Geophysical Research Abstracts
Vol. 13, EGU2011-6067, 2011
EGU General Assembly 2011

Spatio-temporal variations of chemical composition of atmospheric aerosols over background region of southern part of Western Siberia

Mikhail Yu. Arshinov (1,2), Denis V. Simonenkov (1), Boris D. Belan (1), and Gennadii N. Tolmachev (1)

(1) V.E. Zuev Institute of Atmospheric Optics, SB RAS, Tomsk, Russian Federation (michael@iao.ru, +73822492086), (2) Tomsk State University, Tomsk, Russian Federation

In this paper we present the results 13-year study of aerosol chemical composition over background region of Siberia. The Antonov-30 "OPTIK-E" airborne laboratory of the Institute of Atmospheric Optics has been carrying out regular (monthly) airborne sounding over southern regions of West Siberia since July 1997. Airborne surveys are mainly performed over forested area near the boundary of Novosibirsk and Altai regions in the 500 to 7000 m atmospheric layer. Aerosols are sampled onto FPP filters, which then analyzed at the Laboratory of Environmental Monitoring of Tomsk State University. The volume of air aspirated through each filter is 1-4 m^3. Physico-chemical techniques of quantitative analysis are used to analyze the chemical composition of the aerosol (Si, Al, Fe, Mg, Ca, Ti, Cu, Mn, Cr, Ag, Pb, Ni, Ba, Sn, V, Mo, Co, B, Be, K^+, Na^+, Cl^-, SO_4^{2-}, NO_3^-, Br^-, F^-, NH_4^+).

Statistic analysis of mass concentrations of ions and elements showed that empiric distributions for majority components can be described by logarithmically normal law. It is verified by high values of correlation coefficients and χ^2-criterion between empiric and theoretical distributions.

This work was funded by Presidium of RAS (Program No 4), Brunch of Geology, Geophysics and Mining Sciences of RAS (Program No 5), Russian Foundation for Basic Research (grants No 11-05-00470 and 11-05-00516), and Ministry of Education and Science of Russia (State Contracts No 02.740.11.0674 and 14.740.11.0204).