



Some seasonal characteristics in atmospheric methane concentration in the beginning of the XXI century

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Global average value of atmospheric methane concentrations have been increasing during the XX century, but this growth nearly stopped with the beginning of the 2000th. Such “stable” situation is the proper time for studying the seasonal cycle and extreme changes of air methane concentration. One of the most interesting periods for such investigations is autumn and winter 2006/07 [1] when a number of weather abnormalities (warm air temperature up to above 0°C, almost permanent cloudiness and absence of snow cover, and so on) in Moscow region created very specific conditions for air methane existence.

Temporal variations in air methane concentration within the Moscow city have been studied using the data of observations at 12 stations of Moscow municipal environmental monitoring agency “Mosecomonitoring” in 2004–2008 [2]. It was found that near-surface air concentration of methane was much higher this time than few years before and after.

The values of cold season methane concentrations in Moscow region have been compared with similar data measured in the North of Kola Peninsula (at WMO GAW station “Teriberka”), in the Sankt Petersburg region (the two stations of Roshydromet), in Finland and Hungary (the stations of NOAA GMD Carbon Cycle Sampling Network). Winter maxima (more or less) of methane concentrations were revealed almost each year at all these stations, but not everywhere they were simultaneous and as high as those had been found in Moscow.

The reasons of winter 2006/07 high methane concentrations in Moscow and other regions of Northern Eurasia may be special weather conditions which could cause both decrease of air methane sinks and increase of methane emissions from natural and anthropogenic sources. Perhaps, the late growth of global atmospheric methane concentration after 2007 [3] was partly produced by those seasonal anomalies in the Northern Hemisphere.

References:

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