INVESTIGATION OF ATMOSPHERIC COMPOSITION TRENDS OVER EURASIA BASED ON GROUND-BASED AND SATELLITE SPECTROSCOPIC OBSERVATIONS


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Trends in CO and CH\textsubscript{4} total column (TC) over domain “Eurasia” (0–180° E., 0–85° N) are analyzed for different time-periods and seasons. Results of orbital observations are compared with estimates based on ground-based spectroscopic measurements on NDACC, IAP RAS and SPSU stations located in studied domain. Decrease of CO TC with the rate of 1,7-2,8%/yr (in dependence of analyzed city, time-period and season) was obtained in Moscow and Beijing megacities before and after 2007. Annual background CO TC had decreased 0,05−1,8 %/yr during time-period of 2003-2016 in dependence of region. Close to 2007-2008 years we obtained CO TC increase in summer and autumn seasons in most of middle- and high-altitude regions of Eurasia as well as growth of CH\textsubscript{4} especially over subtropical and tropical belt of Eurasia.

Positive trends in CO TC in warm seasons (at least over Europe) cannot be explained by growth of anthropogenic or summer wild-fires emissions. One of possible reasons could be the changes in the entire system of global photochemical occurring against the backdrop of global climate change, in particular, changes in the ratio of "sources/sinks" for small atmospheric components, at example for CO.

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Reference


