

Supplementary materials of manuscript “Terrestrial Ecosystem Model in R version 1.0: Simulating ecophysiological responses of vegetation to atmospheric chemical and meteorological changes” authored by Tai, A. P. K., Yung, D. H. Y., and Lam, T.

Table S1: Plant functional type (PFT) classification, identification and matching between the PFTs used in the Community Land Model version 4.5 (CLM4.5) and International Geosphere Biosphere Program Data and Information System (IGBP-DIS) DISCover land cover dataset.

CLM PFT	IGBP-DIS PFT	IGBP-DIS PFT Abbreviation
Bare land	<i>Not classified</i>	<i>Not classified</i>
Needleleaf evergreen tree – temperate	Evergreen Needleleaf Forest	ENF
Needleleaf evergreen tree - boreal	Evergreen Needleleaf Forest	ENF
Needleleaf deciduous tree – boreal	<i>Not classified</i>	<i>Not classified</i>
Broadleaf evergreen tree – tropical	Evergreen Broadleaf Forest	EBF
Broadleaf evergreen tree – temperate	Evergreen Broadleaf Forest	EBF
Broadleaf deciduous tree – tropical	Deciduous Broadleaf Forest	DBF
Broadleaf deciduous tree – temperate	Deciduous Broadleaf Forest	DBF
Broadleaf deciduous tree – boreal	Deciduous Broadleaf Forest	DBF
Broadleaf evergreen shrub - temperate	<i>Not classified</i>	<i>Not classified</i>
Broadleaf deciduous shrub – temperate	Open Shrubland	OSH
Broadleaf deciduous shrub – boreal	Closed Shrubland	CSH
C3 arctic grass	Grassland	GRA
C3 grass	Grassland	GRA
C4 grass	Grassland	GRA
C3 Unmanaged Rainfed Crop	Cropland	CRO
C3 Unmanaged Irrigated Crop	Cropland	CRO
Rainfed Corn	-	-
Irrigated Corn	-	-
Rainfed Temperate Cereals	-	-
Irrigated Temperate Cereals	-	-
Rainfed Winter Cereals	-	-
Irrigated Winter Cereals	-	-
Rainfed Soybean	-	-
Irrigated Soybean	-	-

Table S2: Information of FLUXNET sites relevant for our simulations and model-observation comparison.

Site ID	Site Name	Site Latitude	Site Longitude	IGBP-DIS PFT Code	Simulation Period	
					Diurnal Analysis (M– yyyy)	Seasonal Analysis (yyyy – yyyy)
AU-DaP	Daly River Savanna	-14.0633	131.3181	GRA	January – 2012	2009 – 2013
AU-DaS	Daly River Cleared	-14.1593	131.3881	GRA	January – 2012	2009 – 2013
AU-Dry	Dry River	-15.2588	132.3706	GRA	January – 2012	2009 – 2013
AU-How	Howard Springs	-12.4943	131.1523	GRA	January – 2012	2009 – 2013
AU-Stp	Sturt Plains	-17.1507	133.3502	GRA	January – 2012	2009 – 2013
AU-Tum	Tumbarumba	-35.6566	148.1517	EBF	January – 2012	2009 – 2013
BE-Lon	Lonze	50.5516	4.7461	CRO	July – 2012	2009 – 2013
CA-TP1	Ontario - Turkey Point 2002 Plantation White Pine	42.6609	-80.5595	ENF	July – 2012	2009 – 2013
CA-TP3	Ontario - Turkey Point 1974 Plantation White Pine	42.7068	-80.3483	ENF	July – 2012	2009 – 2013
CA-TP4	Ontario - Turkey Point 1939 Plantation White Pine	42.7102	-80.3574	ENF	July – 2012	2009 – 2013
CH-Cha	Chamau	47.2102	8.4104	GRA	July – 2012	2009 – 2013
CH-Dav	Davos- Seehorn forest	46.8153	9.8559	ENF	July – 2012	2009 – 2013

Table S2 Cont.

Site ID	Site Name	Site Latitude	Site Longitude	IGBP-DIS PFT Code	Simulation Period	
					Diurnal Analysis (yyyy– yyyy)	Seasonal Analysis (M– yyyy)
CH-Fru	Früebüel	47.1158	8.5378	GRA	July – 2012	2009 – 2013
CH-Oe2	Oensingen2 crop	47.2863	7.7343	CRO	July – 2012	2009 – 2013
CZ-wet	CZECHWET	49.0247	14.7704	GRA	July – 2012	2009 – 2013
DE-Akm	Anklam	53.8662	13.6834	GRA	July – 2012	2009 – 2013
DE-Geb	Gebesee	51.1001	10.9143	CRO	July – 2012	2009 – 2013
DE-Gri	Grillenbourg	50.9495	13.5125	GRA	July – 2012	2009 – 2013
DE-Hai	Hainich	51.0792	10.453	DBF	July – 2012	2009 – 2013
DE-Kli	Klingenberg	50.8929	13.5225	CRO	July – 2012	2009 – 2013
DE-Lkb	Lackenberg	49.0996	13.3047	ENF	July – 2012	2009 – 2013
DE-Obe	Oberbärenburg	50.7836	13.7196	ENF	July – 2012	2009 – 2013
DE-Tha	Tharandt	50.9636	13.5669	ENF	July – 2012	2009 – 2013
DK-NuF	Nuuk Fen	64.1308	-51.3861	GRA	July – 2012	2009 – 2013
DK-Sor	Soroe	55.4859	11.6446	DBF	July – 2012	2009 – 2013
ES-LJu	Llano de los Juanes	36.9266	-2.7521	OSH	July – 2012	2009 – 2013

Table S2 Cont.

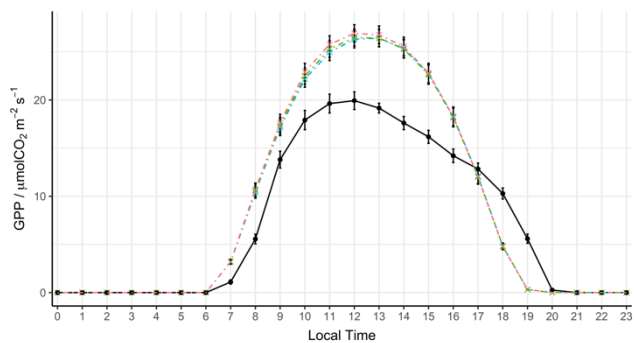
Site ID	Site Name	Site Latitude	Site Longitude	IGBP-DIS PFT Code	Simulation Period	
					Diurnal Analysis (yyyy– yyyy)	Seasonal Analysis (M– yyyy)
FI-Hyy	Hyytiala	61.8475	24.295	ENF	July – 2012	2009 – 2013
FI-Sod	Sodankyla	67.3619	26.6378	ENF	July – 2012	2009 – 2013
FR-Fon	Fontainebleau-Barbeau	48.4764	2.7801	DBF	July – 2012	2009 – 2013
FR-Gri	Grignon	48.8442	1.9519	CRO	July – 2012	2009 – 2013
IT-BCi	Borgo Cioffi	40.5238	14.9574	CRO	July – 2012	2009 – 2013
IT-Col	Collelongo- Selva Piana	41.8494	13.5881	DBF	July – 2012	2009 – 2013
IT-Lav	Lavarone	45.9562	11.2813	ENF	July – 2012	2009 – 2013
IT-MBo	Monte Bondone	46.0147	11.0458	GRA	July – 2012	2009 – 2013
IT-Ren	Renon	46.5869	11.4337	ENF	July – 2012	2009 – 2013
IT-Tor	Torgnon	45.8444	7.5781	GRA	July – 2012	2009 – 2013
NL-Loo	Loobos	52.1666	5.7436	ENF	July – 2012	2009 – 2013
RU-Fyo	Fyodorovskoye	56.4615	32.9221	ENF	July – 2012	2009 – 2013
RU-Sam	Samoylov	72.3733	126.4978	GRA	July – 2012	2009 – 2013

Table S2 Cont.

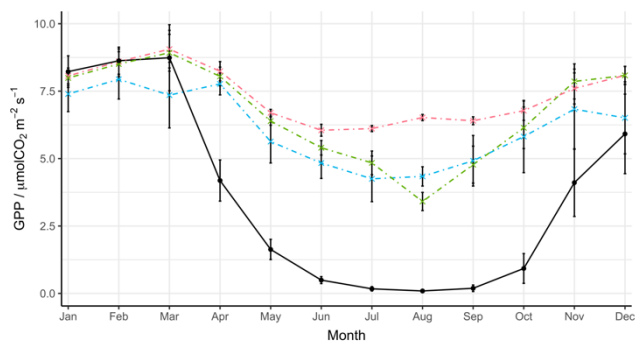
Site ID	Site Name	Site Latitude	Site Longitude	IGBP-DIS PFT Code	Simulation Period	
					Diurnal Analysis (yyyy– yyyy)	Seasonal Analysis (M– yyyy)
US-Me2	Metolius mature ponderosa pine	44.4523	-121.5574	ENF	July – 2012	2009 – 2013
US-MMS	Morgan Monroe State Forest	39.3232	-86.4131	DBF	July – 2012	2009 – 2013
US-Ne1	Mead - irrigated continuous maize site	41.1651	-96.4766	CRO	July – 2012	2009 – 2013
US-Ne2	Mead - irrigated maize-soybean rotation site	41.1649	-96.4701	CRO	July – 2012	2009 – 2013
US-Ne3	Mead - rainfed maize-soybean rotation site	41.1797	-96.4397	CRO	July – 2012	2009 – 2013
US-NR1	Niwot Ridge Forest (LTER NWT1)	40.0329	-105.5464	ENF	July – 2012	2009 – 2013
US-Oho	Oak Openings	41.5545	-83.8438	DBF	July – 2012	2009 – 2013
US-SRG	Santa Rita Grassland	31.7894	-110.8277	GRA	July – 2012	2009 – 2013
US-SRM	Santa Rita Mesquite	31.8214	-110.8661	GRA	July – 2012	2009 – 2013
US-Twt	Twitchell Island	38.1087	-121.653	CRO	July – 2012	2009 – 2013
US-UMB	Univ. of Mich. Biological Station	45.5598	-84.7138	DBF	July – 2012	2009 – 2013

Table S3: Average normalized mean bias (N) of monthly gross primary productivity (GPP) from comparison between FLUXNET GPP and TEMIR-simulated GPP using FLUXNET local meteorology of sites per plant functional type (PFT) described in Table S1.

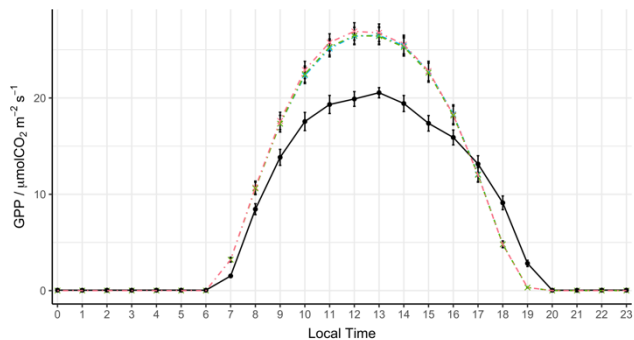
CLM PFT	Average Normalized Mean Bias	Standard Deviation
Bare land	<i>Not classified</i>	<i>Not classified</i>
Needleleaf evergreen tree – temperate	0.1084	0.2686
Needleleaf evergreen tree - boreal	0.0897	0.19
Needleleaf deciduous tree – boreal	<i>Not classified</i>	<i>Not classified</i>
Broadleaf evergreen tree – tropical	-0.0332	0.047
Broadleaf evergreen tree – temperate	-0.2146	0.3035
Broadleaf deciduous tree – tropical	0	0
Broadleaf deciduous tree – temperate	-0.0737	0.2175
Broadleaf deciduous tree – boreal	-0.0209	0.0579
Broadleaf evergreen shrub - temperate	<i>Not classified</i>	<i>Not classified</i>
Broadleaf deciduous shrub – temperate	2.5864	1.4176
Broadleaf deciduous shrub – boreal	-	-
C3 arctic grass	0.1562	0.4838
C3 grass	0.2485	0.5679
C4 grass	0.6683	1.0709
C3 Unmanaged Rainfed Crop	-0.3267	0.2816
C3 Unmanaged Irrigated Crop	0.0367	0.1933
Rainfed Corn	-	-
Irrigated Corn	-	-
Rainfed Temperate Cereals	-	-
Irrigated Temperate Cereals	-	-
Rainfed Winter Cereals	-	-
Irrigated Winter Cereals	-	-
Rainfed Soybean	-	-



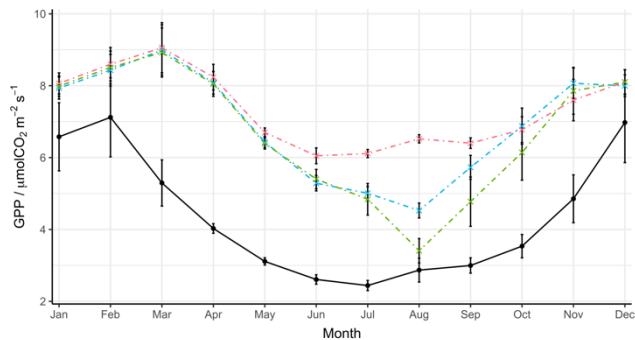
Site :	AU-DaP	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	→ GPP_DT_VUT_MEAN	TEMIR_FLUX	93.9	23.1	0.643
Time Period :	January of 2012	→ TEMIR_FLUX	TEMIR_MO_on	93.8	25	0.622
		→ TEMIR_MO_off	TEMIR_MO_off	93.9	23.5	0.637
		→ TEMIR_MO_on				



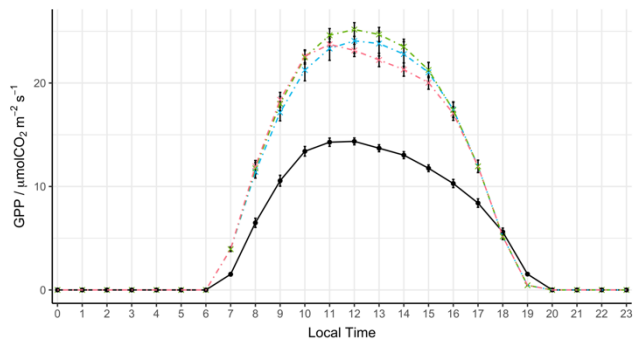
Site :	AU-DaP				R^2 / %	B / %	N
PFT of Site :	GRA	→ GPP_DT_VUT_MEAN	TEMIR_FLUX	78.9	69.9	0.00558	
Year Range :	2009 – 2013	→ TEMIR_FLUX	TEMIR_MO_on	89	104	-0.248	
		→ TEMIR_MO_off	TEMIR_MO_off	80.2	85.6	-0.0409	
		→ TEMIR_MO_on					



