



Evaluation of particulate matter PM_{2.5}/PM₁₀ air pollution in the some of Ukraine and China cities

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Air pollution by particulate matter (PM) is often a critical disaster in many big cities in the world. In Europe, the PM_{2.5} monitoring network operates by stations in 15 countries, but not in Ukraine. According to the Ukraine Central Geophysical Observatory measurements, the mean value of total suspended particles (TSP), an archaic regulatory measure, in the air of Ukrainian cities is 120 $\mu\text{g}/\text{m}^3$ with peak values reached 1800 $\mu\text{g}/\text{m}^3$ in 2016. In Kyiv city daily mean TSP values vary from 100 to 200 $\mu\text{g}/\text{m}^3$. However, these TSP values are not divided by PM_{2.5} and PM₁₀. To cover the gap of PM_{2.5} monitoring, we have recently started in situ measurements of PM_{2.5}/PM₁₀ mass concentration, which shows a general atmosphere pollution in the boundary layer. For preliminary evaluations of PM_{2.5}/PM₁₀ we use the laser diode monitor SDL607 for measurements in several Ukraine cities in the 2016–2017 period. In the report we discuss the results of the PM pollution evaluation in Kyiv, Kharkiv and Lviv cities where PM values are often higher than maximum permissible level according to European standards (25 $\mu\text{g}/\text{m}^3$). We also compare the PM_{2.5} data in Ukraine cities with the some of China cities: Changchun, Shanghai, Hefei, where we have provided PM measurements recently. The proposal to establish of PM_{2.5}/PM₁₀ measurements in Kyiv with an appropriate informing network according to the Project SMURBS of ERA-Planet Horizon 2020 is discussed. To improve the monitoring quality of aerosol pollution we also consider the results of combined ground-based AERONET and satellite data together with in-situ PM_{2.5}/PM₁₀ measurements, as well as the simulation of the spatial-temporal distribution of aerosol particles by the chemical-transport model GEOS-Chem. This approach will help to reveal the information on atmospheric aerosol contamination on the monthly mean basis.

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