Remote Sensing of CO Column Abundance in the Atmosphere by Using Solar Spectroscopic Method

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Measurements of CO column abundance in the atmosphere over Beijing by using a solar infrared absorption method have been conducted since 1992. The aim of these measurements is to estimate the impact of human activities on CO variation behaviors in the atmosphere and to validate CO data obtained by the satellite inversion method.

Some variation characteristics of CO column abundance in the atmosphere over Beijing are given and discussed in this paper. Besides, since the measurements were conducted every year (during time period of late autumn and early winter) and under different weather conditions, so the background value and variation trend of CO content for the last 10 years are analyzed over Beijing area. Results show that, on average, CO content in the atmosphere over Beijing area maintains a high level of 0.130ą“0.160 atm·cm all along with variation range of 0.077ą“0.356 atm·cm in winter and 0.083ą“0.191 atm·cm in summer respectively. Significant diurnal variations of CO content were observed both in the summer and winter times in Beijing area in the most days, that are mainly caused by variations in the meteorological situation. No clear annual variation tendency of CO column content was observed since 1996, the year average is around 0.150 atm·cm with evident increased CO value in 1998 during the observation period.