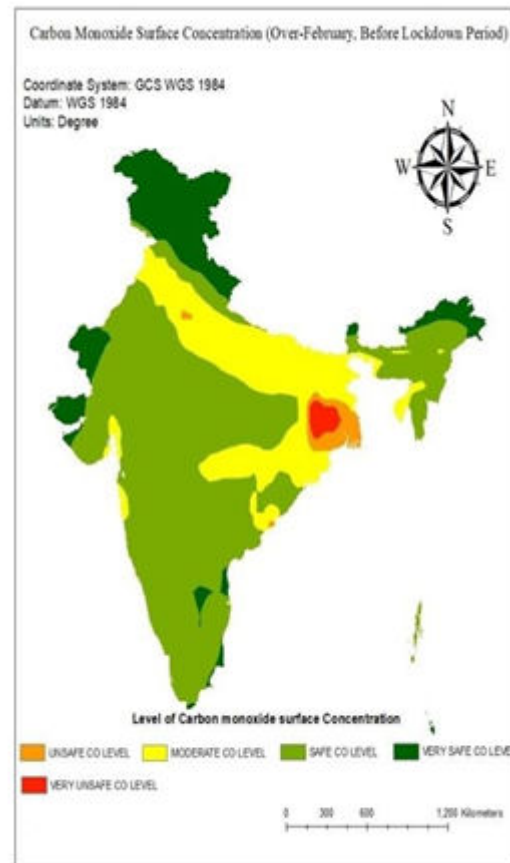**Figure 5:** (CO) Estimation of Feb month.

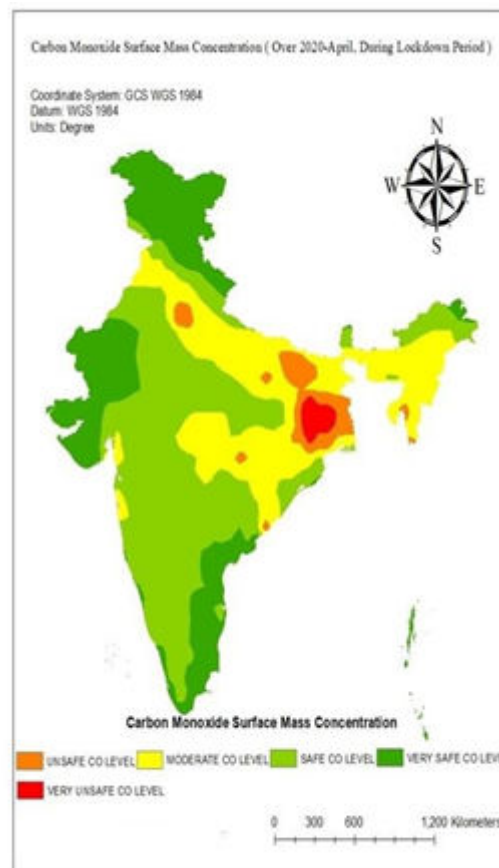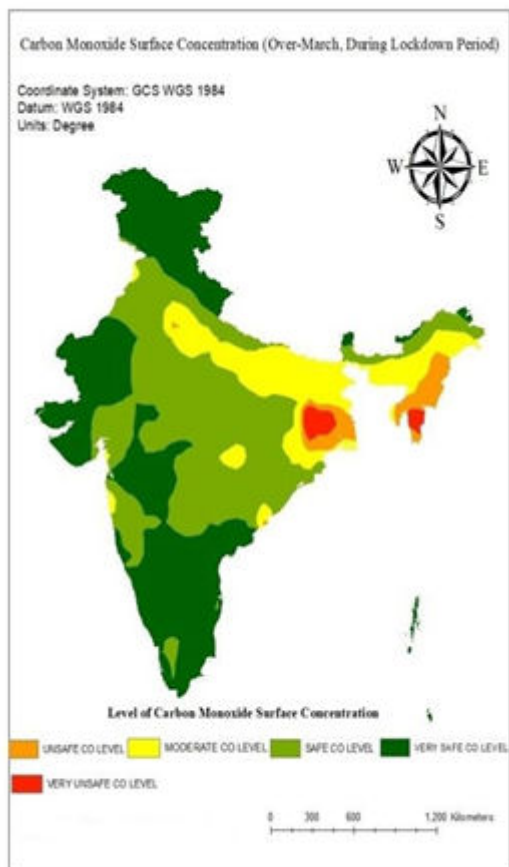**Figure 6:** (CO) Estimation of March month.

