Muhammad Zeeshaan
Shahid
College of Earth and Environmental Sciences, University of the Punjab, Lahore Pakistan
Poster
Emissions of atmospheric pollutants are rapidly increasing over South Asia. A greater understanding of seasonal variability in aerosol concentrations over South Asia is a scientific challenge and has consequences due to a lack of monitoring and modelling of air pollutants. Therefore, this study investigates aerosol patterns and trends over some major cities in the Indo-Gangetic Plain of the South Asia, i.e., Islamabad, Lahore, Delhi, and Dhaka, by using simulations from the Modern -Era Retrospective Analysis for Research and Applications, version 2 (MERRA-2) model and satellite measurements (Moderate Resolution Imaging Spectroradiometer, (MODIS)) from 2000 to 2020. The results show that seasonal MODIS–aerosol optical depth (AOD) during 2000?2020 in Lahore is 0.5, 0.52, 0.92, and 0.71, while in Islamabad 0.25, 0.32, 0.45, and 0.38, in Delhi 0.68, 0.6, 1.0, and 0.77, and in Dhaka 0.79, 0.75, 0.78 and 0.55 values are observed during different seasons, i.e., winter, spring, summer, and autumn, respectively. The analysis reveals a significant increase in aerosol concentrations by 25%, 24%, 19%, and 14%, and maximum AOD increased by 15%, 14%, 19%, and 22% during the winter of the last decade (2011–2020) over Islamabad, Lahore, Delhi, and Dhaka, respectively. In contrast, AOD values decreased during spring by ?5%, ?12%, and ?5 over Islamabad, Lahore, and Delhi, respectively. In Dhaka, AOD shows an increasing trend for all seasons. Thus, this study provides the aerosol spatial and temporal variations over the South Asian region and would help policymakers to strategize suitable mitigation measurements.
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