



Trends and variability of trace gases near Saint-Petersburg (Russia)

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The description of the program for studying characteristics of atmospheric gas composition (seasonal variations, trends and anomalies) in Saint-Petersburg State University and Russian State Hydrometeorological University (RSHU), based on ground-based and satellite measurements of various types and numerical simulation, is given. Ground-based measurements include local measurements of near-surface concentrations by analyzers (O_3 , CH_4 , NO_x , CO_2 , CO , H_2O measurements) and spectroscopic measurements of the total content by Bruker IFS 125 HR-Fourier spectrometer (~ 20 trace gases) and UV DOAS . Satellite data cover measurements from Russian and international satellites and instruments (FTIR-2, IASI, OMI, SBUV, GOME, GOSAT, OCO-2, etc.). Errors of different types of measurements and devices are given. Daily, monthly, seasonal variations of various gases, as well as long-term trends in their contents are analyzed. Examples of anomalies in the contents of ozone and other gases, as well as the results of the numerical simulation using various RSHU three-dimensional models are given.