Figure 7: (CO) Estimation of April month.

Are generated very high quantity of atomic CO particles, damage to human lungs, and other diseases? Figure no. 6, want to interpret about the Carbon Monoxide Surface Mass Concentration area of the whole Indian Sub-continent, through of satellite image which has during the period of Lockdown March months. There are very safe Carbon Monoxide level range value (99.95 – 67.21 ppbv unit) included in the area's Jammu & Kashmir, Punjab, Himachal Pradesh, Uttra-khand, Gujarat, West-Rajasthan, Maharastra, Karnataka, Andhra

Table 4: Shows the List of Major Coal Fields in India.

| State	Coal Field
West Bengal	Ranigunj (Oldest coal field in India)
Jharkhand	Jharia (Largest), Bokaro, Dhanbad, Giridih, Karanpura, Ramgarh, Daltonganj
Madhya Pradesh	Singrauli, Suhagpur, Johila, Umaria, Satpura coalfield
Odisha	Talcher, Himgiri, Rampur
Andhra Pradesh	Kantapalli, Singareni
Chhattisgarh	Korba, Bisrampur, Sonhat, Jhilmil, Hasdo-Arand
Assam	Makum, Najira, Janji, Jaipur

Meghalaya	Umralong, Darrangiri, Cherrapunji, Mawlong, Langrin
Arunachal Pradesh	Naqmchik-Namphuk

Pradesh, Sikkim, and Arunachal Pradesh, That place is not generated carbon monoxide particles because most areas are covered by Snow, Forest, and white ran as well as Desert also. That's why they don't generate CO2 and CO gases particles. Jammu & Kashmir, Punjab, Himachal Pradesh, Uttrakhand, Gujarat, West Rajasthan, Maharastra, Karnataka, Andhra Pradesh, Sikkim, and Arunachal Pradesh. That place is not generated carbon monoxide particles because most areas are covered by Snow, Forest, and white ran as well as Desert also. That's why they don't generate CO2 and CO gases particles. Now we shall look at safe Carbon Monoxide level range value (132.69 – 99.95 ppbv unit) covered area's as Punjab, Rajasthan, Northern UP, Gujarat, MP, west Maharashtra, Jharkhand, Chattishgarh, Odisha, Telingana, North West Bengal, Assam, and south Arunachal Pradesh. That place is also not produced Carbon Monoxide gases atomic particles, Punjab and Haryana are exist from that list which means that the place lies in the safe zone level because due to wind circulation gases move towards West Bengal, which is generated through Wheat stubble burn. Because of that time period, Punjab and Haryana burn wheat crops stubble burn.

