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Intercomparison of in-situ and remote sensing δD signals in tropospheric water vapour

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The main mission of the project MUSICA (MUlti-platform remote Sensing of Isotopologues for investigating the Cycle of Atmospheric water) is the generation of a quasi-global tropospheric water vapour isototopologue dataset of a good and well-documented quality.

We present a first empirical validation of MUSICA's remote sensing δD products (ground-based FTIR within NDACC, Network for the Detection of Atmospheric Composition Change, and space-based with IASI, Infrared Atmospheric Sounding Interferometer, flown on METOP).

As reference we use in-situ measurements made on the island of Tenerife at two different altitudes (2370 and 3550 m a.s.l., using two Picarro L2120-i water isotopologue analyzers) and aboard an aircraft (between 200 and 6800 m a.s.l., using the homemade ISOWAT instrument).