

## Supplementary material

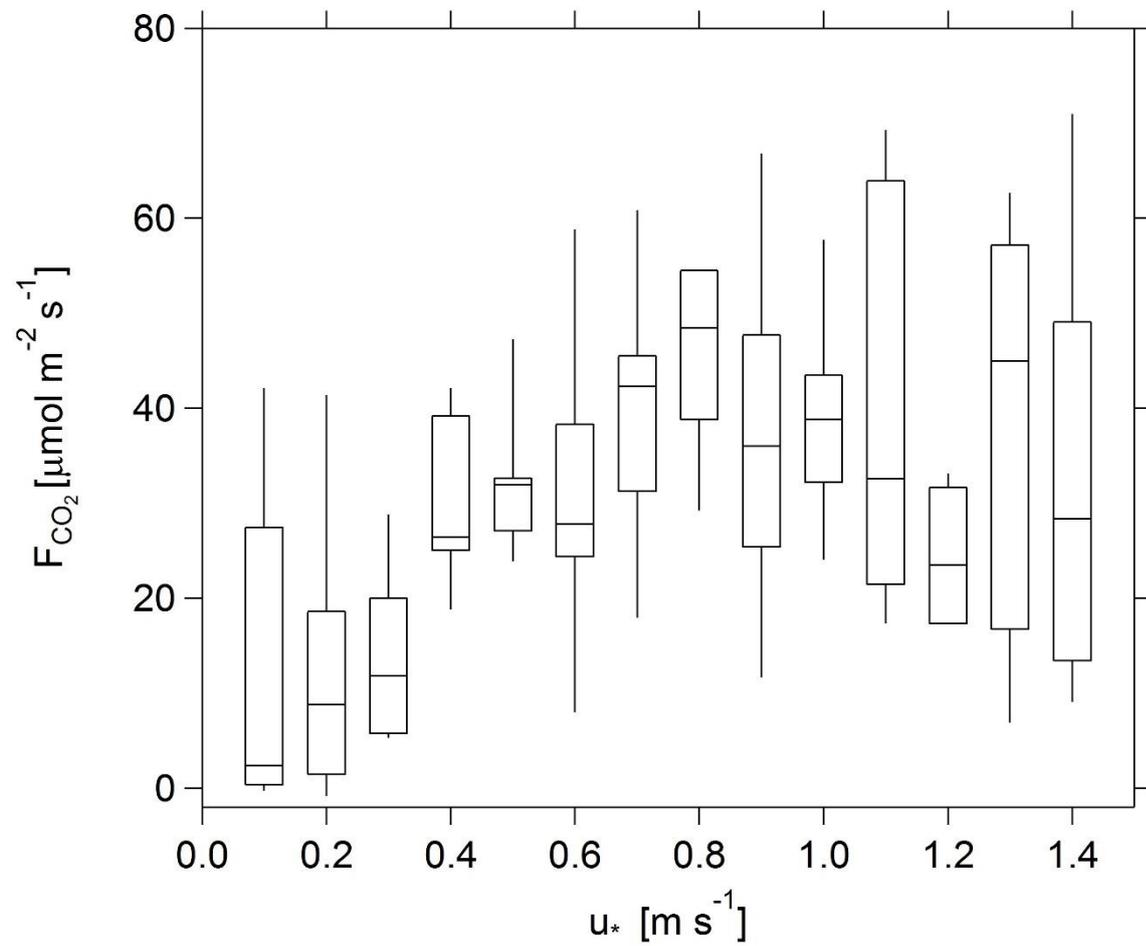


Figure S1: Fluxes of CO<sub>2</sub> measured at 1 Hz at the BT tower in London (sensor height: 190 m a.g.l.) as a function of  $u_*$  binned in increments of 0.1  $\text{m s}^{-1}$  from <0.1  $\text{m s}^{-1}$  to <1.4  $\text{m s}^{-1}$ . Boxes represent 25<sup>th</sup>, 50<sup>th</sup> and 75<sup>th</sup> percentiles and whiskers denote the 10<sup>th</sup> and 90<sup>th</sup> percentile.

