



Monitoring and Evaluation of Tropospheric NO₂ Columns Density and Ultraviolet Aerosol Index (UVAI) over Iraq during the Outbreak of COVID-19 Using Remote Sensing and GIS

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Abstract: Since the discovery of COVID 19 coronavirus in January 2020 and the researchers everywhere try to find a reason behind spreading of coronavirus over the world. The important question here is, does air pollution can be a good medium to increase the infection rate and spread of COVID-19. In present work, ESA remote sensing data, specifically, Sentinel 5p Level 2 data to study the air pollutants with high spatial-temporal resolution was analyzed. We used the tropospheric NO₂ vertical column density, along with UV Aerosol Index (UVAI) were used to investigate the role of changing in the air pollutants on the spread of COVID-19. The continuous decrease in the in tropospheric nitrogen dioxide NO₂ amounts in all cities in Iraq during the lockdown measures. At the same time, the results illustrate a significant increase in UV Aerosol Index in all cities in Iraq. More specifically, the cities that have the highest levels of air pollution are Baghdad and Basra. The maximum declination in NO₂ was 43% lower than that from 1-31 January 2020. On the other hand, we found a significantly large increase ratio in UVAI and the largest increase is 239.8 and 221.2% in June and July respectively. In the end, we concluded that the implementation control actions in Iraq have been effectively contributed to reducing the current air pollution situation and increasing the air quality but unfortunately, the effectiveness of the actions didn't help to reduce the spread of the COVID-19 pandemic and decrease the number of cases of coronavirus in Iraq.

Keywords: COVID-19, UVAI, NO₂, Sentinel 5P, GIS
