Geophysical Research Abstracts
Vol. 15, EGU2013-6107, 2013
EGU General Assembly 2013

Atmosphere aerosol transfer and sources localisation in the East European region by AERONET data

Gennadi Milinevsky (1), Vitaly Kabashnikov (2), Aleksandr Aculinin (3), Vassyl Danylevsky (1), Dariya Kalinskaya (4), Elena Korchemkina (4), Nataliya Miatselskaya (2), Andrii Bovchaliuk (1), Alexander Pietruczuk (5), Piotr Sobolewsky (5), and Anatoly Chaikovsky (2)

(1) Kyiv National Taras Shevchenko University, Space Physics Laboratory, Physics Department, Kyiv, Ukraine (genmilinevsky@gmail.com, +38 050 3525498), (2) Institute of Physics National Academy of Sciences of Belarus, Minsk, Belarus, (3) Institute of Applied Physics Academy of Sciences of Moldova, Kishinev, Moldova, (4) Marine Hydrophysical Institute National Academy of Sciences of Ukraine, Sevastopol, Ukraine, (5) Institute of Geophysics Polish Academy of Sciences, Warsaw, Poland

The typical transfer paths of atmospheric aerosol particles registered at five AERONET network stations equipped by sunphotometers in Belsk, Kyiv, Kishinev, Minsk, Sevastopol, were investigated by the cluster analysis and back trajectory methods. The transfer of fine- and coarse mode particles is considered in warm and cold times of year. The territories, where the air masses bringing to the monitoring stations the aerosol with the total volume column content exceeded mean values in 1.5 times, were revealed. For the same stations the cases of enhanced fine and coarse aerosol faction concentrations and correspondent source regions have been revealed by the method of trajectory statistics. The enhanced aerosol concentration areas were identified with potential sources. In the average for all stations the air masses with the large concentration values of coarse mode aerosol particles were brought from the Donetsk, Rostov, and Kharkiv regions. The fine mode aerosol fraction comes mostly from Tambov, Voronezh and Kharkov areas. The localized aerosol source regions are partially correspond to the European Monitoring and Evaluation Programme (EMEP) data for East Europe. The cause of difference between calculated regions of enhanced aerosol content releases and sources of particle emission by EMEP data are discussed.

This publication is based on work supported by US CRDF Award No. UKG2-2969-KV-09, by the projects F41/106-2012 Derzhinformnauky of Ukraine and the project F11-88 of Belarusian Republican Foundation for Fundamental Research.