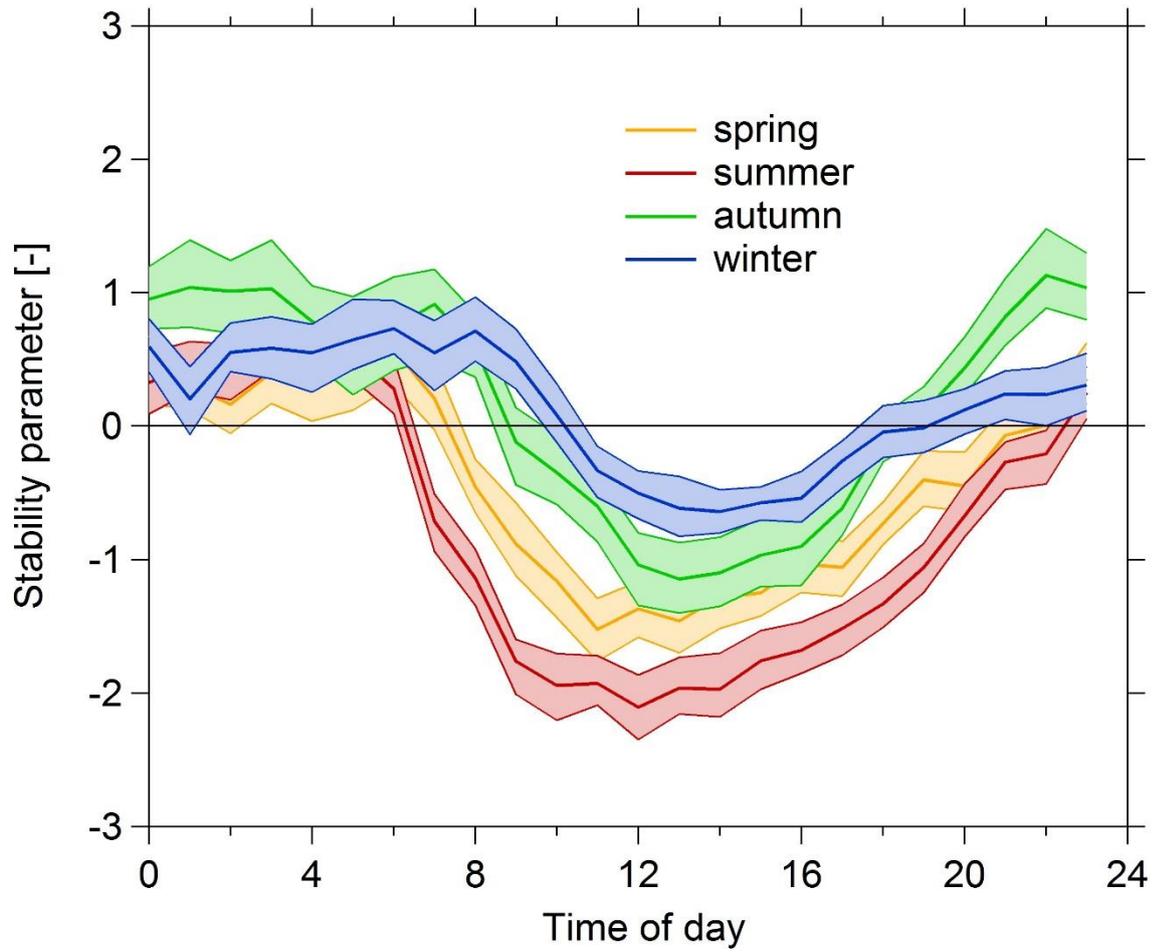


Figure S2: Mean diurnal profiles of the atmospheric stability parameter measured at the BT tower as a function of season.

