

EGU21-8930

<https://doi.org/10.5194/egusphere-egu21-8930>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Changes on atmospheric electric field and PM 2.5 during the COVID-19 measures at Xanthi on 2020 compared to the 2019 measurements and depending on the circulation weather types

Athanasios Karagioras¹, Andrei Nita², and Iasonas Stavroulas³

¹School of Engineering, Democritus University of Thrace, Lab. of Atmospheric Pollution and Pollution Control Engineering of Atmospheric Pollutants, Dept. of Environmental Engineering, Xanthi, Greece (atkarag@env.duth.gr)

²National Meteorological Administration, Department of Research and Meteo Infrastructure Projects, Bucharest, Romania

³National Observatory of Athens, Athens, Greece

We present here the results of a study on the changes of PM 2.5 and atmospheric electric field (Potential Gradient, PG) during COVID-19 measures implemented at Xanthi in comparison with the 2019 measurements according to 10 classes of circulation weather types (CWT). There are two study periods. The first period was from February to May of both 2019 (no lockdown measures were implemented) and 2020 (under lockdown), and the second period was from September to December of both 2019 (no lockdown) and 2020 (lockdown). For both study periods of 2020, Xanthi was subjected to additional measures, such as curfew. Specifically, from 01/04/2020 to 27/04/2020 from 20:00 to 08:00 and from 13/11/2020 to 31/12/2020 from 21:00 to 05:00. These periods were selected according to the two lockdown periods of 2020 at Xanthi and the same periods were selected for the previous year. PM 2.5 was measured in two different locations, one in the city center of Xanthi and the other is located at a semirural location approximately 2 kilometers from the city center, where also PG was measured. We present results in comparison with mean PM 2.5 and mean PG per circulation weather type on no lockdown and lockdown periods of 2019 and 2020 respectively, at Xanthi. There were changes on mean PM 2.5 and mean PG per circulation weather type between the two years. A moderate decrease of PM 2.5 per CWT between the two periods of lockdown on 2020 due to COVID-19 measures and the same periods for 2019 is observed when there was neither lockdown nor curfew. Fluctuations and a variability on mean PG per CWT are also observed between the two years. We acknowledge support of this work by the project "PANhellenic infrastructure for Atmospheric Composition and climatE change" (MIS 5021516) which is implemented under the Action "Reinforcement of the Research and Innovation Infrastructure", funded by the Operational Programme "Competitiveness, Entrepreneurship and Innovation" (NSRF 2014-2020) and co-financed by Greece and the European Union (European Regional Development Fund).