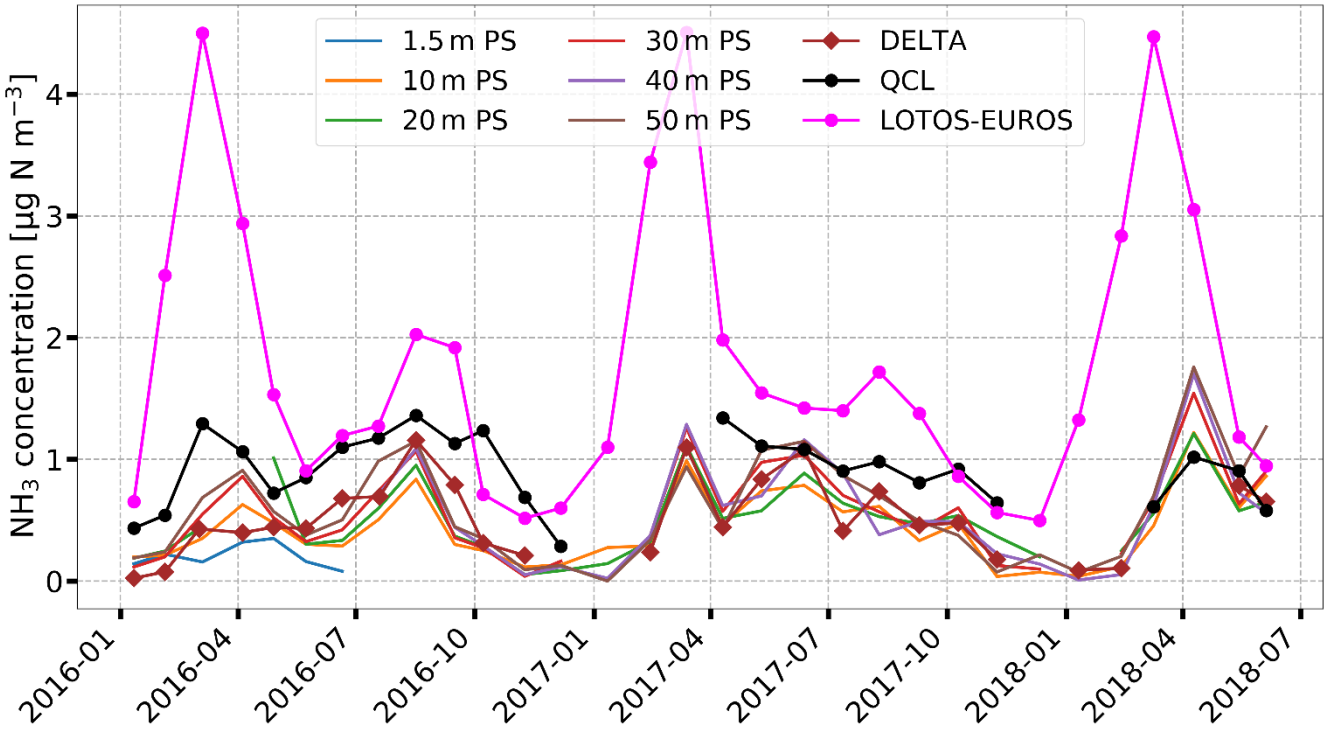


Figure S1 Concentrations of NH_3 obtained from DELTA and passive samplers, LOTOS-EUROS, and the QCL in µg N m^{-3}. NH_3 of the QCL and LOTOS-EUROS was averaged to the exposition period of the long-term sampling methods. Colors of the passive samplers indicate different exposition heights.