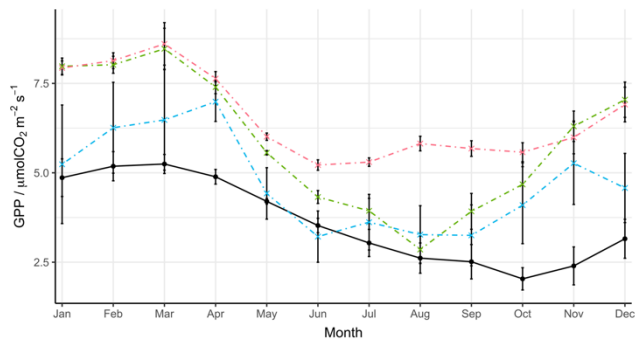
Site :	AU-DaS	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	→ GPP_DT_VUT_MEAN	TEMIR_FLUX	97.1	20	0.715
Time Period :	January of 2012	→ TEMIR_FLUX	TEMIR_MO_on	96.9	21.3	0.702
		→ TEMIR_MO_off	TEMIR_MO_off	97	19.9	0.716
		→ TEMIR_MO_on				



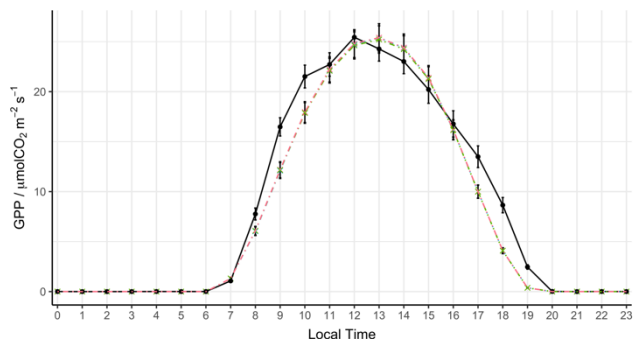
Site :	AU-DaS			R^2 / %	B / %	N
PFT of Site :	GRA	● GPP_DT_VUT_MEAN	TEMIR_FLUX	66.5	59	-0.722
Year Range :	2009 – 2013	● TEMIR_FLUX	TEMIR_MO_on	70.8	68.3	-0.993
		● TEMIR_MO_off	TEMIR_MO_off	66	53.4	-0.557
		● TEMIR_MO_on				



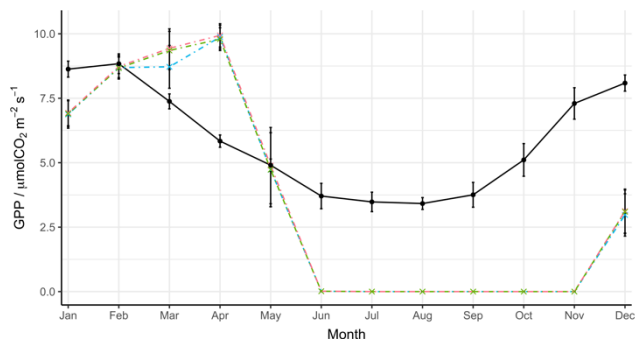
Site :	AU-Dry	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	→ GPP_DT_VUT_MEAN	TEMIR_FLUX	98.5	63.1	0.366
Time Period :	January of 2012	→ TEMIR_FLUX	TEMIR_MO_on	98.7	61.6	0.381
		→ TEMIR_MO_off	TEMIR_MO_off	98.5	68.4	0.315
		→ TEMIR_MO_on				



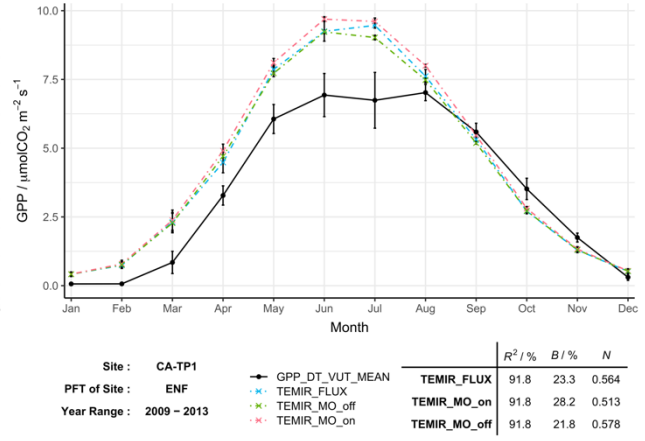
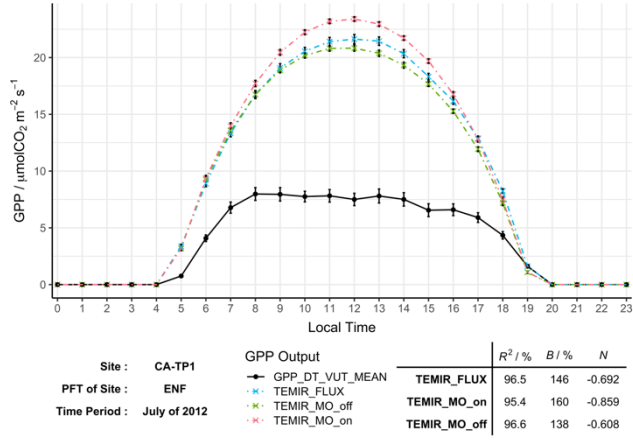
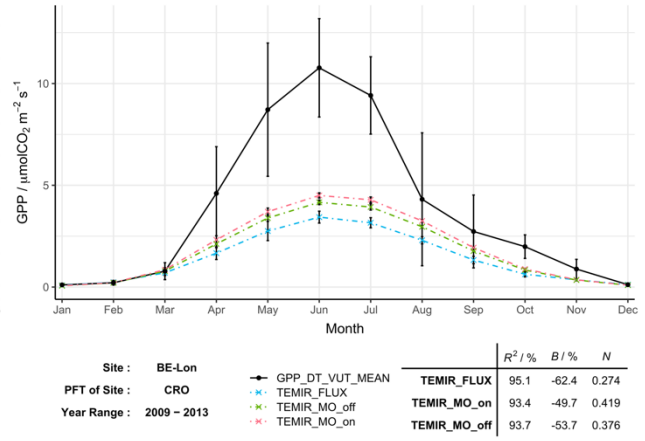
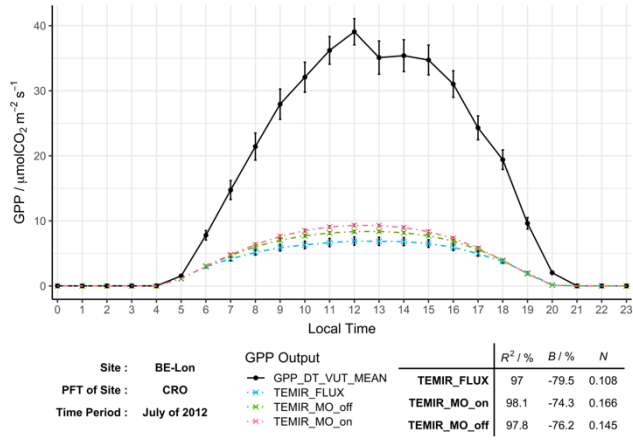
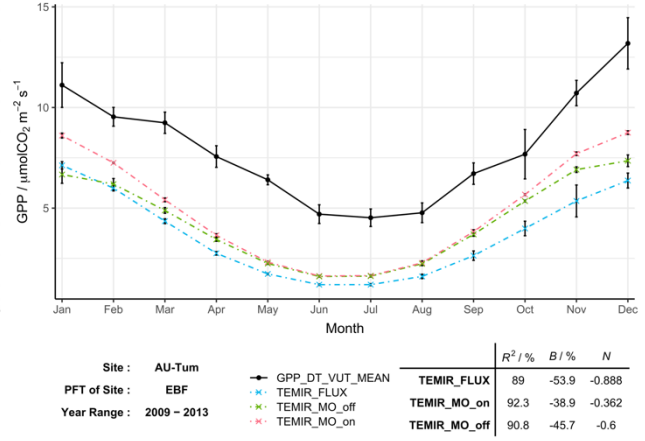
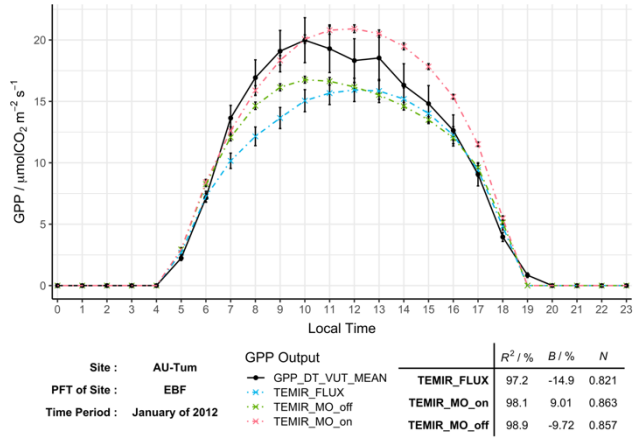
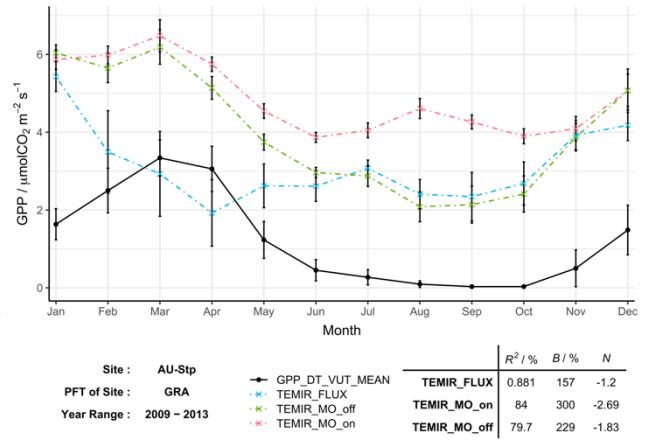
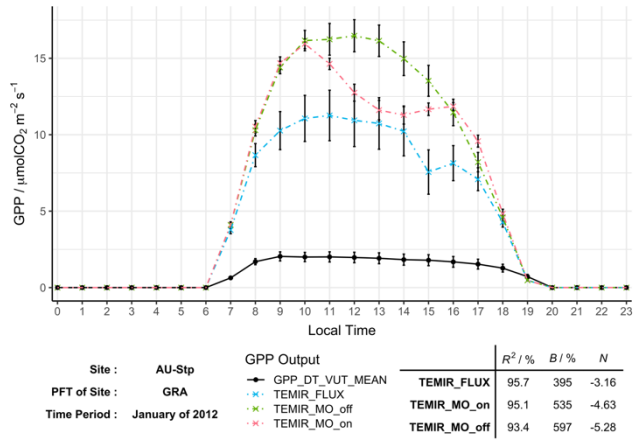
Site :	AU-Dry			R^2 / %	B / %	N
PFT of Site :	GRA	● GPP_DT_VUT_MEAN	TEMIR_FLUX	55.4	29.8	-0.102
Year Range :	2009 – 2013	✚ TEMIR_FLUX	TEMIR_MO_on	70.3	80.5	-1.84
		✚ TEMIR_MO_off				
		✚ TEMIR_MO_on	TEMIR_MO_off	59.8	61.4	-1.17

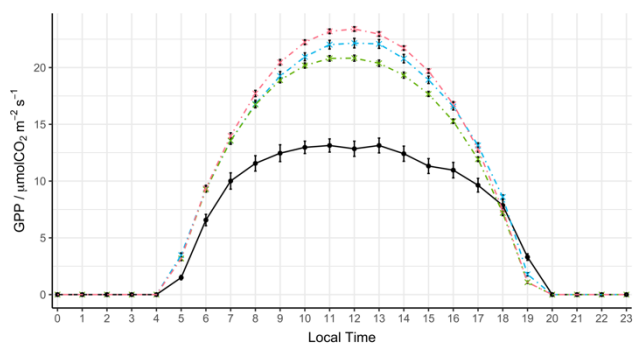


Site :	AU-How	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	→ GPP_DT_VUT_MEAN	TEMIR_FLUX	97.2	-8.79	0.881
Time Period :	January of 2012	→ TEMIR_FLUX	TEMIR_MO_on	97.2	-8.56	0.882
		→ TEMIR_MO_off	TEMIR_MO_off	97.3	-9.04	0.882
		→ TEMIR_MO_on				

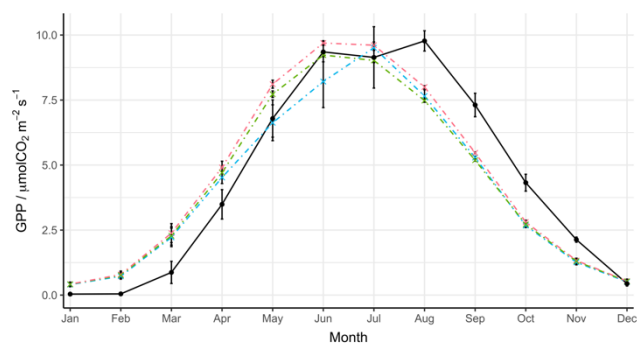


Site :	AU-How				R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	40.8	-40.6	-0.807	
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	40.7	-38.9	-0.824	
		— TEMIR_MO_off	TEMIR_MO_off	41.1	-39.6	-0.826	
		— TEMIR_MO_on					

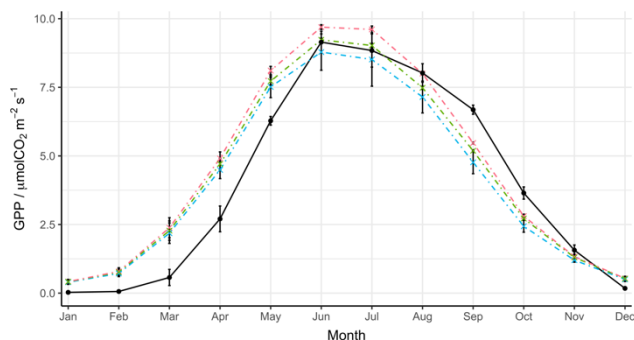




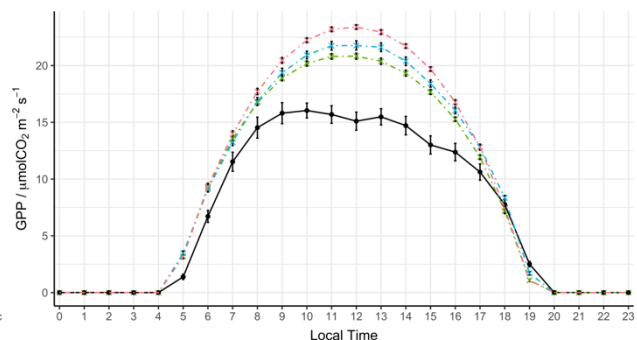
Site :	CA-TP3	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	97.5	53.2	0.352
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	96.4	57.7	0.282
		— TEMIR_MO_off	TEMIR_MO_off	97.2	44.5	0.433
		— TEMIR_MO_on				



