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Supplement of

Species-specific temporal variation in photosynthesis as a moderator of peatland carbon sequestration

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Table S1. Parameter estimates and standard errors of month- and species-wise hyperbolic light response models and the random effects of the models. Sample n is denoted with an asterisk (*), when light response parameters are calculated from a combined sample from the previous and following month.

Species	Month	n	Fixed part						Random part						
			k	SE	Pmax	SE	R	SE	SD (Pmax)	SD (k)	SD (R)	SD (residual)	Corr (Pmax,k)	Corr (Pmax,R)	Corr (k,R)
<i>Sphagnum fuscum</i>	May	4	138.4	7.0	710.4	75.1	-125.1	9.6	130.0	12.1	16.6	0.7	0.8	0.2	-0.4
	June	6*	130.6	7.6	617.7	76.1	-146.8	16.2	169.9	12.6	35.6	6.3	1.0	0.7	0.7
	July	2	114.6	11.0	432.4	39.5	-190.5	19.6	38.7		18.8	5.4		-1.0	
	August	4	96.8	43.1	423.3	53.4	-230.1	26.4	63.8			45.0			
	September	4	117.1	13.6	390.1	52.1	-201.0	26.0	90.2	23.3	45.1	1.3	0.5	1.0	0.2
<i>S. angustifolium</i>	May	4	206.5	32.0	807.0	95.2	-207.7	20.8		55.4	36.0	0.1	0.8	0.6	0.7
	June	7*	194.3	19.4	649.5	95.5	-167.4	27.6	164.9 233.9	47.6	67.6	0.1	0.7	-0.5	0.1
	July	3	155.6	129.9	436.9	87.7	-117.9	39.2	93.7			56.0			
	August	6	217.3	9.6	872.6	40.9	-416.2	39.7	90.5		8.0	6.2		-0.5	
	September	3	262.3	253.4	688.5	105.5	-215.7	38.6	92.5			53.2			
<i>S. balticum</i>	May	2	171.4	85.1	386.8	78.6	-144.2	52.0	73.2		48.3	19.5		-1.0	
	June	5*	150.0	24.3	391.1	40.7	-155.7	29.0	77.6	29.5	54.5	13.5	-1.0	-1.0	1.0
	July	3	113.2	4.7	395.4	61.3	-167.5	36.5	83.9		49.8	2.4		-1.0	
	August	3	234.3	17.9	632.8	87.2	-323.4	27.2	118.5		36.9	4.9		1.0	
	September	5	84.1	13.9	346.7	55.5	-183.4	26.1	108.2	1.0	50.0	13.7	0.1	0.1	1.0
<i>S. magellanicum</i>	May	2	117.4	57.4	576.1	126.7	-175.1	37.5	161.6			54.0			
	June	5*	203.1	37.1	611.3	57.3	-172.9	17.4	132.5	81.2	40.9	11.3	-0.1	0.6	-0.9

Species	Month	n	Fixed part						Random part							
			k	SE	Pmax	SE	R	SE	SD (Pmax)	SD (k)	SD (R)	SD (residual)	Corr (Pmax,k)	Corr (Pmax,R)	Corr (k,R)	
<i>S. majus</i>	July	3		250.7	100.4	704.8	39.1	-175.4	35.0			49.1	34.0			
	August	5		209.7	16.8	727.0	66.8	-322.4	19.0	145.6	19.3	37.5	8.1	1.0	-0.3	-0.3
	September	5		113.1	12.6	429.9	76.3	-167.4	46.1	152.2	17.8	91.8	8.6	1.0	-0.8	-0.5
	May	3		177.5	64.8	772.1	122.2	-179.2	27.4	162.8			39.2			
	June	5*		253.4	41.3	707.7	72.2	-140.3	20.2	162.8	20.6	45.3	19.6	0.2	-0.4	-1.0
	July	2		368.7	283.0	707.0	106.0	-113.8	26.6	96.1			45.7			
	August	5		293.2	25.2	852.7	199.4	-405.3	47.3	398.5	31.6	94.4	7.1	0.8	-0.9	-0.5
	September	2		96.8	9.5	380.4	24.7	-207.0	52.3	23.4		52.1	5.4		1.0	
	May	4		235.1	122.2	838.2	73.2	-171.7	32.6	61.0			55.6			
<i>S. papillosum</i>	June	8*		193.7	31.5	640.6	67.2	-160.2	20.7	165.0		48.9	24.4		-0.4	
	July	4		137.1	22.5	490.1	32.2	-155.7	23.1	54.8	35.6	39.4	7.0	0.3	-1.0	-0.4
	August	7		156.5	40.6	594.8	29.1	-359.2	41.9			94.2	35.5			
	September	3		66.8	43.8	425.6	67.5	-201.3	52.4			52.9	69.9			
	May	1		211.9		492.7		-130.3								
<i>S. rubellum</i>	June	6*		167.7	16.7	382.0	42.8	-176.7	23.9	95.8		53.4	8.6		-0.5	
	July	6*		167.7	16.7	382.0	42.8	-176.7	23.9	95.8		53.4	8.6		-0.5	
	August	5		135.0	13.4	358.3	45.2	-188.6	27.3	89.0		53.8	6.5		-0.8	
	September	4		95.7	8.0	266.4	31.5	-140.0	32.7	54.4	12.4	56.5	2.8	-0.7	-0.7	0.0
<i>S. cuspidatum</i>	May	3		186.7	20.2	698.9	59.8	-208.9	31.3	81.9	27.6	42.9	0.5	1.0	1.0	1.0
	June	7*		178.1	10.9	602.5	44.2	-172.3	24.9	106.5	26.1	60.7	0.1	0.6	-0.2	0.7
	July	4		174.9	16.1	539.5	46.7	-144.9	33.4	80.9	27.5	57.8	1.4	0.4	0.0	0.9
	August	4		204.8	12.0	863.0	32.8	-374.4	44.6	56.8	20.8	77.2	0.2	0.4	-1.0	-0.2

