

## The temporal variation of vertical profile of methane at Poker Flat observed by Fourier transform spectrometer

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Methane is the second important greenhouse gas. In the arctic region, there are many sources of the atmospheric methane, i.e., wetlands, permafrosts and natural gas fields. It is important to investigate the trend of the methane in the arctic region.

In this study, we analyzed the trend of the vertical profile of methane at Poker Flat (Latitude: 65.11 N, Longitude: 147.42 W) observed with FTIR (Fourier Transform Infrared Spectrometer) by NICT from 2000 to 2010 (except for 2006). The vertical profiles of methane were derived with the SFIT2 spectrum fitting program using Rodgers' Optimal Estimation Method (OEM).

We investigated temporal variation of the columns in the lower stratosphere (10-21 km), troposphere (0-10 km), and total (0-100 km) which calculated from the vertical profiles with digital fitting method [Nakazawa *et al.*, 1997]. Lower stratospheric column shows no significant trend. Tropospheric and total columns show increase in 2008 then decrease in 2009. This trend in the troposphere is different from those observed in Germany, East Asia and Global average which don't show decrease after 2008. The difference of the trend indicates that observations at various regions are important in order to understand the spacial and temporal variations of sources and sinks of methane.

Keywords: methane, FTIR(Fourier transform Infra-Red spectrometer)