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Supplement of

Annual greenhouse gas budget for a bog ecosystem undergoing restoration by rewetting

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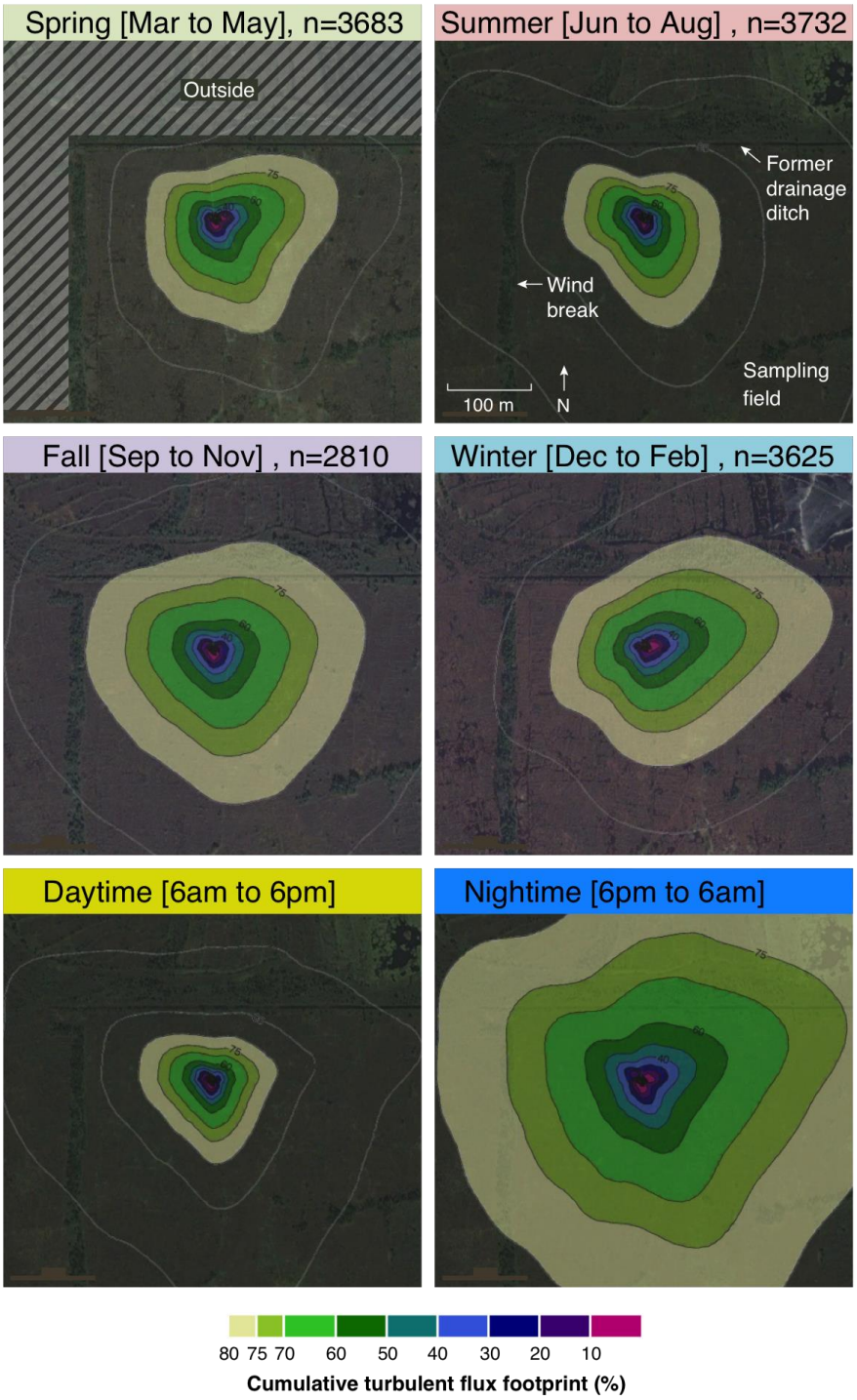

Figure S1: Cumulative flux footprint contours during the study period for each of seasons, and daytime and nighttime flux footprint contours during the study period. The background area was centered at the flux tower, and the area is 500 m x 500 m. The contour lines are in steps of 10% from 10 to 90% of the cumulative probability. The upper left bars in each sub plot explain which months/time were included and list the number of available half-hourly data (*n*).

