Supplementary Material:

Annual and seasonal CO_2 flux in a temperate north-Patagonian peatland exposed to varying intensities of commercial *Sphagnum* moss harvesting

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Table S1: Annual parameters for the R_{eco} and GPP models at the H-ea site: E_o: activation energy [K]; R_{ref}: respiration at reference temperature [µmol CO_2-C m^{-2} s^{-1}]; Temp: optimal fitting temperature for the R_{eco} model. GPP_{max}: maximum carbon fixation rate at infinite PAR [µmol CO_2-C m^{-2} s^{-1}]; Alpha: light use efficiency [µmol CO_2-C m^{-2} s^{-1} / µmol m^{-2} s^{-1}]; R^2: coefficient of determination (Pearson) between modeled and measured values. SE: standard error of the model [µmol CO_2-C m^{-2} s^{-1}]; n: number of samples.

Table S2: Annual parameters for the R_{eco} and GPP models at the L-ea site: E_o: activation energy [K]; R_{ref}: respiration at reference temperature [µmol CO_2-C m^{-2} s^{-1}]; Temp: optimal fitting temperature for the R_{eco} model. GPP_{max}: maximum carbon fixation rate at infinite PAR [µmol CO_2-C m^{-2} s^{-1}]; Alpha: light use efficiency [µmol CO_2-C m^{-2} s^{-1} / µmol m^{-2} s^{-1}]; R^2: coefficient of determination (Pearson) between modeled and measured values. SE: standard error of the model [µmol CO_2-C m^{-2} s^{-1}]; n: number of samples.

Table S3: Annual parameters for the R_{eco} and GPP models at the N-ea site: E_o: activation energy [K]; R_{ref}: respiration at reference temperature [µmol CO_2-C m^{-2} s^{-1}]; Temp: optimal fitting temperature for the R_{eco} model. GPP_{max}: maximum carbon fixation rate at infinite PAR [µmol CO_2-C m^{-2} s^{-1}]; Alpha: light use efficiency [µmol CO_2-C m^{-2} s^{-1} / µmol m^{-2} s^{-1}]; R^2: coefficient of determination (Pearson) between modeled and measured values. SE: standard error of the model [µmol CO_2-C m^{-2} s^{-1}]; n: number of samples.

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Figure S6: Measured and modeled R_{eco} fluxes for H-ea (a), L-ea (b), and N-ea (c).

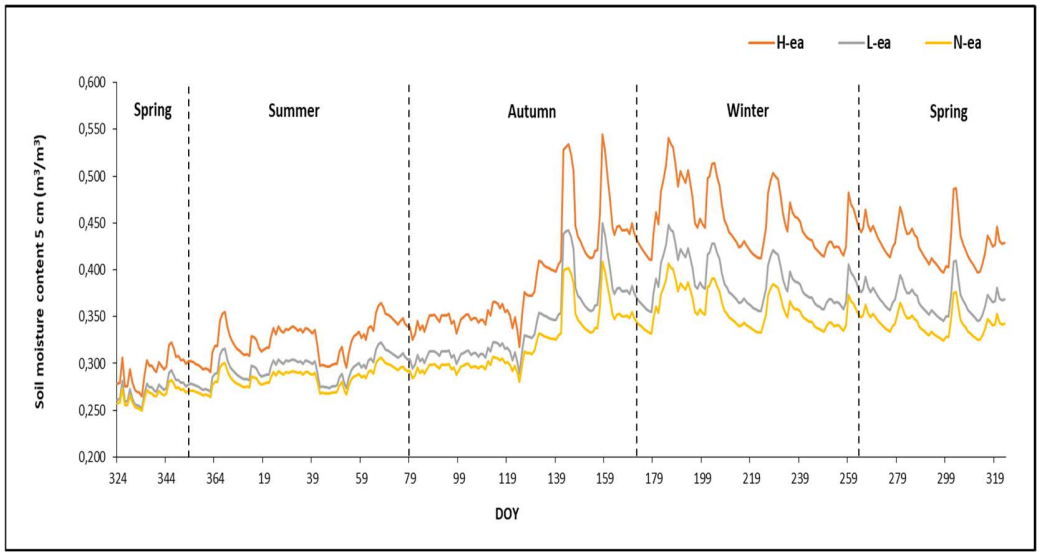


Figure S1. Mean daily soil moisture content at 5 cm depth at the three study sites during the study period.

