



Vertical distribution of Arctic methane

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In this study we show the vertical distribution of atmospheric methane (CH_4) measured in Sodankylä, Northern Finland. The CH_4 profiles are retrieved from the direct Sun FTS measurements using the dimension reduction retrieval method.

In the retrieval method, we have a few degrees of freedom about the profile shape.

The data set covers years 2010-2016 (from February to November) and altitudes 0-40 km. The retrieved FTS profiles are validated against ACE satellite measurements and AirCore balloon measurements. The total columns derived from the FTS profiles are compared to the official TCCON XCH₄ data. A vertically resolved methane data set can be used, e.g., to study stratospheric methane during the polar vortex.