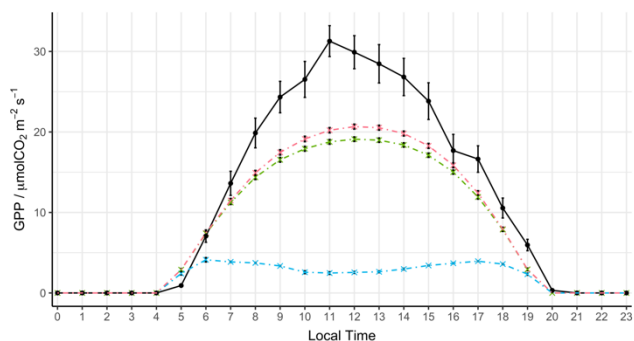
Site :	CA-TP3	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	91.4	-7.63	0.704
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	89.8	0.671	0.694
		— TEMIR_MO_off	TEMIR_MO_off	89.5	-4.37	0.704
		— TEMIR_MO_on				



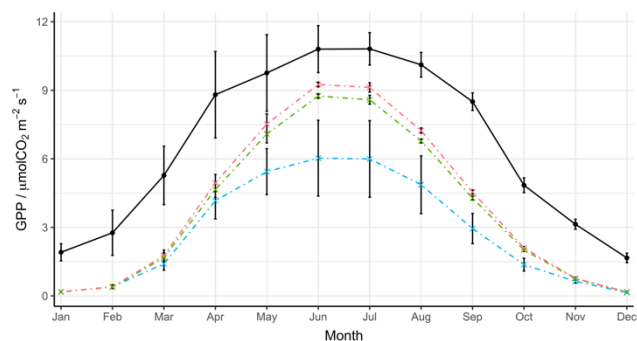
Site :	CA-TP4	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	90.4	1.94	0.711
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	91.8	13.3	0.713
		— TEMIR_MO_off	TEMIR_MO_off	91.6	7.6	0.736
		— TEMIR_MO_on				



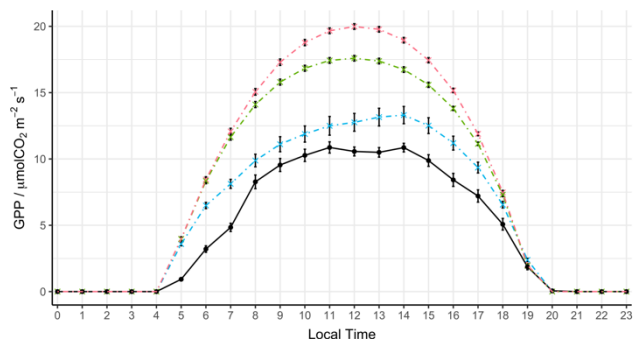
Site :	CA-TP4	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	98.4	30.3	0.643
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	97.8	36.2	0.564
		— TEMIR_MO_off	TEMIR_MO_off	98.5	24.8	0.69
		— TEMIR_MO_on				



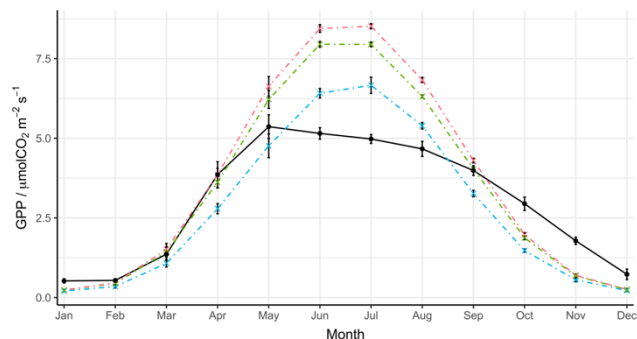
Site :	CH-Cha	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	49	-83.2	0.0725
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	98.2	-25.3	0.703
		— TEMIR_MO_off	TEMIR_MO_off	97.8	-29.4	0.659
		— TEMIR_MO_on				



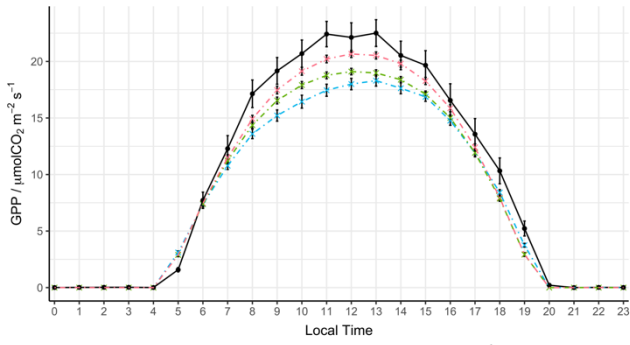
Site :	CH-Cha	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	95.4	-57.2	-0.143
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	94.1	-38.7	0.225
		— TEMIR_MO_off	TEMIR_MO_off	94.1	-42.2	0.156
		— TEMIR_MO_on				



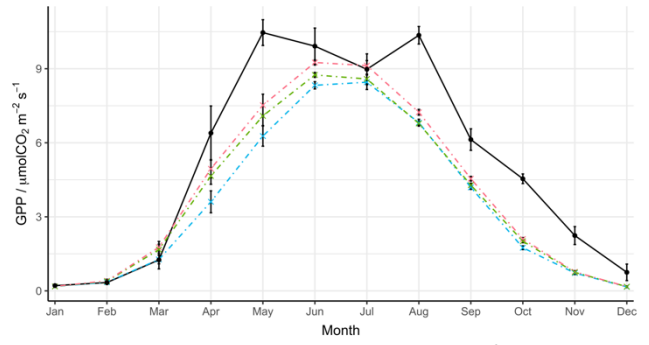
Site :	CH-Dav	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	97.5	28.8	0.676
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	98.1	85.1	0.0451
		— TEMIR_MO_off	TEMIR_MO_off	97.5	68.7	0.228
		— TEMIR_MO_on				



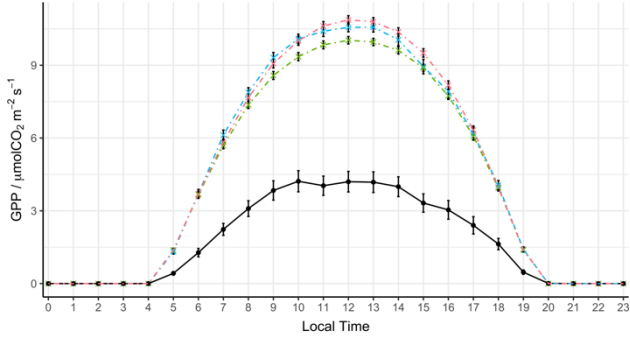
Site :	CH-Dav	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	87.3	-7.59	0.5
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	89.1	21.8	0.323
		— TEMIR_MO_off	TEMIR_MO_off	89.2	14.2	0.421
		— TEMIR_MO_on				



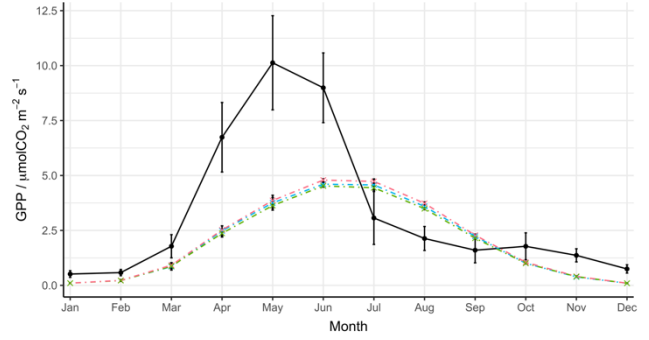
Site :	CH-Fru	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	99.3	-16.5	0.796
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	99.4	-8.57	0.889
		— TEMIR_MO_off	TEMIR_MO_off	99.4	-13.6	0.832
		— TEMIR_MO_on				



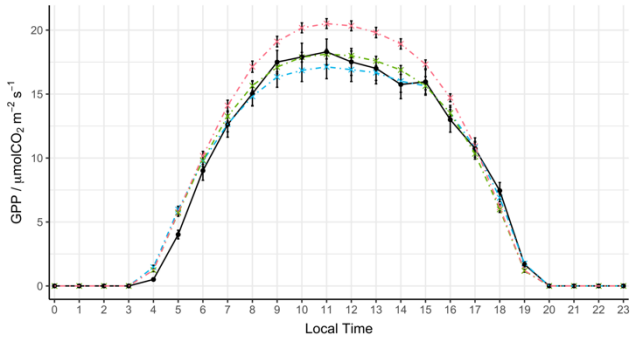
Site :	CH-Fru	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	90.2	-31.6	0.545
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	91.8	-22	0.65
		— TEMIR_MO_off	TEMIR_MO_off	91.8	-26.4	0.599
		— TEMIR_MO_on				



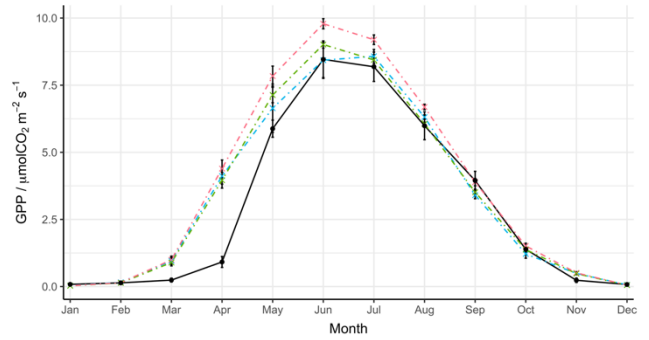
Site :	CH-Oe2	GPP Output		R^2 / %	B / %	N
PFT of Site :	CRO	— GPP_DT_VUT_MEAN	TEMIR_FLUX	99.7	156	-0.729
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	99.4	159	-0.759
		— TEMIR_MO_off	TEMIR_MO_off	99.3	144	-0.598
		— TEMIR_MO_on				



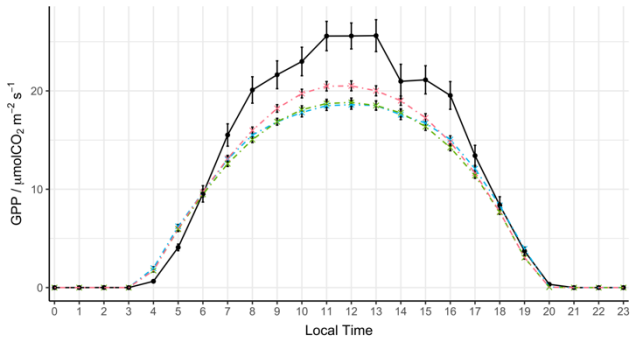
Site :	CH-Oe2	GPP Output		R^2 / %	B / %	N
PFT of Site :	CRO	— GPP_DT_VUT_MEAN	TEMIR_FLUX	50.9	-39.4	0.29
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	50.6	-37.3	0.294
		— TEMIR_MO_off	TEMIR_MO_off	50.8	-40.9	0.291
		— TEMIR_MO_on				



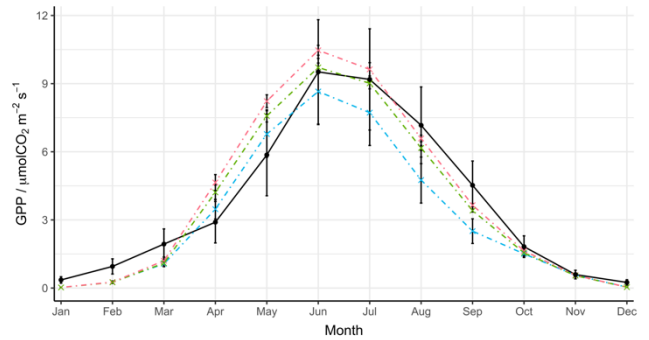
Site :	CZ-wet	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	99.3	-0.403	0.939
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	99.3	12.2	0.837
		— TEMIR_MO_off	TEMIR_MO_off	99.3	2.02	0.937
		— TEMIR_MO_on				



