

Table S1. Plant functional type parameters and bioclimatic limits.

Parameter	Units	TallGrass	Sedges	Typha	SphagnumMoss	BrownMoss	ShortGrass
MaxCanopyHeight	m	1.5813	2.5813	2.5813	0.1	0.2	0.2
BiomassSenescence	-	0.04	0.04	0.04	0.01	0.015	0.03
AutumnLitter	-	0.1	0.1	0.1	0.01	0.04	0.06
PlantResp0	$\mu\text{molCO}_2\text{m}^2\text{s}^{-1}$	0.8	0.8	0.8	0.95	0.9	0.85
MaxPhotosynthesisRate	$\mu\text{molCO}_2\text{m}^2\text{s}^{-1}$	40	40	40	14.0	14.0	14
Temp_MaxPhoto	$^{\circ}\text{C}$	38	40	35	30.0	30.0	30
Temp_MinPhoto	$^{\circ}\text{C}$	-3	-1	-3	-1.0	0.5	-1
TMinGrowth	$^{\circ}\text{C}$	7	2	2	-1.0	0.5	0.5
TOptMinGrowth	$^{\circ}\text{C}$	9	12	12	14.0	5.0	14
TOptMaxGrowth	$^{\circ}\text{C}$	20	30	30	25.0	25.0	25
TMaxGrowth	$^{\circ}\text{C}$	45	45	45	38.0	38.0	38
SpecificLeafArea	m^2g^{-1}	0.012	0.012	0.012	0.02	0.02	0.02
MinLAI	m^2m^{-2}	0.1	0.1	0.1	0.1	0.1	0.1
MaxLAI	m^2m^{-2}	3	4	4	1.2	1.5	1.5
LightExtCoeff	-	0.5	0.46	0.5	0.95	0.95	0.95
LeafRespirationCoeff	-	0.015	0.015	0.015	0.016	0.014	0.014
MaxGrowthRate	$\text{gC}^1 \text{month}^{-1}$	0.07	0.07	0.07	0.045	0.05	0.05
MethanePlantOx	-	0.4	0.4	0.25	0.7	0.8	0.6
MethanePType	-	5	6	10	2.0	2.0	2
MaxRootDepth	m	0.46	1	1	0.1	0.1	0.2
RootSenescence	day^{-1}	0.05	0.05	0.05	0.04	0.04	0.05
ShootsFactor	-	0.7	0.7	0.7	1.0	1.0	0.9
ExudateFactor	-	0.1	0.2	0.2	0.05	0.1	0.11
SpringCorrection	-	0.2	0.4	0.4	0.0	0.0	0.1
LitterConversion	day^{-1}	0.005	0.001	0.001	0.01	0.005	0.003
CBiomassRatio	kgCkgC^{-1}	0.46	0.46	0.46	0.44	0.44	0.44
ResistFrac	-	0.55	0.42	0.3	0.9	0.9	0.9
AssimDissim	-	2.25	2.2	2.2	2.4	2.3	2.3
WLMin	m	-1	-1	-1	-0.5	-0.35	-0.35
WLOptMin	m	-0.4	-0.3	-0.4	-0.2	-0.15	-0.15
WLOptMax	m	-0.2	-0.2	0	-0.05	-0.05	-0.05
WLMax	m	0.0192	0.1	0.3	0.05	0.05	0.05

Table S2. Description of parameters listed in S1.

Parameter	Description
MaxCanopyHeight	Maximum height
BiomassSenescence	fraction of aboveground biomass littered each day
AutumnLitter	For deciduous plants, fraction of leafy biomass littered each day during autumn
PlantResp0	Plant respiration at zero degrees
MaxPhotosynthesisRate	Maximum rate of photosynthesis
Temp_MaxPhoto	Maximum temperature limit for photosynthesis
Temp_MinPhoto	Minimum temperature limit for photosynthesis
TMinGrowth	Minimum temperature for growth
TOptMinGrowth	Lowest temperature for optimal growth
TOptMaxGrowth	Highest temperature for optimal growth
TMaxGrowth	Maximum temperature for growth
SpecificLeafArea	Ratio of leaf area to dry leaf mass
MinLAI	Minimum LAI
MaxLAI	Maximum LAI
LightExtCoeff	Light extinction coefficient
LeafRespirationCoeff	Leaf maintenance respiration coefficient
MaxGrowthRate	Maximum growth rate
MethanePlantOx	Fraction of methane that is oxidized during plant transport
MethanePType	Vegetation type factor for gas transport through plant.
MaxRootDepth	Maximum root depth
RootSenescence	Proportion of root mass that dies during each time step
ShootsFactor	Mass fraction of primary production that consists of shoots; the remainder is root growth
ExudateFactor	Mass fraction of belowground production that consists of exudates
SpringCorrection	Coefficient for stronger exudation in spring
LitterConversion	Conversion factor of above ground to below ground litter; the factor is temperature adjusted such that at 0 degrees the conversion factor is also 0
CBiomassRatio	C to biomass ratio
ResistFrac	Fraction of decomposed organic material that is transferred to resistant humus fraction
AssimDissim	The amount of C from decomposed organic matter converted to microbial biomass
WLMin	Minimum water level for growth
WLOptMin	Lowest water level for optimal growth
WLOptMax	Highest water level for optimal growth
WLMax	Maximum water level for growth

