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Abstract

In the mesosphere and lower thermosphere radicals are produced by incoming high-energy radiation and particles. Over the winter pole these radicals are transported downward into the stratosphere according to the large-scale circulation of the middle atmosphere. To quantify the resulting effects on the polar stratospheric chemistry, knowledge of the respective subsidence rates is needed. One possibility to gain this information is the measurement of CO as a tracer for transport processes in this region.
For this purpose a groundbased microwave radiometer (CORAM) operating at 115 GHz is currently under development and will be permantly installed in Ny Ålesund, Spitsbergen (78.9° N). Latest amplifier technology allows an alternative receiver design. This leads to a reduction of the system noise and shortens the required integration time in comparison to common designs. Another radiometer (KIMRA) is in operation since 2002 in Kiruna, Sweden (67.8° N) for the measurement of CO at 230 GHz among other constituents. First results will be presented.
The longterm aim is to obtain a continuous dataset of CO profiles of the middle atmosphere from the north polar region and to derive continuous subsidence rates from them.

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