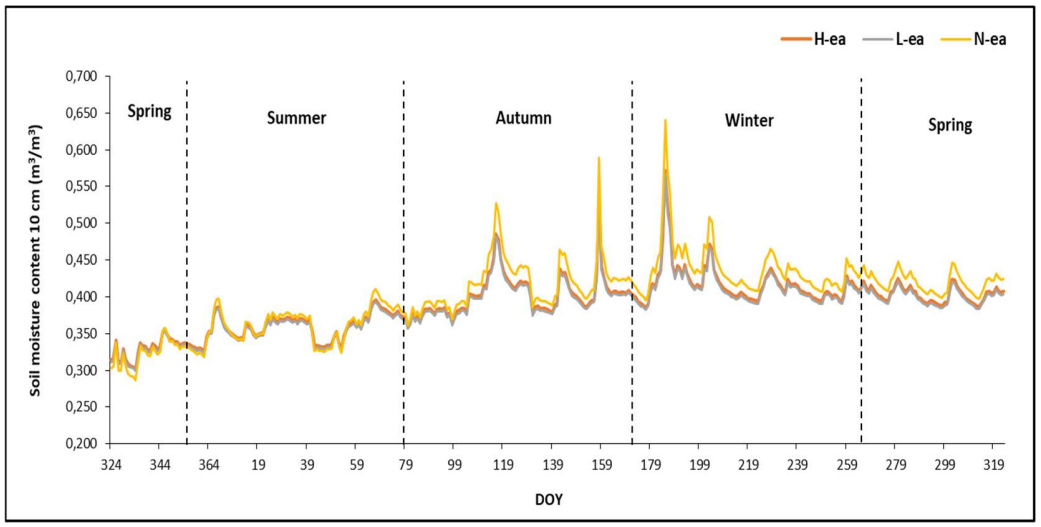


Figure S2. Mean daily soil moisture content at 10 cm depth at the three study sites during the study period.

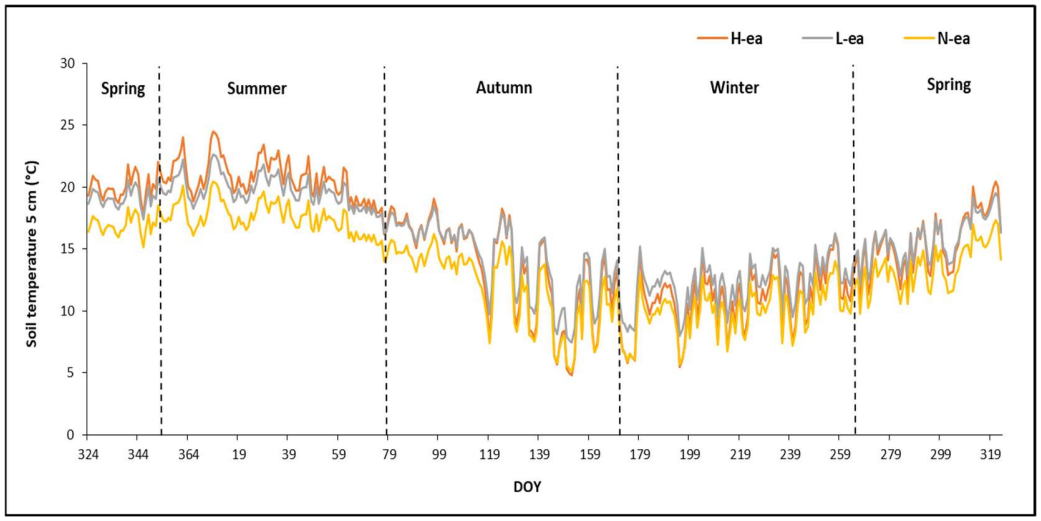


Figure S3. Mean daily soil temperature at 5 cm depth at the three study sites during the study period.

