Supplementary Figures for:
Commane et al., Atmospheric Measurement Techniques Discussion, Intercomparison of commercial analyzers for atmospheric ethane and methane observations

Figure S1: (a) Raw methane mixing ratios from Aeris MIRA sampling a compressed air cylinder over multiple days of humidity tests in February 2022.

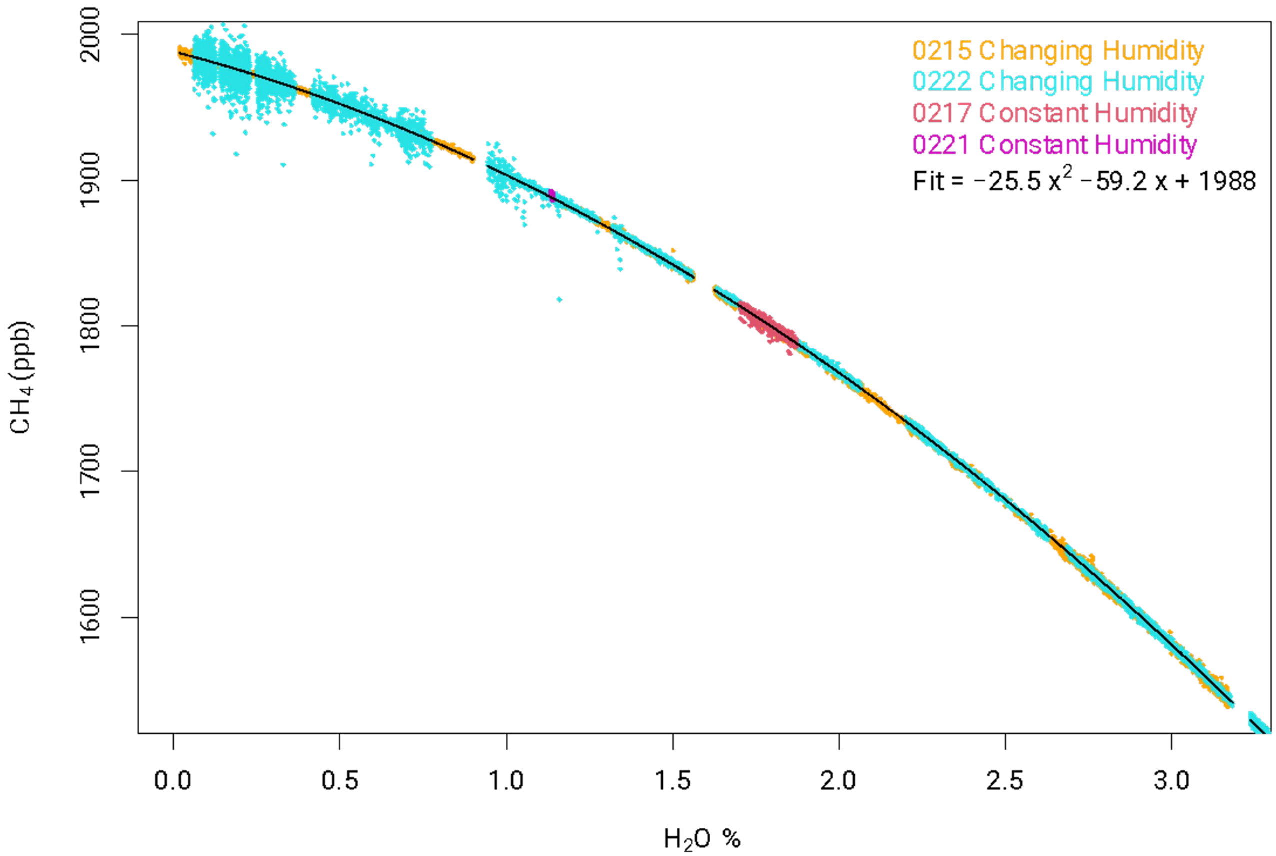

Figure S2: Time series and Allan Variance for (a) methane and (b) ethane for the Aerodyne SuperDUAL. For 100s averaging, we observed a < 0.05 ppbv CH_4 and < 5 pptv C_2H_6 precision.