Then there are estimated the Moderate (CO) level through a satellite image of India to carbon mon-oxide gas particles. Moderate CO level range value (200.51 – 132.69 ppbv unit) founded areas as Uttar-Pardesh, Bihar, Jharkhand, West Bengal, Chattishgarh, Assam, and Nagaland. That place is less generating pollution, but there are carbons particles move hither and thither in the atmospheric surface (Hermann Harde, et.al. 2013). Which are move according to wind direction west to East, during that time period wind move towards the West to East. That's why in figure-6, want to describe moderate Carbon monoxide level zone are moving continuously. Now its turn to discuss Unsafe CO level range value (331.46 – 200.51 ppbv unit) are included area's as West Bengal, South Assam, Tripura, Mizoram and Nagaland, that place are recognized for their forest cover, but there are also showing unsafe level just because of carbon molecules particles are frozen, due to wind circulation (Hermann Harde, et.al., 2013). As well as Nagaland and south Mizoram are occurred coal in the region. That's why there are showing unsafe CO levels through oil and coal block were in working during the lockdown period. Now, illustrated fig-6, very unsafe CO level range value (663.53 – 331.46 ppbv unit) are included areas as the Jharkhand and Mizoram region. That place is showing most generated carbon Monoxide gases atomic particles, especially (Bokaro, Godda, Jharia Jharkhand) and Mizoram (Kolasib), that place was active during lockdown that's why there will not define extremely transformation in the particular regions. Figure-7, want to express about the Carbon Monoxide Surface Mass Concentration area of the whole Indian continent, through of satellite image which has during the period of Lockdown April months, Very safe Carbon Monoxide level range value (89.51 – 65.97 ppbv unit) are included the area's as Jammu & Kashmir, Himachal Pradesh, Uttarakhand,

Jaisalmer, Badhmer, Jodhpur (West Rajasthan), West Gujarat, Andhra Pradesh, Tamilnadu, Western Coastal area, North Sikkim and North Arunachal Pardesh. That place is not generated carbon monoxide and other gases particles, because most are covered by snow, forest and Desert. That's why there are no available carbon gases atomic particles. Safe CO Level range value (115.40 – 89.51 ppbv unit) are included area as North Punjab, Himachal Pardesh, North UP, Rajasthan, South UP, MP, East Gujarat, Maharashtra, Karnataka, South Chattishgarh, Telingana, South West Odisha, Central-South Sikkim, Arunachal Pradesh, and Assam. That place is not generated carbon monoxide and other gases particles because of most areas covered by the Reserve forest and wild forest. Consequently, there is also less human settlement. That's why there are no available carbon gases atomic particles. Now we shall talk about moderate CO Level range value (155.42 – 115.40 ppbv unit) are included area as Punjab, Haryana, UP, Bihar, Jharkhand, North Chattish-garh, South West-Bengal, Odisha, East MP, Mumbai, North-West Bengal, Assam, Meghalaya, Nagaland, Tripura, Manipur, and Mizoram. That place is generating less carbon pollution particles, which are related to the core region of carbon monoxide atomic particles, which are moved towards the West to East Indian region, its especially cover North-east Indian region. It's the biggest effect to cover that place. Unsafe CO Level range value (230.75 – 155.42 ppbv unit) are included area's as East UP, Bihar, Jharkhand (Bokaro, Godda), and West Bengal (Raniganj). That place is generated lots of carbon monoxide particles, through Industrial plants such as:- Iron ore mines, Coal Block mines. Now there have interpreted Very unsafe CO Level range value (666.23 – 230.75 ppbv unit) are included area's as West Bengal and Jharkhand. That place is generated CO, CO2, NO2, and other gases atomic particles, which are produced coal mines, the iron industry established in the particular region of both states, After declaring the lockdown, these coal and iron industry are always in working, that's why its seen core part for generating carbon monoxide atomic gaseous particles [18].

Figure 8: Variation of zonal mean map value of (CMSMC) analysis Feb - April months.
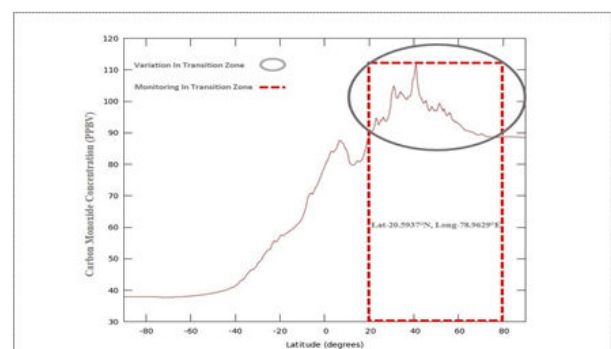
There are interpreted Figure-8 the identification of CO value in the world level, there are showing maximum value lies between (20-60) latitude range, which are higher compared with (-80-20), it's very low. Because where are showing higher value, there are situated developing and developed country, such as: Garmany, England, India, China, and Russia. Maximum