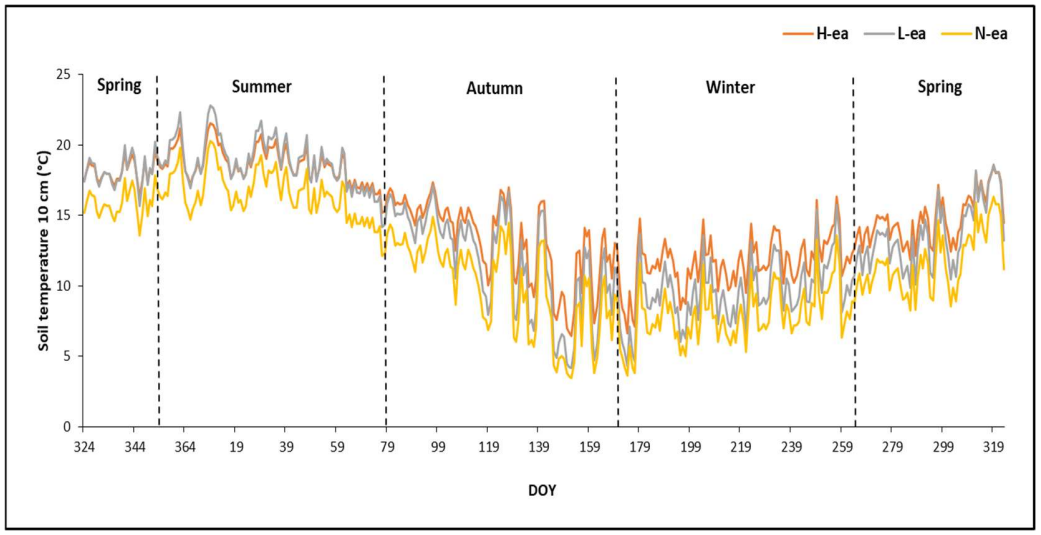
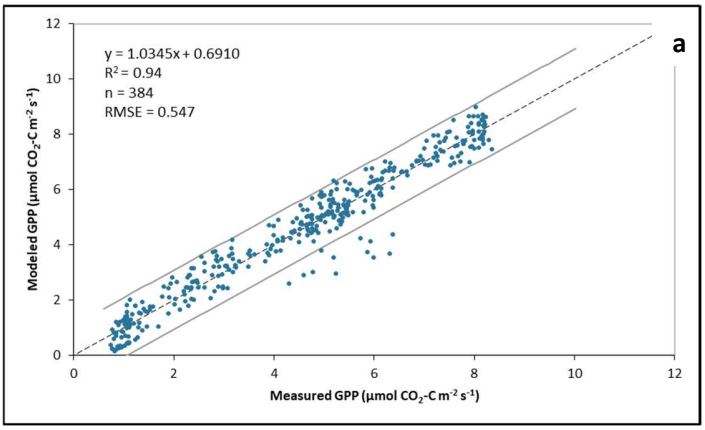
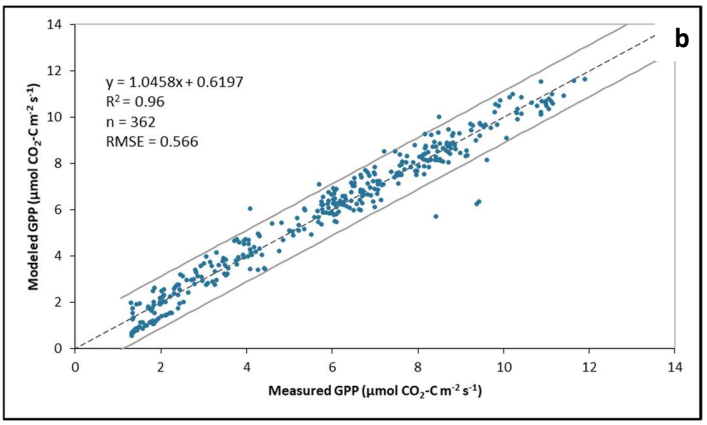


