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## Changes of air pollutants' concentrations in selected Romanian cities during the pandemic year 2020

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Present research contributes to scientific knowledge concerning spatial and temporal variation of major air pollutants with high resolution at the country scale bringing statistical information on concentrations of NO<sub>x</sub>, O<sub>3</sub>, CO, SO<sub>2</sub> and particulate matter with an aerodynamic diameter below 10 μm (PM<sub>10</sub>) and below 2.5 μm (PM<sub>2.5</sub>) during the pandemic year 2020 using an observational data set from the Romanian National Air Quality Network in seven selected cities spread out over the country. These cities have different level of development, play regional roles, might have potential influence at European scale and they are expected to be impacted by different pollution sources. Among them, three cities (Bucharest, Brașov, Iași) appear frequently on the list of the European Commission with reference to the infringement procedure that the European Commission launched against Romania in the period 2007-2020 regarding air quality.

Air pollutant data was complemented with local meteorological parameters at each site (atmospheric pressure, relative humidity, temperature, global solar radiation, wind speed and direction). Statistics of air pollutants provide us with an overview of air pollution in main Romanian cities. Correlations between meteorological parameters and ambient pollutant levels were analyzed. Lowest air pollution levels were measured during the lockdown period in spring, as main traffic and non-essential activities were severely restricted. Among exceptions were the construction activities that were not interrupted. During 2020, some of selected cities experienced few pollution episodes which were due to dust transport from Sahara desert. However, in Bucharest metropolitan area, some cases with high pollution level were found correlated with local anthropogenic activity namely, waste incinerations. Air mass origins were investigated for 72 hours back by computing the air mass backward trajectories using the HYSPLIT model. Dust load and spatial distribution of the aerosol optical depth with BSC-DREAM8b v2.0 and NMBM/BSC-Dust models showed the area with dust particles transport during the dust events.

The obtained results are important for investigations of sources of air pollution and for modeling of air quality.

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