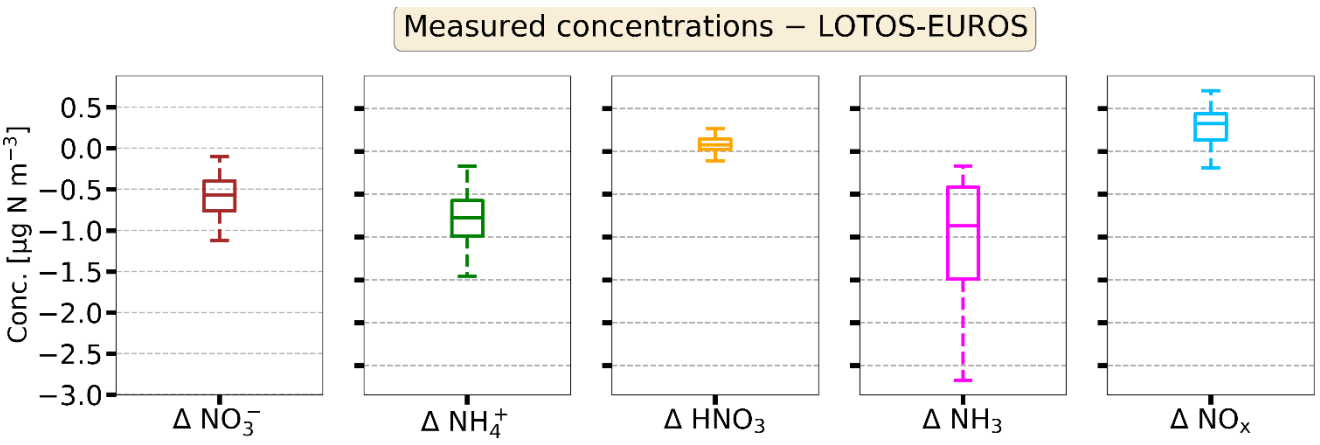
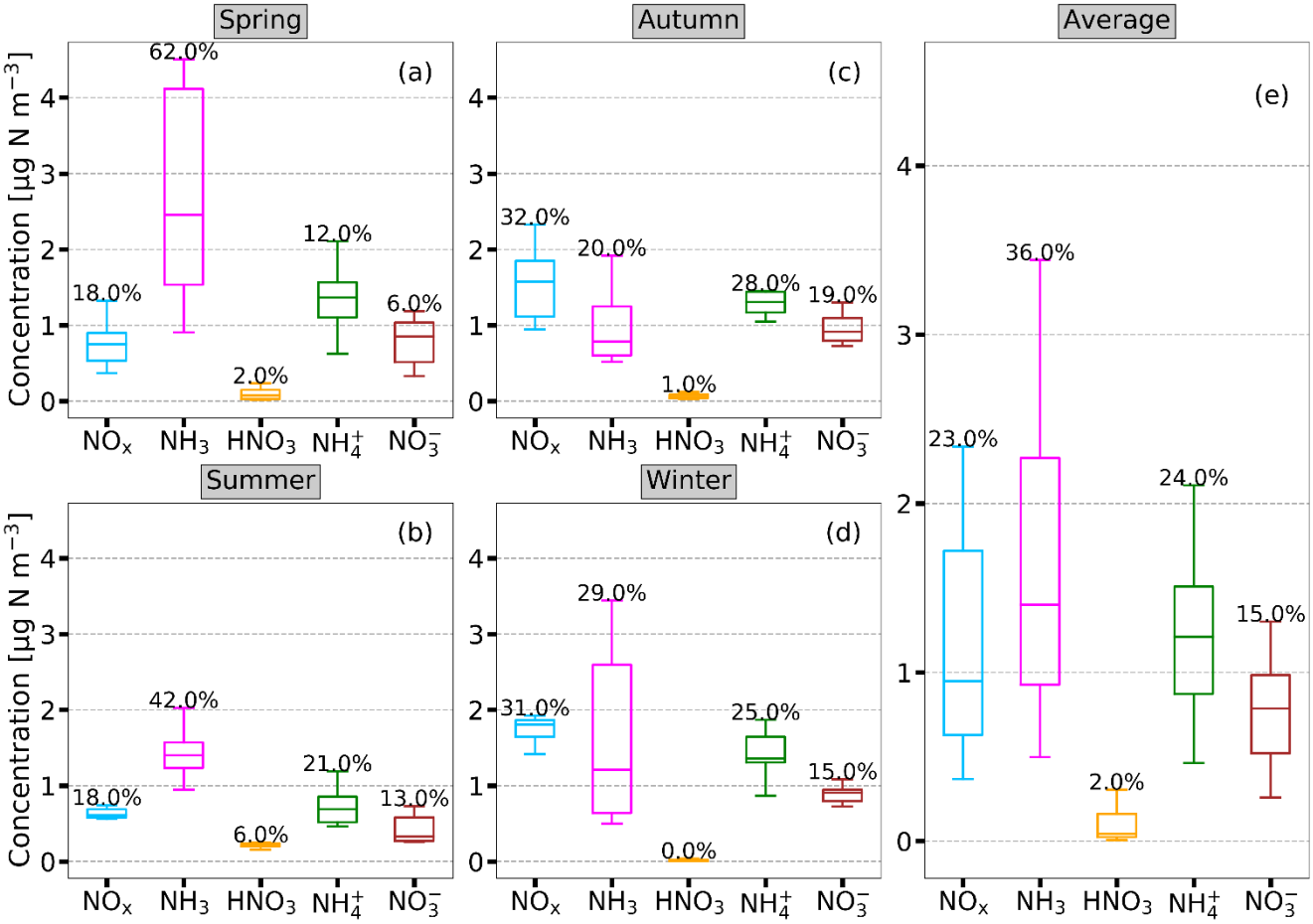
