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Air Desperation Quality by Using AERMOD Software Program

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ABSTRACT

Study of the experiment measurement and the Pollutant of traffic emissions of carbon monoxide (CO) quality around the Industrial District in Kirkuk city in Iraq, where the carbon monoxide (CO) conducted experimentally then showed the Pollutant of traffic emissions for this paper of pollutant dispersion within also around the Industrial District. Mathematical scheming used an (AERMOD) software dispersion model. Observing carbon monoxide (CO) are validated by comparing with observed values at the three point sections, by comparing for the concentrations values and measured values, by demonstrating an acceptable model performance. The simulation Results performed that the Industrial District area is facing high concentrations of CO. This is due to the high degree of pollution that this area suffers from due to the large number of factories and factories that need to emit smoke that pollutes the place, which affects human health as well.

1. Introduction

The air quality of Pollutant of traffic emissions of carbon monoxide (CO) has become more imperative in recent years, which effects on human health. In latest years, many investigators have studied pollutant emissions at different positions in world and big consequential foundation of industrial air pollution are the automobiles. These researches show high absorption of atmospheric pollution air. Study of the effect of the traffic emission of the pollution of the air quality in where in this paper AERMOD dispersion model had been used. Comparing made between the traffic emission including,CO, which the result shows good agreement

In this paper AERMOD is the complete and power full air dispersion modeling ,where its popular in USA. Also this model is used extensively to access pollution concentration and deposition from wide coverage area of sources. The AERMOD tools are provided to get the air quality analysis done on time, which including imports variety of base map format, 3D powerful visualization, building analysis. Easy and graphical interface, data metric in units, report ready output, etc……, . Where the AERMOD customizable GIS–Based emission inventory system, where is a dynamic and powerful package that features a unique spatial and temporal GIS based platform , which designed for feudality to state wide to nationwide coverage data are compiled and stored in a complete geospatial data base engine. Dimitrov and etal study in [1] the characteristics of a gasoline engine at 2015. And Maya Stefanova and etal study the Nitrous oxide emission in [2] at

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2014 then its reduction in [3][4] at 2015,2016 respectively , and at 2017 she studied in [5] Nitrous oxide emission by using BREEZE AERMOD Software. Where Liao and Chturkova at 2017 in [6,7] respectively they proved that specific rising ground and lowland, which they had acceptable affections for dispersion atmosphere pollutants.R. Zakaria and etal in 2020 at [8] they used AERMOD software model to air dispersion of gas turbine power plant emissions in Makassar region where they used the AERMOD software program.

2. Mythology

Three point locations were designated at Figure 1. Below Show the region points of Industrial District in the Kirkuk city in the north of Iraq. From the Northwest and the other from the Southwest. One is located near the Middle East point selection.

Fig.1. The three Locations nearby Industrial District.

Location Point (P1) at the Northwest of Industrial District, whereas location point (P3)is at the Southwest from Industrial District. location point (P2) is located near the Middle East point selection from the Industrial District. Figure 2. Shows the Ideal lattices for Industrial District.

Figure 2. Ideal lattices for Industrial District.

Figure 3. Shows Wind statistics for Industrial District in may. Observing was finished synchronously at all point location during May.

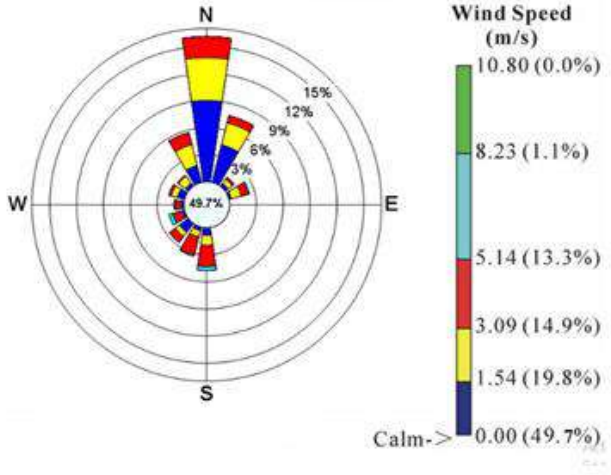

Figure 3. Wind statistics for Industrial District in may.

3. Simulation Result

Result of the air value were confirmed using 3 handset points (P1),(P2)and P3 near the industrial district from the southern of Kirkuk as shown in figure 1 the location of the last region from google map earth. While in figure2. Indicated the locations of the mobile point in the industrial district. Where these monitored points for various pollutants during the last three month from 2019. Atmosphere feature model results were confirmed using 3 (three) handset location points (P1), (P2), and (P3) near the industrial district, as mentioned in previous section and shown at figure1. Stations observed the different pollutants pending the last weeks of May 2019 . Average location point information for different pollutants pending May 2019 presented in Table 1.

Table 1. Averaged data for all points.

LP	CO	CH_4	THC	NMHC
p1	2.98	1.8	3.5	1.71
p2	3.68	2	2.11	0.11
p3	0.48	1.31	1.39	0.09

The (PPM) was measured: carbon monoxide(CO), non- methane volatile organic compounds (NMVOC), CH4 and THC. (P1) showed the more absorption from all pollutants. Average CO was 3.68 PPM at (P2) more than (P1). CH4 and THC at (P1) are better than(P2)and (P3). NMHC was greater at (P1) can be numbered the reason of pollution : Traffic jam, heavy adjustment activities at industrial district; and the momentary bus stopping –place close to the zone.Car also van traffic where stable sources of atmosphere pollution in the industrial district.Location Point (P1) hourly statistical chart averaged information data in May are presented in Figure 4.