Species	Month	n	Fixed part						Random part						
			k	SE	Pmax	SE	R	SE	SD (Pmax)	SD (k)	SD (R)	SD (residual)	Corr (Pmax,k)	Corr (Pmax,R)	Corr (k,R)
<i>Calluna vulgaris</i>	September	5	206.4	254.9	772.2	142.5	-322.4	93.1	162.1			144.0			
	May	1	103.7		655.3		-28.4								
	June	3	232.8	19.6	889.9	164.6	-103.0	4.5	232.5			6.5			
	July	8*	226.3	17.6	1289.1	148.8	-159.8	27.6	392.2	43.3	72.8	0.2	0.1	-0.2	0.1
	August	5	206.2	24.1	1514.2	117.5	-193.4	38.0	231.1	28.2	73.8	15.3	-0.5	0.7	0.2
	September	4	124.2	19.6	708.2	168.1	-192.0	47.5	291.1	33.5	82.3	3.4	0.9	-0.4	0.0
	May	1	173.4		964.0		-159.7								
<i>Betula nana</i>	June	3	148.6	35.9	714.9	82.9	-141.4	15.0	113.2			21.4			
	July	7*	156.3	26.4	705.8	76.0	-153.4	13.5	171.8	43.4	27.5	18.4	1.0	-0.3	-0.1
	August	4	173.1	75.8	659.4	110.8	-157.9	21.9	155.7			37.9			
	September	5	101.2	27.8	767.8	139.5	-312.9	41.5	269.6	47.6	72.2	22.0	0.9	0.4	-0.1
	May	3	170.6	131.3	898.5	319.8	-134.3	58.6	433.4			88.4			
<i>Carex limosa</i>	June	3	211.4	62.6	1107.7	259.6	-69.2	21.8	363.4			31.9			
	July	8*	161.7	22.6	996.5	163.1	-86.6	22.3	430.6	43.6	55.9	19.2	1.0	0.5	0.5
	August	5	157.4	15.6	927.6	229.0	-94.5	31.2	457.3		60.2	16.9		0.1	
	September	4	102.6	32.2	457.2	104.8	-146.5	38.0	179.2	41.5	62.7	20.7	0.9	-0.8	-0.9
	May	2	227.9	11.0	1517.9	549.3	-280.4	36.4	549.2		36.1	4.9		-1.0	
<i>Andromeda polifolia</i>	June	2	279.6	51.0	1575.1	385.4	-136.3	14.3	383.9			14.6			
	July	5*	158.4	41.6	1045.0	253.9	-173.3	37.4	506.9	76.9	71.8	21.8	1.0	0.4	0.5
	August	3	81.7	42.3	699.5	148.5	-204.9	49.6	184.2			71.3			
	September	5	216.5	44.6	1818.4	179.9	-306.8	65.4	357.0	83.3	128.0	28.9	0.6	0.4	1.0

