



*Supplement of*

**Radiation, soil water content, and temperature effects on carbon cycling in an alpine swamp meadow of the northeastern Qinghai–Tibetan Plateau**

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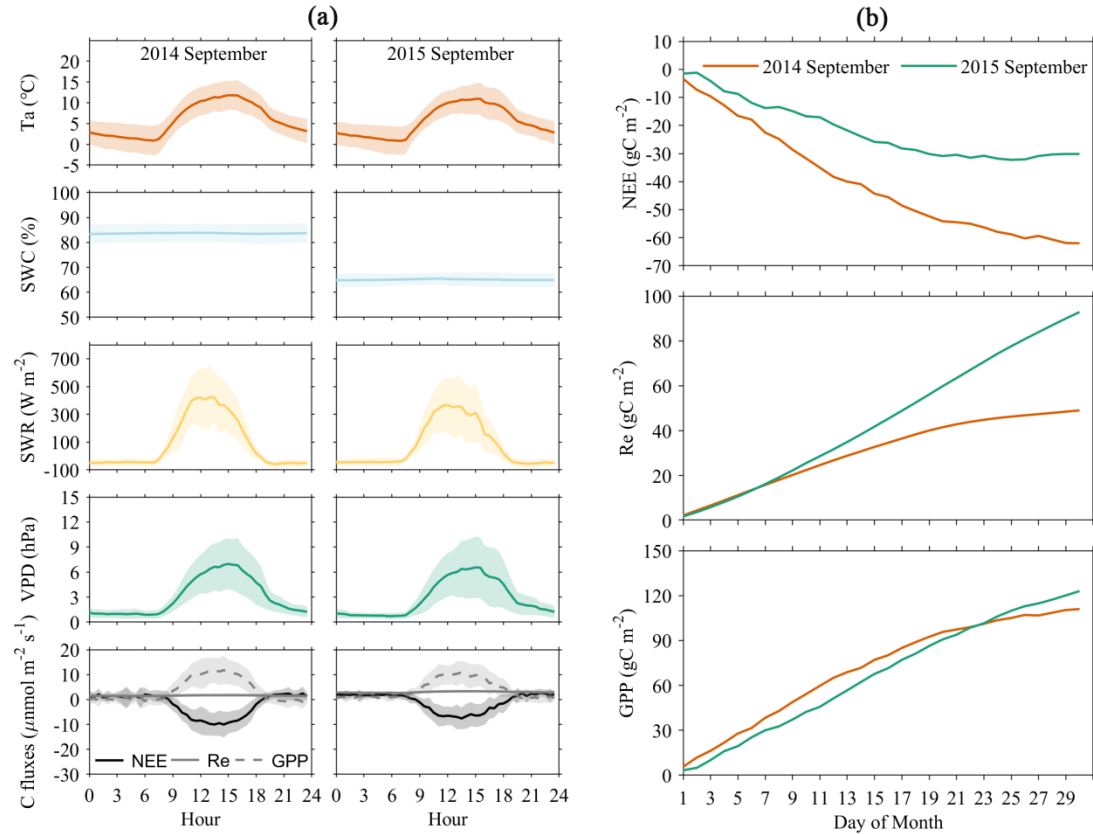
**Table S1. Temporal scale, time aggregation, sample size and number of random forests utilized in the Random Forest analysis.**

Temporal scale	Time aggregation	Sample size	Number of random forests (per variable and per flux)
Diurnal	Hourly	23323	24 (every hour)
Seasonal	Hourly	23323	8 (every 2 weeks)
Annual	Hourly	23323	5 (every year + entire period)

**Table S2. Seasonally aggregated environmental drivers and C fluxes in the late growing season of 2014, 2015, and 2018 and their relative difference between years.**

Period	Ta (°C)	Rn (W m <sup>-2</sup> )	SWC (%)	NEE (g C m <sup>-2</sup> )	Re (g C m <sup>-2</sup> )	GPP (g C m <sup>-2</sup> )
2014 Late GS	6.8±2.6	93.2±49.4	80.7±4.1	-175.6	152.7	328.3
2015 Late GS	6.8±2.5	93.2±43.6	68.3±4.3	-141.6	191.9	333.5
2018 Late GS	8.5±3.4	97.7±47.6	80.8±3.8	-134.3	225.4	359.7
2015 - 2014	0.8%	-0.1%	-15.4%	-19.4%	25.7%	1.6%
2018 - 2014	25%	4.8%	0.1%	-23.5%	47.6%	9.6%

Note: late GS represents late (Aug. - Sep.) growing season.



**Fig. S1. (a) Comparisons of the diurnal variations of environmental drivers (Ta, SWC, Rn, and VPD) and C fluxes (NEE, Re, and GPP) between September 2014 and September 2015. The shading represents the mean  $\pm$  standard deviation of the presented variables. (b) Comparisons of the daily accumulated C fluxes (NEE, Re, and GPP) between September 2014 and September 2015.**

**Table S3. Daily aggregated environmental drivers and C fluxes in 2014 and 2015 September.**

Period	Ta (°C)	Rn (W m <sup>-2</sup> )	SWC (%)	NEE (g C m <sup>-2</sup> )	Re (g C m <sup>-2</sup> )	GPP (g C m <sup>-2</sup> )
2014 Sept	5.8 $\pm$ 2.5	88.8 $\pm$ 43.5	83.7 $\pm$ 3.7	-62.0	49.0	111.0
2015 Sept	5.4 $\pm$ 2.2	86.5 $\pm$ 38.3	65.1 $\pm$ 2.4	-30.2	92.8	123.0
2015 - 2014	-6.8%	-2.6%	-22.2%	-51.3%	89.4%	11.0%

**Table S4. Daily aggregated environmental drivers and C fluxes in 2014, 2017, and 2018.**

Year	Ta (°C)	Rn (W m <sup>-2</sup> )	SWC (%)	NEE (g C m <sup>-2</sup> )	Re (g C m <sup>-2</sup> )	GPP (g C m <sup>-2</sup> )
2014	-0.9 $\pm$ 8.2	72.2 $\pm$ 52.9	47.8 $\pm$ 32.0	-240.3	561.1	801.4
2017	-0.5 $\pm$ 8.3	73.4 $\pm$ 53.7	50.2 $\pm$ 32.8	-117.6	959.3	1076.9
2018	-0.5 $\pm$ 9.1	74.7 $\pm$ 54.9	49.8 $\pm$ 31.6	-113.4	788.4	901.8

2017-2014	44.4%	1.7%	5.0%	-51.1%	71.0%	34.4%
2018-2014	44.4%	3.5%	4.1%	-52.8%	40.5%	12.5%

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