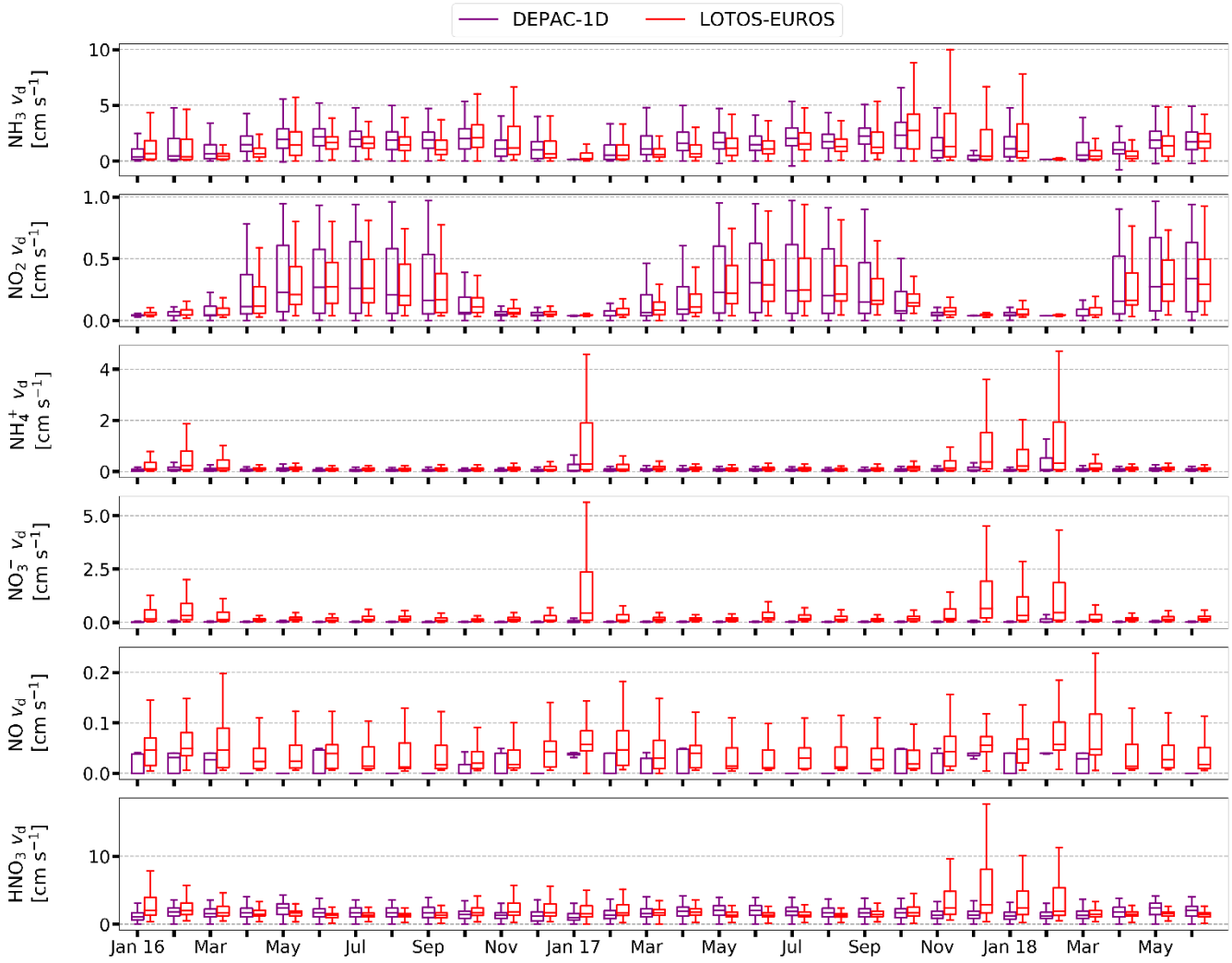


