Prepare Maps For Greenhouse Gases With Some Weather Elements For Baghdad City Using Data Observation And Arc-GIS Techniques.

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Abstract
Air pollution refers to the release of pollutants into the air that are detrimental to human health and the planet as a whole. In this research, the air pollutants concentration measurements such as Total Suspended Particles (TSP), Carbon Monoxides (CO), Carbon Dioxide (CO₂) and meteorological parameters including temperature (T), relative humidity (RH) and wind speed & direction were conducted in Baghdad city by several stations measuring numbered (22) stations located in different regions, and were classified into (industrial, commercial and residential) stations. Using Arc-GIS program (spatial Analyses), different maps have been prepared for the distribution of different pollutant concentrations of the city of Baghdad. These maps indicate where the highest and lowest concentrations are based on the color gradient of the map.

Key word: green house gases, CIS, Baghdad city, Spatial analysis.

1. Introduction
The air that a human breathe is a mixture of gases, small solid and liquid particles. Some substances come from natural sources while others are caused by human activities such as our use of motor vehicles, domestic activities, power generation and industry. Air pollution occurs when the air contains substances in quantities that could harm the comfort or health of humans and animals, or could damage plants and materials. These substances are called air pollutants and can be either particles, liquids or gaseous [1].

The air pollutants can be classified as primary or secondary pollutants. The primary air pollutants are harmful chemicals which directly enter the air due to natural events and human activities. A secondary air pollutant is a harmful chemical produced in the air due to chemical reaction between two or more components. That is a primary pollutant combines with some component of the atmosphere to produce a secondary pollutant [2].

With the rapid industrialization and urbanization after the industrial revolution, human activities accentuated the degradation of air quality for the last several centuries. Severe air pollutant events drew public attention to the influences of air pollutants on human health, and ideological studies proved the effects on mortality and diseases [3].

1.1 Sources of Air pollution
The sources of air pollution can be either natural or artificial. The natural sources of air pollutants include forest fires, wind erosion of soil, volcanic eruption, evaporation of volatile organic matter and bacterial decomposition. Most of the potential air pollutants artificially added to the atmosphere due to
human activities including the burning of fossil fuels in power plants and industries and in motor vehicles [4].

1.2 Global Warming
Global warming is an environmental phenomenon that guarantees human life and living organisms on earth. Global warming protects the heat energy from the sun from being lost. Otherwise, temperatures would be less than zero by 18 degrees Celsius, making it difficult for organisms to live on Earth. How heat is prevented by blocking thermal energy through a range of gases within moderate proportions, thus contributing to the provision of climatic conditions suitable for living organisms on Earth. Over time, global warming, which protects the planet, has become a serious problem affecting the environment and living organisms. This is caused by negative human activities that have increased the proportion of gases, such as water vapor, methane, chlorine fluoride and carbon dioxide, In the balance of this phenomenon, and cause great danger to the life of living organisms [5,6].

1.3 Spatial Analysis in GIS
The need for spatial interpolation models in the monitoring environment has grown in the past few years. The EPA is using these models to review choices on monitoring network design and to calculate the efficacy of release control programs. Due to the limited number of monitoring sites across the country for ambient concentrations of ozone and fine particles, there is an necessity to use spatial interpolation to predict ambient concentrations in unmonitored locations. Support for these methods has occurred from researchers and state/local/ EPA agencies in recent workshops[7]. The general consent is that it is now probable to model the spatial requirement of air pollution data to reliably predict concentrations in unmonitored locations along with associated uncertainties for use in developing regulatory policy [8].

2. Interpolation Methods
Interpolation is the process of using points with known values or sample points to estimate values at another unknown points. It can be used to predict unknown values for any geographic point data, such as elevation, rainfall, chemical concentrations, noise levels, and so on. The available interpolation methods are listed below[9]. Assessment the air quality of Baghdad city through determining the concentration of air pollutants in the ground level. By using the Arc_GIS program Version 10.3 to prepare maps for distribution of concentration many gases in Baghdad.

3. Results and Discussion
This section includes the results of the measurements and analysis of the pollutants in air at many selected stations of Baghdad city that have been obtained from the sampling operations. study of air quality by using the ground measurements of Baghdad city in order to recognize the concentrations of pollutants in 22 station, the stations are classified in to industrial, commercial and residential, also they are distributed on regular basis to cover most area of Baghdad city.

3.1 Study area
Baghdad city is located in central of Iraq, within the sector of flat sedimentary plains. The border of the municipality of Baghdad encompass fourteen administrative units, eight in Rusafa (east of Tigris river) and six in Karkh (west of Tigris river). It lies on latitude 43 east and longitude 34 north. Baghdad is suited in a plain area of elevation between 31-39 m above sea level. The climate of Baghdad region (which is part of the a plain area at the central of Iraq and has same climatic characteristics) is define a semi-arid subtropical and continental, dry, hot, long summer, cool winter and short spring and autumn
Figure 1. show the satellite image of Baghdad city.

Figure 2. Concentration of carbon monoxide in Baghdad areas.
Figure 3. Geostatistical Analyst of CO.

Figure 4. Concentration of carbon dioxide in the areas of Baghdad.
Figure 5. Geostatistical Analyst of CO2.

Figure 6. Ratio of TSP in Baghdad areas.
Figure 7. Geostatistical Analyst of TSP.

Figure 8. Temperature of Baghdad areas.
Figure 9. Geostatistical Analyst of Temperature.

Figure 10. Ratio of RH in Baghdad areas.
3.2 Conclusion and Recommendations

1. The results indicate that the air pollution levels were severe over the Baghdad city with the concentrations of CO, CO and TSP in the ground measurements, the highest concentrations of TSP, CO, and CO2 are recorded in many stations (4, 6, 8, 10, 16, 17, 18), which are characterized by high population and increase in the number of cars as well as poor fuel, the age of the vehicles and industrial activities inside the city.

2. This measurement was characterizing the local variation of air pollution in Baghdad city.

3. The increased concentrations of CO and CO2 in the air of Baghdad are due to increase in anthropogenic emissions, mainly due to the increase in fossil fuel use for heating, the burning of the fuel used in various types of vehicles, as well as the low quality of fuel and the age of the vehicles and the use of generators, the industrial activity, high population density and traffic volume have direct effect on the increasing criteria air pollutants concentration.

4. Conclusions

As a part of departure the current study has shown some suggestions to limit the Environmental pollution through the following:

1. Increasing the environmental consciousness in the citizens by specified programs that share to limit pollution.

2. Reduce the traffic volume at the main roads especially near the highly polluted locations; reduce the amount of air pollutants emission from the industrial factories and the development of electric train system.

3. Using clean technology in product operations (or processes).

4. Planting trees in the city to delete its environmental effect.

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