

Title: Total Carbon Column Observing Network (TCCON) activities at Izaña, Tenerife (28°N, 17°W).

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Abstract:

Total Carbon Observing Network (TCCON) is a global network of ground-based Fourier Transform Spectrometers recording direct solar spectra in the near-infrared spectral region. With stringent requirements on the instrumentation, data processing and calibration, from the spectra obtained, accurate and precise column-averaged abundance of CO₂, CH₄, N₂O, HF, CO, H₂O, and HDO are retrieved. TCCON was established in 2004 with primary focus of measuring precise and accurate columns of CO₂. Actually there are 19 sites affiliated around the world being Izaña fully operational since May 2007. Izaña is a subtropical high mountain observatory located at 2.3 km. altitude over a temperature inversion layer that works as a natural barrier for local pollution. Its latitude and geographical location complements the other TCCON sites, since it is well representative for atmospheric background conditions. Since many years Izaña is a Global Atmospheric Watch (GAW) station and it has a comprehensive measurement program of a large variety of different atmospheric constituents.

A first overview of the TCCON activities performed at the Izaña Observatory will be presented. The ground-based FTIR measurement technique will be explained and the procedure for calculating the trace gas abundances from the measured spectra will be described. First examples for retrievals of CO₂ and CH₄ will be shown and the good quality of the data will be documented. Furthermore, the column-averaged abundances of CO₂ and CH₄ will be compared with the simultaneously performed surface in-situ measurements.