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Supplementary Materials for

How close are we to the temperature tipping point of the terrestrial biosphere?

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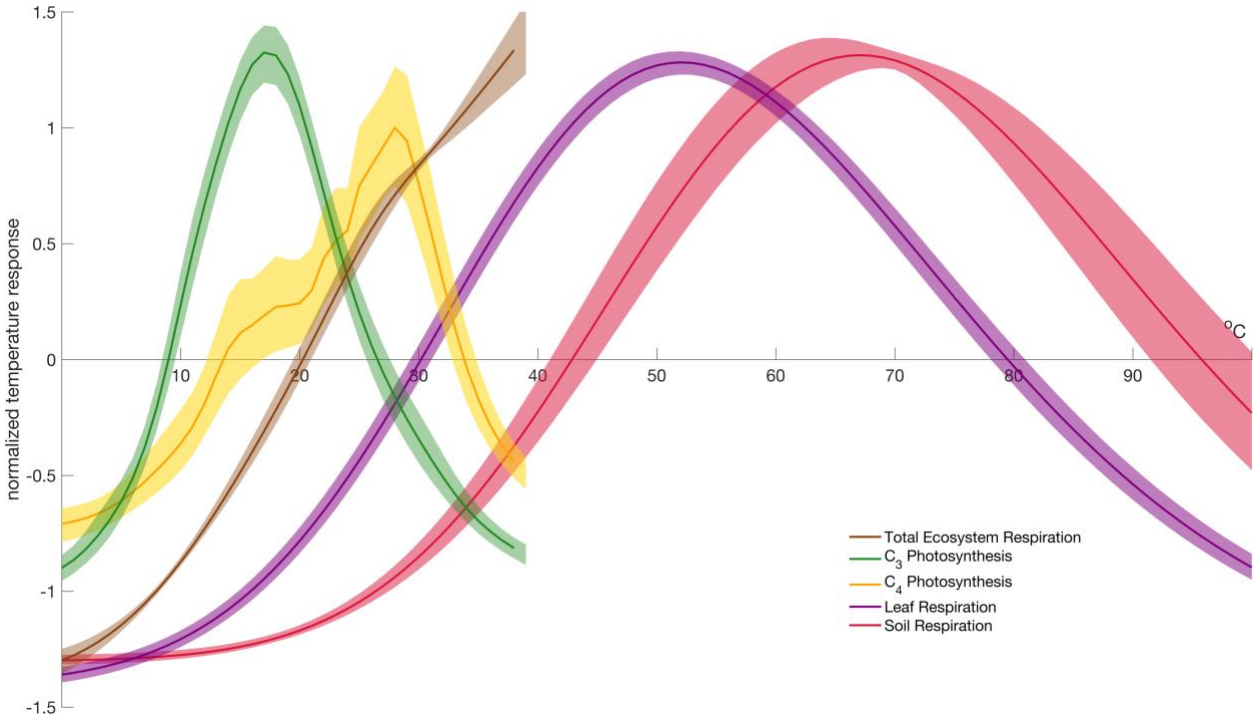

Fig. S1 Temperature dependence of global carbon fluxes to 100₀C. The normalized global temperature response of C3 photosynthesis (green), which exhibits $\boldsymbol{T_P^{max}}$ of 18°C, C4 photosynthesis (yellow) which exhibits $\boldsymbol{T_P^{max}}$ at 28°C, and total ecosystem respiration (orange) derived from the FLUXNET 2015 synthesis dataset. The minor thermal optima observed in C4 classified sites validates the mixed C3/C4 nature of some sites and was well explained by the sum of two Gaussian curves (see methods). FLUXNET total ecosystem respiration only extends through temperatures where we were able to quantify response given the ambient temperature nature of tower data. Additional curves represent soil respiration *(15)* (red, $\boldsymbol{T_R^{max}}$ 68°C) and leaf respiration *(16)* (purple, $\boldsymbol{T_R^{max}}$ 55°C). All fluxes were normalized and fit over the temperatures observed by FLUXNET (up to 38°C) or experimental data (up to 100 °C) where the mean across each curve sums to zero. Shaded areas represent the 90% confidence interval of projections.