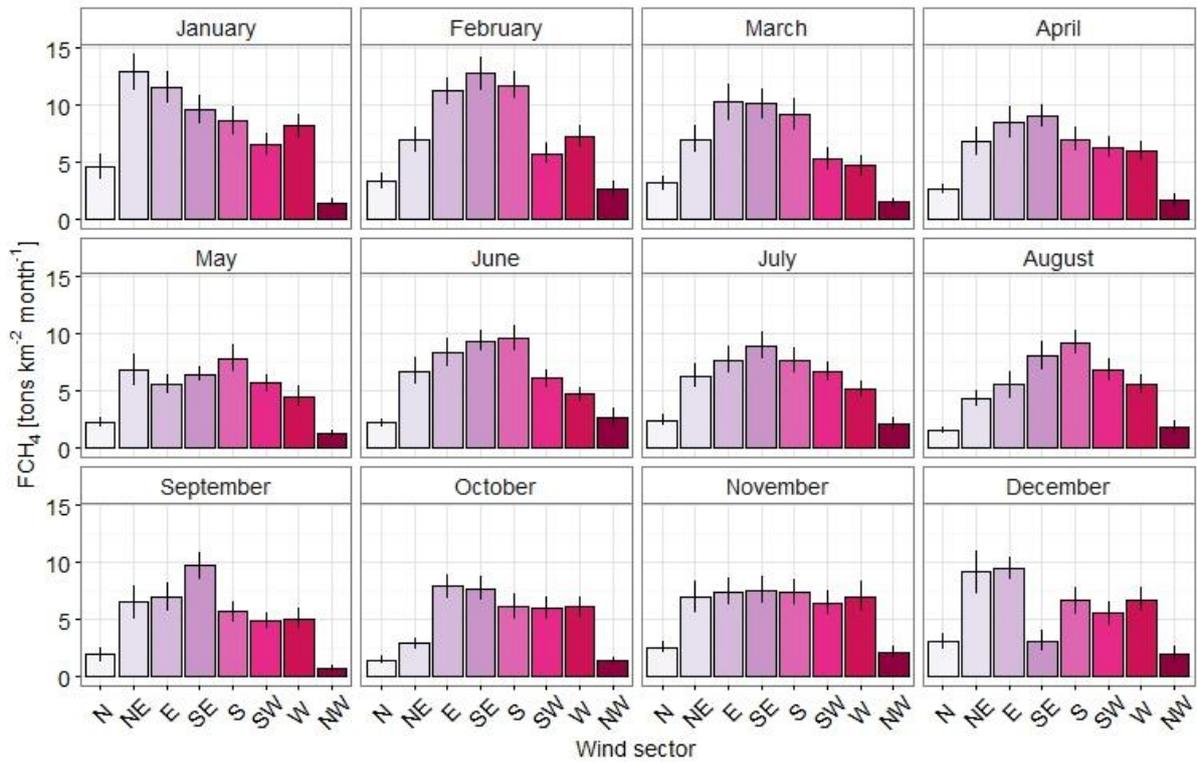


Figure S3: Monthly fluxes of methane measured by eddy-covariance at the BT tower by month and wind direction. Data period 15/09/2011-31/12/2014. Error bars are standard deviation.

