

Mapping Geo-Spatial Examination of Pre-and Post-Quarantine Nocturnal Illumination amidst the COVID 19 in the United Arab Emirates

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Abstract:

The COVID-19 pandemic has resulted in the adoption of quarantine measures aimed at restricting the movement of people to prevent the spread of the disease. The paper examines the pre- and post-quarantine social activities amidst the pandemic in the United Arab Emirates as indicated by nocturnal lighting or illumination. Lighting, for the purpose of this study, refers to artificial light in dwellings, office towers, roads, and so on, to achieve practical or aesthetic effects. The authors employed a methodology using geographical information systems (GIS) technology to capture and analyze spatial and geographic data. For this purpose, night-time satellite images and analogue maps were used to create the spatial database of the GIS for the study area. Using GIS advanced analytical functionality (Zonal Statistics for each emirate), visibility analysis was implemented. The output from this analysis are a series of maps reflecting the change in light emission in the emirates (Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain) during February 2020 (pre-quarantine) and April 2020 (post-quarantine). The findings demonstrate a decrease in lighting during the post-quarantine period in Dubai and Ajman and an increase in the remaining emirates. Furthermore, the increase in the overall light emission in Abu Dhabi is attributed to an increase in lighting on the offshore oil fields (see Map).

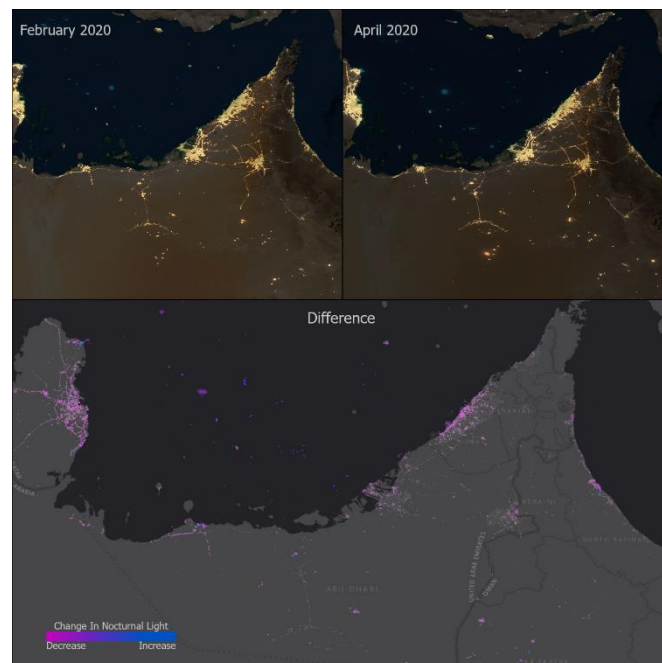


Figure 1. Map – Change in Nocturnal Light in the United Arab Emirates.