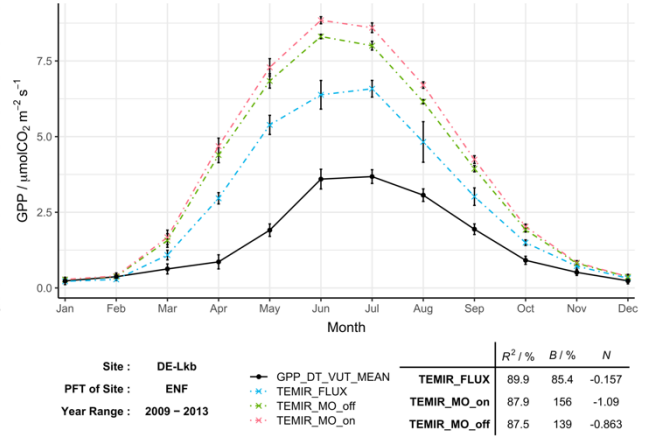
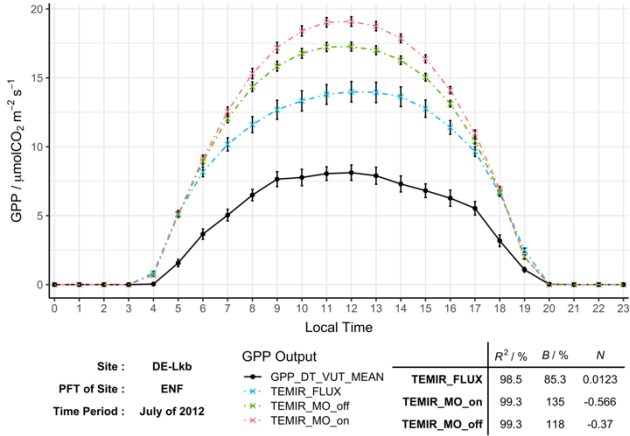
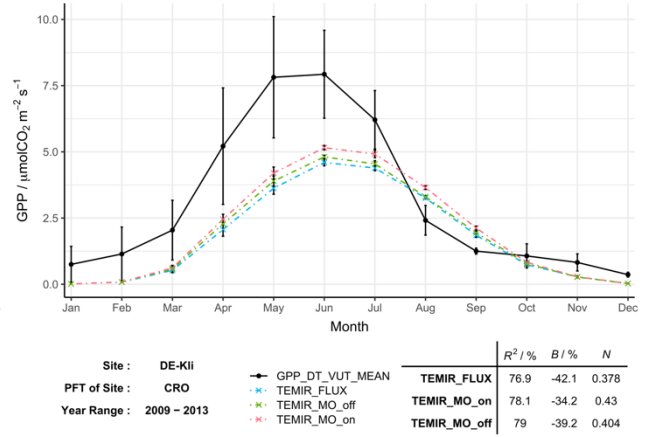
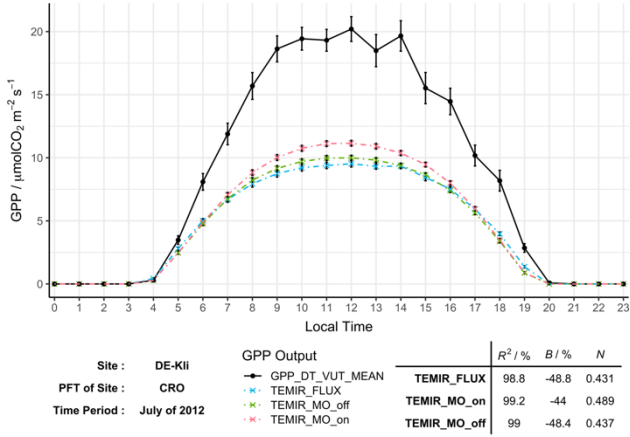
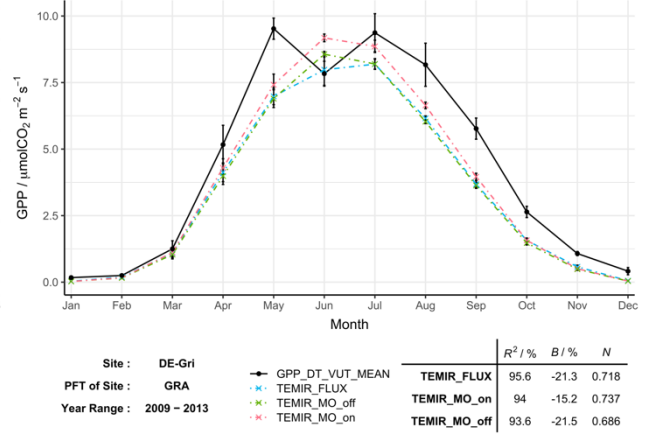
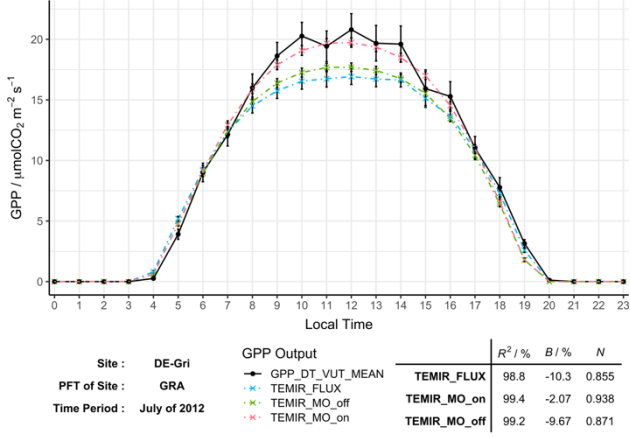
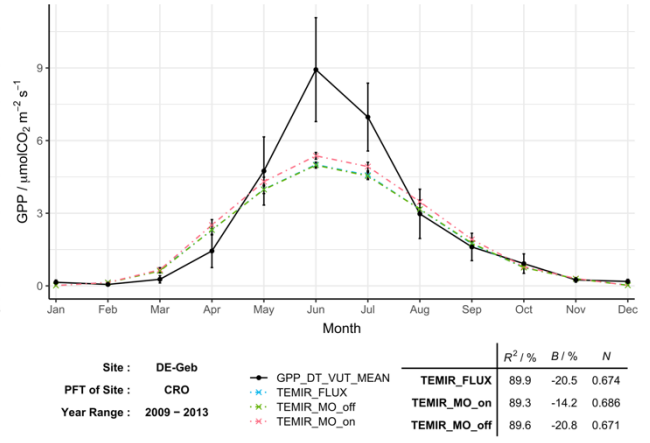
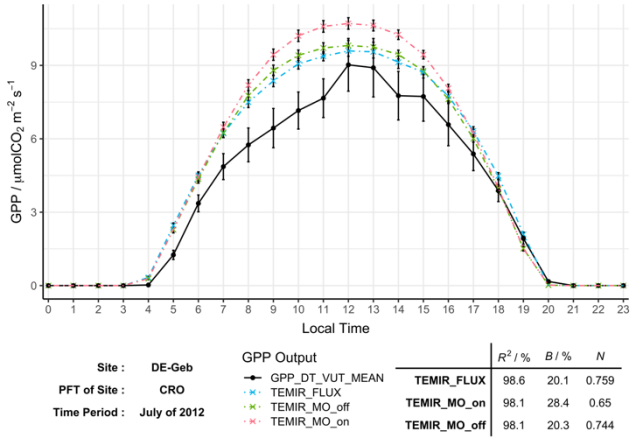
Site :	CZ-wet	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	92	13.7	0.817
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	92.6	26.7	0.723
		— TEMIR_MO_off	TEMIR_MO_off	92.9	15.6	0.813
		— TEMIR_MO_on				

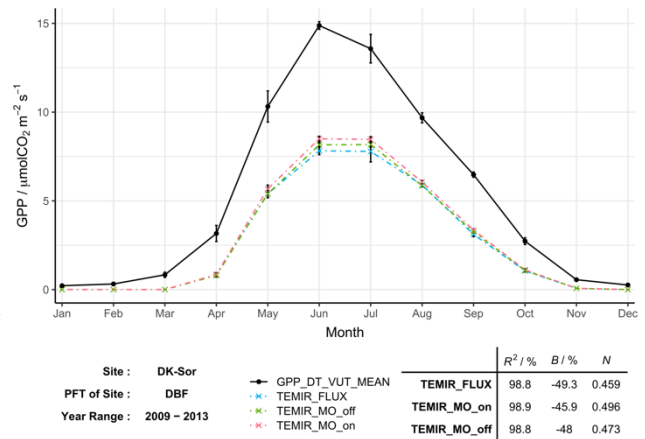
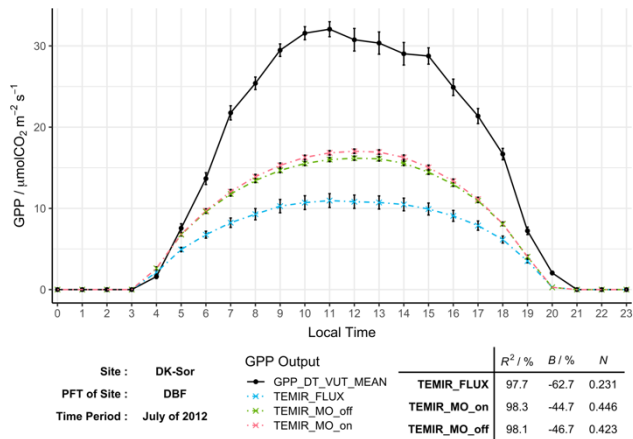
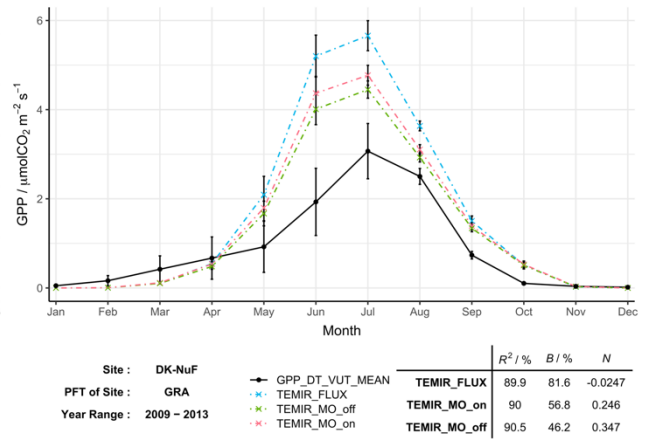
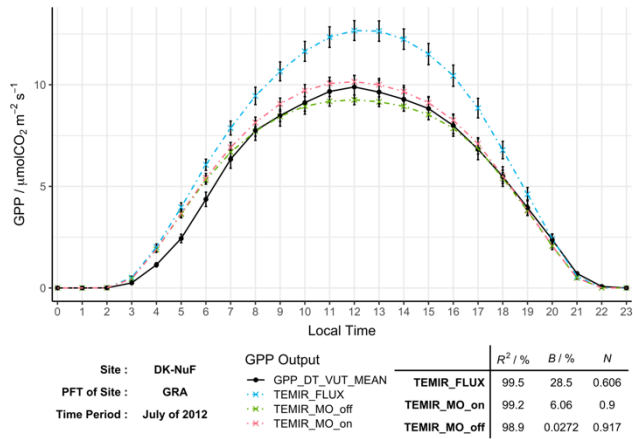
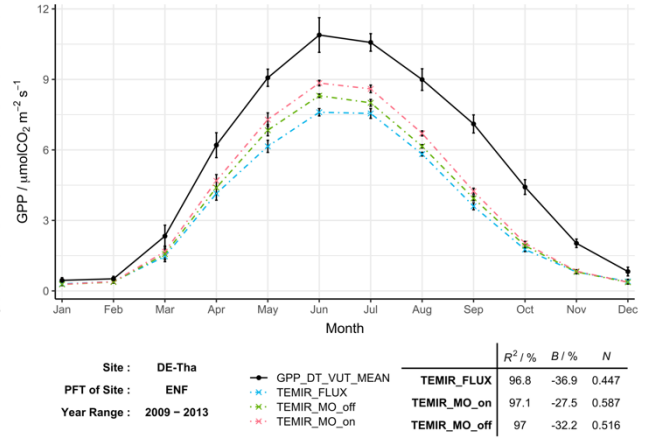
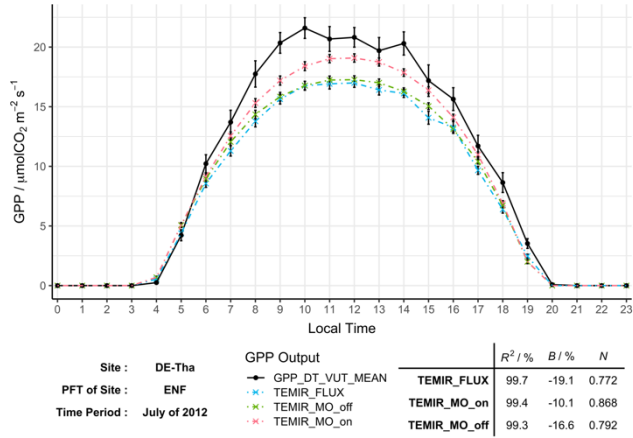
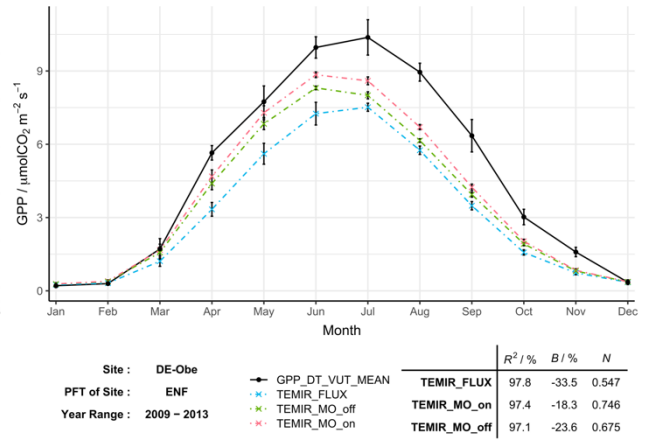
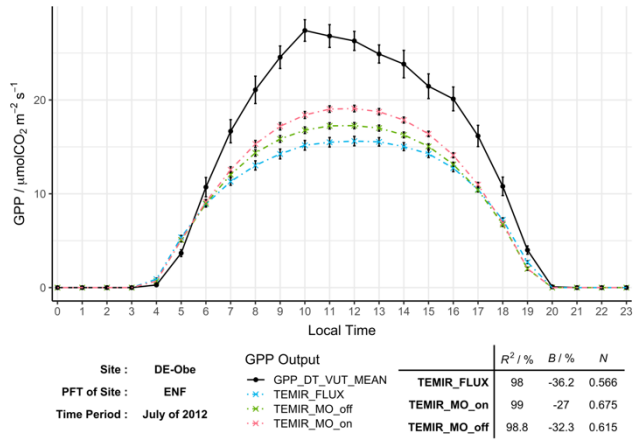


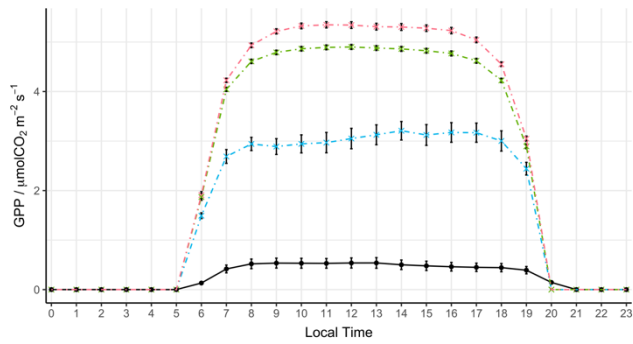
Site :	DE-Akm	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	98.1	-18.7	0.753
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	98.9	-15.4	0.797
		— TEMIR_MO_off	TEMIR_MO_off	98.5	-20.3	0.743
		— TEMIR_MO_on				



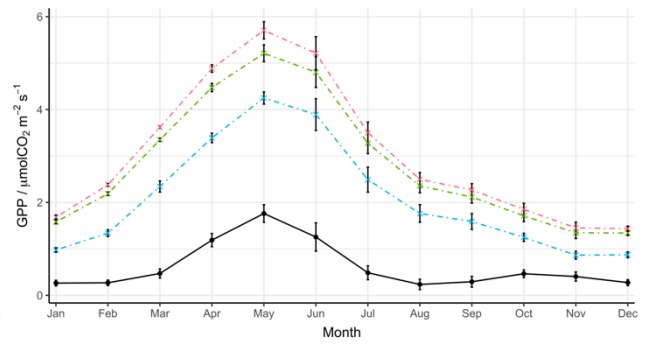
Site :	DE-Akm	GPP Output		R^2 / %	B / %	N
PFT of Site :	GRA	— GPP_DT_VUT_MEAN	TEMIR_FLUX	92	-17.1	0.694
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	94	4.16	0.739
		— TEMIR_MO_off	TEMIR_MO_off	94.5	-3.23	0.774
		— TEMIR_MO_on				