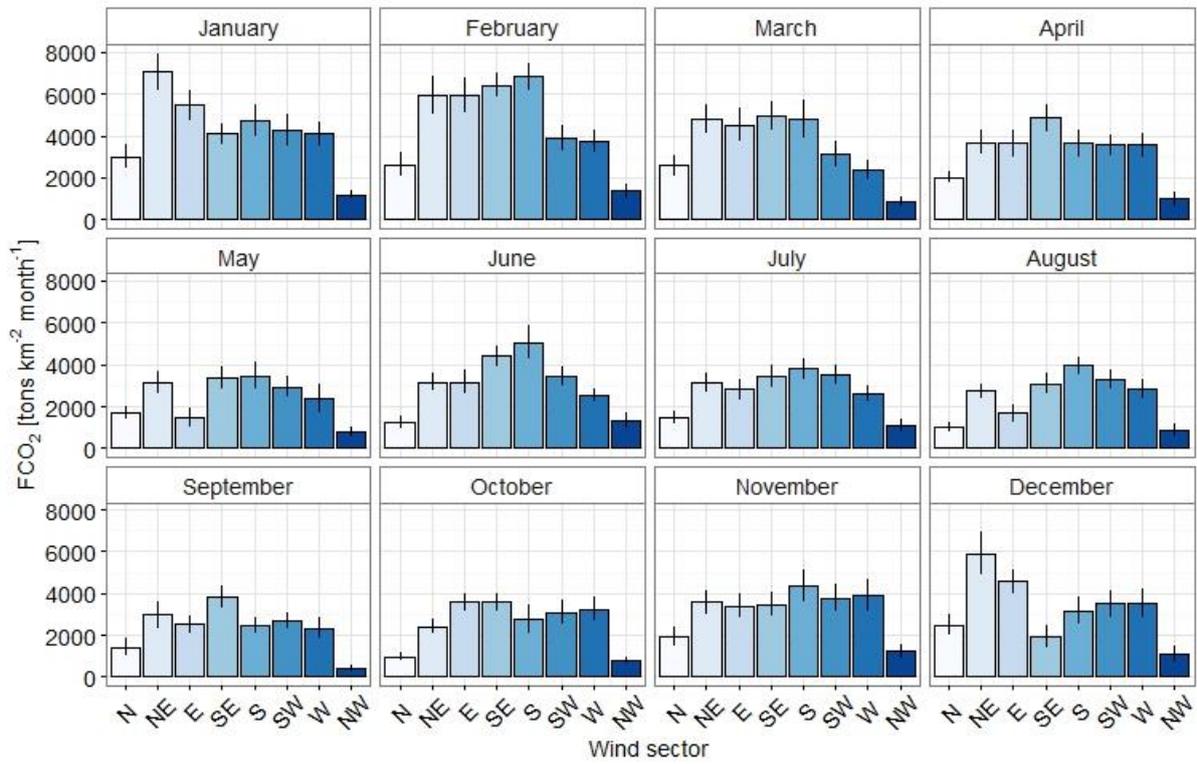


Figure S4: Monthly fluxes of carbon dioxide measured by eddy-covariance at the BT tower by month and wind direction. Data period 15/09/2011-31/12/2014. Error bars are standard deviation.

