Difference Air Pollution between Erbil and Sulaymaniyah in 12 month

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Abstract

This poster presents a comparison of air pollution levels in Sulaymaniyah and Erbil cities in Kurdistan, based on data collected over twelve months at Hasar (Sustainability lab)[1]. Erbil consistently shows higher pollution levels, especially in winter, attributed to urbanization, industrialization, and vehicular traffic. Effective air quality management strategies are crucial to safeguard public health and the environment, necessitating collaboration between stakeholders for sustainable development and cleaner environments.

Introduction

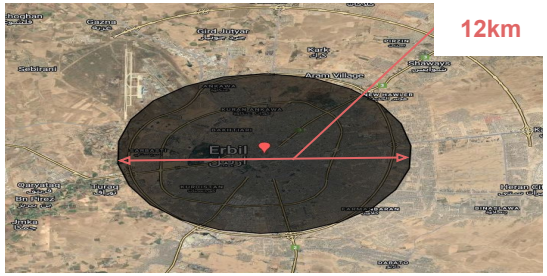


Figure1: Erbil 12 km

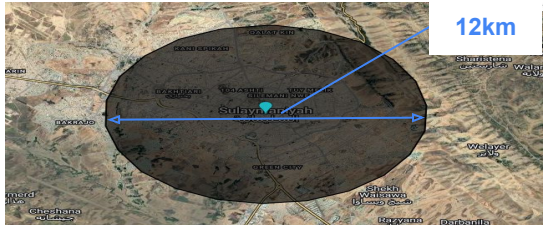


Figure 2: Sulaymaniyah 12 km

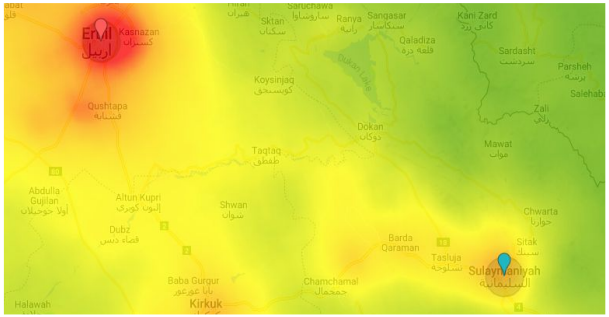


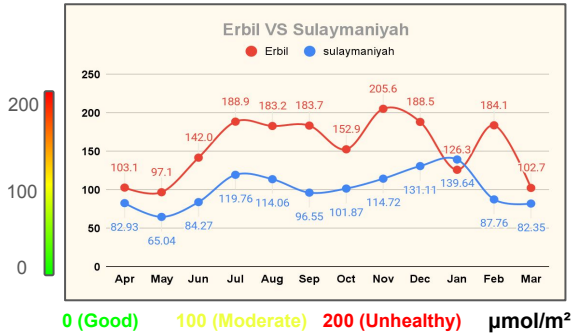
Figure 3: Air pollutant concentration of SO2 in Erbil and Sulaymaniyah

Methods and materials

- **Area Selection:** Utilizing Google Earth Engine[2], a circular area with a radius of 6 kilometers, centered on the city, was delineated for analysis.
- **Data collection** was conducted at the Sustainability Lab on the Hasar website, utilizing the Air Quality Monitoring Platform. The platform incorporates metrics such as Aerosol Optical Depth (AOD), derived from satellite observations, to assess air quality. High AOD values indicate increased air pollution levels, including fine particulate matter (PM2.5) and other pollutants.[3]
- **Data Analysis**: The collected data underwent analysis to calculate the average pollution levels for each month, providing insights into seasonal variations in air quality.
  Find average by Geometric mean[4] formula : $G.M. = \sqrt[n]{\prod_{i=1}^{n} x_i}$

Scan this for references

Results



0 (Good) **100 (Moderate)** **200 (Unhealthy)** **µmol/m²**

Discussions

The data indicates that Sulaymaniyah typically maintains lower pollution levels than Hawler (Erbil), with this trend being most noticeable during the winter months. To address these differences effectively, focused interventions and collaborative initiatives are necessary to advance sustainable development goals and safeguard public health.

Conclusion

The data comparison between Sulaymaniyah and Erbil underscores Sulaymaniyah consistently lower pollution levels attributed to factors such as smaller transportation networks and reduced industrial activity. However, Erbil exhibits higher pollution levels, particularly evident during winter months, indicating a concerning trend. If unchecked, Sulaymaniyah risks converging with Erbil's pollution levels. Thus, proactive measures are crucial to sustain Sulaymaniyah cleaner environment and prevent a similar scenario in the future.