Figure S4. Mean daily soil temperature at 10 cm depth at the three study sites during the study period.





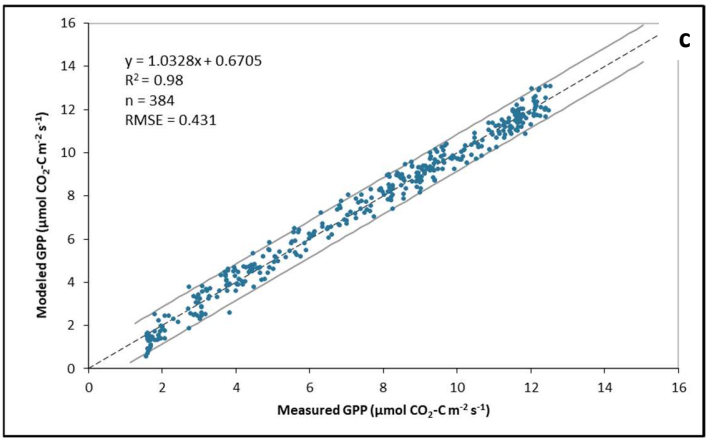


Figure S5. Measured and modeled GPP fluxes for H-ea (a), L-ea (b), and N-ea (c).

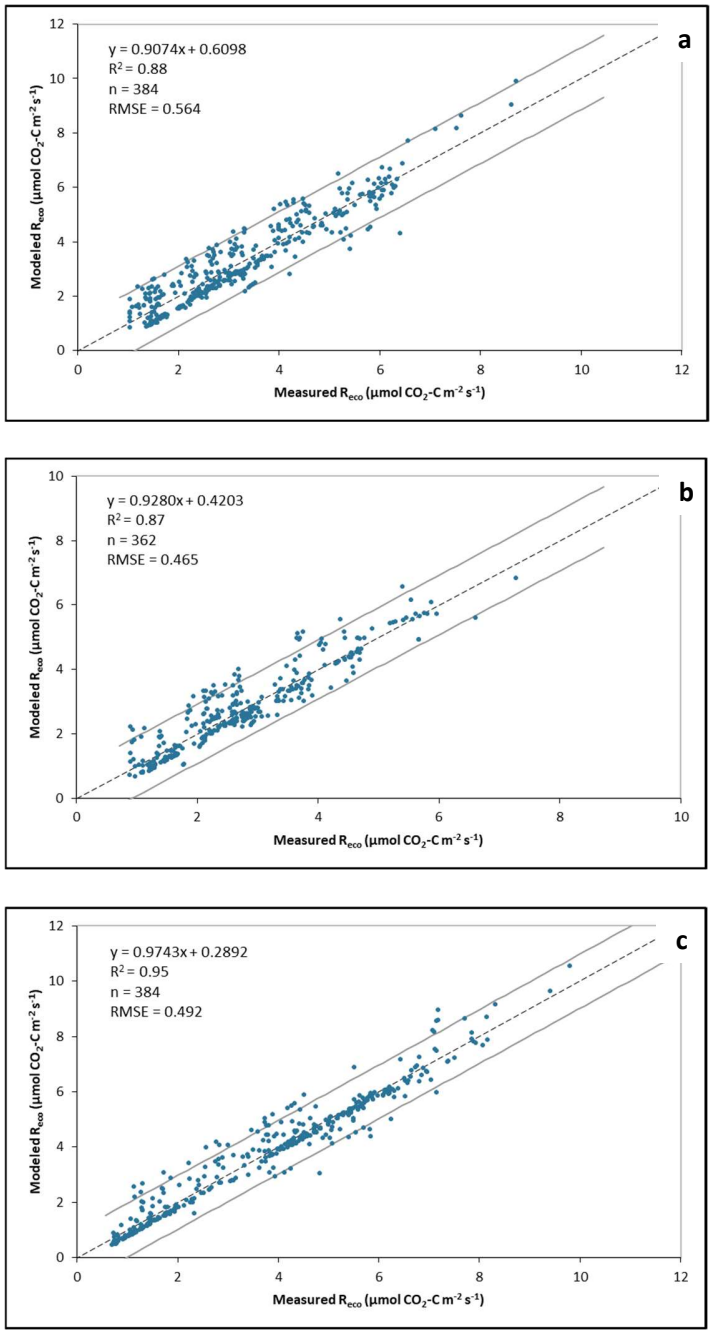


Figure S6. Measured and modeled R_{eco} fluxes for H-ea (a), L-ea (b), and N-ea (c).

Table S1. Annual parameters for the R_{eco} and GPP models at the H-ea site: E_0: activation energy [K]; R_{ref}: respiration at reference temperature [µmol CO_2-C m^{-2} s^{-1}]; Temp: optimal fitting temperature for the R_{eco} model. GPP_{max}: maximum carbon fixation rate at infinite PAR [µmol CO_2-C m^{-2} s^{-1}]; Alpha: light use efficiency [µmol CO_2-C m^{-2} s^{-1} / µmol m^{-2} s^{-1}]; R^2: coefficient of determination (Pearson) between modeled and measured values. SE: standard error of the model [µmol CO_2-C m^{-2} s^{-1}]; n: number of samples.