Table S3. References for parameters in Table S1. VH06 values informed by Peatland-VU van Huissteden et al. (2006, 2009). H16 (HA16) refers to parameters taken directly (adapted) from the NUCOM-BOG model Heijmans et al. (2008). W16 (WA16) refers to values taken directly (adapted) Wu et al. (2016). W09 refers to values taken from Wania et al. (2009). TRY refers to values taken from the TRY database 5.0 (www.try-db.org) Kattge et al. (2020); KATTGE et al. (2011). W11 (WA11) refers to values taken directly (adapted) Wu et al. (2011). SA03 refers to values informed by Sitch et al. (2003).

Parameter	TallGrasses	Sedges	Typha	SphagnumMoss	BrownMoss	ShortGrass
MaxCanopyHeight	TRY	TRY	TRY	H16	H16	TRY
BiomassSenescence	HA16	HA16	HA16	H16	H16	HA16
AutumnLitter	VH06	VH06	VH06	H16	H16	TRY
PlantResp0	VH06	VH06	VH06	VH06	VH06	VH06
MaxPhotosynthesisRate	WA16	W16	WA16	W16	W16	WA16
Temp_MaxPhoto	WA16	W16	WA16	W16	W16	WA16
Temp_MinPhoto	WA16	W16	WA16	W16	W16	WA16
TMinGrowth	TRY	HA16	HA16	H16	H16	HA16
TOptMinGrowth	TRY	TRY	TRY	H16	H16	HA16
TOptMaxGrowth	TRY	TRY	TRY	H16	H16	HA16
TMaxGrowth	TRY	TRY	TRY	H16	H16	HA16
SpecificLeafArea	HA16	HA16	HA16	H16	H16	TRY
MinLAI	WA16	W16	WA16	WA16	WA16	WA16
MaxLAI	WA16	W16	WA16	WA16	WA16	WA16
LightExtCoeff	H16	H16	H16	H16	H16	TRY
LeafRespirationCoeff	SA03	SA03	SA03	SA03	SA03	SA03
MaxGrowthRate	HA16	HA16	HA16	H16	H16	HA16
MethanePlantOx	VH06	VH06	VH06	VH06	VH06	VH06
MethanePType	VH06	VH06	VH06	VH06	VH06	VH06
MaxRootDepth	WA16	W16	WA16	WA16	WA16	WA16
RootSenescence	W09	W09	W09	HA16	HA16	HA16
ShootsFactor	WA16	W16	WA16	H16	H16	HA16
ExudateFactor	VH06	VH06	VH06	VH06	VH06	VH06
SpringCorrection	VH06	VH06	VH06	VH06	VH06	VH06
LitterConversion	VH06	VH06	VH06	VH06	VH06	VH06
CBiomassRatio	WA11	WA11	WA11	W11	W11	WA11
ResistFrac	SA03	SA03	SA03	SA03	SA03	SA03
AssimDissim	VH06	VH06	VH06	VH06	VH06	VH06
WLMin	TRY	TRY	TRY	H16	H16	HA16
WOptMin	TRY	TRY	TRY	H16	H16	HA16
WOptMax	TRY	TRY	TRY	H16	H16	HA16
WLMax	TRY	TRY	TRY	H16	H16	HA16