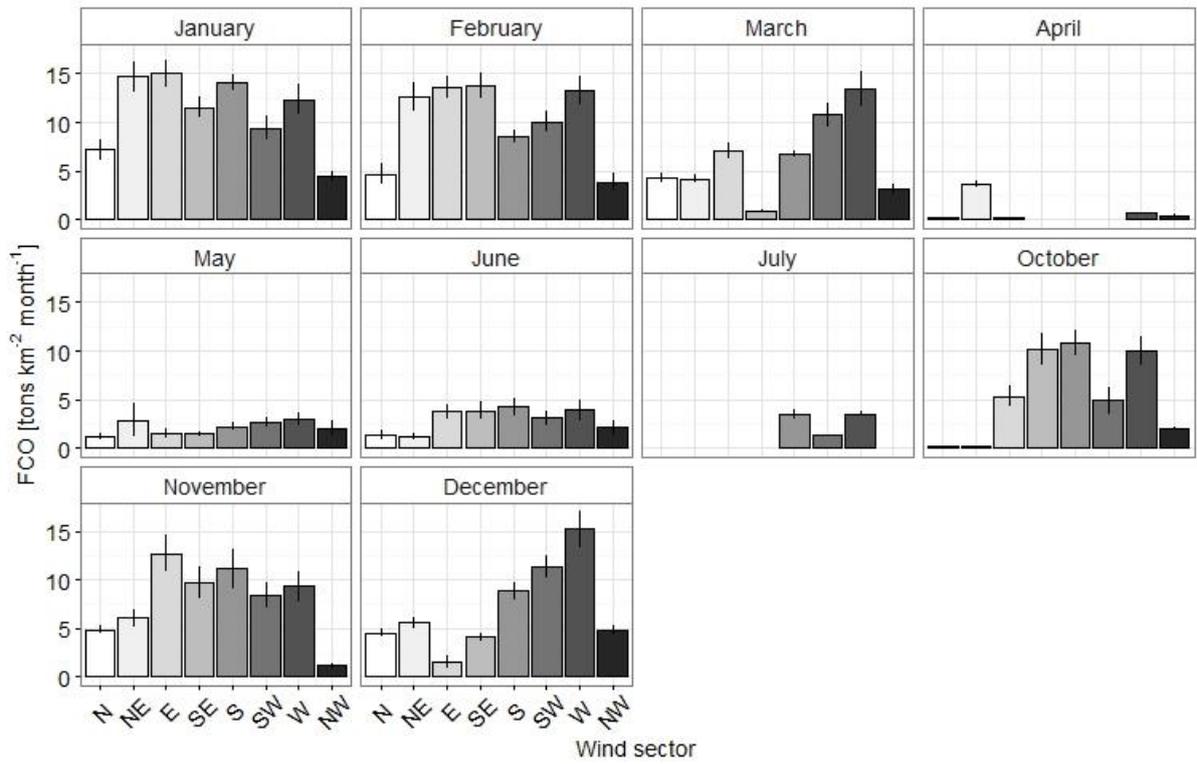


Figure S5: Monthly fluxes of carbon monoxide measured by eddy-covariance at the BT tower by month and wind direction. Data period 15/09/2011-31/12/2014. Error bars are standard deviation.

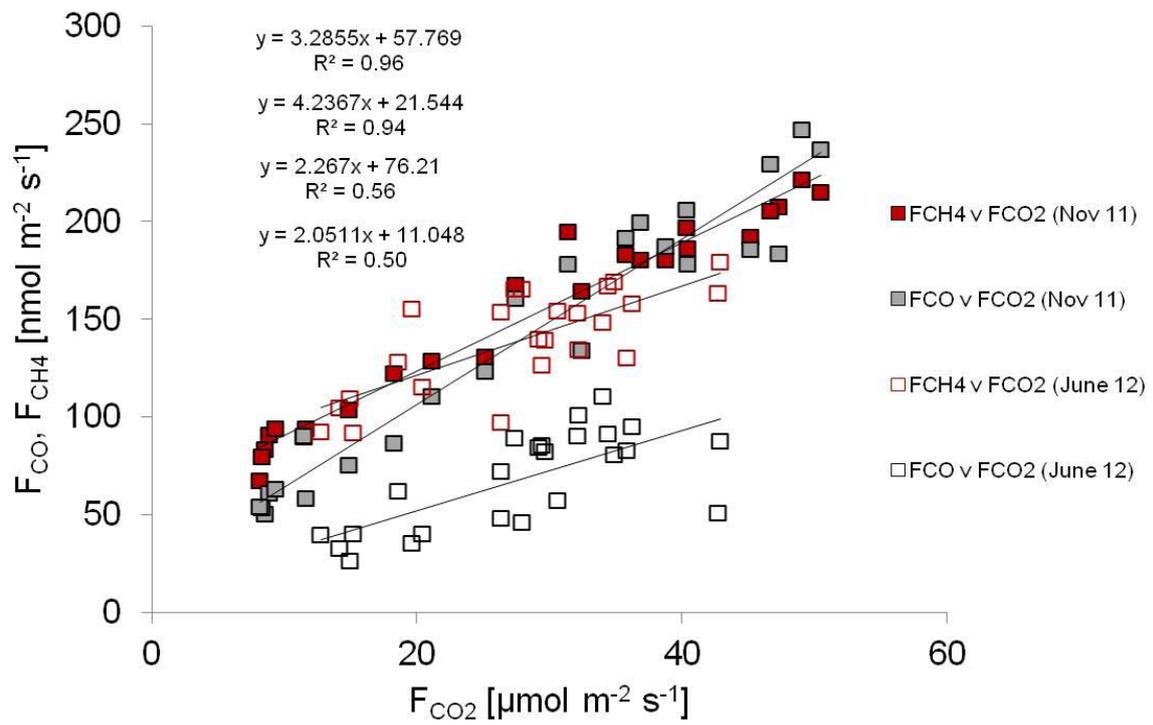


Figure S6: comparison of  $F_{CO}$  and  $F_{CH4}$  to  $F_{CO2}$  measured by eddy-covariance at the BT tower (monthly averages of spatially-integrated half-hourly values) for the months of November 2011 and June 2012.

