

## Continuous measurement of CO<sub>2</sub> and CH<sub>4</sub> concentration from a tower network (JR-STATION) over Siberia

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Continuous measurements of CO<sub>2</sub> and CH<sub>4</sub> concentration have been carried out with a tower network in Siberia (JR-STATION: Japan–Russia Siberian Tall Tower Inland Observation Network) in order to study the spatial and temporal variations of CO<sub>2</sub> and CH<sub>4</sub> and estimate the distribution of the flux over this vast area (Sasakawa *et al.*, 2010, 2012, 2013) where only a few atmospheric investigations were made.

The JR-STATION consists of 6 towers (Figure) located at Berezorechka (BRZ) since 2002, at Karasevoe (KRS) since 2004, at Demyanskoe (DEM) and Noyabrsk (NOY) since 2005, at Azovo (AZV) since 2007, and at Vaganovo (VGN) since 2008. Air samples taken at two heights (5-85 m) on each tower were analyzed with an NDIR (LI-COR, LI-820) for CO<sub>2</sub> and a SnO<sub>2</sub> semiconductor sensor (Suto *et al.*, 2010) for CH<sub>4</sub> after passing through the line with a glass water trap, a Nafion membrane dryer (PERMA PURE, MD-050-72F-2), and a magnesium perchlorate. Measurement precision was ±0.3 ppm for CO<sub>2</sub> and ±5 ppb for CH<sub>4</sub>.

We will discuss the long-term variations in CO<sub>2</sub> and CH<sub>4</sub> observed with the present system. From the year of 2015, we installed a Cavity Ring-Down Spectroscopy (CRDS; Picarro inc.) at KRS, DEM, and NOY. We thus validate the recent data with the data by the CRDSs.

### References

Sasakawa, M. *et al.*, Tellus **62B**, 403-416, 2010.

Sasakawa, M. *et al.*, Tellus **64B**, doi:10.3402/tellusb.v64i0.17514, 2012.

Sasakawa, M. *et al.*, J. Geophys. Res. **118**, 1-10, doi:10.1002/jgrd.50755, 2013.

Suto, H. *et al.*, J. Atmos. Ocean. Tech. **27**, 1175-1184, 2010.

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