Figure S2 Differences in concentration between DELTA and LOTOS-EUROS for NO_x, NH_3, HNO_3 NH_4^+, and NO_3^- in µg N m^{-3} depicted as boxplots (box frame = 25 % to 75 % interquartile range (IQR), bold line = median, whisker = 1.5*IQR)). Colors indicate different N_r compounds. Negative difference indicates overestimation by LOTOS-EUROS, positive difference underestimation.



10 **Figure S3** LOTOS-EUROS concentrations of NO_x, NH_3, HNO_3 NH_4^+, and NO_3^- in µg N m^{-3} for each season ((a), (b), (c), (d)) and the entire period (e) depicted as boxplots (box frame = 25 % to 75 % interquartile range (IQR), bold line = median, whisker = 1.5*IQR)). Colors indicate different N_r compounds. Numbers above whiskers show the relative contributions of each compound to ΣN_r for the respective period. Values based on the average concentrations.



15 **Figure S4** Deposition velocities of DEPAC-1D (purple) and LOTOS-EUROS (red) for NH_3, NO_2, NH_4^+, NO_3^-, NO, and HNO_3 in cm s^{-1} as monthly boxplots (box frame = 25 % to 75 % interquartile range (IQR), bold line = median, whisker = 1.5*IQR)).

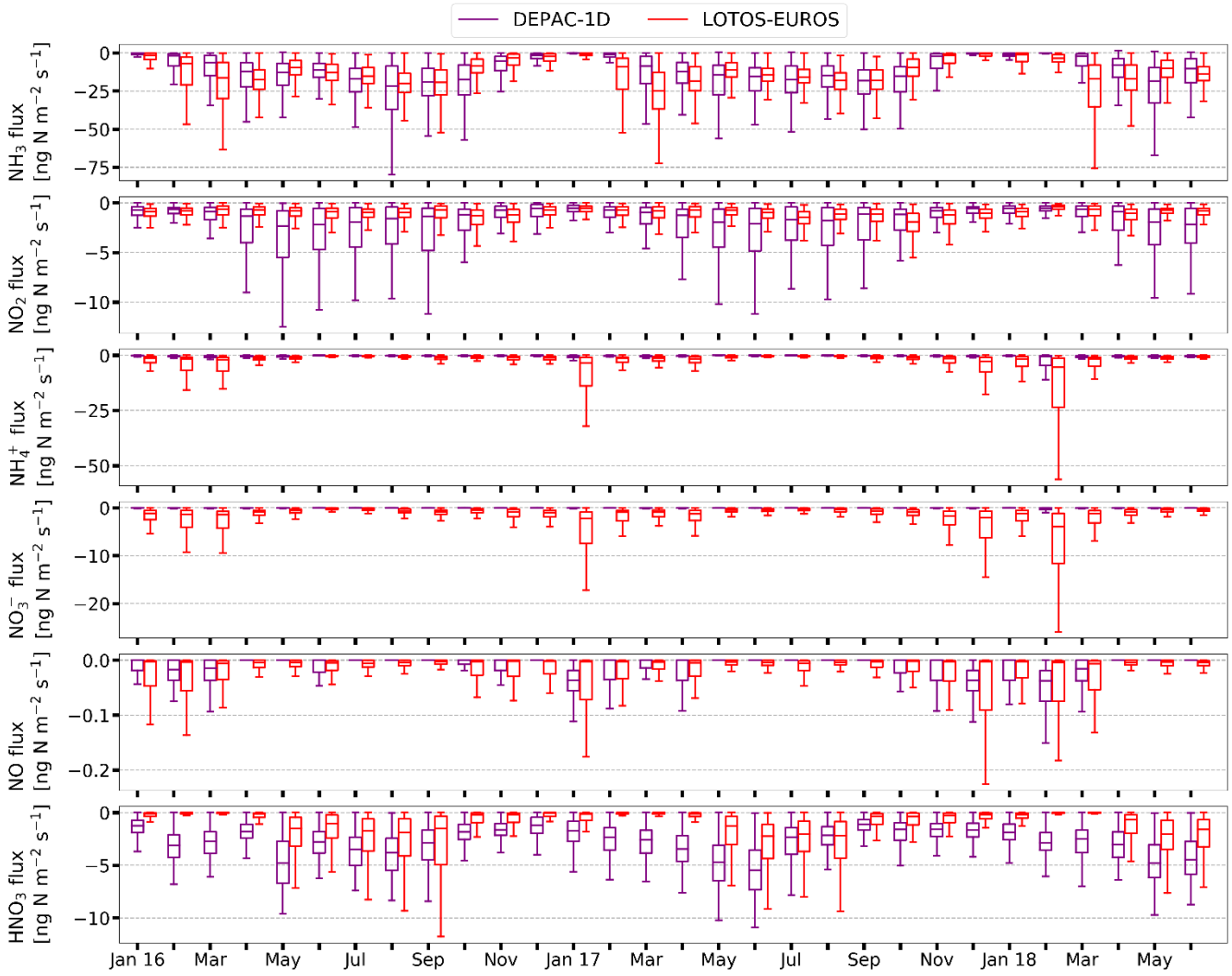


Figure S5 Fluxes of DEPAC-1D (purple) and LOTOS-EUROS (red) for NH_3, NO_2, NH_4^+, NO_3^-, NO, and HNO_3 in ng N m^{-2} s^{-1} as monthly boxplots (box frame = 25 % to 75 % interquartile range (IQR), bold line = median, whisker = 1.5*IQR)).

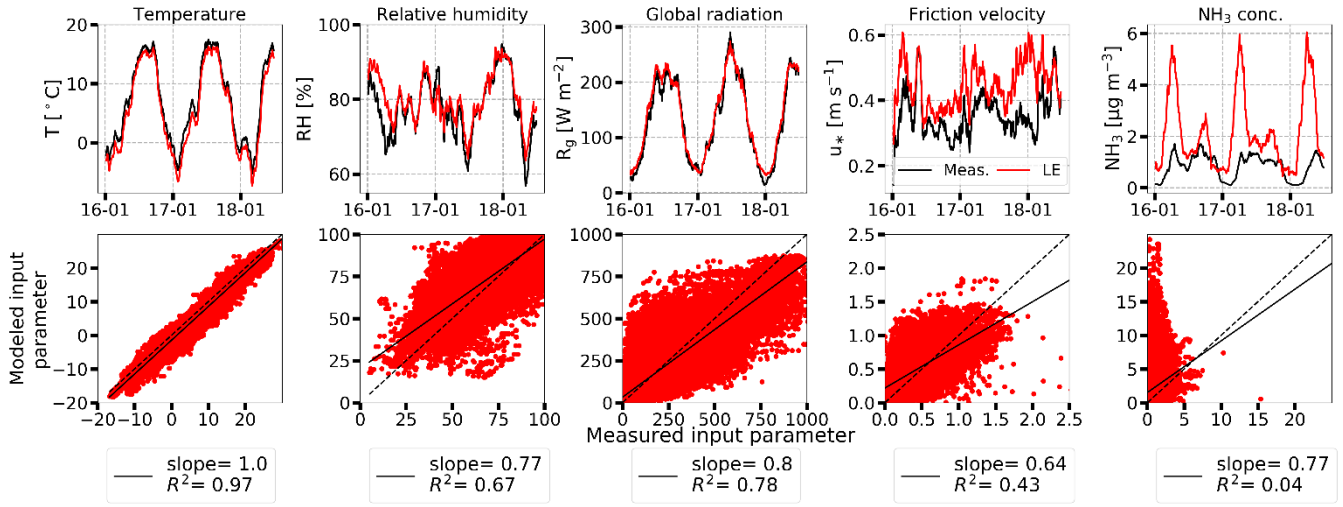


Figure S6 Comparison of LOTOS-EUROS (red) and measured (black) input data smoothed with a 30-day running average is applied to the input data for better visibility. The latter is applied to time series shown in the first row. In the second row, scatter plots of input data on half-hourly basis are shown for each input variable. Linear regressions are shown as black, solid lines, black, dashed lines represent 1:1 lines.