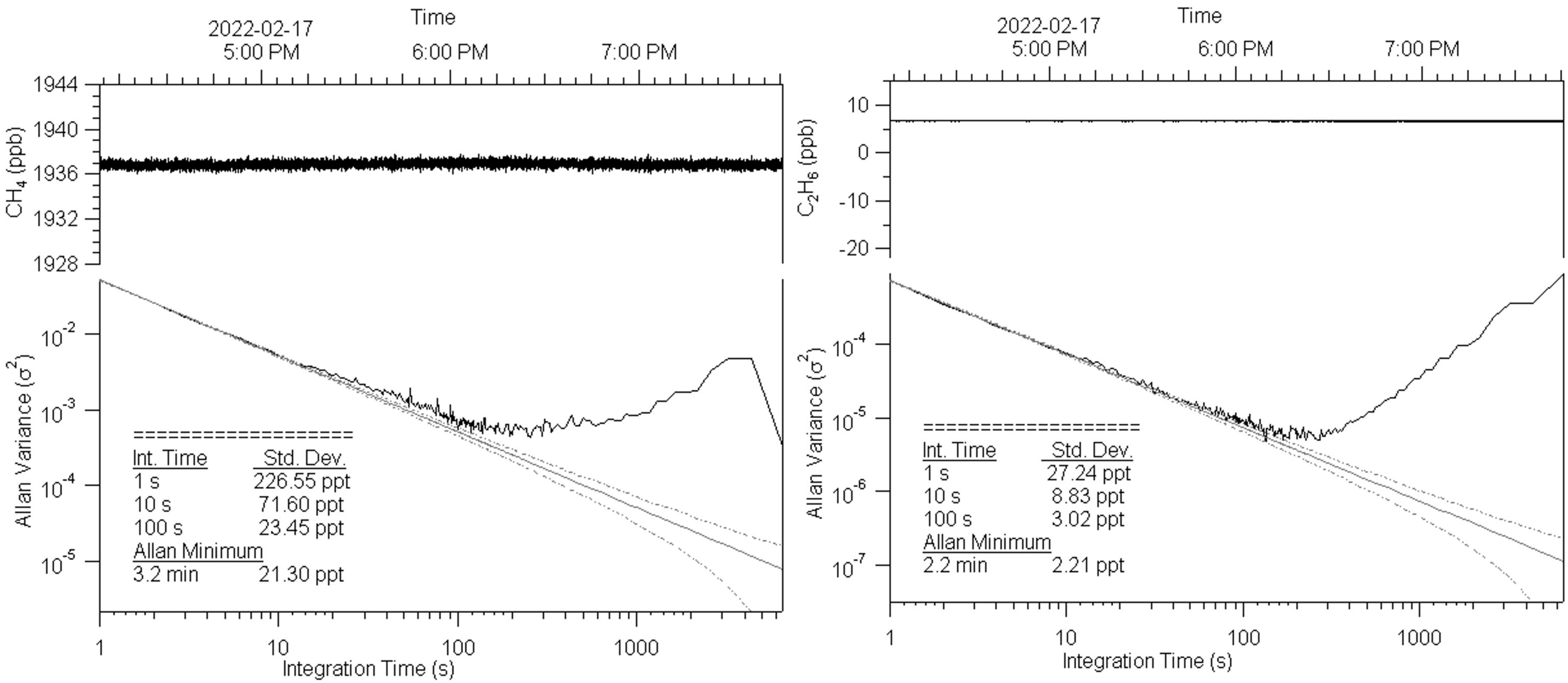

Figure S3. Time series and Allan Variance for (a) methane and (b) ethane for the Aeris Mira LDS. For 100s averaging, we observed a < 0.2 ppbv CH_4 and < 50 pptv C_2H_6 precision.