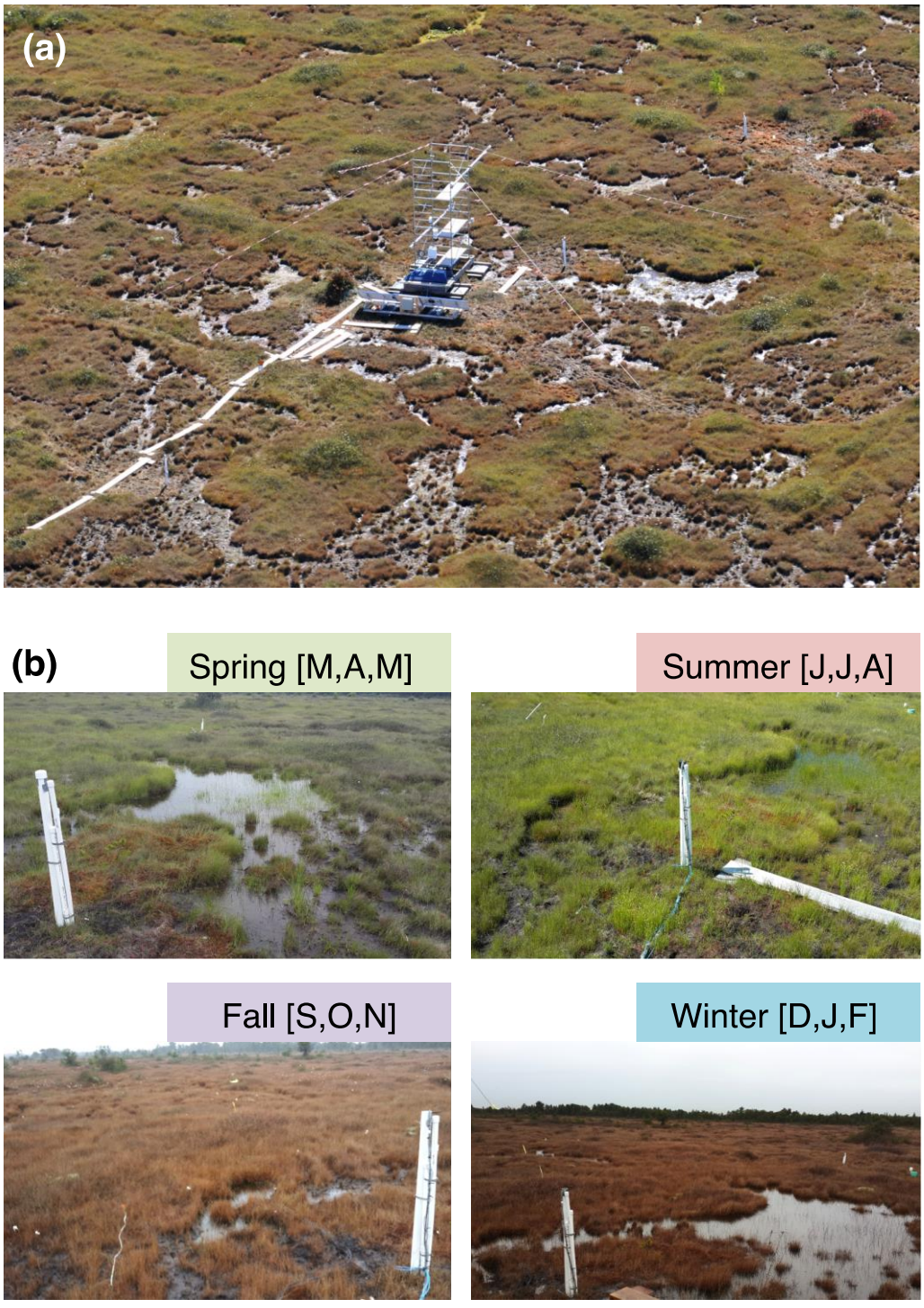

Figure S2: (a) Aerial photograph of the flux tower seen from the NW. To the left is the boardwalk (photo taken by Metro Vancouver by helicopter in July 2014).
(b) Documentation of vegetation cover around the flux tower.

