

## A ground-based millimeter-wave measurement of stratospheric ClO over Atacama, Chile

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We present a first result of measuring the stratospheric chlorine monoxide (ClO) with a millimeter-wave radiometer in Atacama (23S, 68W, Alt. 4800m), Chile. In the last decades, interests in measurements of the stratospheric ozone and ClO have increased considerably because chlorine chemistry plays an essential role in the ozone depletion in the stratosphere. It is, therefore, in essential importance to monitor the stratospheric ClO, especially in the mid-latitude region.

For continuous measurements of stratospheric ClO, ground-based millimeter-wave radiometers are the powerful instruments because thermal emission of ClO can be detected only in the millimeter wavelength. In recent years, ClO measurements with the millimeter-wave radiometers were started, but validations and long-term stabilities of the measurements have not been established yet. In addition, because the ClO emission is much weaker than ozone, a high sensitivity receiver system and a clear sky with a small optical depth in millimeter-wave region is strongly required for this measurement.

In 2004, Solar-Terrestrial Environment Laboratory (STEL) of Nagoya University installed a high-sensitivity ground-based millimeter-wave radiometer capable of detecting thermal emission from rotational lines of ozone and other minor constituents in 200-210 GHz band at Atacama Desert in Chile. The newly developed instrument is equipped with a superconducting (SIS) mixer receiver whose noise temperature is  $\sim 200$  K in single sideband at 204 GHz, and therefore, we can obtain a ClO spectrum in 204 GHz band every 1-2 hours. At present, we have measured the ClO spectra in 10 days, and retrievals of their vertical profiles are in progress.

In this paper, we present features of the instrument and preliminary results of the ClO measurements in Chile. In addition, we discuss on a possibility of using our data for a validation of the JEM/SMILES measurements.