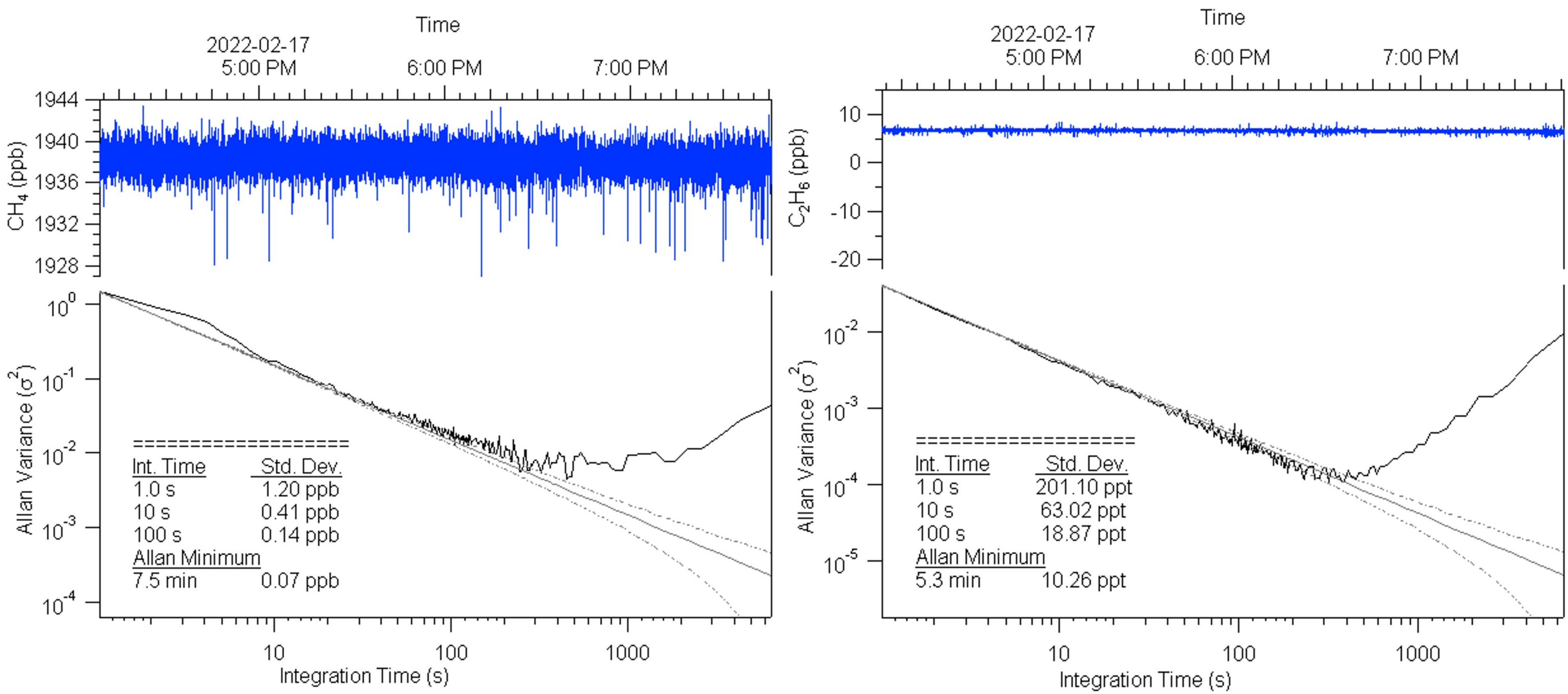

Figure S4: Time series and Allan Variance for (a) methane and (b) ethane for the Picarro G2210-i. For 100s averaging, we observed a < 0.1 ppbv CH_4 and ~ 500 pptv C_2H_6 precision.

