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Comparison of orbital and ground based spectroscopic measurements of CO and CH4 total content with using of simplest dispersion and trajectory analysis

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The results of ground-based regular spectroscopic measurements of CO total content (TC) over Moscow and Zvenigorod (53 km to the West from the Moscow measurement site) during 2010-2012 and over ZOTTO station (Central Siberia) for summer periods of 2010-2012 years for typical and anomalous (during wild fires) emission rates are presented and compared with satellite TC data (sounders MOPITT, AIRS, IASI). Using simplest dispersion and trajectory models locations of transported main pollution air masses were calculated. This approach allows us to obtain empiric coefficients of correlation between ground-based and satellite CO and CH4 TC data. Correlation with results of ground-based spectrometers was estimated for all three space-borne instruments. The comparison has demonstrated good agreement of satellite and ground-based data in low pollution conditions and systematic underestimation of satellite CO TC (130-200 %) in condition of intense surface emissions.