



## Aerosol type assessment at Magurele (Romania) based on remote sensing measurements and large scale circulation patterns

Simona Andrei (1), Nicu Barbu (2,3), Anca Nemuc (1), Ioannis Binietoglou (1), Alexandru Dandocsi (1,4), Horatiu Stafanie (5,2,1)

(1) National Institute of R&D in Optoelectronics, Remote Sensing Department, Magurele - Bucharest, Romania (simona.andrei@inoe.ro), (2) University of Bucharest, Faculty of Physics, Bucharest - Magurele, Romania, (3) National Meteorological Administration, Bucharest, Romania, (4) University Politehnica of Bucharest, Faculty of Applied Sciences, Bucharest, Romania, (5) "Babeş-Bolyai" University of Cluj-Napoca, Faculty of Environmental Science and Engineering, Cluj-Napoca, Romania

A qualitative evaluation of aerosols detected at Magurele (Romania) in correlation with air masses arriving to this region is presented. The aim of this study is to highlight the way the aerosols identified in the area of observation differ depending on its source and transport path. To establish the origin of atmospheric aerosols, two classification method were used, one based on Lagrangian approach (back trajectories analysis), and a second based on Eulerian approach (WLK COST733 catalogue). The analyzed period was from 2012 – 2014 and the assessments were carried out both annual and seasonal evaluation. Additionally, the aerosols features within each circulation type had been evaluated in terms of mean aerosol optical depth (AOD) and Angstrom exponent (AE). The results emphasized the presence of aerosols within three main atmospheric layers: first one (between 0.5 and about 2 km) can be assimilated with the PBL, the second layer (between 2 and 4 km) has been detected in 44% of the analyzed cases, and the third layer (between 4 and 6 km) was identified only in 8% of cases. Occasionally (one case detected), the presence of a fourth layer has been noticed at heights of over 10 km. Within the first two layers the dominant types are continental, smoke and their mixture, while mineral aerosol particles dominate the third and fourth layers.

Keywords: aerosols type, large scale circulation