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The Total Carbon Column Observing Network (TCCON): overview and update

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The Total Carbon Column Observing Network (TCCON) is a network of ground-based Fourier Transform Spectrometers that record direct solar absorption spectra of the atmosphere in the near-infrared. From these spectra, accurate and precise column-averaged abundances of atmospheric constituents including CO_2, CH_4, N_2O, HF, CO, H_2O, and HDO, are retrieved. TCCON measurements are linked to WMO calibration scales by comparisons with co-incident in situ profiles measured from aircraft. For CO_2, TCCON achieves 1-sigma precision of typically 0.2 ppm for single measurements, and a network wide comparability of better than 0.1

In this paper we present an overview and the current status of the network, ongoing efforts to improve network coverage, precision and accuracy, and examples of TCCON data and their application.

Further information about TCCON and a full list of sites and TCCON partners is available from the TCCON wiki, https://tccon-wiki.caltech.edu/ and Wunch et al. (2011).

Wunch, D., G.C. Toon, J.-F. Blavier, R. Washenfelder, J. Notholt, B. Connor, D.W.T. Griffith and P.O. Wennberg, The Total Carbon Column Observing Network (TCCON). Philosophical Transactions of the Royal Society A 2011. 369: p. 2087-2112.