

## Atmospheric mercury in the free troposphere

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In order to clarify the dynamics of atmospheric mercury in the free troposphere (FT), continuous observation of atmospheric mercury were carried out in Norikura Solar Observatory in Japan. The observation period is one week each of Oct 2011 and Oct 2012. Gaseous mercury (TGM) and particulate mercury (PHg) concentration in Norikura Oct 2011 were 0.72 - 1.23 ng m<sup>-3</sup> and 17.0 - 121.0 pg m<sup>-3</sup>, respectively. TGM concentration in 2012 was 0.2 - 2.4 ng m<sup>-3</sup>, and the mean was 1.6 ng m<sup>-3</sup>. A diel variation of TGM was observed with daytime highs and nighttime lows in almost all of both periods. This diel pattern is considered to be due to upslope wind of boundary layer air resulting from a mountain surface that is warmed up with sunlight in daytime. Therefore such observation of atmosphere in the FT to use mountains, data is collect at night. In addition, the observation of 2012, sharp rise in the TGM concentration has been observed. Almost simultaneously with the concentration increasing of TGM, temperature has dropped drastically, and we saw a half inches of snow. This is thought to be due to cold air mass that flowed into Japan came from the continent, this suggested the possibility of long-distance transport of mercury.

Keywords: mercury, atmospheric chemistry, free troposphere, long - range transport