



Application of the LIRIC algorithm for the characterization of aerosols during the Airborne Romanian Measurements of Aerosols and Trace gases (AROMAT) campaign

Horatiu Stefanie (1,2,4), Doina Nicolae (1), Anca Nemuc (1), Livio Belegante (1), Florica Toanca (1,4), Nicolae Ajtai (2,3), and Alexandru Ozunu (2)

(1) National Institute of Research and Development for Optoelectronics, Magurele, 077125, Romania, (2) Faculty of Environmental Science and Engineering, Babeş-Bolyai University, Cluj-Napoca, 400294, Romania, (3) Consiglio Nazionale delle Ricerche, Istituto di Metodologie per l'Analisi Ambientale, Potenza, Italy, (4) Faculty of Physics, University of Bucharest, P.O.BOX MG-11, Magurele, Bucharest, Romania

The ESA/ESTEC AROMAT campaign (Airborne Romanian Measurements of Aerosols and Trace gases) was held between 1st and 14th of September 2014 with the purpose to test and inter-compare newly developed airborne and ground-based instruments dedicated to air quality studies in the context of validation programs of the forthcoming European Space Agency satellites (Sentinel 5P, ADM-Aeolus and EarthCARE). Ground-based remote sensing and airborne in situ measurements were made in southern Romania in order to assess the level and the variability of NO₂ and particulate matter, focusing on two areas of interest: SW (Turceni), where many coal based power plants are operating, and SE (Bucharest), affected by intense traffic and partially by industrial pollution.

In this paper we present the results obtained after the application of the Lidar - Radiometer Inversion Code (LIRIC) algorithm on combined lidar and sunphotometer data collected at Magurele, 6 km South Bucharest. Full lidar data sets in terms of backscatter signals at 355, 532 and 1064 nm, as well as depolarization at 532 nm were used and combined with Aerosol Robotic Network (AERONET) data, in order to retrieve the profiles of aerosol volume concentrations, separated as fine, spherical and spheroidal coarse modes.

Preliminary results showed that aerosols generated by traffic and industrial activities were present in the Planetary Boundary Layer, while biomass burning aerosols transported from the Balkan Peninsula were detected in the upper layers.

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