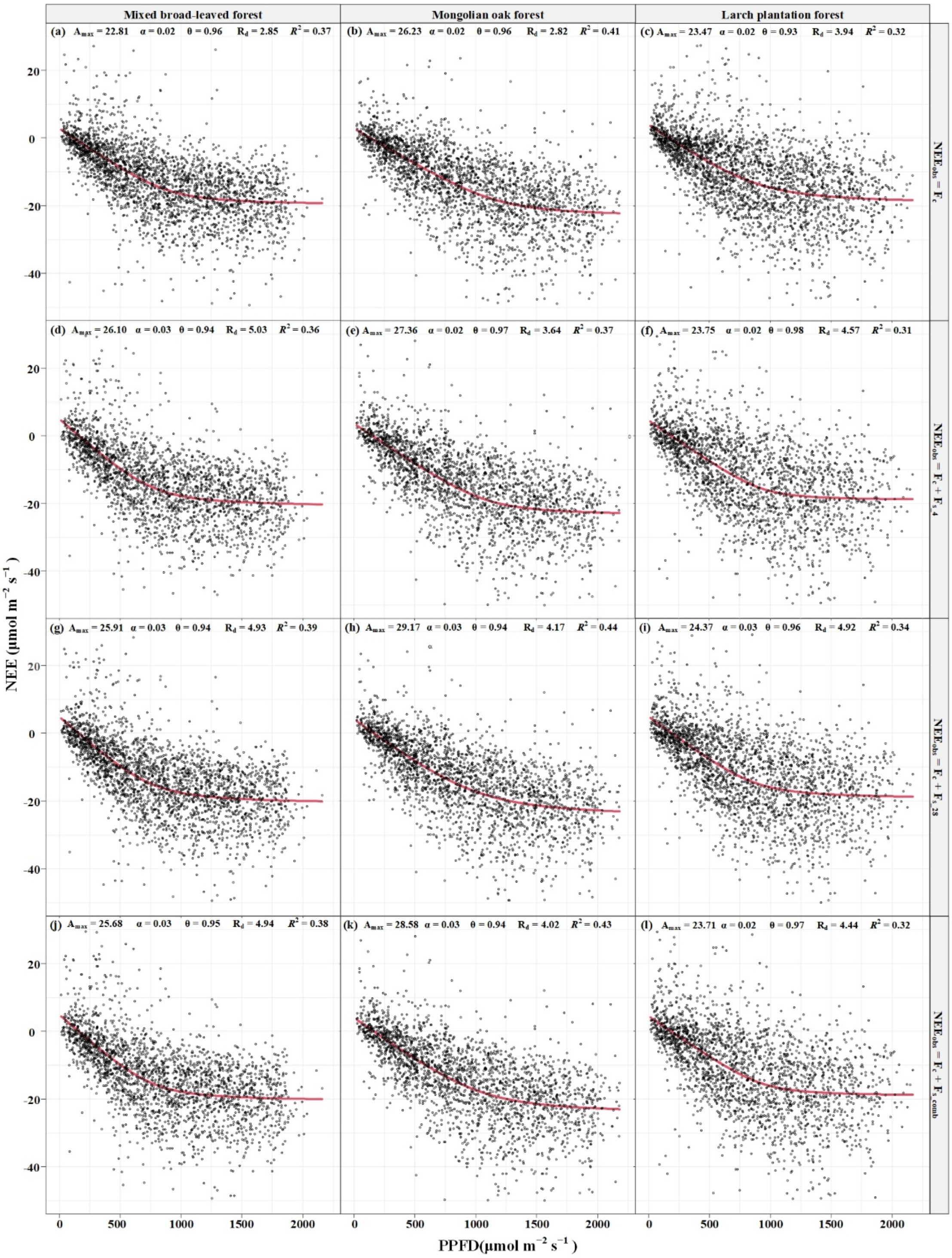

Figure S1 Response of daytime NEE observations (NEE_{obs}) to photosynthetic photon flux density (PPFD) during July and August