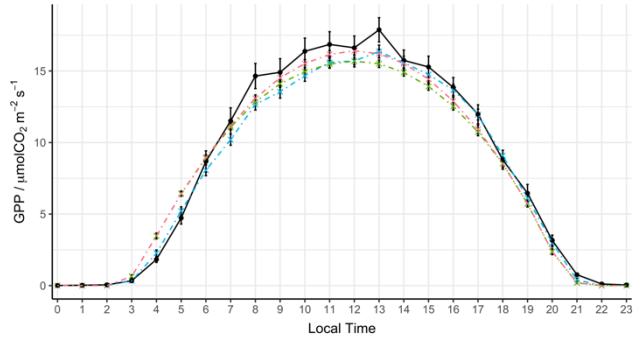




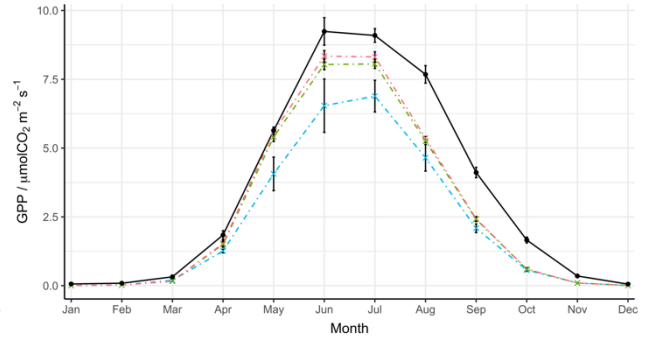
Site :	ES-LJu	GPP Output		R^2 / %	B / %	N
PFT of Site :	OSH	— GPP_DT_VUT_MEAN	TEMIR_FLUX	95.8	508	-5.15
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	97	898	-9.85
		— TEMIR_MO_off	TEMIR_MO_off	97.1	822	-8.94
		— TEMIR_MO_on				



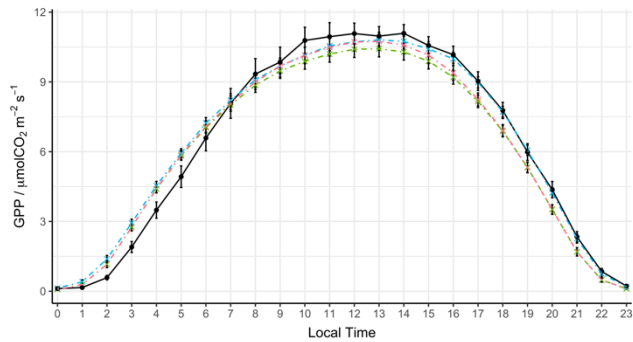
Site :	ES-LJu	GPP Output		R^2 / %	B / %	N
PFT of Site :	OSH	— GPP_DT_VUT_MEAN	TEMIR_FLUX	83.7	239	-2.73
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	81.7	395	-5.16
		— TEMIR_MO_off	TEMIR_MO_off	80.7	358	-4.58
		— TEMIR_MO_on				



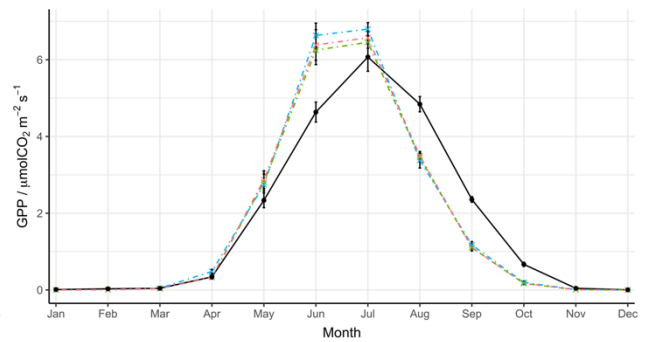
Site :	FI-Hyy	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	99.4	-5.71	0.907
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	98.9	-3.69	0.897
		— TEMIR_MO_off	TEMIR_MO_off	98.8	-6.29	0.863
		— TEMIR_MO_on				



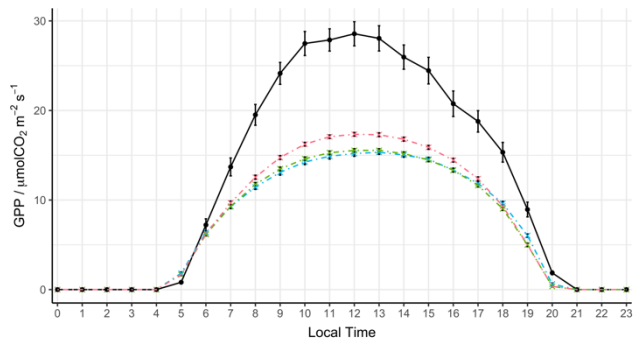
Site :	FI-Hyy	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	98	-34.2	0.639
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	96.6	-19.1	0.798
		— TEMIR_MO_off	TEMIR_MO_off	96.9	-21.4	0.775
		— TEMIR_MO_on				



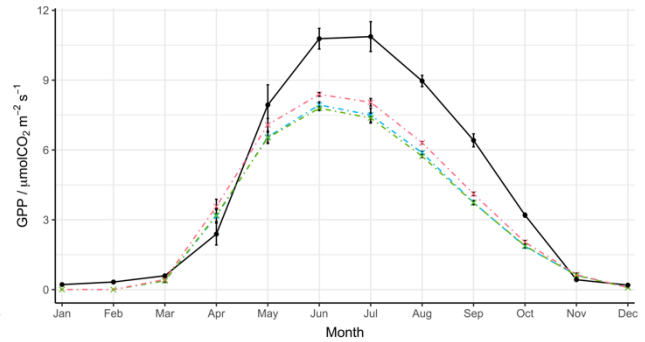
Site :	FI-Sod	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	99	1.28	0.909
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	98.4	-2.85	0.863
		— TEMIR_MO_off	TEMIR_MO_off	98.3	-4.53	0.837
		— TEMIR_MO_on				



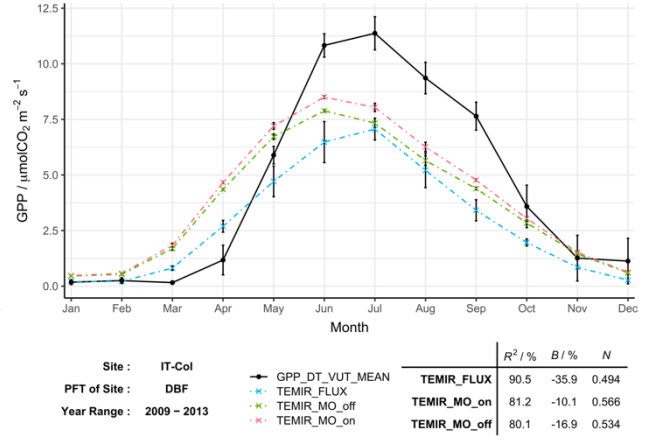
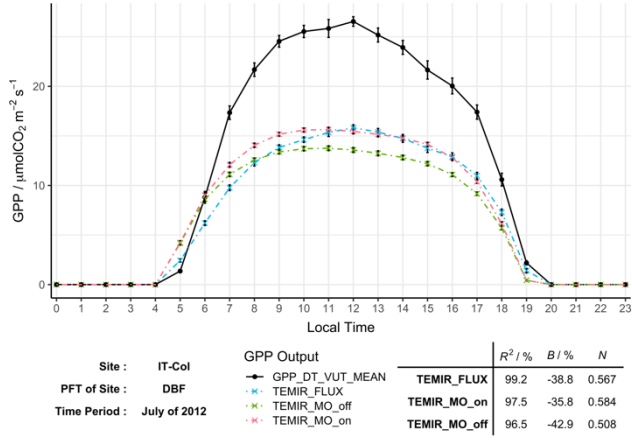
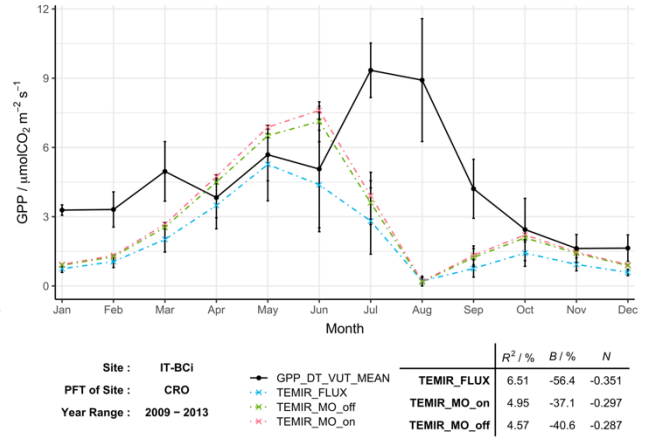
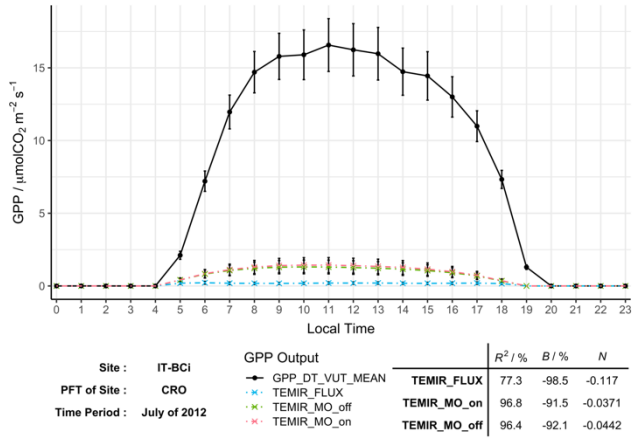
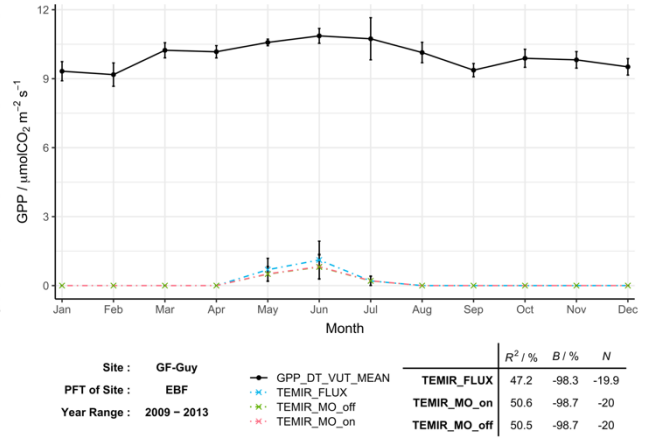
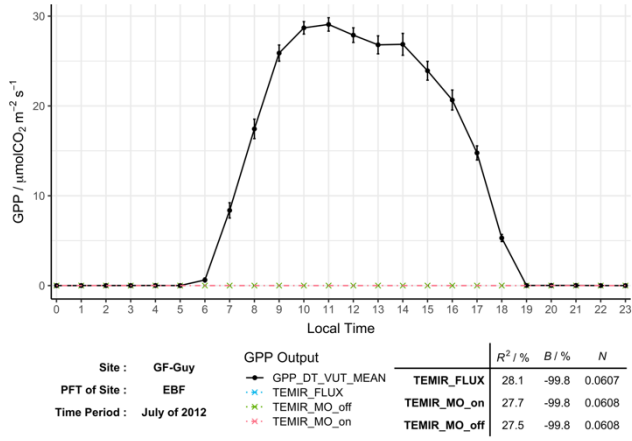
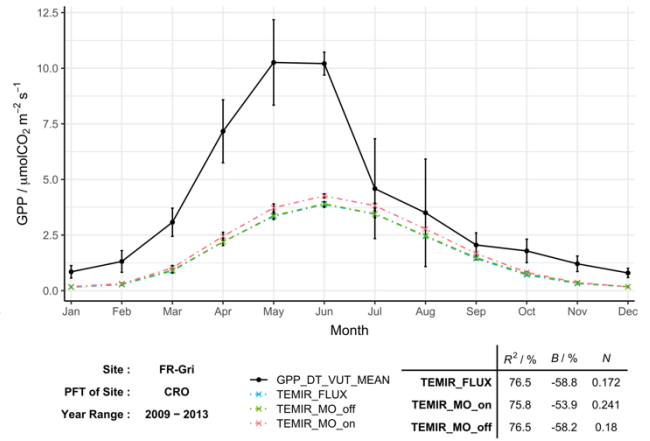
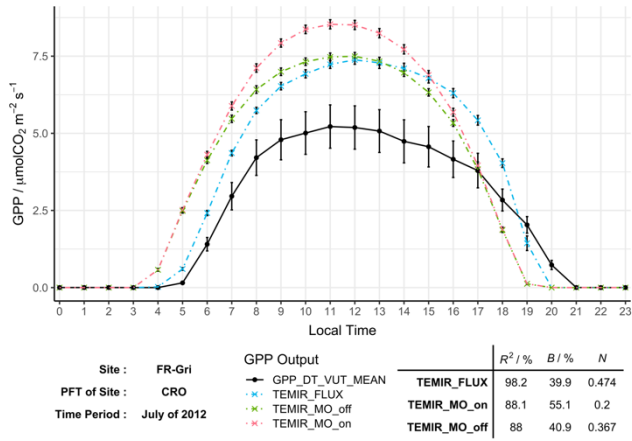
Site :	FI-Sod	GPP Output		R^2 / %	B / %	N
PFT of Site :	ENF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	88.8	0.402	0.715
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	89.9	-1.85	0.737
		— TEMIR_MO_off	TEMIR_MO_off	90.1	-3.63	0.748
		— TEMIR_MO_on				