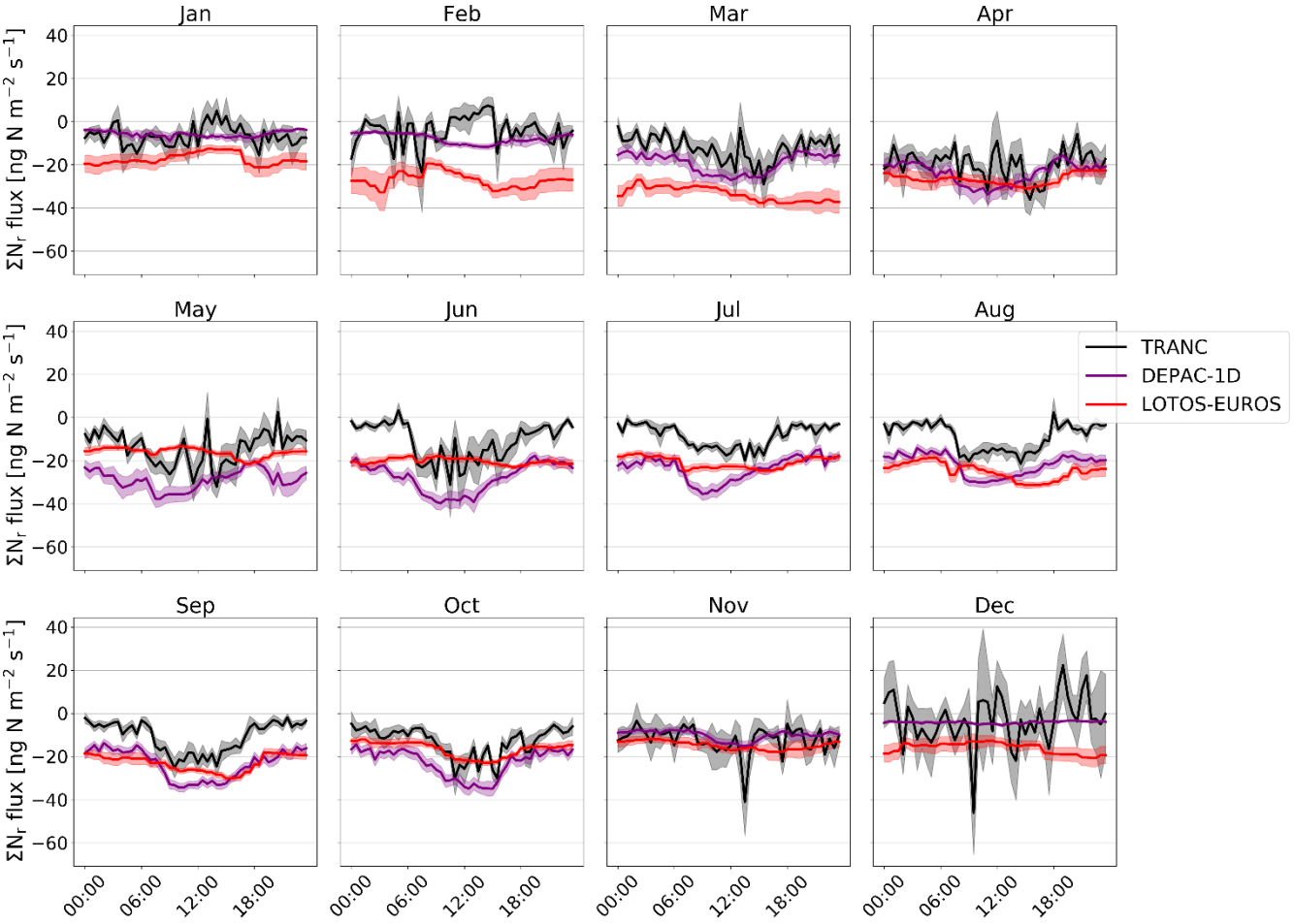


Figure S7 Mean diurnal cycles of ΣN_r fluxes for DEPAC-1D (purple), LOTOS-EUROS with the actual land-use weighting (red), and TRANC (black) in ng N m^{-3} s^{-1} exemplarily shown for the year 2017. Shaded areas represent the standard error of the mean.