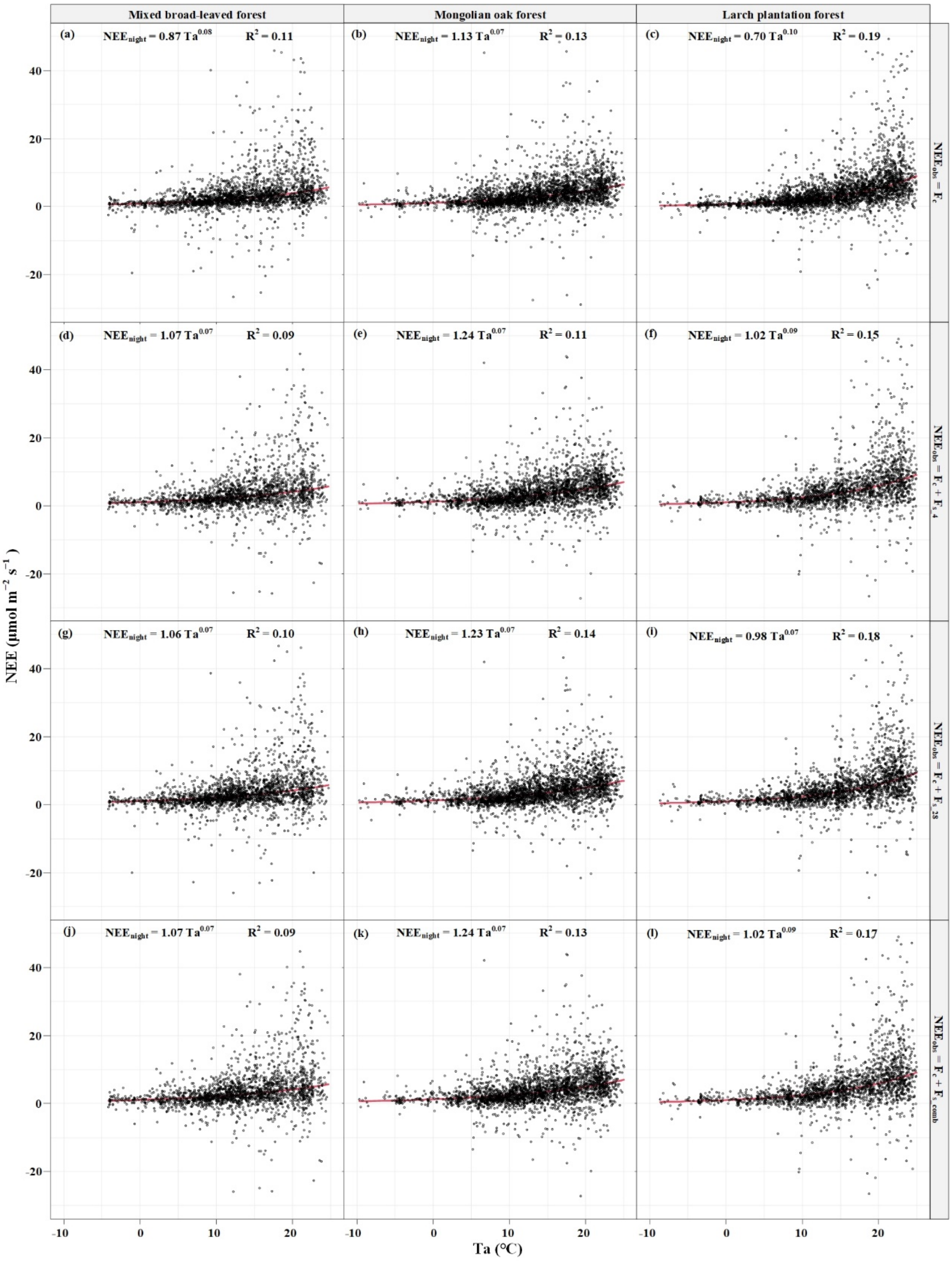

Figure S2 Response of nighttime NEE observations (NEE_{obs}) to air temperature (Ta) during the growing season

The influences of F_s on the relationship between NEE observations and meteorological drivers, indicated the effect of uncertainty in F_s estimates on NEE observations. Our analysis showed that the correlations between NEE observations derived from F_c+F_s and both photosynthetic photon flux density (PPFD) and air temperature are lower compared to those obtained from F_c alone (Figure 1 and Figure 2 in the Supplementary Materials). Additionally, the estimated light saturated net CO_2 assimilation (A_{max}) is greater when NEE observations are estimated by F_s+F_c, as opposed to when NEE is estimated solely by F_c. This suggests that F_s significantly affects daytime NEE and can correct the estimation of A_{max} and related parameters. The relationship between NEE observations and PPFD is influenced by the size of averaging time window the F_s measurement. A larger averaging window results in less random uncertainty in the F_s estimation, thereby increasing the correlation between NEE observations and meteorological drivers, including PPFD and Ta.

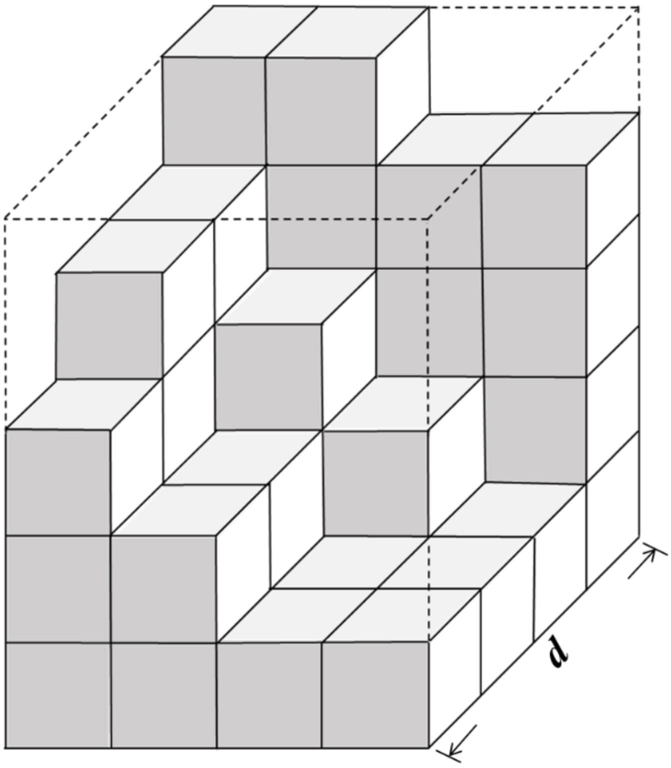

Figure S3 Calculation the volume of terrain above the lowest elevation of an area unit (V_u) and its largest vertically projected area (S_v) utilizing 3-dimentional box counting. d is the edge length of the side of the area unit; V_u represents the cumulative volumes of the constituent cubes; and S_v indicates the total area of the shaded regions. P_d is calculated by the ratio of V_u to the product of S_v and d.