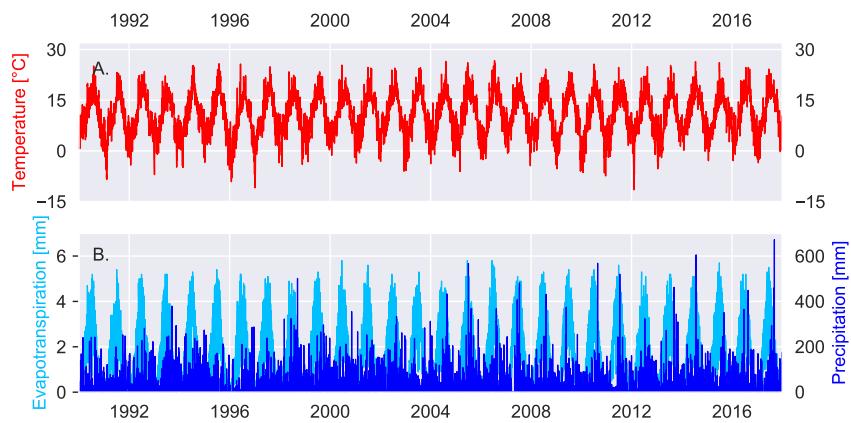


Figure S1. Daily precipitation, evapotranspiration, and temperature observations recorded at nearby weather station, Schiphol. Shown for the years 1990 - 2019.

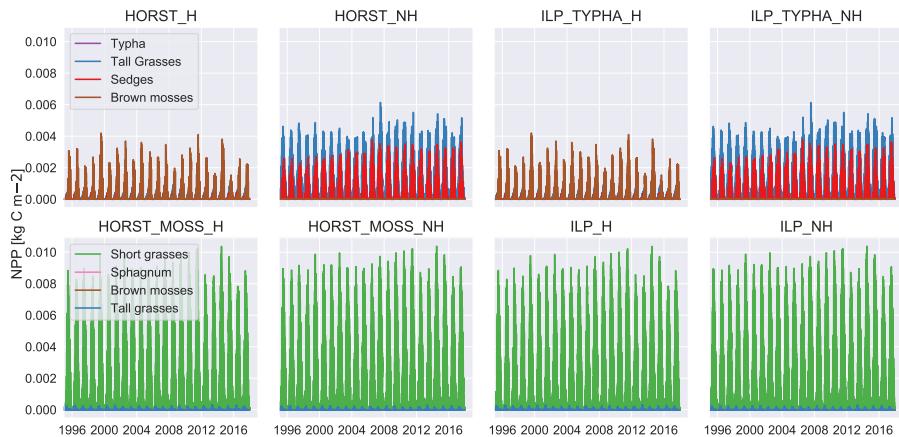


Figure S2. Daily NPP ($\text{kg C m}^{-2} \text{ day}^{-1}$), presented as monthly averages.

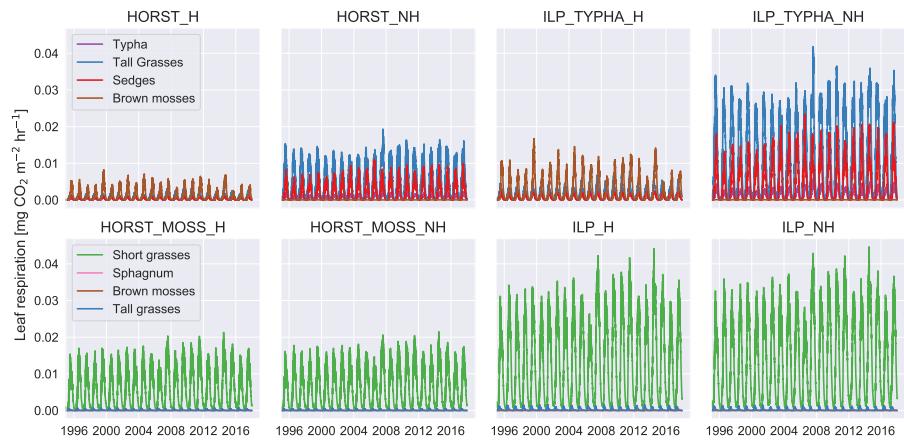


Figure S3. Daily autotrophic respiration (kgCO₂m⁻²day⁻¹), presented as monthly averages.

