

Proceeding Paper

# Meteorological Characteristics Associated with Air Pollution in Bucharest Greater Area, Romania <sup>†</sup>

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<sup>†</sup> Presented at the 3rd International Electronic Conference on Atmospheric Sciences, 16–30 November 2020; Available online: <https://ecas2020.sciforum.net/>.

**Abstract:** This study examines how the mass concentrations of gaseous species (NO, NO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub>, SO<sub>2</sub>, CO, C<sub>6</sub>H<sub>6</sub>) and particulate matter PM<sub>10</sub>, PM<sub>2.5</sub> (particulate matter less than 10 µm and less than 2.5 µm) might be linked with precipitation characteristics using an observational data set for five years (2015–2019) in the Bucharest metropolitan area. Particulate matter data and meteorological parameters at each site (atmospheric pressure, relative humidity, temperature, solar radiation, wind speed and direction) were extracted from the publicly available Romanian National Air Quality Database. Meteorology was complemented with radar products (images, reflectivity, echotops) from the C-band meteorological radar of the National Meteorological Administration in Bucharest. Change in aerosol mass concentration during the evolution of the precipitation events was investigated. The aerosol scavenging coefficients were estimated and compared with those in the scientific literature. Correlations between meteorological parameters and ambient pollutant levels were analyzed. The connection between meteorological phenomena occurrence and air mass origin was investigated by computing air mass backward trajectories for a 72-h period using the HYSPLIT (Hybrid Single-Particle Lagrangian Integrated Trajectory) model. Results demonstrate the good capability of the convective precipitating systems to clear the atmosphere of fine aerosol and gaseous pollutant species. The obtained results are important for the modeling of air quality and for investigations of aerosol wet deposition processes.

**Citation:** Hriscan, T.; Chirita, S.; Burcea, M.; Calcan, A.; Corbu, M.; Iorga, G. Meteorological Characteristics Associated with Air Pollution in Bucharest Greater Area, Romania. *Environ. Sci. Proc.* **2021**, *4*, 22. <https://doi.org/10.3390/ecas2020-08128>

Academic Editor: Anthony R. Lupu

Published: 13 November 2020

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**Keywords:** air pollution; radar; meteorology; precipitations

**Supplementary Materials:** The supplementary file is available online at <https://www.mdpi.com/article/10.3390/ecas2020-08128/s1>.

**Acknowledgments:** The authors thank the financial support from EEA-RO-NO-2019-0423 and UB198 projects and to National Meteorological Administration for access to the RADAR database. NOAA Air Resources Laboratory for HYSPLIT transport model available at READY website <https://www.ready.noaa.gov> is also acknowledged. The data regarding ground-based air pollution and local meteorology was extracted from the public available Romanian National Air Quality Database, [www.calitateaer.ro](http://www.calitateaer.ro), last accessed in August 2020.