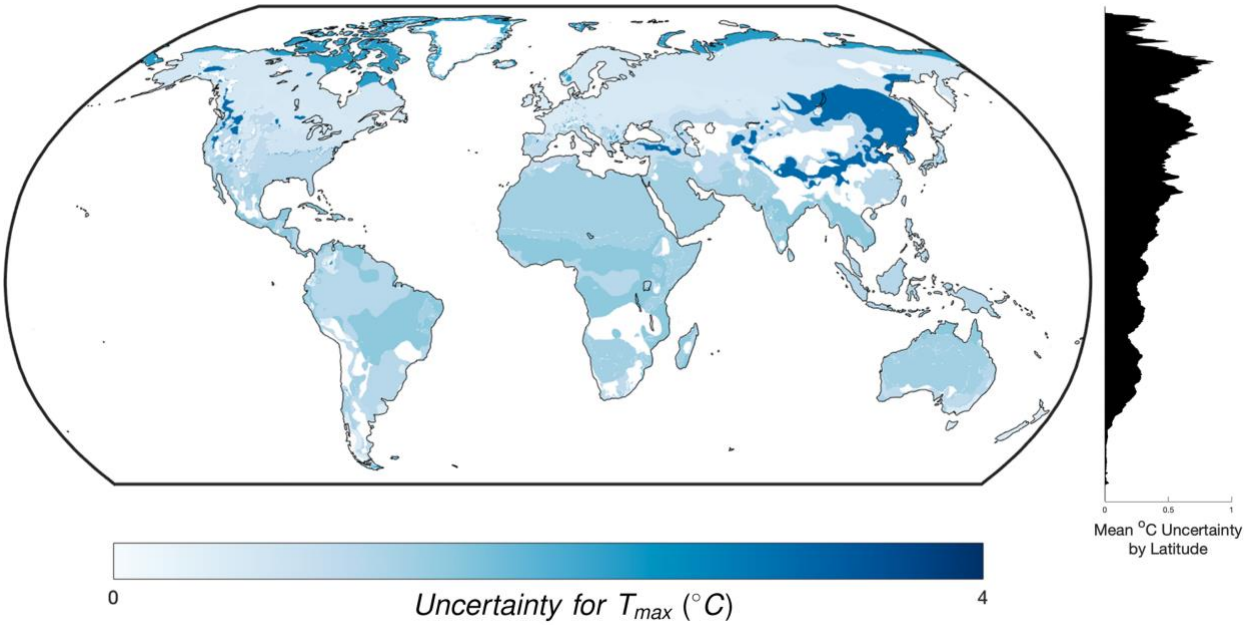

Fig. S2 Spatial distribution of uncertainty for $\mathbf{T_P^{max}}$ (oC). To investigate uncertainty in our constraint of $\boldsymbol{T_P^{max}}$ by biome we calculated the cross-bootstrap variability in $\boldsymbol{T_P^{max}}$ for all biomes investigated (Fig. S4). Uncertainty for $\boldsymbol{T_P^{max}}$ by biome was then spatially assigned to pixels that constitute that region. The vertical violin bar represents the mean uncertainty by latitude (oC).