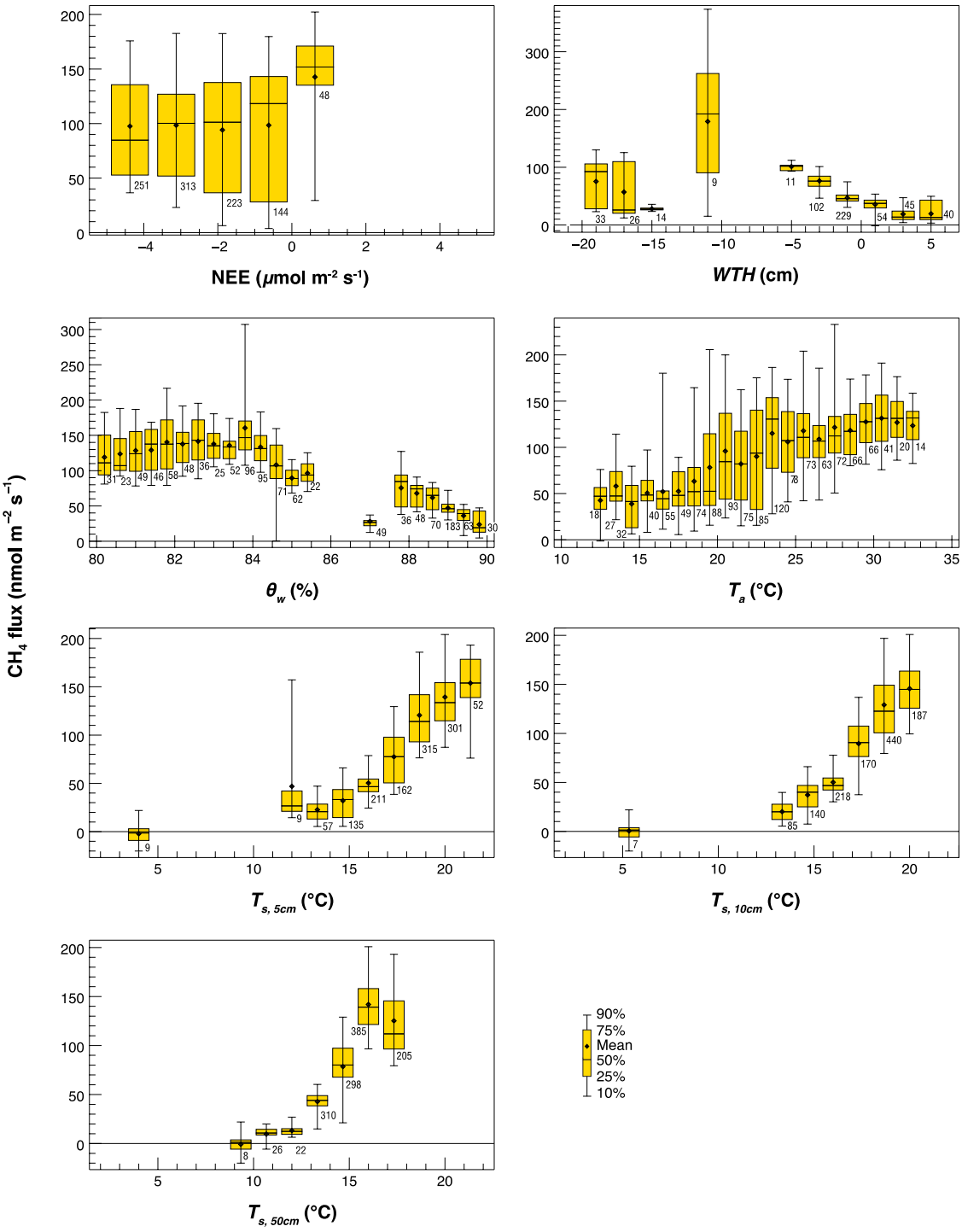

Figure S3. The relationships between CH_4 fluxes with quality flags 0 and 1 and all measured environmental factors using all half-hourly data.

