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# $CO_2$ total column retrieval by mid-IR FT Spectroscopy

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Over the last decade ground-based remote sensing measurements of $CO_2$ have been established as an important component in the global observing system for greenhouse gases. Since 2004 the Total Carbon Column Observing Network (TCCON) sites have provided $CO_2$ retrievals in the near-IR region. $CO_2$ can also be retrieved in the mid-IR spectral region and it would be of great benefit to use these spectra to produce $CO_2$-data of sufficient precision. With this, 20 years of additional observations obtained in the mid-IR at a suite of FT-IR sites of the Network Detection of Atmospheric Composition Change (NDACC) will be accessible. We investigated a series of different $CO_2$ microwindows in the mid-IR spectral region and present results from the most promising candidates for a showcase FT-IR site (Ny Alesund). Limitations of the approach are outlined and the feasibility of a future Mid-IR $CO_2$-product of sufficient precision is discussed.