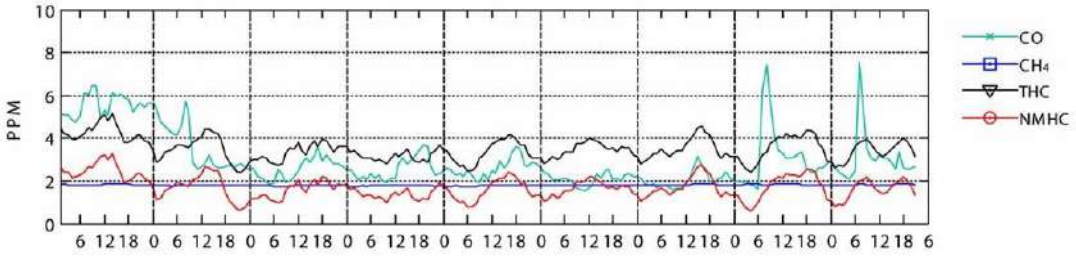

Figure 4. location Point (P1) hourly averaged data May.

As shown from figure 4., statistical plot of contaminated CO is shown in green, while the statistical plot for polluted CH4 is shown in blue, THC polluted in black, and finally NMHC polluted in red. Its clear from the statistical chart in Figure 4. The pollution is in a large proportion and the gases are more intertwined with each other. Location Point (P2) hourly statistical chart averaged information data in May are presented in Figure 5.

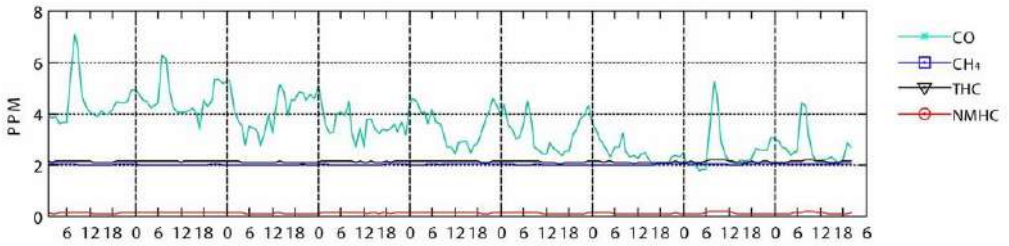

Figure 5.location point (p2) hourly averaged data May

As for the statistical scheme in Figure 5. The pollution is very high with respect to CO and other polluting gases after settling from point p1 first and from the pollutant CO is very low. Study days for (P3) in May are presented at Figure 6.

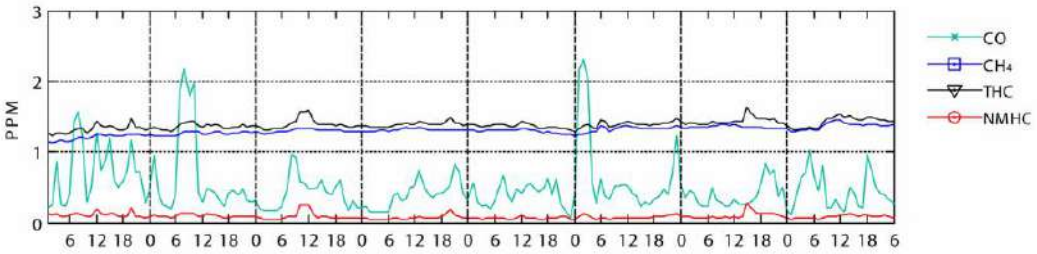

Figure 6. location point (p3) hourly averaged data May

Its clear from the statistical chart in Figure 6. The pollution is in a large proportion and the gases are more intertwined with each other. statistical plot of contaminated CO is shown in green, while the statistical plot for polluted CH4 is shown in blue, THC polluted in black, and finally NMHC still low.

Observing carbon monoxide (CO) are validated by comparing with observed values at the three point sections, by comparing for the concentrations values and measured values, by demonstrating an acceptable model performance. The simulation Results performed that the Industrial District area is facing high concentrations of CO. This is due to the high degree of pollution that this area suffers from due to the large number of factories and factories that need to emit smoke

that pollutes the place, which affects human health as well.

4. Conclusion

The aim of this paper is Study the experiment measurement and the Pollutant of traffic emissions of carbon monoxide (CO) quality around the Industrial District in Kirkuk city in Iraq, where the carbon monoxide (CO) conducted experimentally then showed the Pollutant of traffic emissions for Study of the experiment measurement and the Pollutant of traffic emissions of carbon monoxide (CO) quality around the Industrial District in Kirkuk city in Iraq, where the carbon monoxide (CO) conducted experimentally then showed the Pollutant of traffic emissions for this paper of pollutant dispersion within also around the Industrial District. Mathematical scheming used an (AERMOD) software dispersion model. Observing carbon monoxide (CO) are validated by comparing with observed values at the three point sections, by comparing for the concentrations values and measured values, by demonstrating an acceptable model performance. The simulation Results performed that the Industrial District area is facing high concentrations of CO. This is due to the high degree of pollution that this area suffers from due to the large number of factories and factories that need to emit smoke that pollutes the place, which affects human health as well.

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