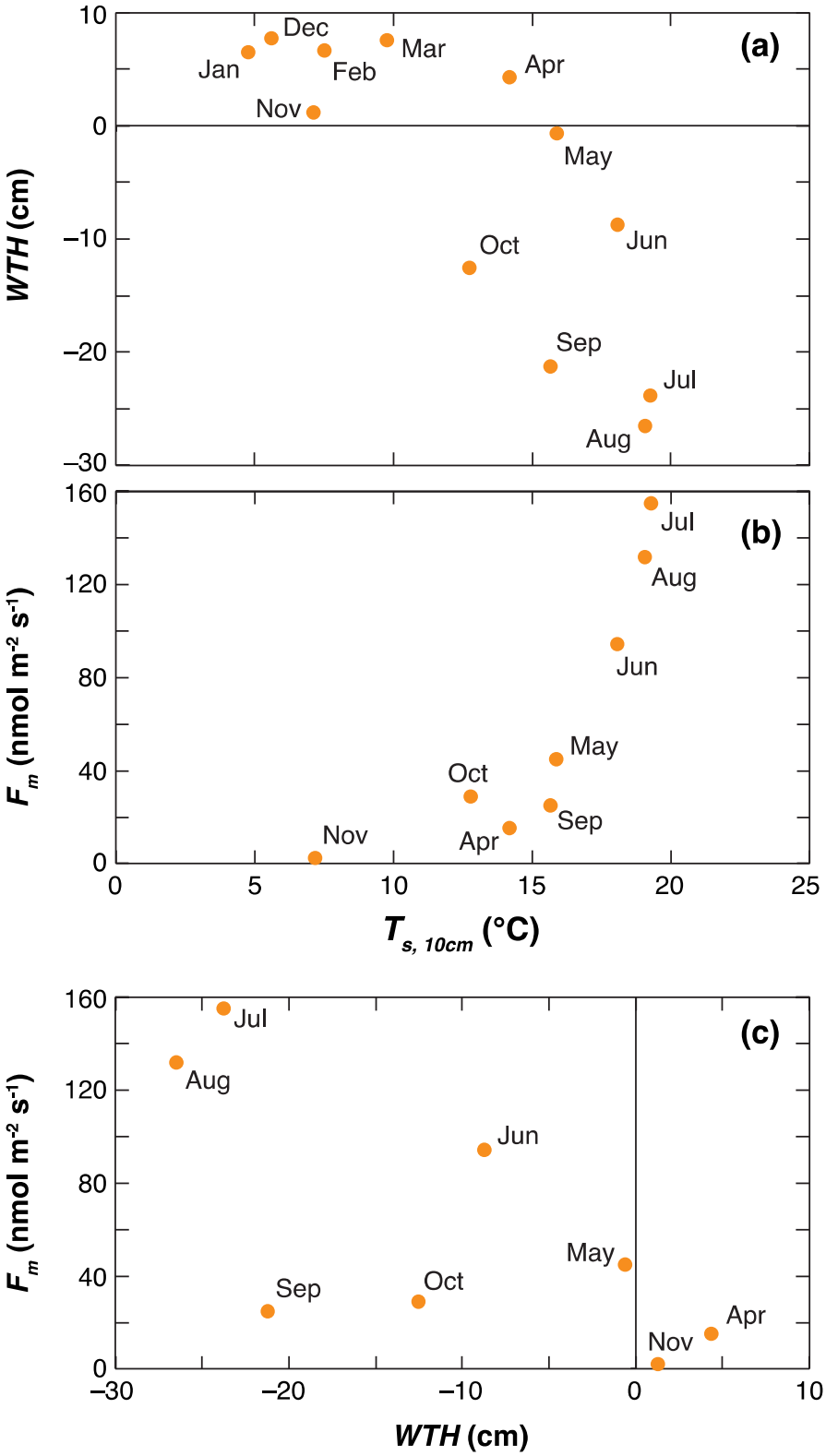

Figure S4. (a) Monthly mean *WTH* vs. monthly mean $T_{s,10cm}$. (b) Monthly mean CH_4 flux based on available measurements (non-gap-filled) vs. monthly mean *WTH* and (c) $T_{s,10cm}$.