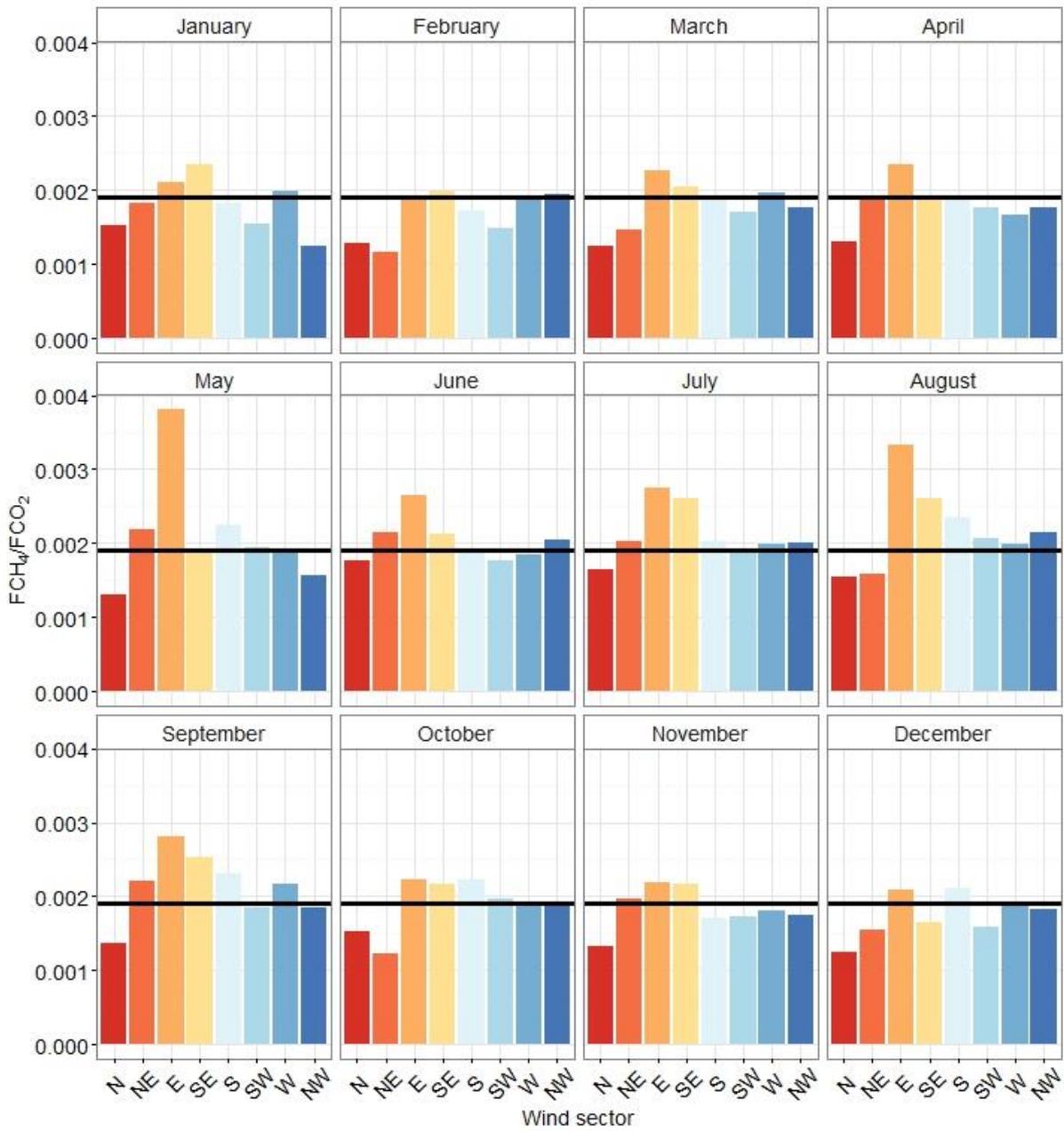


Figure S7: Ratios of fluxes of methane to carbon dioxide as a function of wind sector and month of the year. The horizontal line is the median of all data.

