

Quasi-Continuous Methane Measurements at Cherskii, Russia

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Atmospheric methane (CH_4) mixing ratio has been measured quasi-continuously at Cherskii, Russia ($68^\circ 30' \text{N}$, $161^\circ 32' \text{E}$) since September 2008. Samples are taken approximately every 5 minutes rotating between three different tower levels (2.6 m, 16.2 m, and 34.4 m). Measurements are made using an optical analyzer that uses off-axis, integrated cavity output spectroscopy, a robust measurement technique for remote sites. The uncertainty at 68% confidence limit is ± 2.4 ppb. The average seasonal cycle peak-to-peak amplitude at Cherskii is 33.4 ppb with a minimum in late spring and a maximum in late winter. A significant diurnal cycle is not observed throughout the year. Figure 1 shows CH_4 data from Cherskii plotted with a marine boundary layer reference for 72.8°N and \sim weekly discrete samples from five arctic sites. CH_4 data at Cherskii are highly variable with large enhancements especially after periods of low wind speed in the summer, when wetland emissions are greatest.

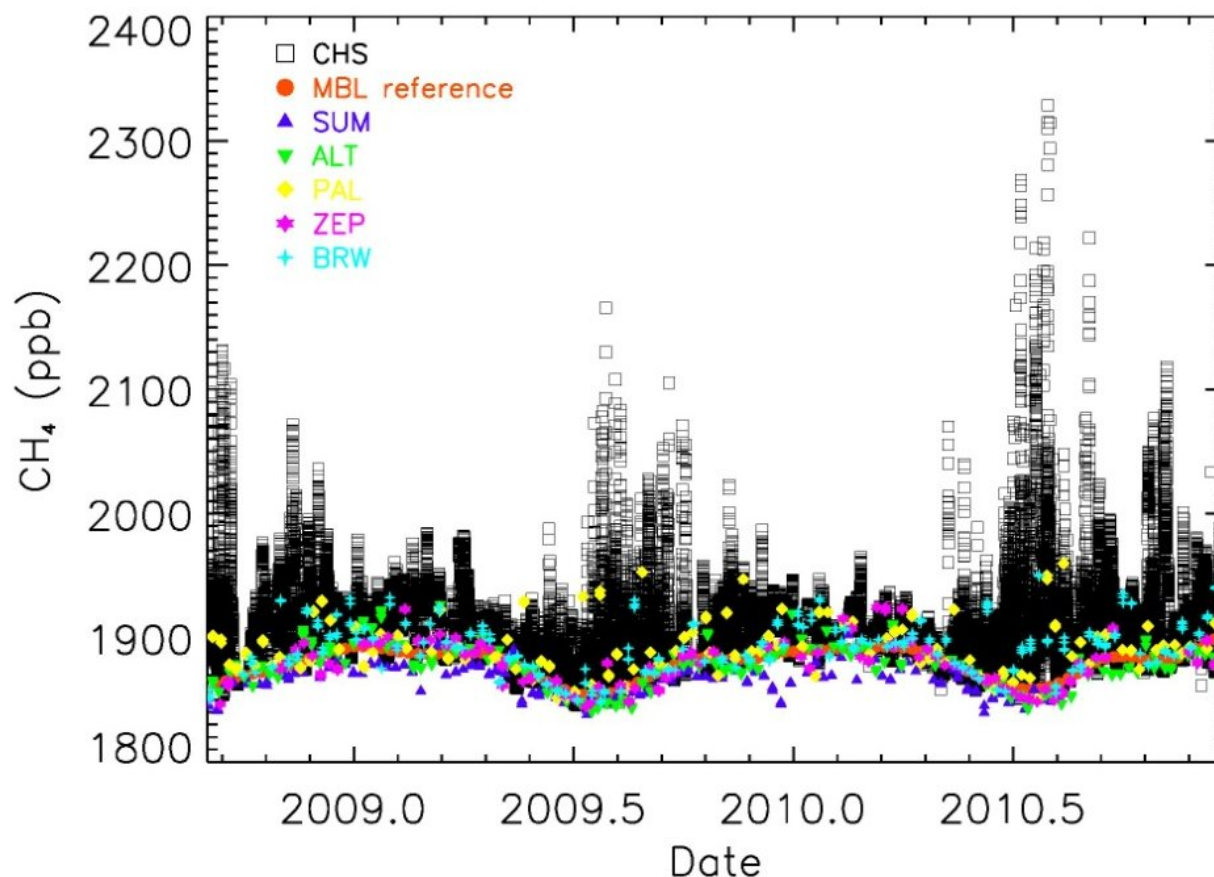


Figure 1. CH_4 mole fraction ($\text{ppb} = \text{nmol mol}^{-1}$) from Cherskii, Russia (CHS) plotted with the marine boundary layer reference (MBL reference) for 72.8°N and discrete samples from Summit, Greenland (SUM); Alert, Canada (ALT); Pallas-Sammaltunturi, Finland (PAL); Ny-Ålesund, Svalbard, Norway and Sweden (ZEP), and Barrow, Alaska, United States (BRW).