Date	R_{ref}	E_0	R^2	SE	n	Temp.	GPP_{max}	Alpha	R^2	SE	n
20-11-2021	1,27	599,54	0,99	0,51	12	Soil-5	9,37	0,0148	0,99	0,32	12
03-12-2021	1,35	523,92	0,98	0,32	12	Soil-5	9,64	0,0147	0,99	0,45	12
04-12-2021	1,27	706,36	0,99	0,51	12	Air	9,46	0,0147	0,99	0,37	12
16-12-2021	0,92	679,92	0,98	0,56	12	Soil-10	9,26	0,0149	0,99	0,07	12
17-12-2021	1,29	542,12	0,96	0,35	12	Soil-5	9,79	0,0142	0,99	0,36	12
06-01-2022	1,56	507,65	0,99	0,47	12	Soil-10	9,37	0,0148	0,99	0,43	12
07-01-2022	1,57	505,42	0,96	0,21	12	Soil-10	9,38	0,0148	0,91	0,32	12
26-01-2022	1,68	463,12	0,85	0,23	12	Soil-10	9,50	0,0148	0,97	0,37	12
10-02-2022	1,77	429,72	0,84	0,22	12	Air	9,59	0,0148	0,90	0,48	12
11-02-2022	1,78	427,50	0,98	0,59	12	Soil-10	9,60	0,0148	0,99	0,53	12
26-02-2022	1,66	437,13	0,91	0,21	12	Soil-10	9,56	0,0147	0,93	0,54	12
05-03-2022	1,61	441,63	0,88	0,17	12	Soil-10	9,54	0,0147	0,87	0,33	12
06-03-2022	1,60	442,27	0,71	0,09	12	Soil-5	9,54	0,0147	0,87	0,30	12
25-03-2022	1,45	454,48	0,96	0,15	12	Soil-5	9,49	0,0146	0,99	0,28	12
13-04-2022	1,49	451,27	0,99	0,29	12	Soil-10	9,04	0,0152	0,99	0,17	12
14-04-2022	1,55	461,10	0,96	0,12	12	Soil-5	9,37	0,0148	0,99	0,15	12
09-05-2022	1,68	400,75	0,38	0,19	12	Air	9,45	0,0146	0,84	0,36	12
10-05-2022	1,57	412,75	0,85	0,28	12	Soil-10	9,53	0,0144	0,38	0,14	12
09-06-2022	1,32	372,29	0,16	0,14	12	Soil-5	9,62	0,0145	0,47	0,17	12
10-06-2022	1,32	317,41	0,33	0,11	12	Soil-10	9,39	0,0147	0,98	0,69	12
08-07-2022	1,68	437,52	0,24	0,12	12	Air	9,23	0,0147	0,54	0,14	12
09-07-2022	1,39	418,67	0,24	0,08	12	Soil-5	13,84	0,0144	0,42	0,09	12
12-08-2022	1,64	388,27	0,76	0,02	12	Air	9,14	0,0147	0,55	0,11	12
13-08-2022	1,41	455,54	0,98	0,05	12	Soil-5	9,97	0,0145	0,95	0,03	12
09-09-2022	1,69	427,28	0,87	0,22	12	Air	9,27	0,0146	0,93	0,27	12
10-09-2022	1,70	438,34	0,73	0,25	12	Air	9,65	0,0145	0,77	0,28	12
14-10-2022	1,41	530,60	0,95	0,40	12	Soil-10	9,43	0,0145	0,98	0,71	12
15-10-2022	1,49	473,98	0,63	0,18	12	Soil-10	9,41	0,0146	0,97	0,65	12
26-10-2022	1,39	526,10	0,68	0,24	12	Soil-10	9,59	0,0144	0,92	0,46	12
27-10-2022	1,45	498,78	0,86	0,02	12	Soil-10	8,37	0,0177	0,63	0,16	12
18-11-2022	1,23	581,66	0,49	0,14	12	Soil-5	9,59	0,0144	0,85	0,25	12
19-11-2022	1,39	498,94	0,85	0,06	12	Soil-5	9,38	0,0146	0,79	0,29	12

Table S2. Annual parameters for the R_{eco} and GPP models at the L-ea site: E_0: activation energy [K]; R_{ref}: respiration at reference temperature [µmol CO_2-C m^{-2} s^{-1}]; Temp: optimal fitting temperature for the R_{eco} model. GPP_{max}: maximum carbon fixation rate at infinite PAR [µmol CO_2-C m^{-2} s^{-1}]; Alpha: light use efficiency [µmol CO_2-C m^{-2} s^{-1} / µmol m^{-2} s^{-1}]; R^2: coefficient of determination (Pearson) between modeled and measured values. SE: standard error of the model [µmol CO_2-C m^{-2} s^{-1}]; n: number of samples.