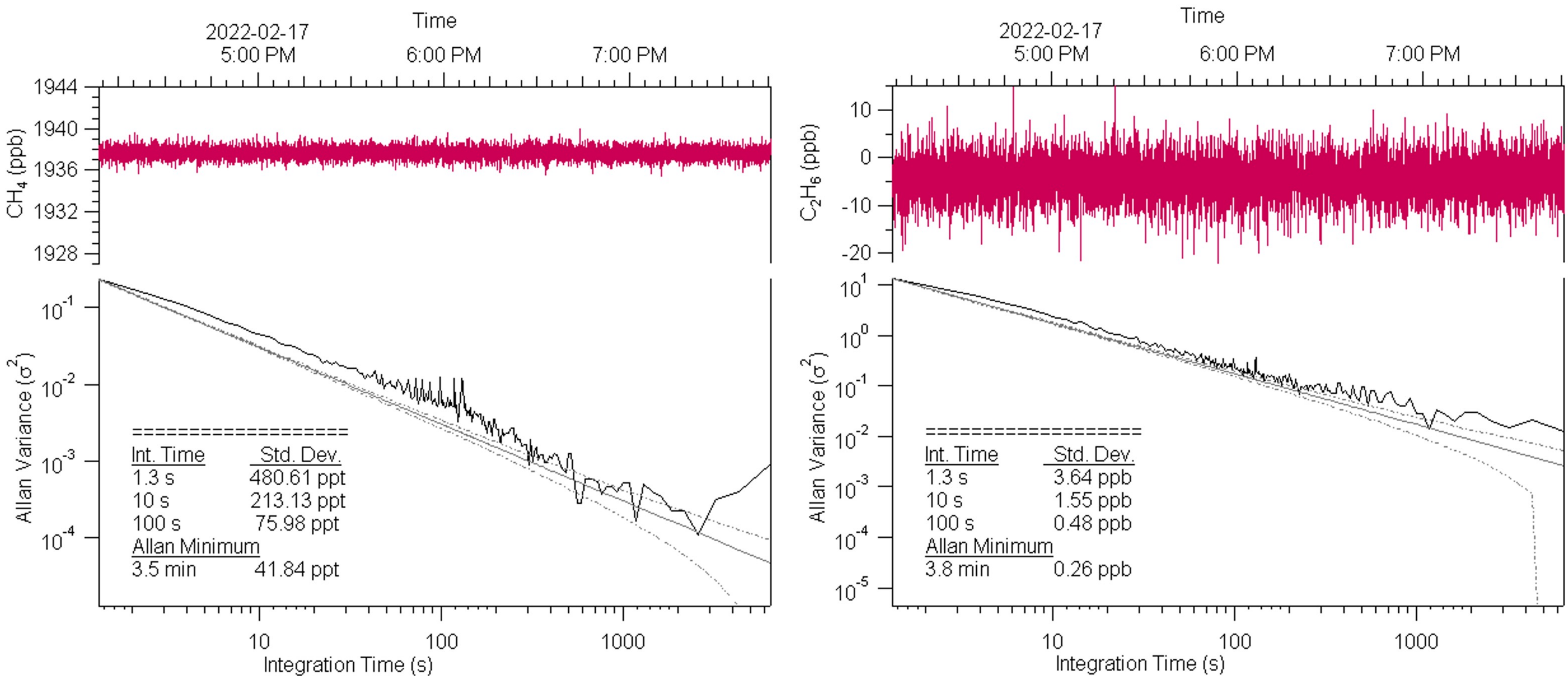

Figure S5. Time series and Allan Variance for (a) methane isotopes and (b) ethane for the Picarro G2210-i when running in isotopic measurement mode. The ethane data has about 1.5 times lower precision in this mode than when set to measure ethane while the methane precision is unchanged. For 100s averaging, we observed a < 1 ppbv C_2H_6 and < 1 ‰ dCH_4 precision.