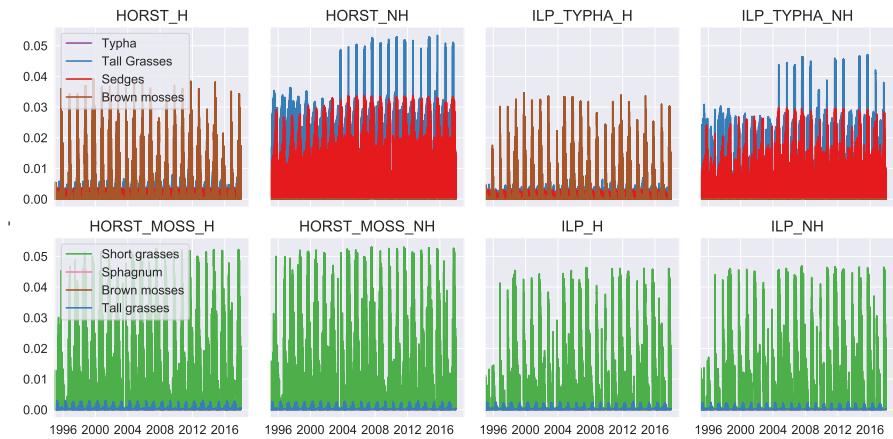


Figure S4. Daily potential growth, presented as monthly averages.

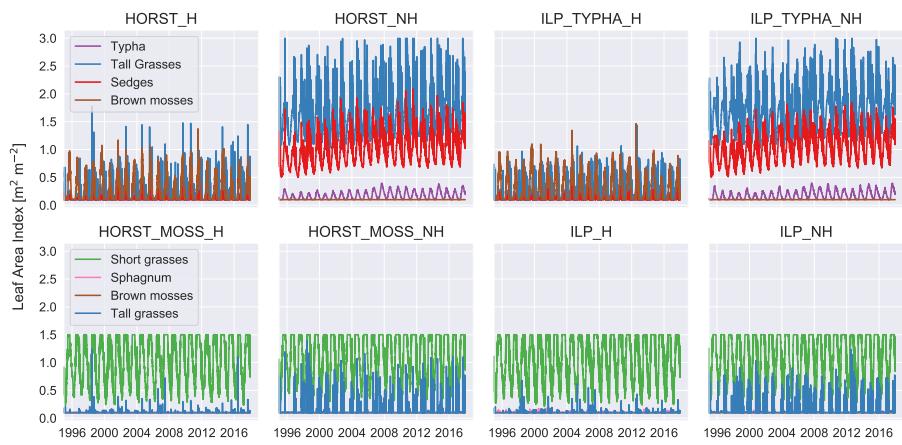


Figure S5. Leaf Area Index (LAI)(m), presented as monthly averages.

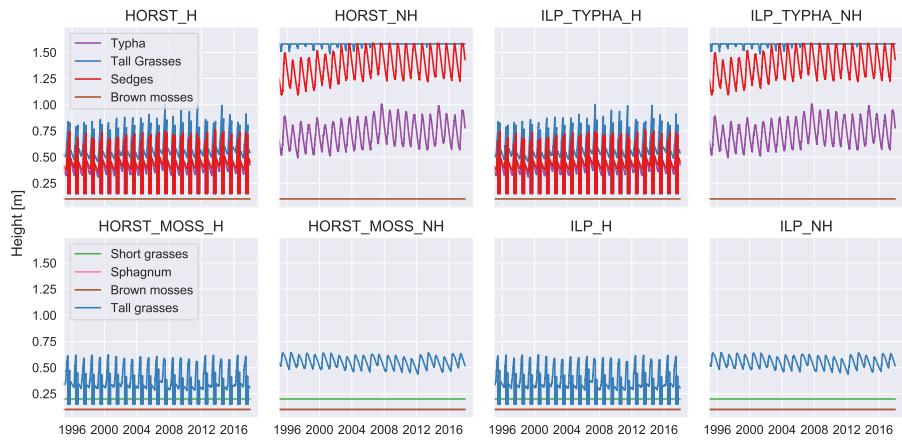


Figure S6. Daily PFT heights (m), presented as monthly averages.

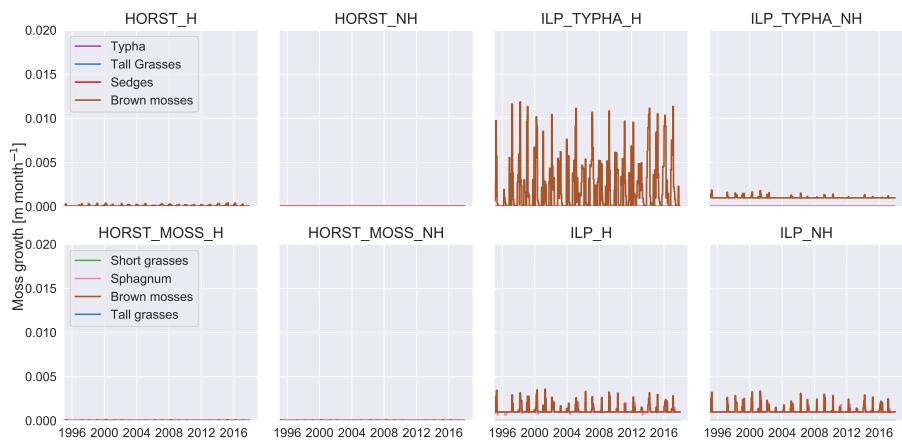


Figure S7. Moss growth per month (mm month^{-1}), for moss PFTs.