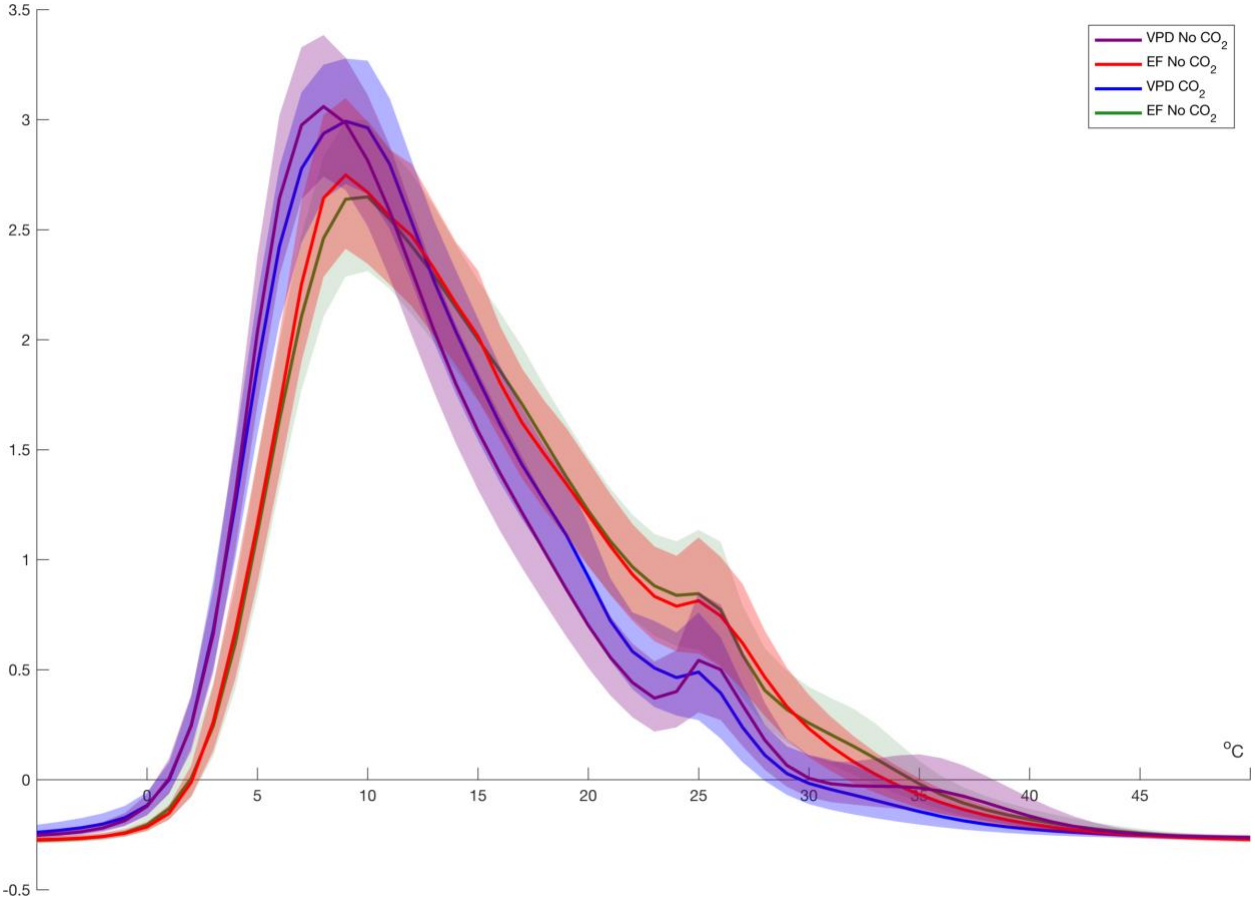

Fig. S3 Between-model evaluation of temperature dependence. Evaluation of partial correlation explanatory variables on the temperature dependence of gross primary production holding all other components identical. To evaluate the effects of Vapor Pressure Deficit (VPD) compared to Evaporative Fraction (EF) as well as with and without CO_2 as an explanatory variable, the entire analysis was run under multiple model frameworks. Given the 90% confidence interval overlap of all frameworks we see no evidence for bias in water metrics or inclusion of CO_2 into the analysis.