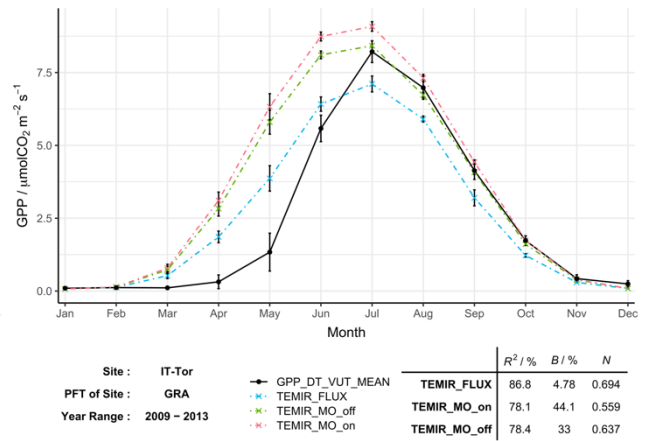
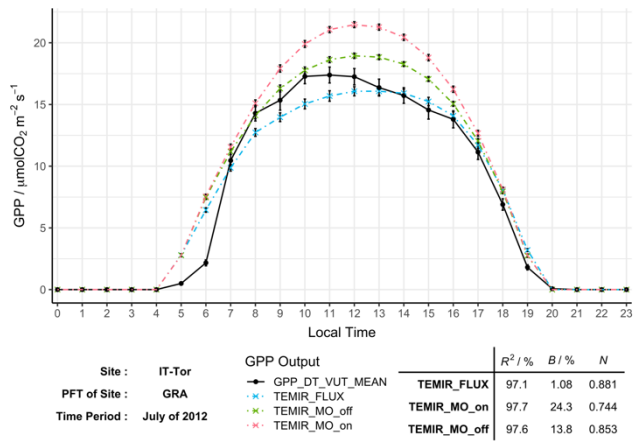
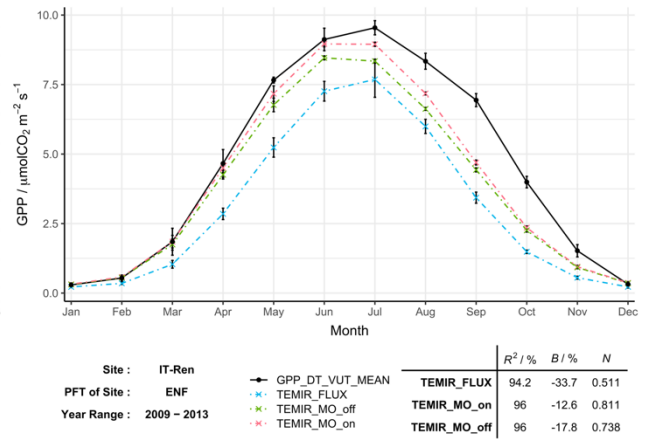
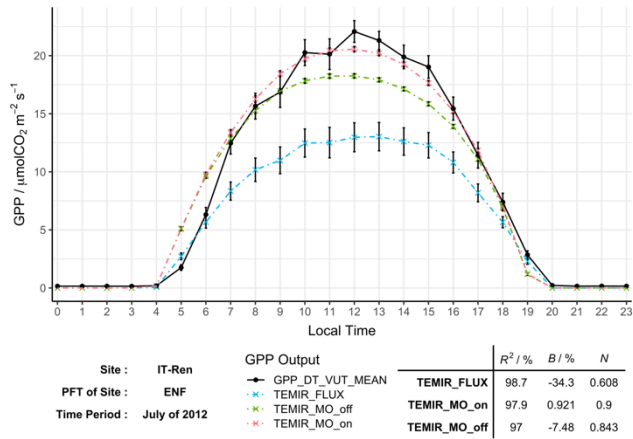
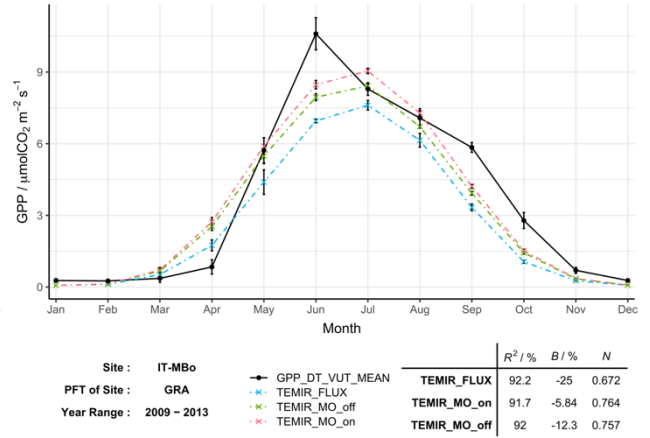
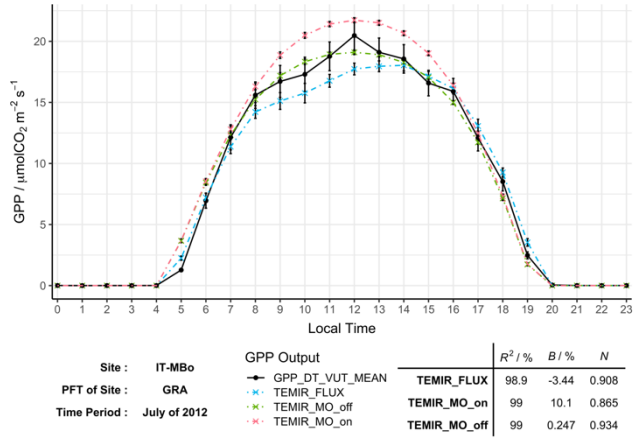
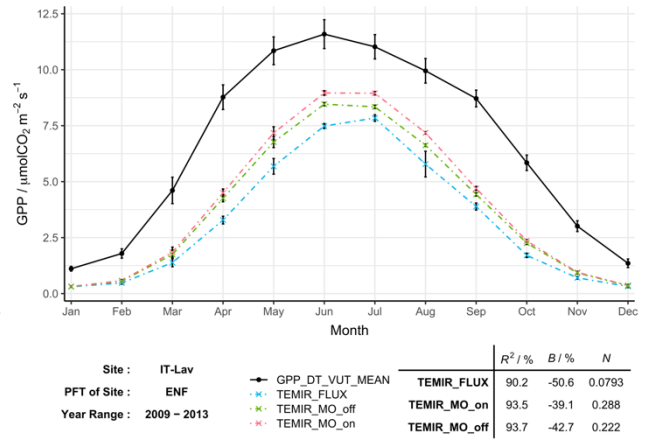
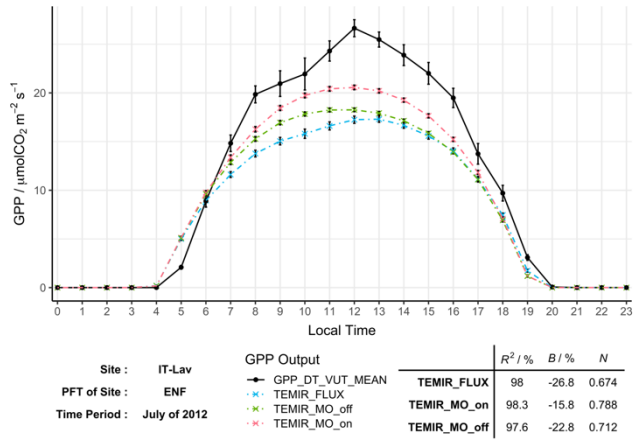


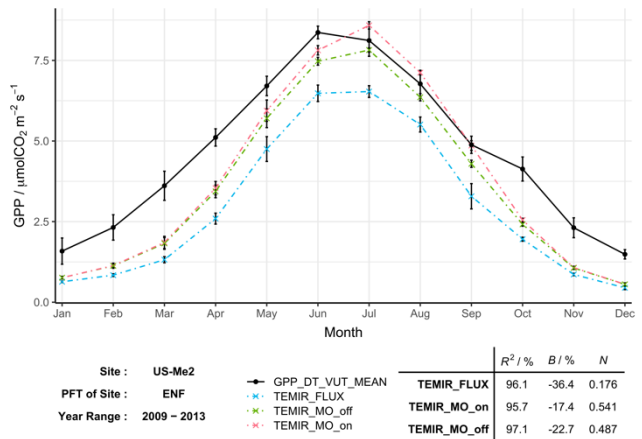
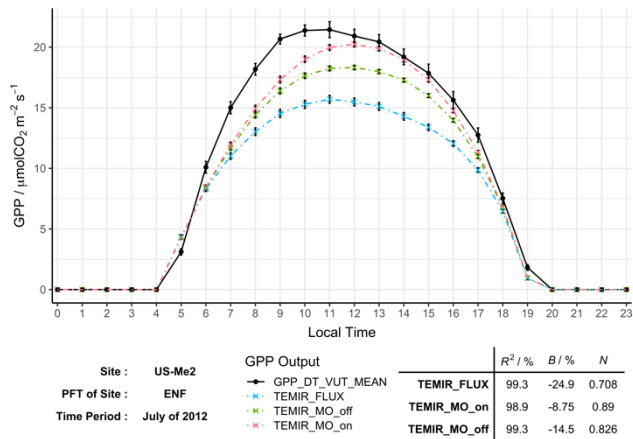
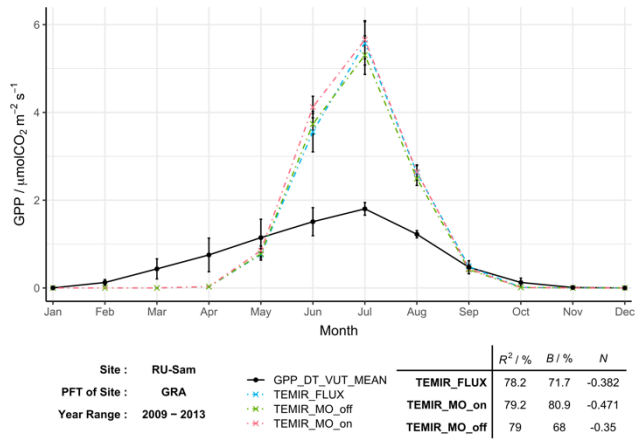
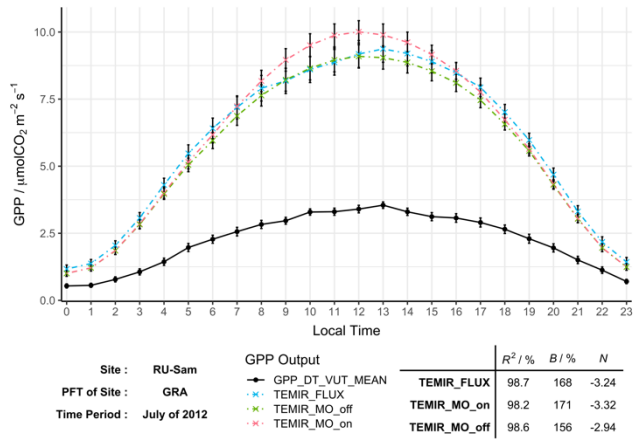
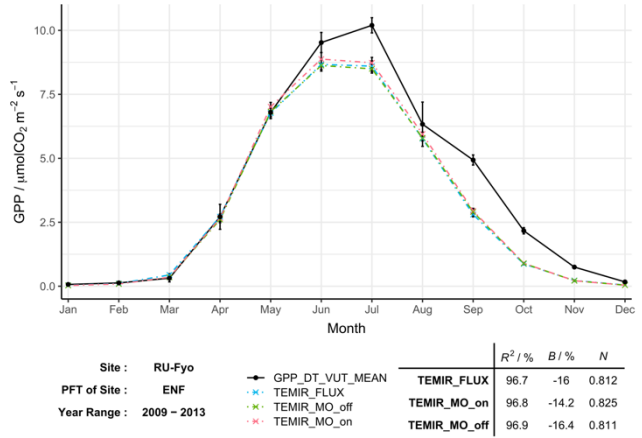
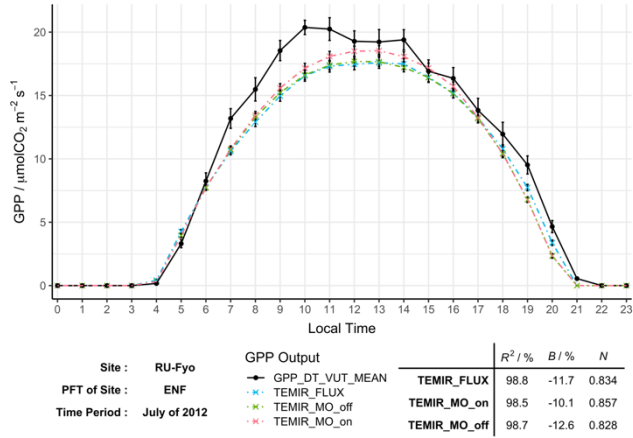
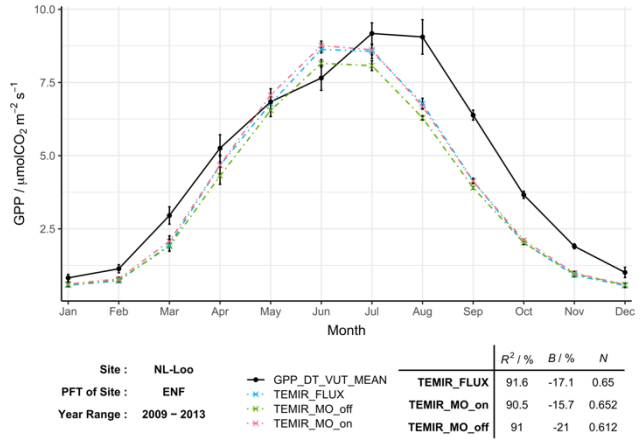
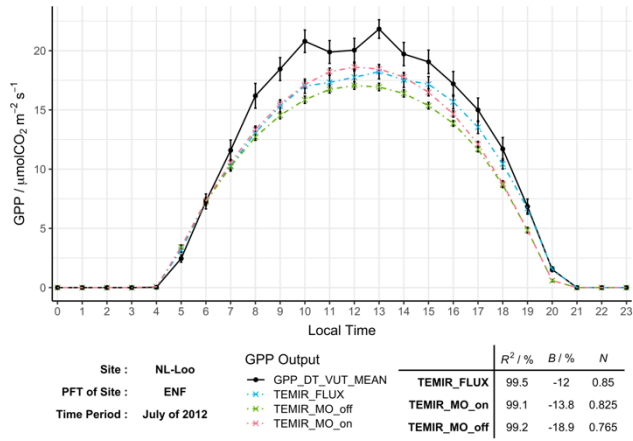
Site :	FR-Fon	GPP Output		R^2 / %	B / %	N
PFT of Site :	DBF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	98.2	-41.1	0.52
Time Period :	July of 2012	— TEMIR_FLUX	TEMIR_MO_on	99.1	-36.3	0.577
		— TEMIR_MO_off	TEMIR_MO_off	98.7	-41.3	0.52
		— TEMIR_MO_on				