Date	R_{ref}	E_0	R^2	SE	n	Temp.	GPP_{max}	Alpha	R^2	SE	n
20-11-2021	1,36	506,31	0,92	0,37	12	Soil-5	12,61	0,0203	0,93	0,20	12
03-12-2021	1,44	471,69	0,99	0,29	8	Soil-5	13,81	0,0181	0,99	0,32	8
04-12-2021	1,64	417,55	0,97	0,13	12	Soil-10	15,03	0,0166	0,99	0,23	12
16-12-2021	1,32	504,24	0,99	0,46	12	Soil-10	12,21	0,0227	0,79	0,14	12
17-12-2021	1,59	429,28	0,92	0,19	12	Soil-10	14,39	0,0172	0,99	0,11	12
06-01-2022	1,42	480,98	0,82	0,21	12	Air	13,97	0,0175	0,95	0,58	12
07-01-2022	1,41	483,56	0,99	0,14	8	Soil-5	13,95	0,0175	0,99	0,33	8
26-01-2022	0,87	880,89	0,96	0,65	8	Air	12,73	0,0188	0,99	0,55	8
10-02-2022	1,71	399,30	0,97	0,38	9	Soil-10	12,46	0,0215	0,95	0,52	9
11-02-2022	1,91	383,94	0,92	0,48	12	Soil-5	14,08	0,0177	0,99	0,32	12
26-02-2022	1,67	448,09	0,91	0,14	12	Soil-10	12,95	0,0209	0,91	0,45	12
05-03-2022	1,55	478,02	0,95	0,08	12	Soil-10	12,42	0,0223	0,92	0,39	12
06-03-2022	1,53	482,30	0,87	0,05	12	Soil-10	12,35	0,0226	0,89	0,36	12
25-03-2022	1,22	563,56	0,95	0,39	9	Soil-5	10,92	0,0266	0,98	0,36	9
13-04-2022	1,55	445,18	0,98	0,26	12	Soil-5	14,00	0,0179	0,99	0,08	12
14-04-2022	2,22	80,22	0,73	0,07	8	Air	13,96	0,0176	0,99	0,28	8
09-05-2022	1,60	381,83	0,73	0,09	12	Soil-10	11,56	0,0254	0,95	0,44	12
10-05-2022	1,65	381,66	0,83	0,27	12	Air	9,86	0,0312	0,95	0,63	12
09-06-2022	1,58	297,06	0,63	0,07	12	Soil-5	10,08	0,0289	0,91	0,49	12
10-06-2022	1,57	379,01	0,55	0,06	12	Air	6,88	0,0329	0,75	0,18	12
08-07-2022	1,58	385,23	0,88	0,08	12	Air	1,35	0,2514	0,36	0,14	12
09-07-2022	1,54	365,21	0,88	0,01	12	Air	1,14	0,3758	0,75	0,05	12
12-08-2022	1,57	346,81	0,64	0,02	12	Soil-10	2,36	0,0757	0,98	0,07	12
13-08-2022	1,58	358,21	0,97	0,01	12	Soil-10	2,65	0,0674	0,44	0,11	12
09-09-2022	1,64	424,60	0,91	0,25	12	Air	4,17	0,0868	0,96	0,35	12
10-09-2022	1,63	376,90	0,79	0,27	12	Air	5,68	0,0412	0,93	0,41	12
14-10-2022	1,55	455,76	0,91	0,41	12	Soil-10	13,13	0,0246	0,97	0,71	12
15-10-2022	1,57	412,59	0,82	0,13	12	Soil-10	15,27	0,0204	0,91	0,28	12
26-10-2022	1,62	418,33	0,85	0,33	12	Soil-5	14,98	0,0214	0,98	0,81	12
27-10-2022	1,65	383,69	0,98	0,06	12	Soil-5	14,99	0,0230	0,97	0,75	12
18-11-2022	1,49	460,01	0,64	0,16	12	Soil-5	14,97	0,0212	0,96	0,59	12
19-11-2022	1,64	394,77	0,82	0,05	12	Soil-5	12,61	0,0225	0,87	0,35	12

Table S3. Annual parameters for the R_{eco} and GPP models at the N-ea site: E_0: activation energy [K]; R_{ref}: respiration at reference temperature [µmol CO_2-C m^{-2} s^{-1}]; Temp: optimal fitting temperature for the R_{eco} model. GPP_{max}: maximum carbon fixation rate at infinite PAR [µmol CO_2-C m^{-2} s^{-1}]; Alpha: light use efficiency [µmol CO_2-C m^{-2} s^{-1} / µmol m^{-2} s^{-1}]; R^2: coefficient of determination (Pearson) between modeled and measured values. SE: standard error of the model [µmol CO_2-C m^{-2} s^{-1}]; n: number of samples.