Species	Month	n	Fixed part					Random part								
			k	SE	Pmax	SE	R	SE	SD (Pmax)	SD (k)	SD (R)	SD (residual)	Corr (Pmax,k)	Corr (Pmax,R)	Corr (k,R)	
<i>Empetrum nigrum</i>	May	1	133.1		634.1		-106.4									
	June	3	133.1	57.2	634.1	98.2	-106.4	26.1	128.4			37.4				
	July	7*	128.0	18.6	770.4	122.5	-151.7	56.1	299.3	36.6	136.3	16.5	0.8	-0.7	-0.2	
	August	4	123.1	28.0	872.0	200.0	-187.0	97.5	345.8	45.6	168.4	13.5	0.9	-0.8	-0.4	
	September	5	128.2	14.9	589.8	142.8	-144.1	59.9	285.6	26.7	119.6	5.6	1.0	-0.9	-0.9	
<i>Eriophorum vaginatum</i>	May	3	197.6	90.5	1464.3	203.3	-184.6	45.8	268.1			65.5				
	June	3	111.0	80.6	579.2	207.0	-82.7	50.0	273.3			74.5				
	July	7*	124.2	30.6	692.1	164.2	-107.0	20.8	402.2	74.3	50.4	7.8	1.0	-0.4	-0.5	
	August	4	148.9	49.1	772.3	258.8	-120.1	16.1	448.1	83.7	26.7	8.2	1.0	-0.9	-0.9	
	September	3	76.8	67.3	658.1	160.4	-170.7	81.3	155.9			116.1				
<i>Rhynchospora alba</i>	May	-	-	-	-	-	-	-								
	June	3	109.6	24.2	1197.6	162.0	-210.0	61.2	204.2		74.5	38.8		1.0		
	July	6*	123.0	15.6	892.2	298.3	-150.5	41.9	652.6	24.0	91.6	17.9	0.6	-0.4	0.5	
	August	3	90.4	22.4	342.1	104.9	-93.4	11.5	146.5			17.0				
	September	-	-	-	-	-	-	-								
<i>Rubus chamaemorus</i>	May	-	-	-	-	-	-	-								
	June	3	113.8	31.5	1109.8	473.2	-159.2	46.8	597.9		56.3	24.9		-1.0		
	July	8*	111.4	12.1	711.6	211.8	-125.8	19.8	550.8		48.4	20.6		-1.0		
	August	5	81.0	20.1	478.0	176.5	-111.3	11.8	353.0	40.2	23.6	0.0	0.9	-0.9	-0.7	
	September	3	262.0	117.4	821.7	329.0	-113.0	21.7	460.8			33.6				

Species	Month	n	Fixed part						Random part							
			k	SE	Pmax	SE	R	SE	SD (Pmax)	SD (k)	SD (R)	SD (residual)	Corr (Pmax,k)	Corr (Pmax,R)	Corr (k,R)	
<i>Scheuchzeria palustris</i>	May	2		326.8	155.5	1182.3	80.8	-218.5	66.3			55.6	20.7			
	June	2		74.0	5.4	708.1	13.7	539.1	166.6			148.9	6.3			
	July	6*		65.6	7.4	603.1	67.1	-349.1	75.3	145.6	15.8	167.4	0.3	0.5	-0.8	-0.6
	August	4		63.3	9.5	560.8	70.3	-254.1	31.8	121.0	15.1	54.3	9.7	0.0	-0.8	-0.6
	September	5		63.0	6.6	572.1	107.3	-392.6	102.8	213.0	4.6	204.9	18.1	0.6	-0.9	-0.1
<i>Trichophorum cespitosum</i>	May	2		66.8		425.6		-201.3								
	June	3		202.3	96.2	1795.0	160.8	-144.6	56.4	186.8			80.0			
	July	6*		181.0	19.6	1543.1	160.4	-165.6	32.5	358.3	41.6	72.1	8.9	0.9	0.4	0.7
	August	3		149.4	21.7	1281.9	211.6	-190.7	16.4	297.3			23.5			
	September	4		51.7	39.2	1248.0	204.1	-532.6	133.5	0.1			258.4			
<i>Vaccinium oxycoccos</i>	May	1		192.0	0.0	1002.3	0.0	-73.2	0.0							
	June	3		89.0	16.7	949.7	160.6	-119.5	18.4	182.5			18.4			
	July	6*		68.9	11.8	694.0	124.0	-98.4	11.4	260.4			22.7			
	August	3		125.1	420.3	579.2	199.3	-82.9	133.4			50.6	167.1			
	September	5		111.4	107.4	1261.2	216.9	-424.2	129.9	197.3			225.8			

Table S2. Species-specific conversion factors (b1) to convert vascular plant cover (%) into LAI (m² m⁻²) and the R²-values of liner regression (LAI = b1*cover).

Species	b1	R ²
<i>C. vulgaris</i>	0.013	0.58
<i>B. nana</i>	0.009	0.79
<i>C. limosa</i>	0.017	0.61
<i>A. polifolia</i>	0.008	0.70
<i>E. nigrum</i>	0.009	0.87
<i>E. vaginatum</i>	0.013	0.75
<i>R. alba</i>	0.015	0.71
<i>R. chamaemorus</i>	0.011	0.61
<i>S. palustris</i>	0.021	0.62
<i>T. cespitosum</i>	0.021	0.27
<i>V. oxycoccos</i>	0.011	0.90

Figure S3. A photograph of the study site.

