



Investigation of long term and seasonal variations of climatically active gases (CO and CH₄) over the central Russia, Northern Caucasus and Antarctica

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Results of the measurements of the total contents of carbon monoxide and methane by solar absorption spectroscopy are presented. The points of measurements were Zvenigorod Scientific Station near Moscow, Mountain Scientific Station (Northern Caucasus) and Antarctica St. Novolazorevskaya (Antarctica). The analysis of the full 38-year long series for Zvenigorod reveals an average trend of 0.1% for the whole period. The rate of growth of CO was not constant. For the period of 1970-1983 it was near 0.8% per year. For 1984-2000 trend was equal to -0.3% per year and for the period of 2001-2007 it was near -0.6% per year. The average total content of CO in Antarctica for January-March 2003-2007 was 0.027 atm.cm, which is 4 times lower than in Zvenigorod Station. The total contents of CO in Mountain Station in February-March 2007 were near 0.095 atm.cm, which is 10% lower than in Zvenigorod. Analysis of 34-year total column CH₄ observations revealed positive linear trend between 1974 and 2007 of about 0.5 % per year, but for the last 7 years it was equal to 0.2%. There was carried out a comparison with satellite data received according to programs EOS-1 (MOPITT) and ENVISAT (SCIAMACHY). Since July 2007 regularly measurements of near surface concentrations of CO, CH₄, NMHC, NO and NO₂ were started and results are discussed.