value of ppbv are showing approx (115 ppbv) between 40 degree latitude, and minimum value defined as (less than 40 ppbv) -80 degree latitude. There have an observated COSMC in ppbv using (MERRA-2 Model) over Feb-April 2020. Fig-9 are described Histogram value map over Feb month in India, In which max and min value are classified as (714.05-67.71 ppbv unit) & Standard deviation value are performed 45.69 ppbv. Diagram no.d are showing value of march month in indian sub-continental region, occurred max and min value (663.53-

67.31 ppbv unit), and standard deviation value varies as 48.22, that value increased to compare the feb month. But when its show the april month histogarm data during lockdown period , it's being lower 36.35 ppbv compared with previous both months histogram data. Now there talk about some research questions, first one are showing about How CO level are spread in the atmospheric troposphere specially in the major concentration level and how its existing lifelayer? The CO level are being increased day per day through of Coalfield, thermal plants, which are not combustion carbonic particles, due to its coagulated in the troposphere, which are suitable for all weather, and mostly atmospheric variation vary in this layer, so there are occurred most concentration level in this layer, mostly CO level are increased according to industrilization, speacilly East india regions (WB, JH, CH, and Odisha) as well as also assisting for increasing CO level mega cities, Mumbai, Kolkata, Chennai, and Bangalore). Next one which regions are generating CO level in the concentration area of atmosphere? There have already mention about this question. But even then, discussed specially jharkhand region, where found huged amount of coal, magnasiam, and iron mines field. Table no. 4 are showing list of coal fields, that's why it's highly relased CO level very huge in size and Figure 10. Shows the Negative Feedback of aerosol. Its spread in the atmospheric layer, and upto many years coagulated in the layers, as well as its affect to the aerosolic particles, which can be affected to to rain and other climatical variation, can create less rain.

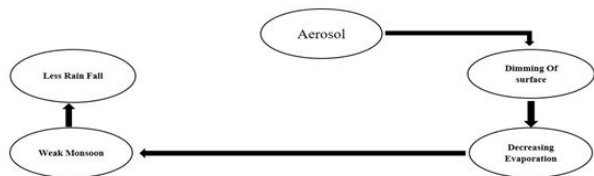**Figure 9:** Affected to to rain and other climatical variation.

Figure10: Variation in (CMSMC) analysis Feb month.
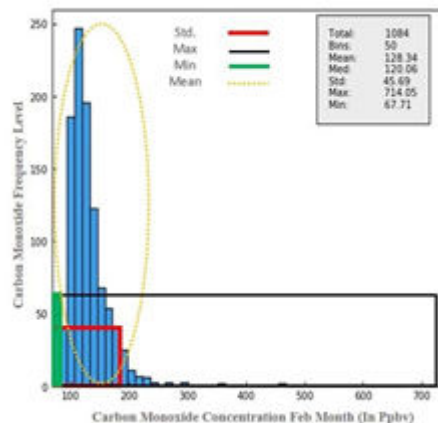

Figure11: Variation in (CMSMC) analysis March month.
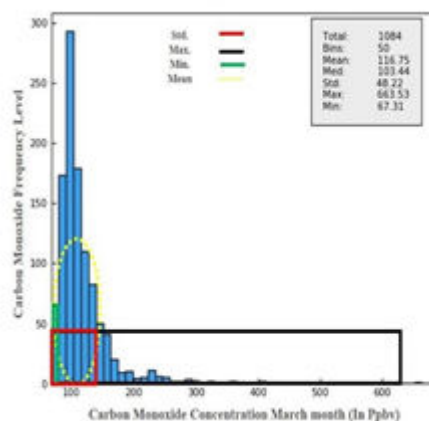