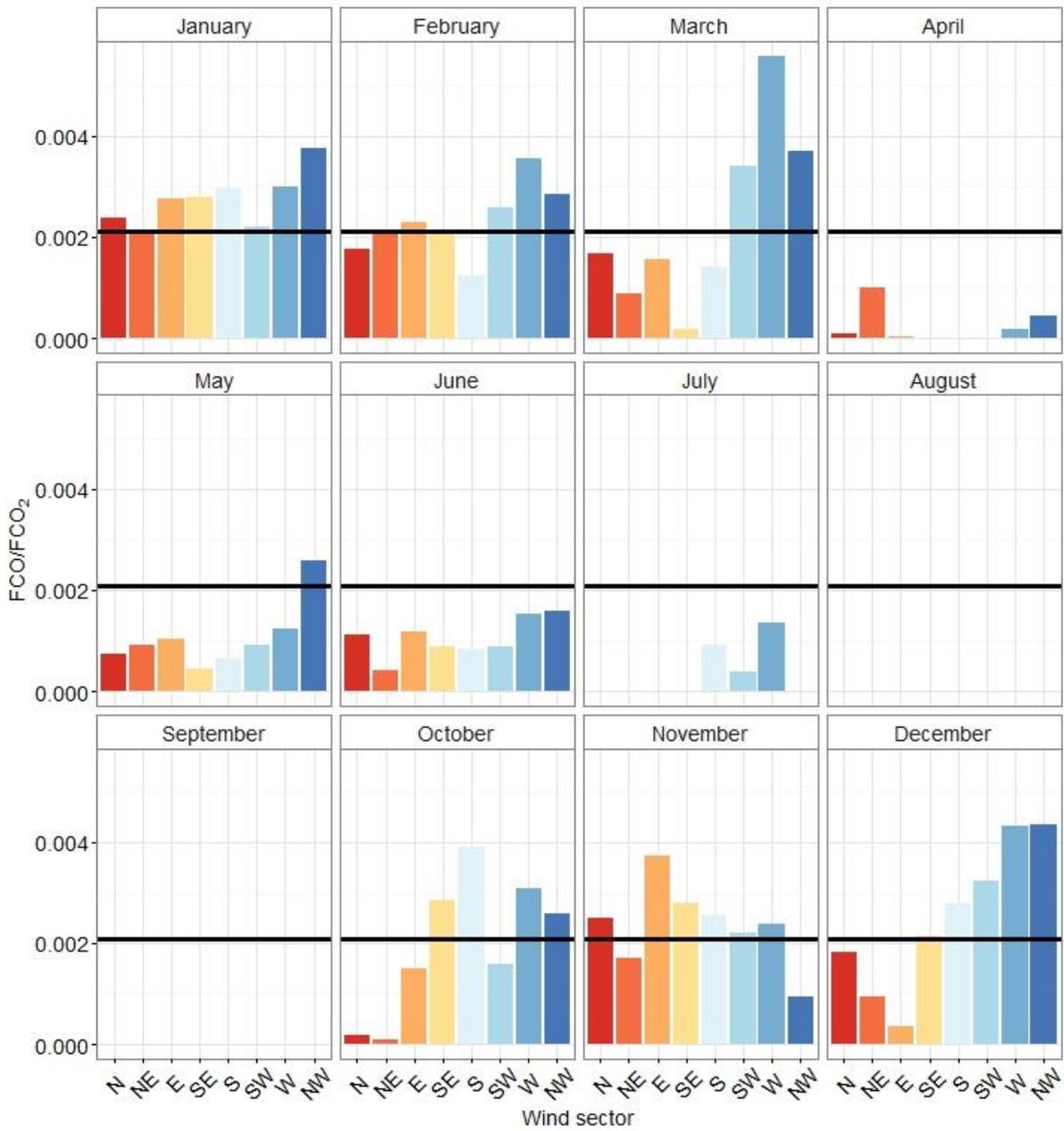


Figure S8: Ratios of fluxes of carbon monoxide to carbon dioxide as a function of wind sector and month of the year. The horizontal line is the median of all data.