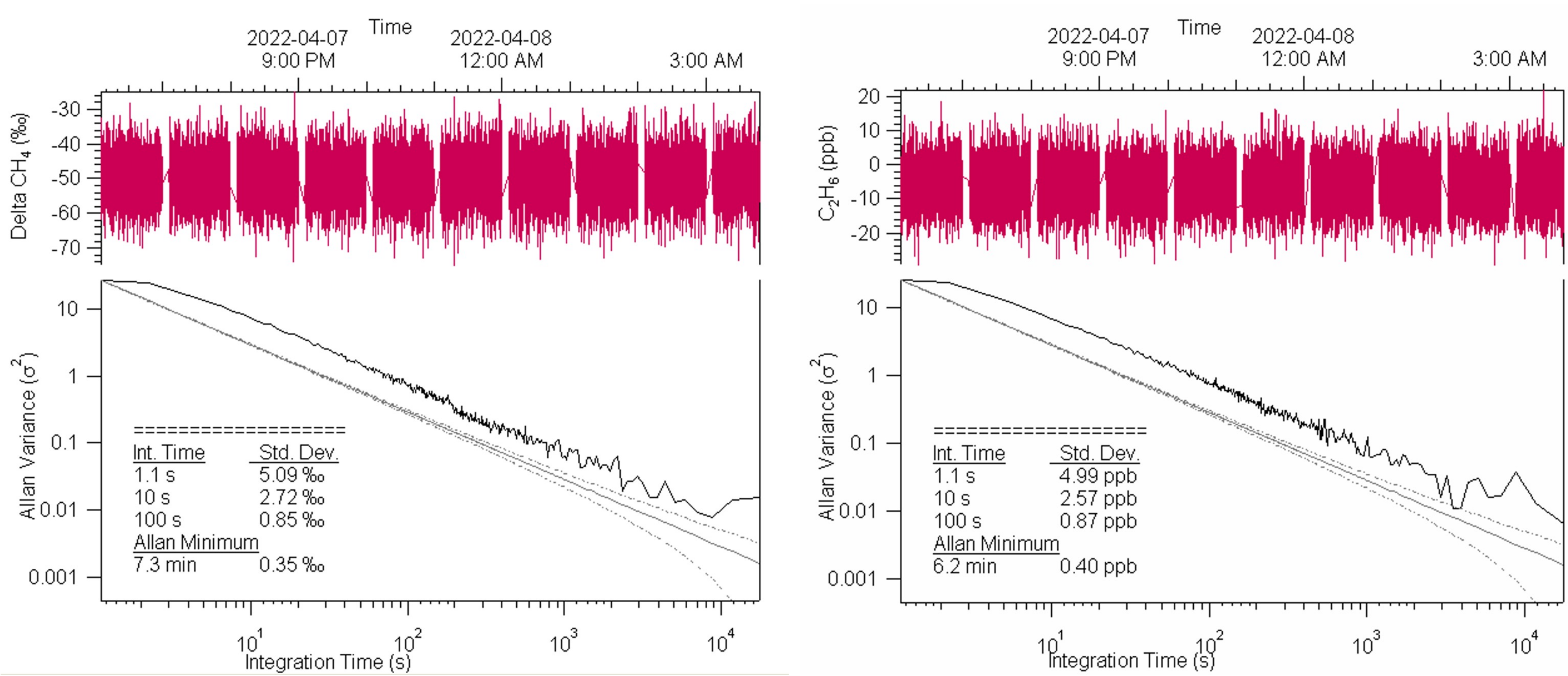

Figure S6. Picarro G2210-i ethane mole fraction for two NOAA calibrated standards. The raw reported mole fractions are shown as small grey points. After correction for water vapor sensitivity (Table 1) and linear calibration (Table 2), the high (4.21 ppbv) and low (0.97 ppbv) span mole fractions are accurate but with a 1sigma standard deviation of 1.34 ppbv and 1.41 ppbv respectively.