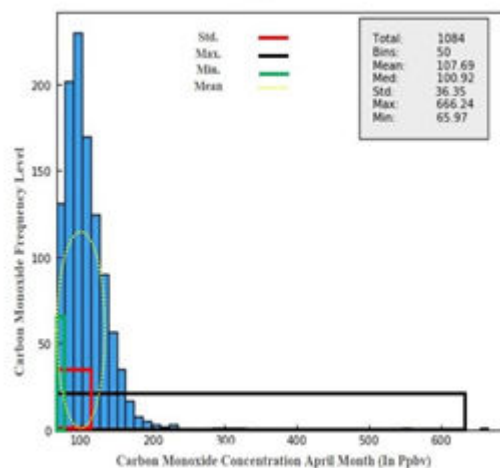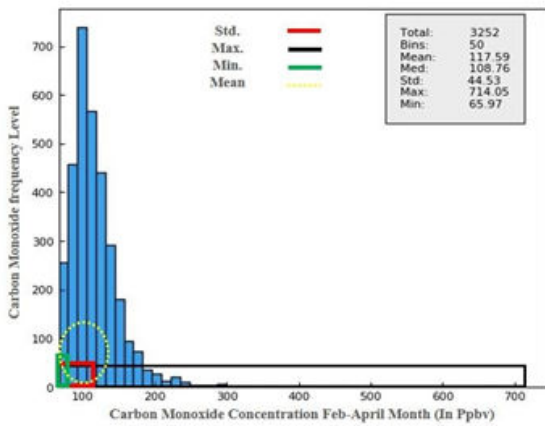Figure12: Variation in (CMSMC) analysis April month.

Figure13: Variation in (CMSMC) analysis Feb to April month.

There are figure-13, performs that entire variation of carbon monoxide concertration, in which show the feb-april months standand deviation taransformation (44.53 ppbv), which was on the March month (Non-lockdown) figure-11, (48.22 ppbv), which was seen in the month of April only because of lockdown. Fig-11 and 12 illustrate the maximum and minimum values can also be seen changed in the statistical data of India. With it, figure-14 is interpreting Monthly variation in standard deviation satellite data of, which are enhanced level-wise.

Figure14: Monthly variation in standard deviation satellite data.
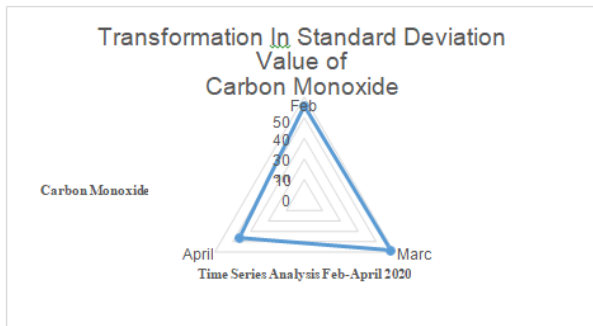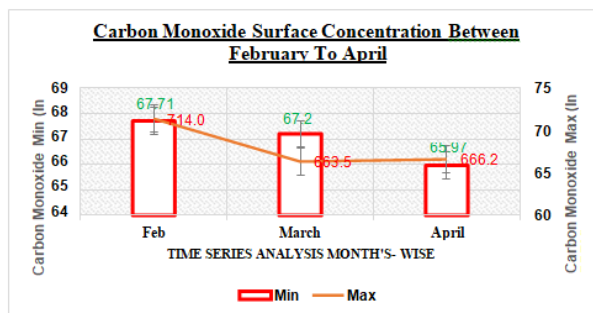

Figure15: Variation of (COSMC) graphical representation of Feb to April month's (Min- Max).

There are figure-15, explain that entire variation of carbon monoxide concertration, in which show the feb-april months (Min-Max) alteration in Feb (67.71-714.04 ppbv) non-lockdown, and during lockdown in april month (65.97-666.23 ppbv), its illuatrate biggest variation non- lockdown between lockdown period that mean its explain due to closed human activities In

the result, carbon monoxide has been seen to work compared to the February month.

