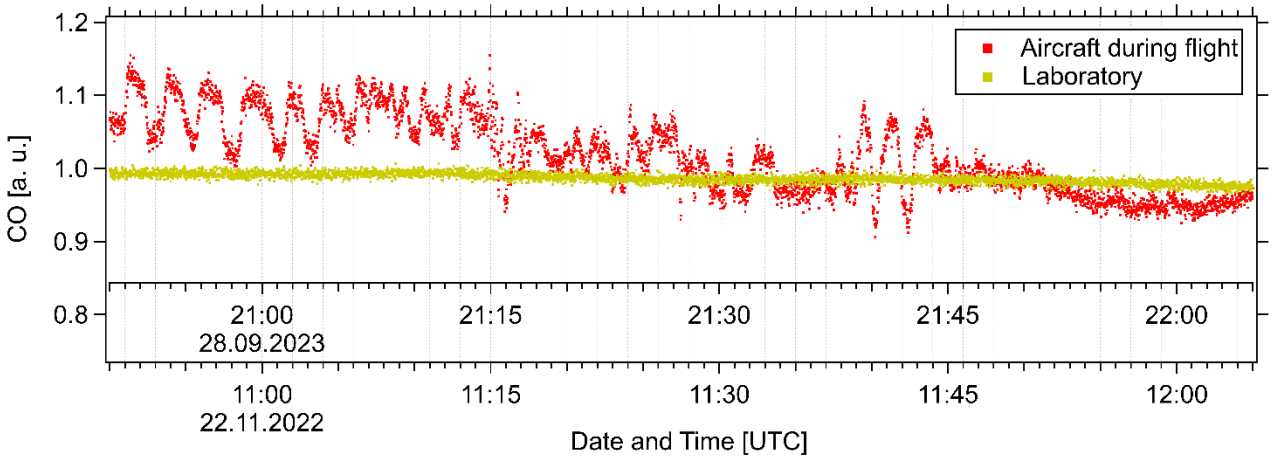

Figure S1. Two time series of constant gas measurements of CO while the ATTILA instrument was built in the rack and located in the laboratory (yellow) and inside the aircraft HALO during the test flight on the 22nd of November 2022 (red). Both time series have been normalized to the standard concentration of the gas bottles used for a better comparison. The concentrations of the standard gas bottles are at 156 ppbv and 245 ppbv for the flight and laboratory, respectively. The measurement uncertainties for the laboratory CO measurements are 1.6 ppbv (0.665 %) and for the aircraft on ground measurement at 8.2 ppbv (5.3 %).

