



## **Seven years of middle-atmospheric CO in the Arctic by ground based radiometry**

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During polar winter, carbon monoxide (CO) is a well-suited tracer for middle atmospheric dynamics and for studying the polar vortex boundary: In polar night the chemical reactions involving atmospheric carbon monoxide are negligible due to the lack of sunlight and, as a result, the gas exhibits strong vertical and horizontal gradients in the stratosphere and mesosphere. Due to the upcoming likely gap in satellite profiling instruments, and in order to maintain a long-term global record of atmospheric trace gas concentrations, current and future satellite missions must be inter-calibrated using measurements from ground-based instruments around the globe.

The Kiruna Microwave Radiometer (KIMRA), installed at the Swedish Institute of Space Physics, Kiruna, Sweden (67.8 N, 20.4 E), has been measuring microwave spectra of emissions from atmospheric CO since 2007. This contribution presents the CO concentration record which has been retrieved from KIMRA measurements using different temperature datasets: measurements from the Defense Meteorological Satellite Program - F18 and model output from the European Centre for Medium-Range Weather Forecasts. The concentration profiles, retrieved between 40 and 80 km altitude, are compared to data from the Microwave Limb Sounder on the Aura satellite and are used to examine the concentration gradient across the polar vortex edge.