

REGIONAL CHANGES IN THE DOMINANT AEROSOL TYPE OVER EUROPE DURING THE ACTRIS COVID-19 CAMPAIGN

K. A. Voudouri⁽¹⁾, D. Nicolae⁽²⁾, L. Mona⁽³⁾, G. D'Amico⁽³⁾, N. Papagiannopoulos⁽³⁾, E. Marinou⁽⁴⁾, A. Kampouri^(4,5), J. Vasilescu⁽²⁾, C. Talianu⁽²⁾, I. Stachlewska⁽⁶⁾, R. Fortuna⁽⁶⁾, M. Sicard⁽⁷⁾, A. Rodriguez⁽⁷⁾, S. Romano⁽⁸⁾, M. R. Perrone⁽⁸⁾, A. Floutsi⁽⁹⁾, X. Shang⁽¹⁰⁾, S. Bohlmann⁽¹⁰⁾, N. Siomos^(1,4,11), A. Gialitaki^(1,4), A. Tsekeri⁽⁴⁾, D. Balis⁽¹⁾ and V. Amiridis⁽⁴⁾

⁽¹⁾ *Laboratory of Atmospheric Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece*

⁽²⁾ *National Institute of R&D for Optoelectronics (INOE2000), Magurele, Romania*

⁽³⁾ *Consiglio Nazionale delle Ricerche, Istituto di Metodologie per l'Analisi Ambientale, Potenza, Italy*

⁽⁴⁾ *National Observatory of Athens ISAARS, Athens, Greece*

⁽⁵⁾ *Department of Meteorology and Climatology, Aristotle University of Thessaloniki, Greece*

⁽⁶⁾ *University of Warsaw, Faculty of Physics, Warsaw, Poland*

⁽⁷⁾ *CommSensLab, Universitat Politècnica de Catalunya, Barcelona, Spain*

⁽⁸⁾ *University of Salento, Mathematics and Physics Department, Lecce, Italy*

⁽⁹⁾ *Leibniz Institute for Tropospheric Research, Leipzig, Germany*

⁽¹⁰⁾ *Finnish Meteorological Institute, Kuopio, Finland*

⁽¹¹⁾ *Meteorological Institute, Ludwig Maximilian Universität München, LMU, Munich, Germany*

The coronavirus (COVID-19) spread around the world, lead to the application of restrictions and strict stay-at-home mandates in the majority of the European countries, during the first quarter of 2020. An intensive observation campaign was organized during May 2020 by the European Aerosol Research Lidar Network (EARLINET), part of ACTRIS (Aerosols, Clouds and Trace gases Research Infrastructure), to investigate possible aerosol type changes in the lower troposphere due to the decreased emissions during the COVID-19 lockdown and relaxation period. The current work is part of an extended study related to potential changes in the aerosol load over Europe. The dominant aerosol types are identified from aerosol classification schemes (e.g., NATALI, Mahalanobis) that are applied to aerosol lidar - derived intensive products. The aerosol types within May 2020 are then compared to (i) the aerosol types from the period January-May 2020 and (ii) the aerosol types from the reference period between 2015-2019. The results will be grouped based on: (i) predefined regional clusters (e.g., Central Europe, East Europe, North Europe, East Mediterranean, West Mediterranean), (ii) the aerosol sources affecting each station (urban/rural), (iii) climatological air mass transportation patterns and (iv) aerosol layer height, so as to better interpret the possible aerosol changes. Further discussion along with the climatological meteorological conditions and the air mass trajectory analysis is made.