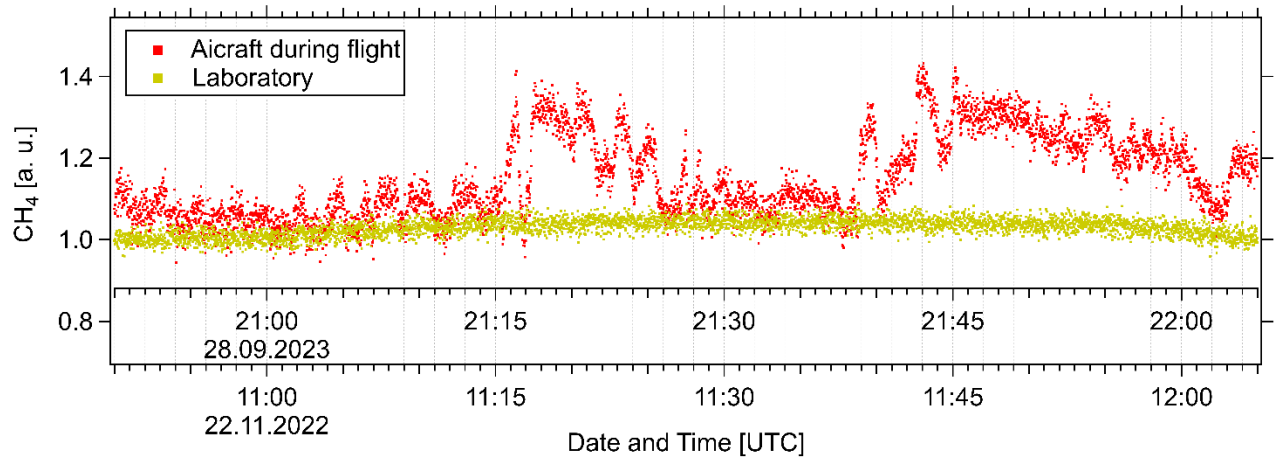

Figure S2. Two time series of constant gas measurements of CH_4 while the ATTILA instrument was built in the rack and located in the laboratory (yellow) and inside the aircraft HALO during the test flight on the 22nd of November 2022 (red). Both time series have been normalized to the standard concentration of the gas bottles used for a better comparison. The concentrations of the standard gas bottles are at 1920 ppbv and 2024 ppbv for the flight and laboratory, respectively. The measurement uncertainties for the laboratory CH_4 measurements are 42.52 ppbv (2.1 %) and for the aircraft measurement at 195 ppbv (10.2 %) for the shown period.

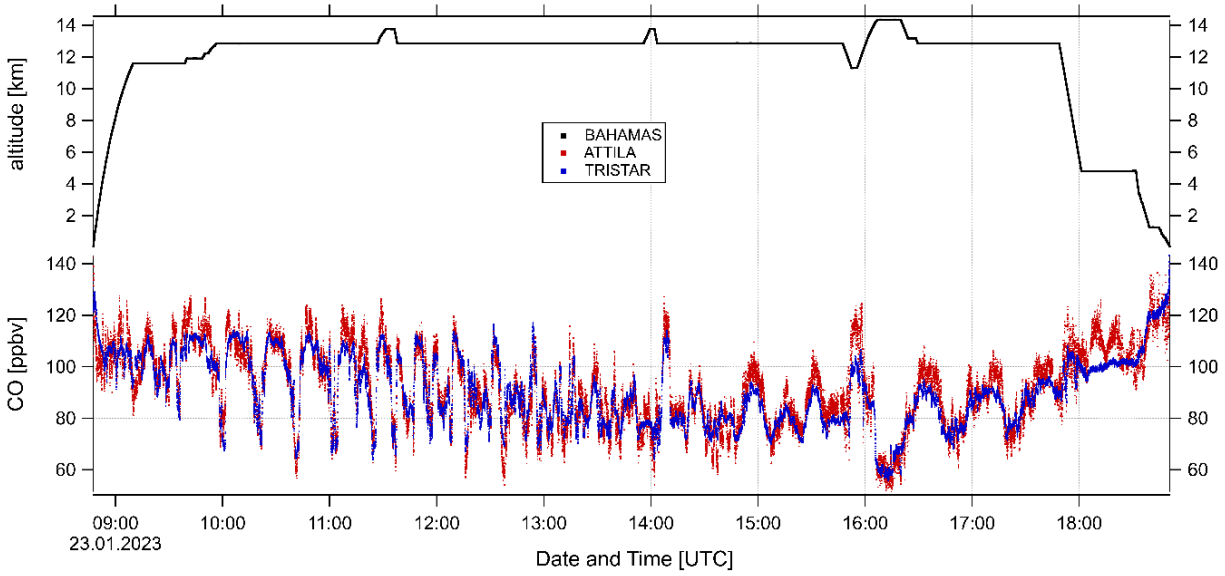

Figure S3. An example research flight (RF19) of fully processed ambient CO data during the CAFE Brazil campaign is shown. The CO mixing ratios of ATTILA are shown in red and from TRISTAR are shown in blue. Additionally, the GPS altitude given by the BAHAMAS instrument (DLR, Oberpfaffenhofen, Germany) is displayed in black. The measurement uncertainty of this flight was at 2.5 % and 7.8 % for TRISTAR and ATTILA CO measurements, respectively.