

## **Observed changes in the amplitude and phase of the methane seasonal cycle at high northern latitudes**

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We spectrally decompose using a wavelet transform observed variations of methane (CH<sub>4</sub>) mole fraction at high northern latitude sites. We report how the amplitude and phase of the observed seasonal cycle have changed over the past three decades. We interpret these changes using auxiliary isotope, meteorological data and an ensemble of atmospheric chemistry transport model runs. We will discuss the implications of our results on the current observing network at high northern latitudes where ecosystems are more vulnerable to changes in climate.