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## 10 years of characterization of the troposphere in the East Antarctic plateau region using a ground-based Fourier transform spectroradiometer

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Since December 2011 the Radiation Explorer in the Far Infrared (REFIR) Fourier transform spectroradiometer has been operating continuously from the Italian-French station Concordia, in the Dome C region, Antarctica, providing a decade long dataset of spectrally resolved atmospheric downwelling radiances in the mid/far-infrared range.

In 2016 The Dome C Tropospheric Observatory (DOCTOR) project was established with the aim to recalibrate and reorganize the full time series of REFIR spectra in order to provide a homogeneous dataset, and to make it available to the scientific community.

A further objective of the DOCTOR project has been to integrate the REFIR spectroradiometer with a Lidar sensor to provide coincident, colocated measurements of tropospheric backscatter profiles.

The downwelling radiance spectra are processed with a retrieval code which is capable to provide vertical profiles of tropospheric temperature and water vapor. The availability of coincident backscatter profiles permits to improve the performance of the retrieval in cloudy sky conditions, providing the vertical structure of clouds which is not easily inferred from the spectra alone.

The resulting observation repository will provide a relevant source of information about tropospheric trends in a region, the East Antarctic plateau, which is sparsely covered by ground-based measurements.