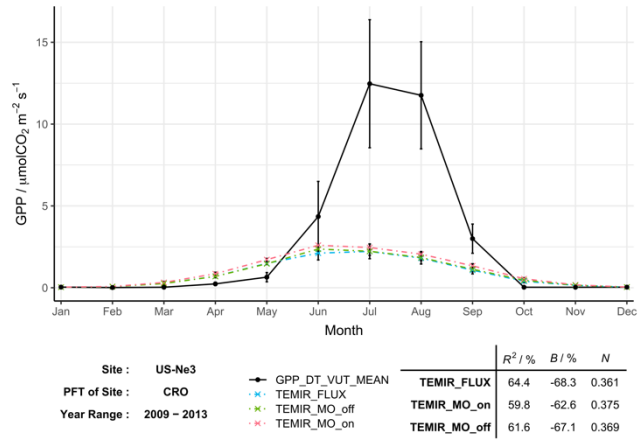
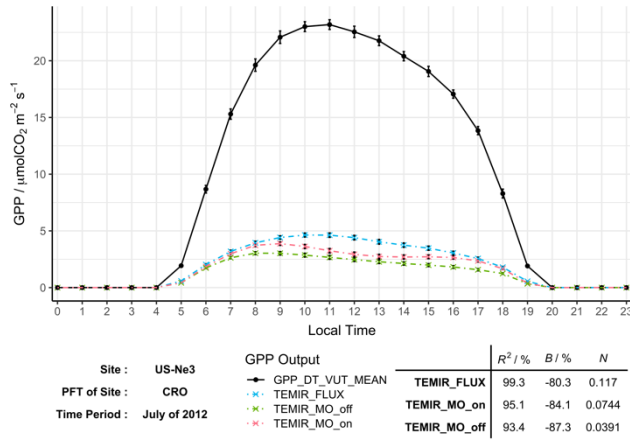
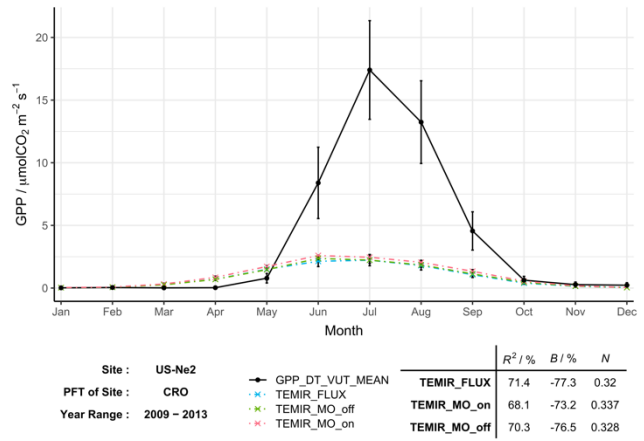
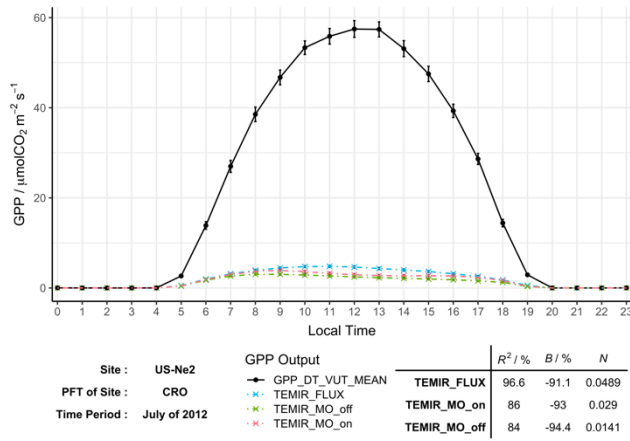
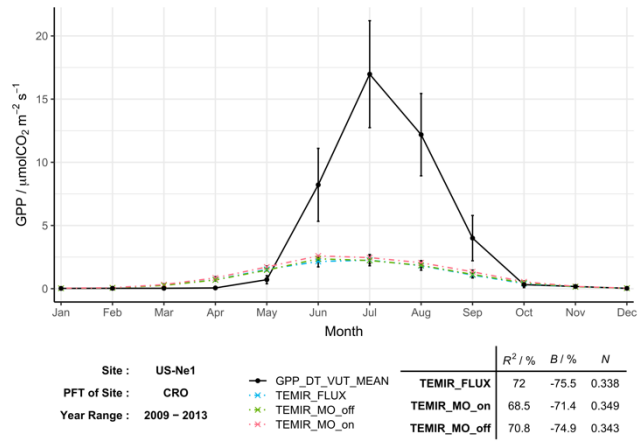
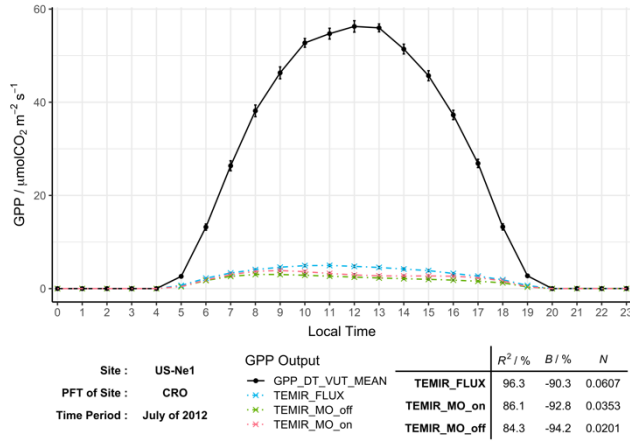
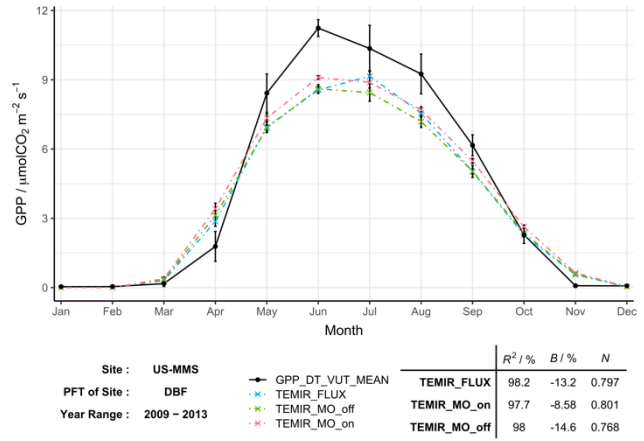
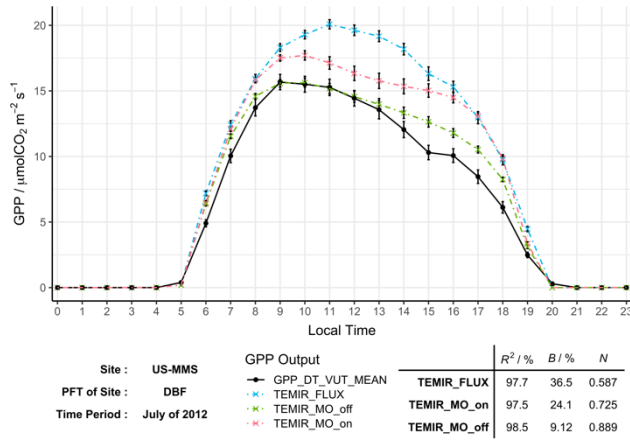


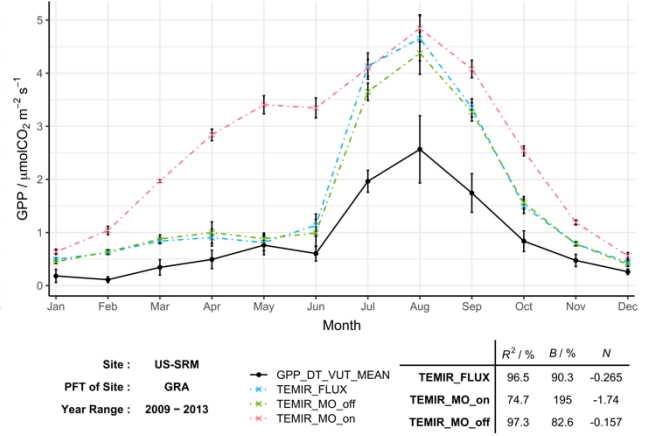
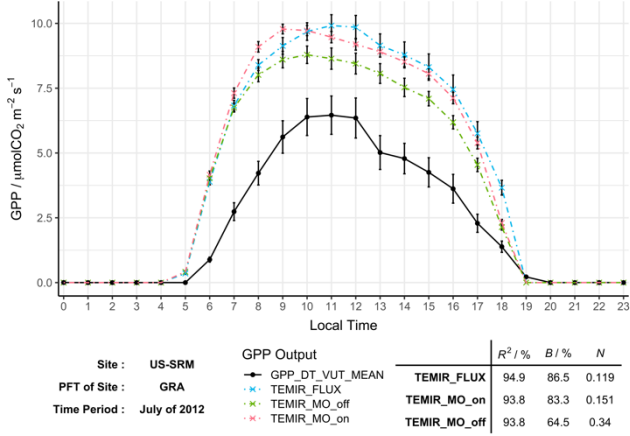
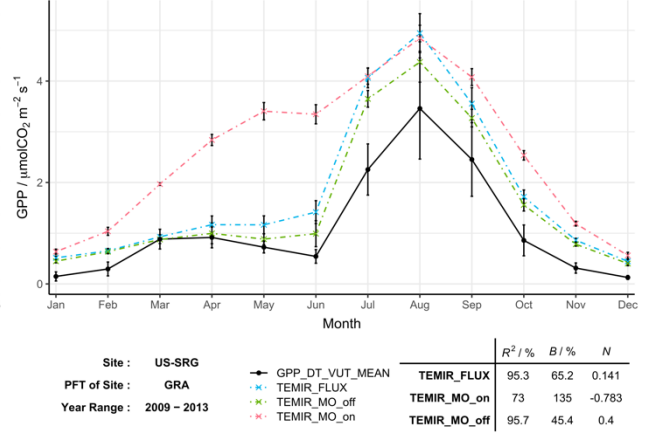
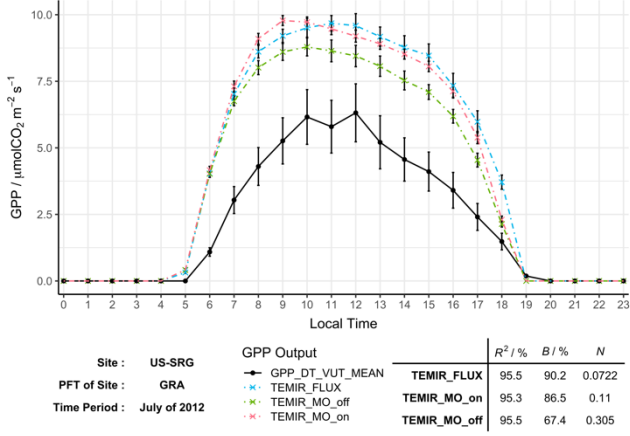
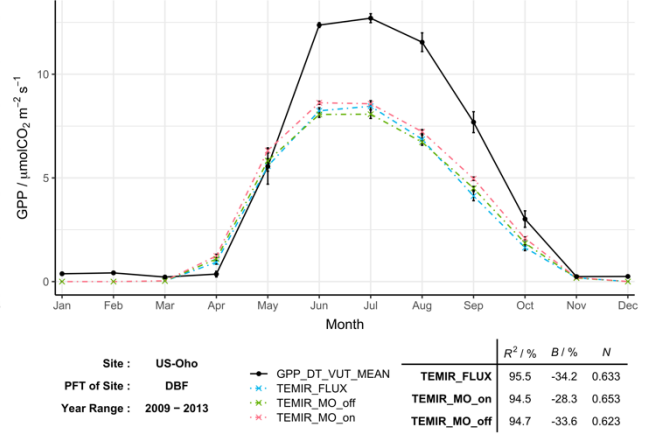
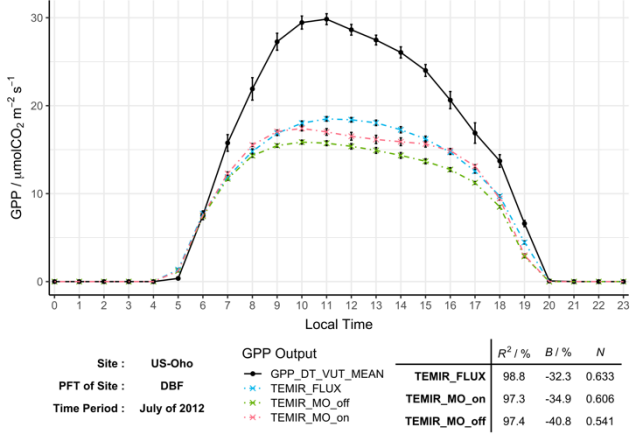
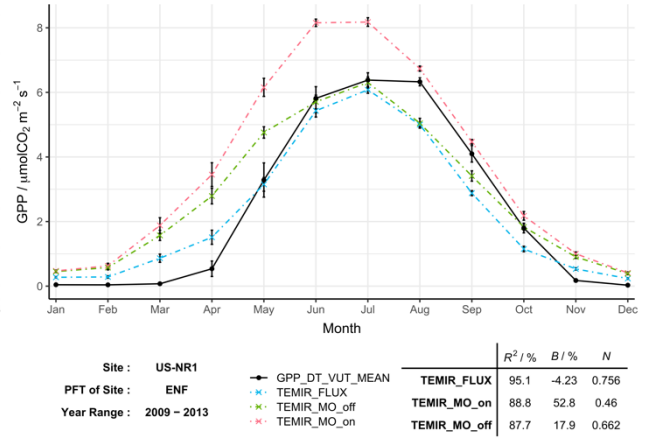
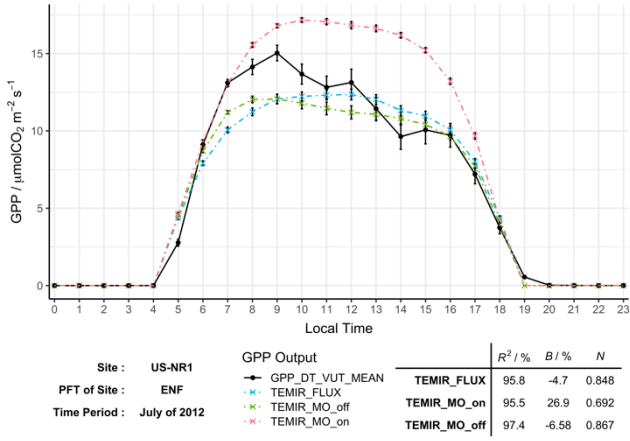
Site :	FR-Fon	GPP Output		R^2 / %	B / %	N
PFT of Site :	DBF	— GPP_DT_VUT_MEAN	TEMIR_FLUX	95.9	-27.9	0.644
Year Range :	2009 – 2013	— TEMIR_FLUX	TEMIR_MO_on	95.6	-22.1	0.689
		— TEMIR_MO_off	TEMIR_MO_off	95.6	-28.6	0.633
		— TEMIR_MO_on				











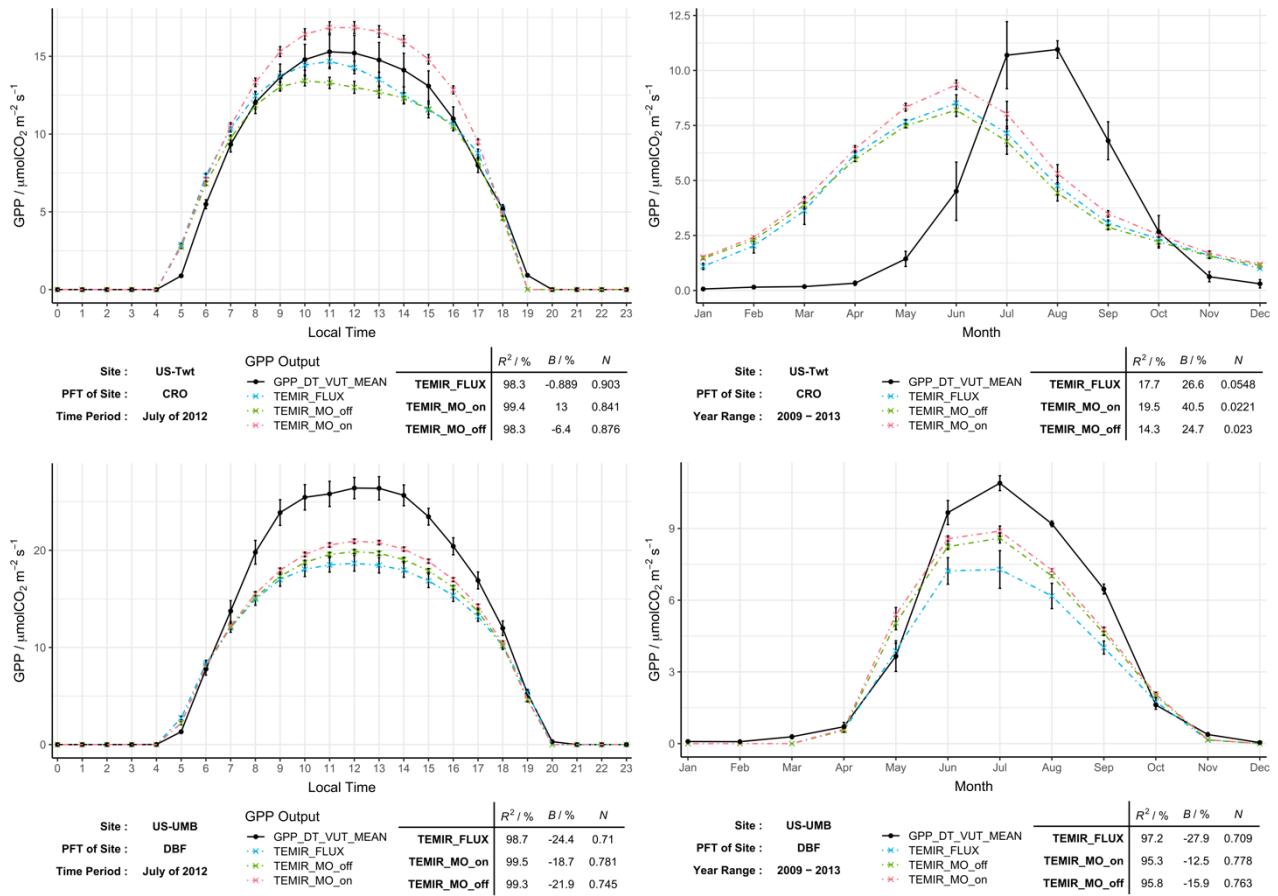


Figure S1: Diurnal and monthly averaged gross primary productivity of sites listed in Table S2 from simulations described in Table 1 with relevant site information and statistics.