Figure16: Interprets the Exponential Equation of (COSMC) months of (Feb-April), amid (min-max ppbv value).
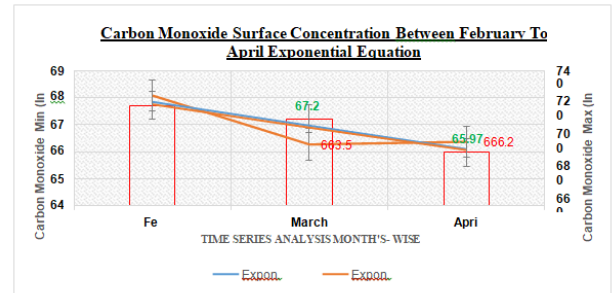

Table 5: Shows the Correlation statistics of Carbon Monoxide min and max value Between Feb to April months.

	Min	**Max**
Min (Feb to April)	1	0
Max (Feb to April)	0.688118	1

In these Table-5 it is shown that Correlation statistics of Carbon Monoxide min feb-April value analysis 1 whereas 0 and max feb-April value analysis 0.688, whereas max value 1. With it, the carbon monoxide logarithmic fig-17, illustrated value of min and max ($y = -1.491In(x) + 67.854$, $R^2 = 0.8549$, whereas max value ($y = -46.68In(x) + 714.15$, $R^2 = 0.8329$.

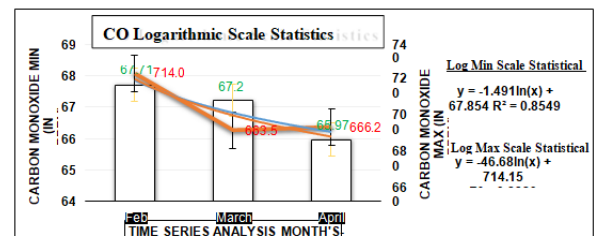**Figure17:** variation of the CO Logarithmic Scale Statistics.

Table6: Shows the Regression Statistics that observation classified between three month's Feb to April.

Regression Statistics	
Multiple R	0.688118
R Square	0.473507
Adjusted R Square	-0.05299
Standard Error	0.91927
Observations	3 Months (Feb-April)

There are explained table-6, which are describing about the multiple Regression value 0.68 and occurred standard error value 0.91%. as well as there are R squre value are showing feb to april month's data value 0.47%. The table-7 interpret value

the significance F value are performed that 0.51% in the regression model.

Table7: Classified the regression and residual pattern analysis.

	df	SS	MS	F	Significance F
Regression	Residual	0.76001	0.76001	0.89936	0.51687403
	1	0.845057	0.845057	-	-
Total	2	1.605067		-	-

Table8: Show in the intercept coefficients value.

	Coefficients	Standard Error	t-Stat	P-value
Intercept	52.18349078	15.5939023	3.346404	0.184863
Max	0.021694651	0.02287631	0.948346	0.516874

In this table-8, are illustrated in the intercept coefficients value is 52.18%, standard error value 15.59% and P-value are performed as 0.18% whereas in the max value coefficients value 0.02%, standard error value 0.02% and P-value level are analyzed as 0.51%.

Table9: Carbon Monoxide Resudual Analysis between Feb to April months.

Carbon Monoxide Resudual Analysis

Observation	Predicted Min	Residuals	Standard Residuals
Feb	67.67433936	0.035660639	0.054860679
March	66.57854254	0.631457459	0.971440388
April	66.6371181	-0.667118098	-1.026301066

In these table-9, are illustrated the residual value between Feb to April month's in the Feb month the predicted min value 67.67%, March month predicted min value 66.57% and April month value lies between 66.63%. There are able to look that value due to lockdown because almost coal, thermal plants and transportation were hardly off.

Table10: Variation value of probability testing of minimum value analysis related carbon monoxide.