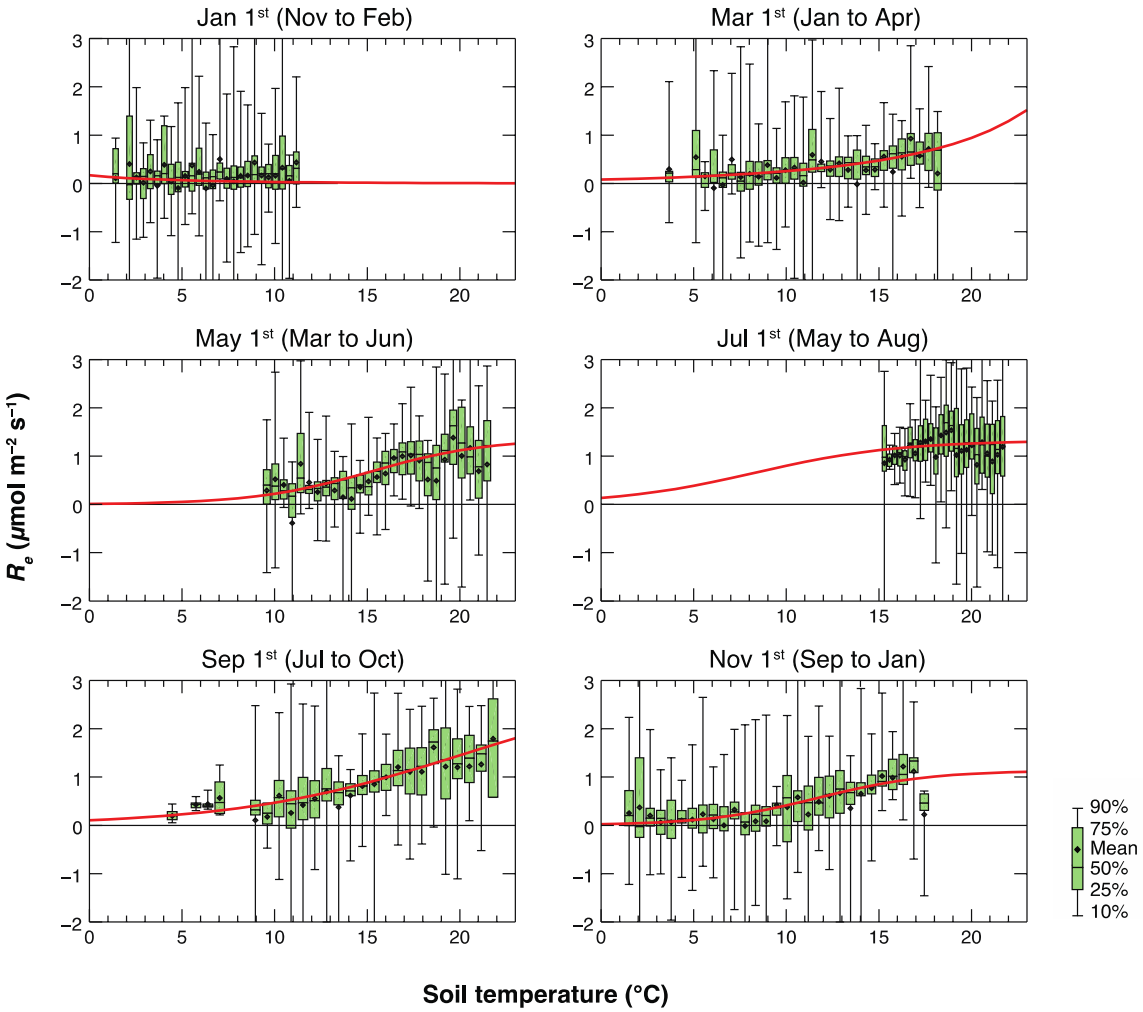

Figure S5: Boxplots of measured R_e (nighttime NEE) plotted against $T_{s,5cm}$ with a fitted curve on the first day of each time period using a window size of 120 days. R_e was binned for 32 classes from minimum of $T_{s,5cm}$ to maximum of $T_{s,5cm}$ in each period. Note: Although y-axis is fixed, the x-axis is variable.

