

Infrared Spectroscopic Measurements of Tropospheric Carbon Monoxide above Poker Flat, ALASKA: Seasonal Variations of 1999-2002

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Ozone (O₃) and Carbon Monoxide (CO) is a classical pair of tracers exploited to study both downward O₃ transport from stratosphere as well as photochemical O₃ formation in the troposphere. The purpose of this study is to report and interpret a time series of measurements derived from high-resolution infrared solar absorption spectra. The two molecules analyzed are CO and O₃. The observations were recorded from September 1999 with a Fourier transform spectrometer (FTS) on Poker Flat, Fairbanks, Alaska (65N, 147W). The maximum sensitivity of infrared spectroscopic observations is from the troposphere to lower stratosphere, and the altitude profiles are obtained for the 1 - 25 km region. These mixing ratio profiles were retrieved from infrared spectra, recorded by high resolution FTS (Bruker 120HR: 0.0019cm⁻¹ resolution), using Rodger's optimal method (OEM).