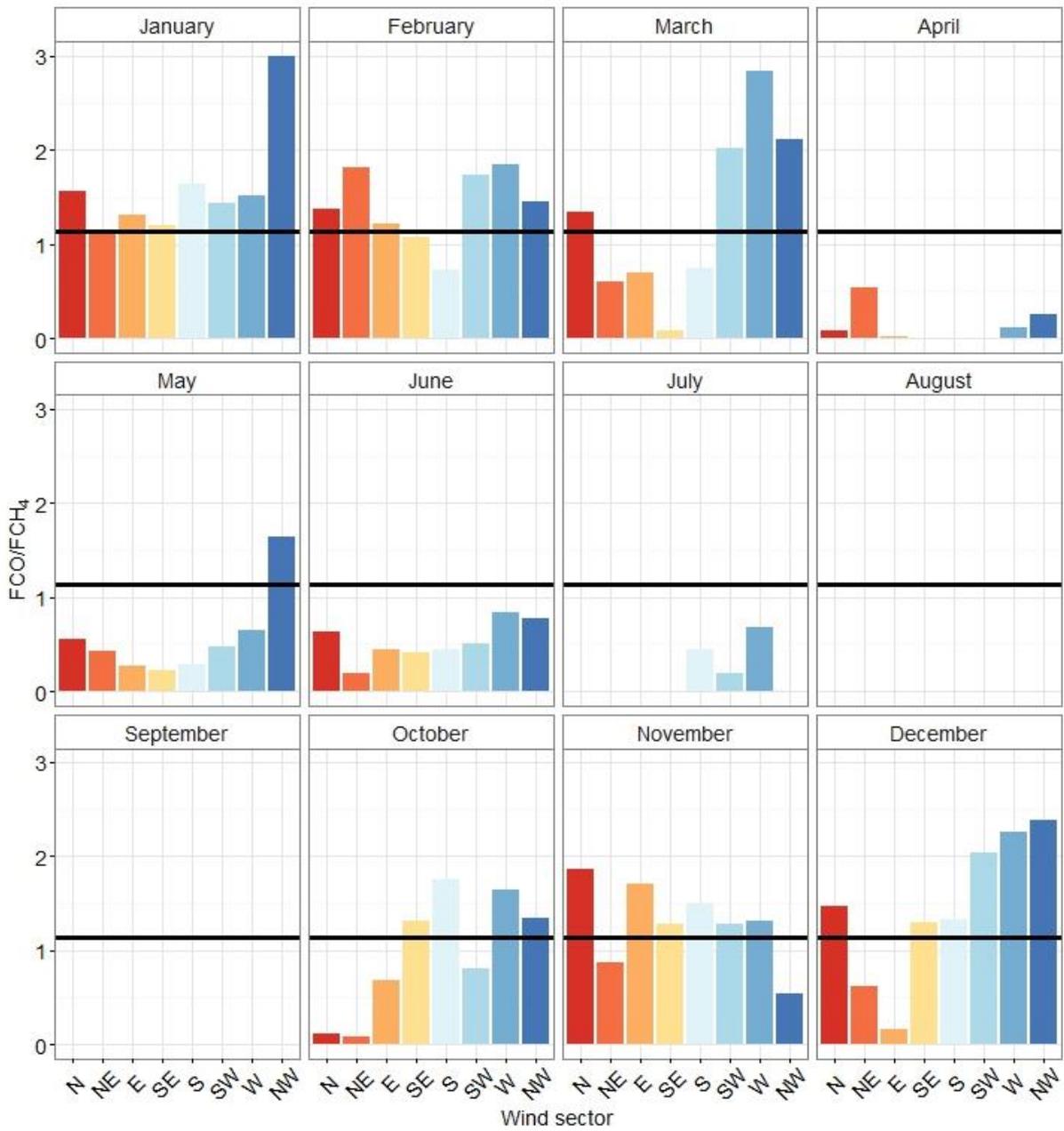


Figure S9: Ratios of fluxes of carbon monoxide to methane as a function of wind sector and month of the year. The horizontal line is the median of all data.