

## **Monitoring tropospheric HDO/H<sub>2</sub>O profiles within the ground-based FTIR network (NDACC)**

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The ground-based FTIR experiments -- operating in the framework of the Network for Detection of Atmospheric Composition Change (NDACC, <http://www.acd.ucar.edu/irwg/>) -- have provided high quality solar absorption spectra since more than 15 years. Recently, sophisticated water vapour retrieval algorithms have been developed. Reprocessing the historic FTIR spectra can provide a unique dataset of consistent tropospheric H<sub>2</sub>O and HDO/H<sub>2</sub>O profiles with long-term characteristics and some global representativeness.

We describe the analysis methods that have been developed since 2004. We document the quality of the FTIR profiles, firstly, by theoretical estimations, and secondly, by empirical validations. Currently the ground-based FTIR technique is the only technique that can provide consistent tropospheric profiles of H<sub>2</sub>O and  $\delta D$  over long time periods. We demonstrate the ground-based FTIR network's potential for long-term atmospheric water cycle studies (see also: <http://www.atmos-chem-phys-discuss.net/9/26199/2009/>).