



CO pollution anomaly over Moscow and rural area in summer 2010, July - August.

Vadim Rakitin (1), Anatoly Dzhola (1), Evgeny Grechko (1), Ekaterina Fokeeva (1), Roman Shumsky (1), and Leonid Yurganov (2)

(1) Obukhov Institute of Atmospheric Physics, RAS, Moscow, Russian Federation (vadim@ifaran.ru), (2) Joint Center for Earth System Technology, University of Maryland Baltimore County, Baltimore, MD, USA

The report presents data from two ground-based spectrometers and two non-dispersive IR analyzers in Moscow city and outskirts (Zvenigorod, 53 km west from the city) during strong forest fires at central Russia, summer 2010. Period July 20 – August 20 was characterized by very high CO total column (TC) and surface CO concentrations. These data were compared to TC measured by three space-based sounders. TC measured by ground-based spectrometers exceeded yearly means more than 3 times; surface concentrations exceeded yearly means more than 10 times for Moscow and more than 20 times for Zvenigorod. As a contrast to normal (without fires) situations the surface measurements demonstrated a high correlation between TC and local concentration of CO for both sites. Analyzing the boundary layer (BL) parameters we concluded that the main part of the pyrogenic pollution has been located at relatively low tropospheric layer.

CO TC retrieved from the data of space-based sounders appears to be 2-3 times less than those obtained from the ground. That is due to a very low sensitivity of IR sounders in the BL. Comparison of TC measured from the ground and from space in conditions of strong pyrogenic pollution near the surface (up to 10 ppm daily mean) allowed us to give a better estimate of the error of satellite sounders over wild fires.