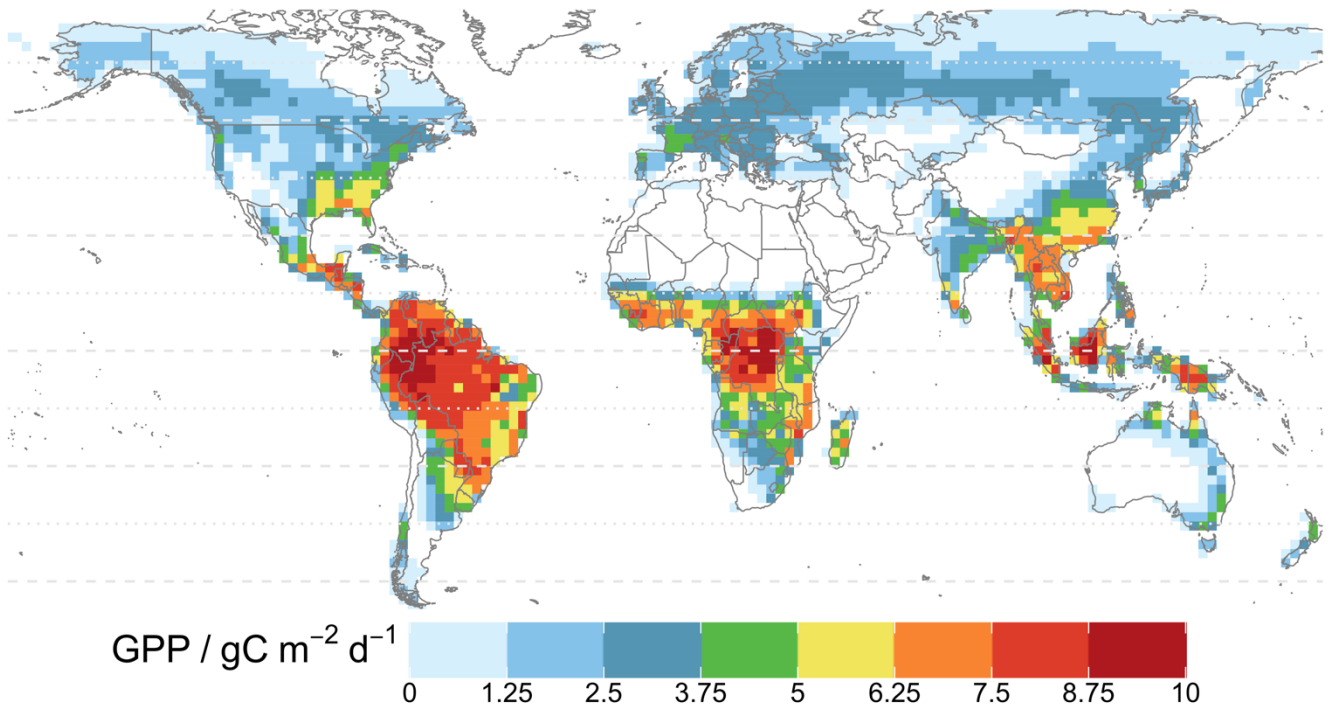


Figure S2: Simulated global GPP averaged over years 2010 to 2015 from simulation TEMIR_MO_off (Table 2)

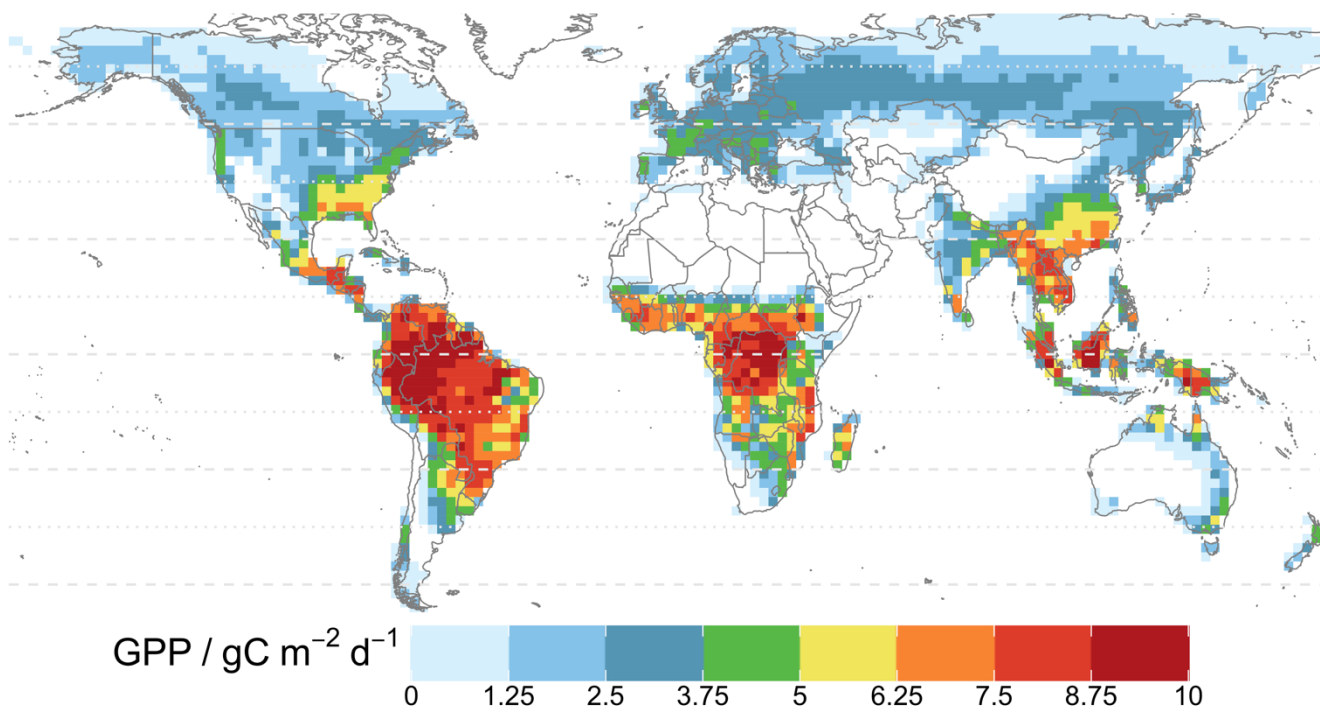


Figure S3: Simulated global GPP averaged over years 2010 to 2015 from simulation TEMIR_MO_on (Table 2)

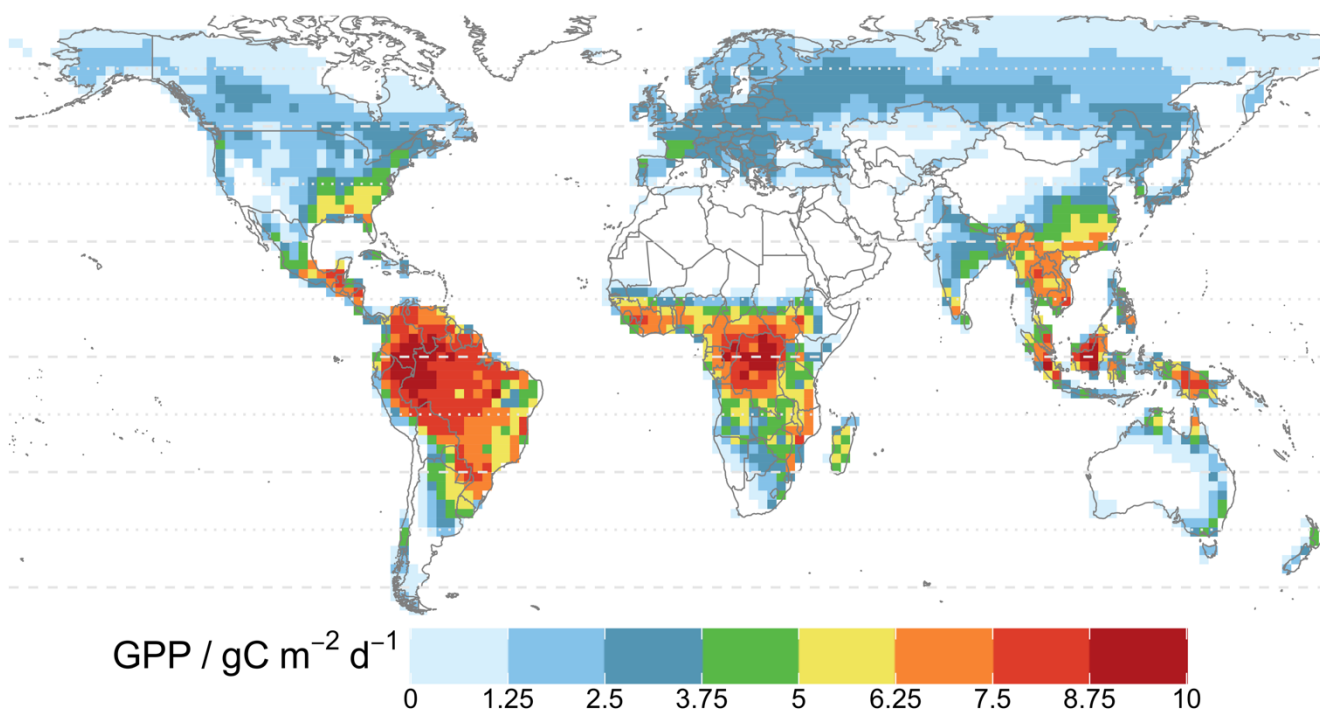


Figure S4: Simulated global GPP averaged over years 2010 to 2015 from simulation TEMIR_SI (Table 2)

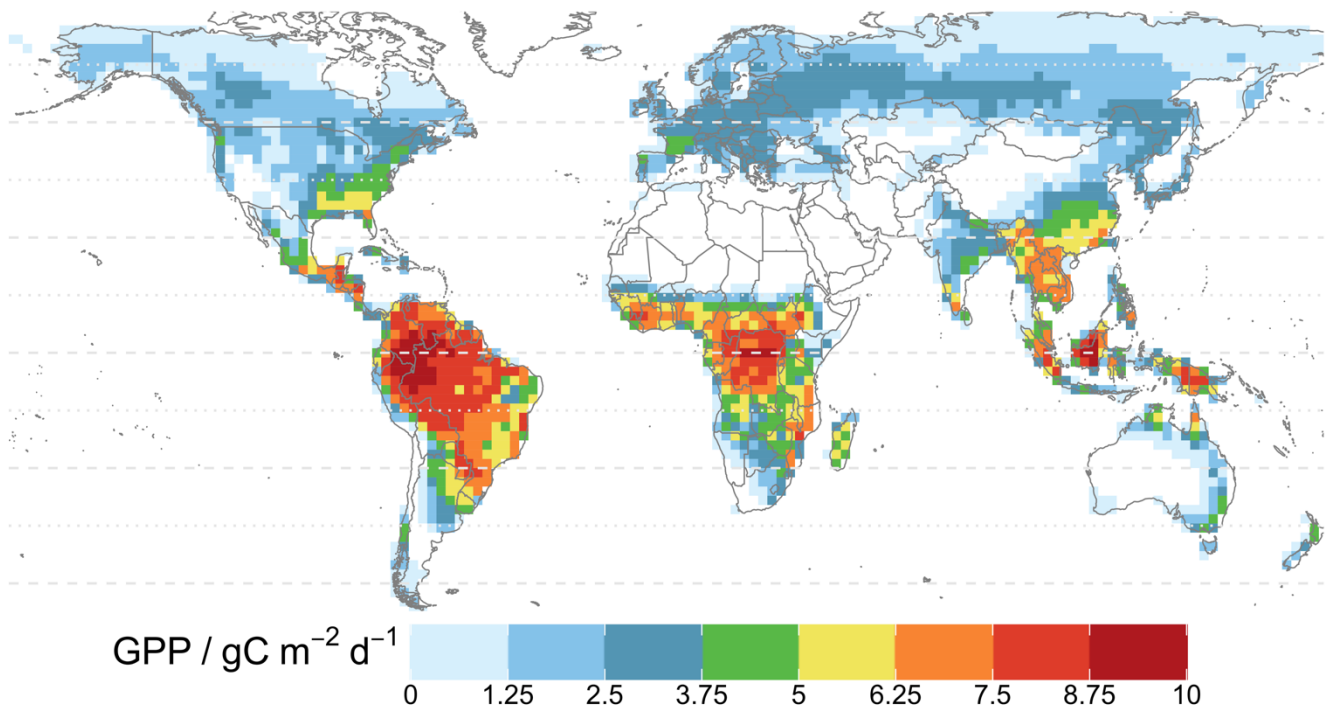


Figure S5: Simulated global GPP averaged over years 2010 to 2015 from simulation TEMIR_Sh (Table 2)