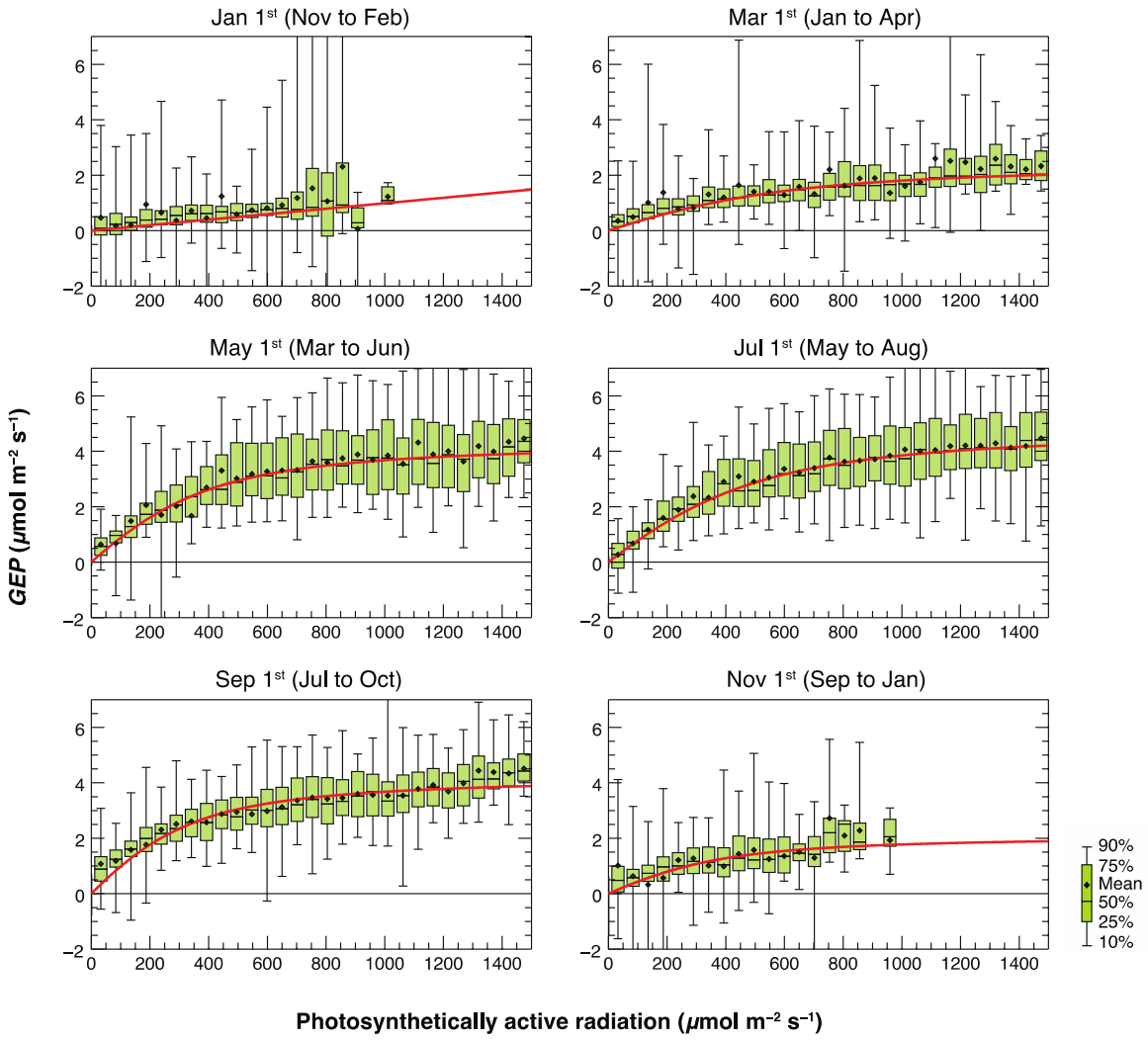

Figure S6: Light response curves on the first day of each time period using a window size of 90 days. PPFD was binned for 30 classes from 0 to 1500 µmol m^{-2} s^{-1}.

Table S1. Coefficients of determination (R^2) from simple regression analyses of relationships between CH_4 fluxes and soil temperature (T_a, $T_{s,5cm}$, $T_{s,10cm}$, $T_{s,50cm}$, θ_W, WTH and NEE. The highest value was marked as orange.

Initial identification of major controls							
Variables / Functions	$T_{s,5cm}$	$T_{s,10cm}$	$T_{s,50cm}$	T_a	θ_W	WTH	NEE
Linear	0.55	0.59	0.48	0.21	0.57	0.55	0.00
Exponential	0.66	**0.73**	0.64	0.23	0.51	0.51	0.01
Logarithmic	0.50	0.54	0.48	0.28	0.50	0.00	0.00
Polynomial	0.56	0.61	0.48	0.31	0.57	0.52	0.01

Table S2. The residual analysis for T_a, θ_W, WTH and NEE for the study period based on the relationship between CH_4 flux $T_{s,10cm}$. The highest value was marked as orange.

	NEE	WTH	θ_W	T_a
R^2 value	0.004	**0.065**	0.045	0.022