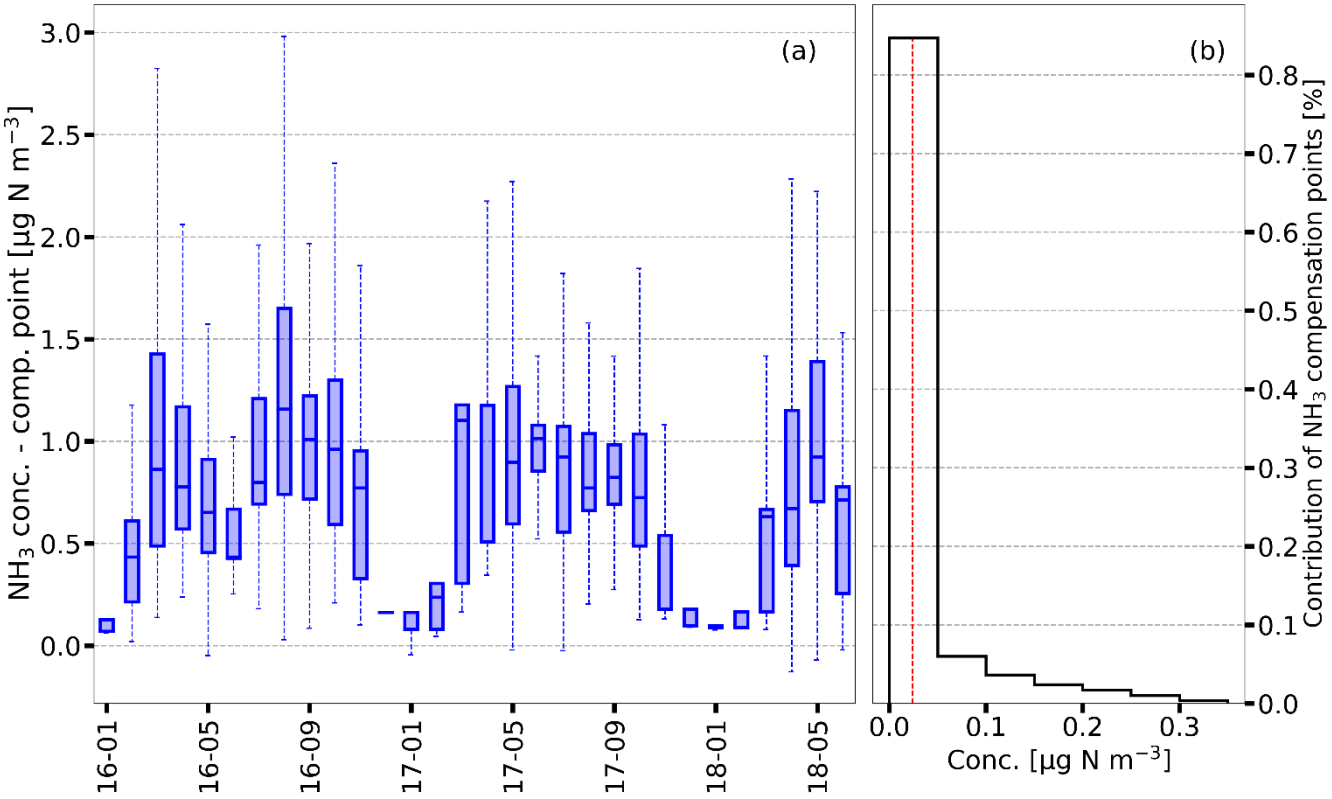


Figure S8 Difference between NH_3 concentration and its compensation point in µg N m^{-3} depicted as monthly boxplot for the entire measurement campaign (a). In panel (b), the distribution of the NH_3 compensation point is shown. Bin size is 0.05 µg N m^{-3}.