Date	R_{ref}	E_0	R^2	SE	n	Temp.	GPP_{max}	Alpha	R^2	SE	n
20-11-2021	2,23	426,38	0,59	0,12	12	Air	12,23	0,0245	0,99	0,74	12
03-12-2021	4,56	124,34	0,84	0,08	12	Soil-10	10,99	0,0314	0,88	0,39	12
04-12-2021	3,45	220,56	0,13	0,03	12	Soil-5	10,90	0,0320	0,94	0,20	12
16-12-2021	1,78	494,99	0,99	0,46	12	Soil-10	12,32	0,0250	0,97	0,20	12
17-12-2021	1,89	466,01	0,95	0,18	12	Soil-10	13,07	0,0220	0,99	0,33	12
06-01-2022	1,98	475,31	0,99	0,52	12	Air	12,32	0,0244	0,98	0,53	12
07-01-2022	1,81	491,61	0,96	0,41	12	Soil-10	10,90	0,0302	0,93	0,53	12
26-01-2022	2,30	408,92	0,88	0,23	12	Soil-10	12,05	0,0272	0,90	0,48	12
10-02-2022	2,69	343,64	0,78	0,18	12	Soil-5	11,85	0,0292	0,97	0,44	12
11-02-2022	2,72	339,29	0,99	0,42	12	Soil-5	11,83	0,0294	0,82	0,09	12
26-02-2022	2,50	372,51	0,88	0,27	12	Air	12,32	0,0267	0,91	0,61	12
05-03-2022	2,40	388,00	0,89	0,30	12	Soil-10	12,54	0,0254	0,81	0,36	12
06-03-2022	2,39	390,22	0,84	0,15	12	Soil-5	12,58	0,0253	0,84	0,43	12
25-03-2022	2,14	420,29	0,97	0,37	12	Soil-10	13,19	0,0219	0.98	0,93	12
13-04-2022	1,49	617,85	0,99	0,15	12	Soil-10	11,94	0,0244	0,48	0,15	12
14-04-2022	2,03	379,11	0,90	0,17	12	Air	13,14	0,0217	0.98	0,53	12
09-05-2022	1,21	685,94	0,79	0,10	12	Air	8,42	0,0224	0,67	0,26	12
10-05-2022	1,21	706,43	0,98	0,08	12	Air	6,88	0,0305	0,95	0,52	12
09-06-2022	1,20	735,07	0,83	0,11	12	Air	5,77	0,0312	0,82	0,27	12
10-06-2022	1,35	926,77	0,55	0,07	12	Air	5,78	0,0316	0,92	0,27	12
08-07-2022	0,96	874,15	0,95	0,12	12	Soil-10	2,72	0,0695	0,84	0,25	12
09-07-2022	1,42	982,57	0,86	0,02	12	Air	5,65	0,0301	0,78	0,15	12
12-08-2022	1,21	756,29	0,44	0,02	12	Soil-5	5,03	0,0322	0,56	0,11	12
13-08-2022	1,25	812,59	0,98	0,06	12	Air	4,39	0,0367	0,98	0,15	12
09-09-2022	1,21	578,19	0,94	0,30	12	Soil-5	5,53	0,0301	0,53	0,13	12
10-09-2022	1,33	618,53	0,77	0,26	12	Air	5,95	0,0287	0,98	0,09	12
14-10-2022	1,27	606,56	0,48	0,08	12	Air	8,62	0,0231	0,97	0,53	12
15-10-2022	1,20	652,86	0,84	0,27	12	Air	8,59	0,0230	0,96	0,54	12
26-10-2022	1,30	586,86	0,61	0,21	12	Air	9,22	0,0201	0,73	0,23	12
27-10-2022	1,18	650,05	0,86	0,02	12	Soil-5	6,59	0,0294	0,89	0,38	12
18-11-2022	1,30	587,25	0,86	0,22	12	Air	8,64	0,0234	0,98	0,67	12
19-11-2022	3,61	613,36	0,99	014	12	Soil-5	7,89	0,0239	0,75	0,26	12