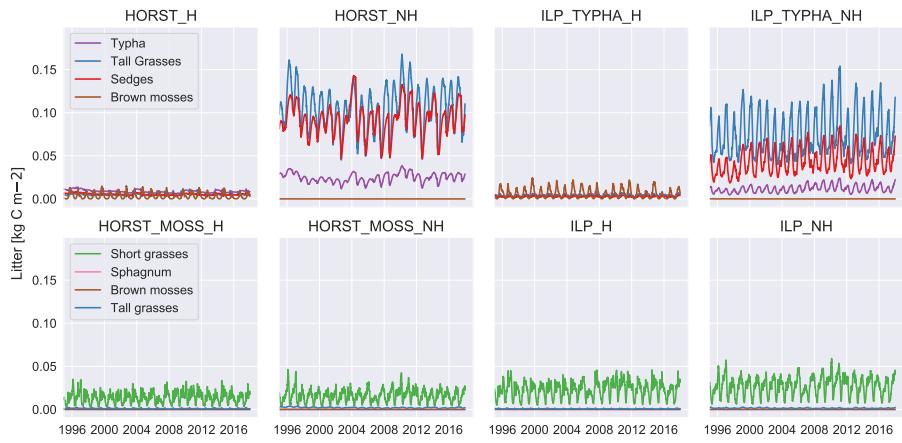


Figure S8. Daily litter layer per PFT, presented as monthly averages.

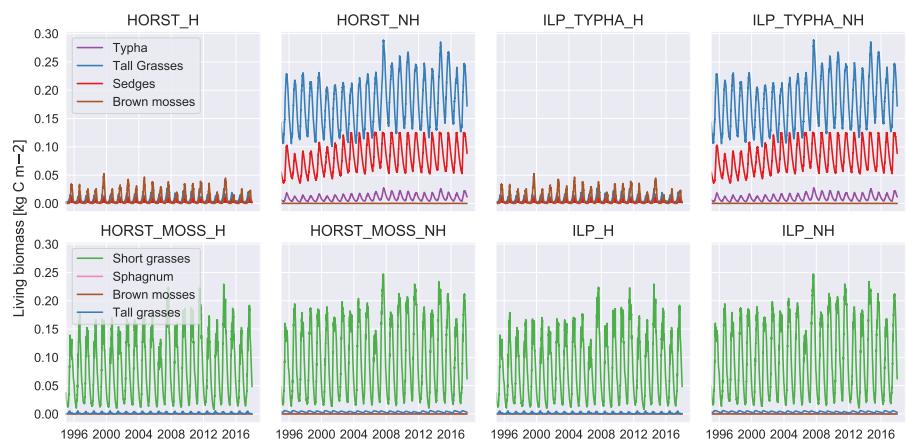


Figure S9. Daily aboveground living biomass, presented as monthly averages.

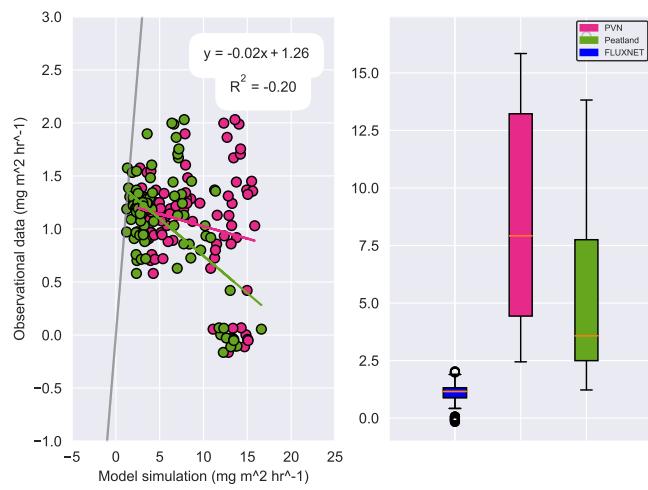


Figure S10. Hourly CH₄ fluxes at the Horstermeer site. FLUXNET observations were measured using an EC tower in the middle of the field, approximately 60m from the chamber measurements.

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