Carbon Monoxide Probability

Percentile	Min

16.66666667	65.97
50	67.21
83.33333333	67.71

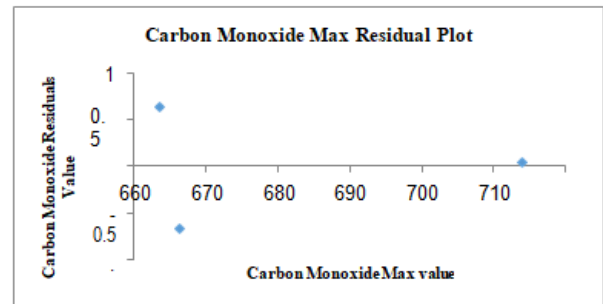**Figure18:** Maximum residual plot value between Carbon Monoxide maximum value analysis.

Figure19: Min and Max Line Fit plot value as well as there are also classified Predicted Min value of Carbon Monoxide.
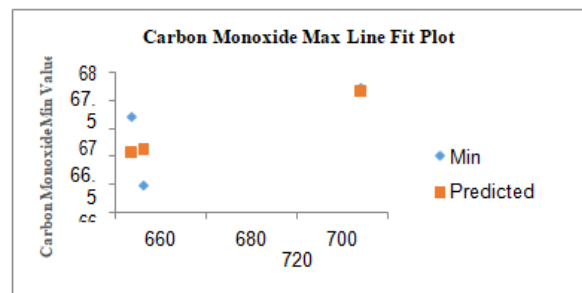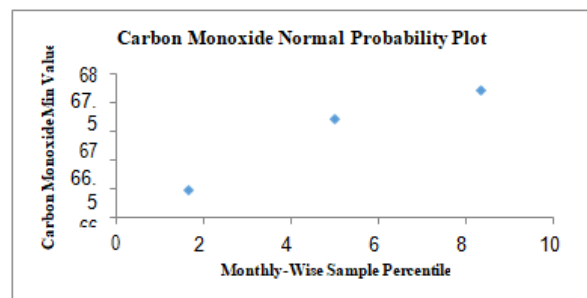

Figure20

In these figure-20, are illustrated the COSMC Minimum sample percentile normal Probability plot months of Feb to April. Third question, which algorithoms are, provides authunticated result? In this research we have analyzed all algorithms circulation data achieved pristine result. The logarithmic result are showing about an according to passing time the (CO) level are reducing due to lockdown period [19].

CONCLUSION

Carbon monoxide poisoning is that the commonest sort of unintentional poisoning. CO is quickly absorbed across the alveolus and combines with haemoglobin. In the day time

standard deviation between Feb – April, (45.46 – 48.22 – 36.35), final result of standard deviation is 44.53.

We have also analysed over CO max and min range value between February – April month's in the Feb month's value are occurred (714.05 – 67.71 ppbv), whereas in the March month's (663.53 – 67.31 ppbv) and in the April month's (666.24 – 65.97 ppbv). Final result between Feb to April months are (714.05 – 65.97 ppbv). In the April month's maximum value are reduced. Because during this period was closed human activities and transport corporation was banned during that period, which are generated carbon monoxide and factory also. We have also analysed Time series Area- Arveraged between Feb to April Month's (73.3, 71.4 and 70.2 ppbv). As far as I am concerned that it is starting point for reducing carbon monioxide gaseous particle, and during few month's its will be reduced in the atmosphere. We have also occurred variation in the zonal mean value during latitude degree 20-60, its define that 110 ppbv rate value.

Research Highlight

Carbon monoxide forms pollutants when hydrocarbon fuels (natural gas, gasoline, and diesel) are burned.

There provided authnticated result wheather Logarithmic or Coorelation and Regression model Algorithm.

Mostly CO level are increased according to industrilization, speacilly East india regions (WB, JH, CH, and Odisha) as well as also assisting for increasing CO level mega cities (Delhi, Mumbai, Kolkata, Chennai, and Bangalore).

Which regions are generating CO level in the concentration area of atmosphere?

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