Travels with an EM27, measurements of CO2 and CH4 below 45 degrees south.

David F. Pollard\textsuperscript{1}, Dan Smale\textsuperscript{1}, Hue Tran\textsuperscript{2}, Jamie McGaw\textsuperscript{2}, Frank Hase\textsuperscript{3}, and Thomas Blumenstock\textsuperscript{3}

\textsuperscript{1}National Institute of Water and Atmospheric Research, Omakau, New Zealand (dave.pollard@niwa.co.nz)
\textsuperscript{2}Antarctica New Zealand, Christchurch, New Zealand
\textsuperscript{3}Karlsruhe Institute of Technology, Karlsruhe, Germany

During 2016 and again during 2019 through 2020 an EM27/SUN portable near infrared solar absorption Fourier Transform Spectrometer of the Karlsruhe Institute of Technology was transported first to Lauder, New Zealand (45.034S, 169.68E, alt. 370 m) and then to the Arrival Heights laboratory, Ross Island Antarctica (77.82S, 166.65E, 200 m). On the first occasion the EM27/SUN made the first ever near infrared solar absorption retrievals of carbon dioxide and methane in Antarctica over a period of two weeks. The second deployment had the aim of making retrievals in Antarctica throughout the 2019-2020 Austral summer.

We report on the comparison of retrievals of carbon dioxide and methane from the EM27 spectra with those made by the Total Carbon Column Observing Network (TCCON) stations at both Karlsruhe and Lauder and compare with similar comparisons made throughout the Collaborative Carbon Column Observing Network (COCCON), as well as the latitudinal extension of these measurements to Antarctica.

Further comparisons with observations from TROPOMI instrument on the Sentinel 5 precursor satellite will be discussed.