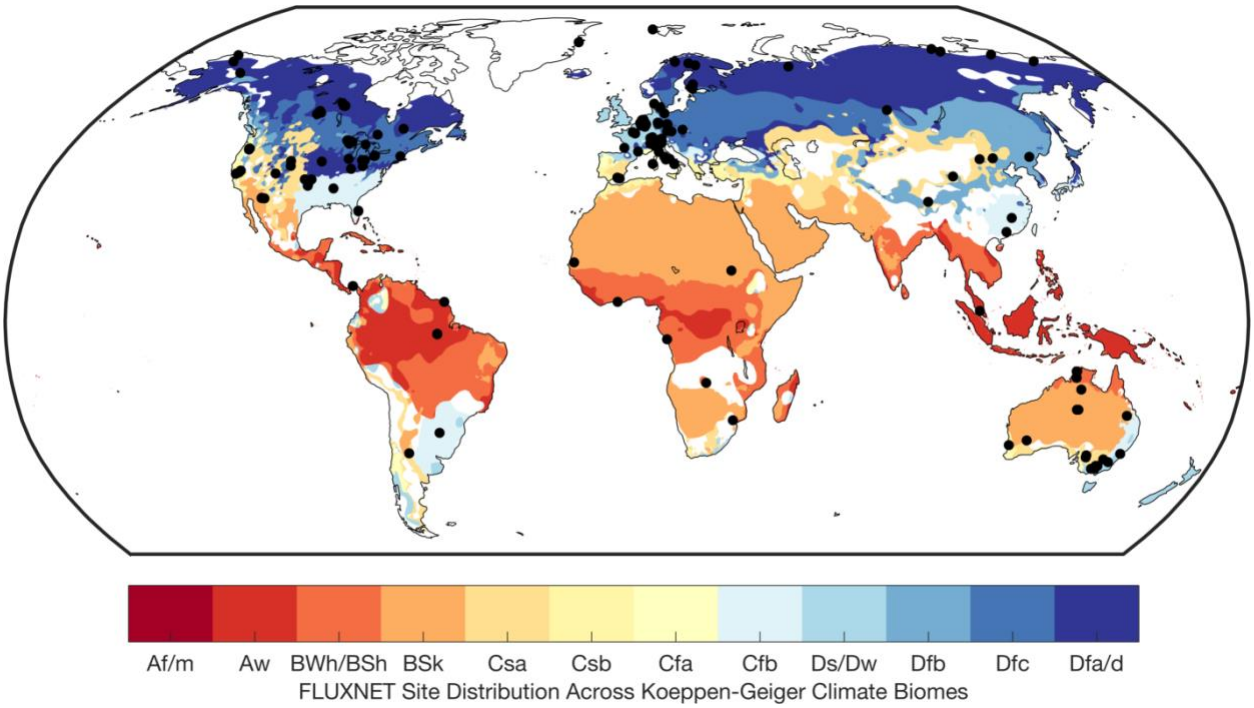

Fig. S4 Distribution of Tier 1 and 2 FLUXNET sites used in this analysis by Koeppen-Geiger Classification. FLUXNET sites were aggregated based on Koeppen-Geiger climate classification regions where the FLUXNET synthesis dataset retained a coverage of >5 sites. Classes lacking sufficient replication were collapsed to the next level of climatological organization.

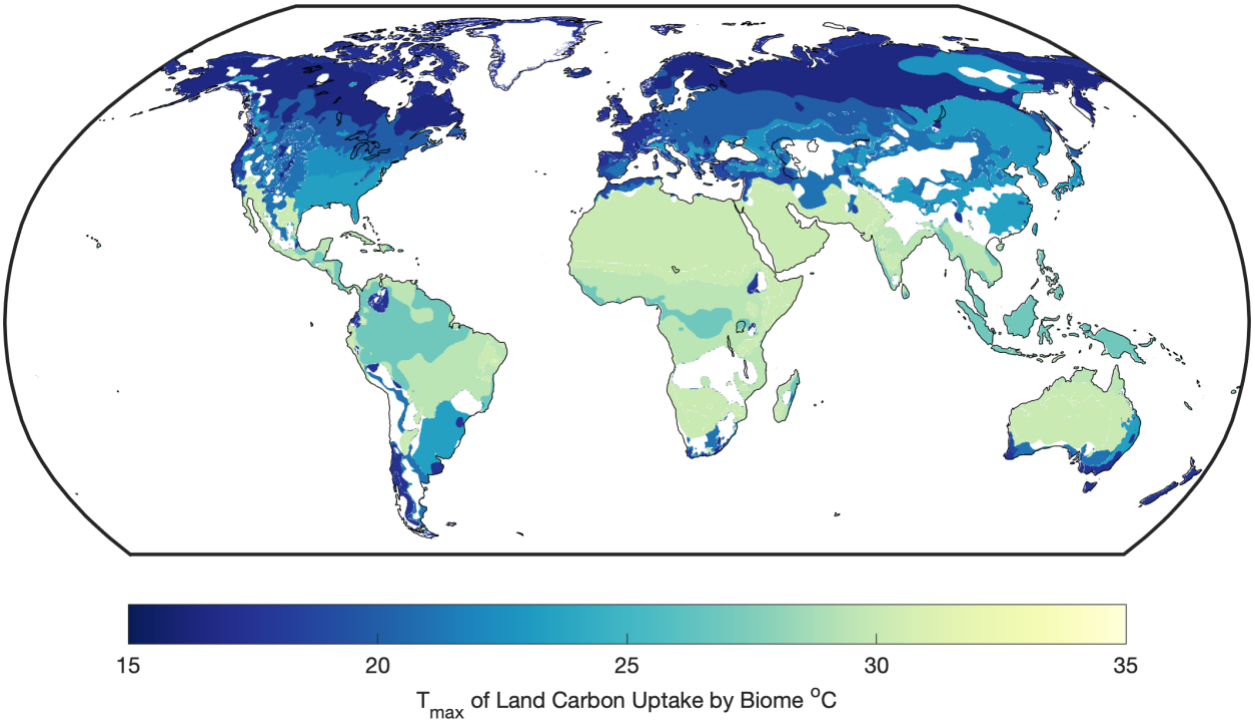

Fig. S5 Gridded T_P^{max} by Koeppen-Geiger Biome. Gridded mean values of $\mathbf{T_P^{max}}$ based on *in-situ* fit of MMRT at FLUXNET tower sites. White areas indicate no data.

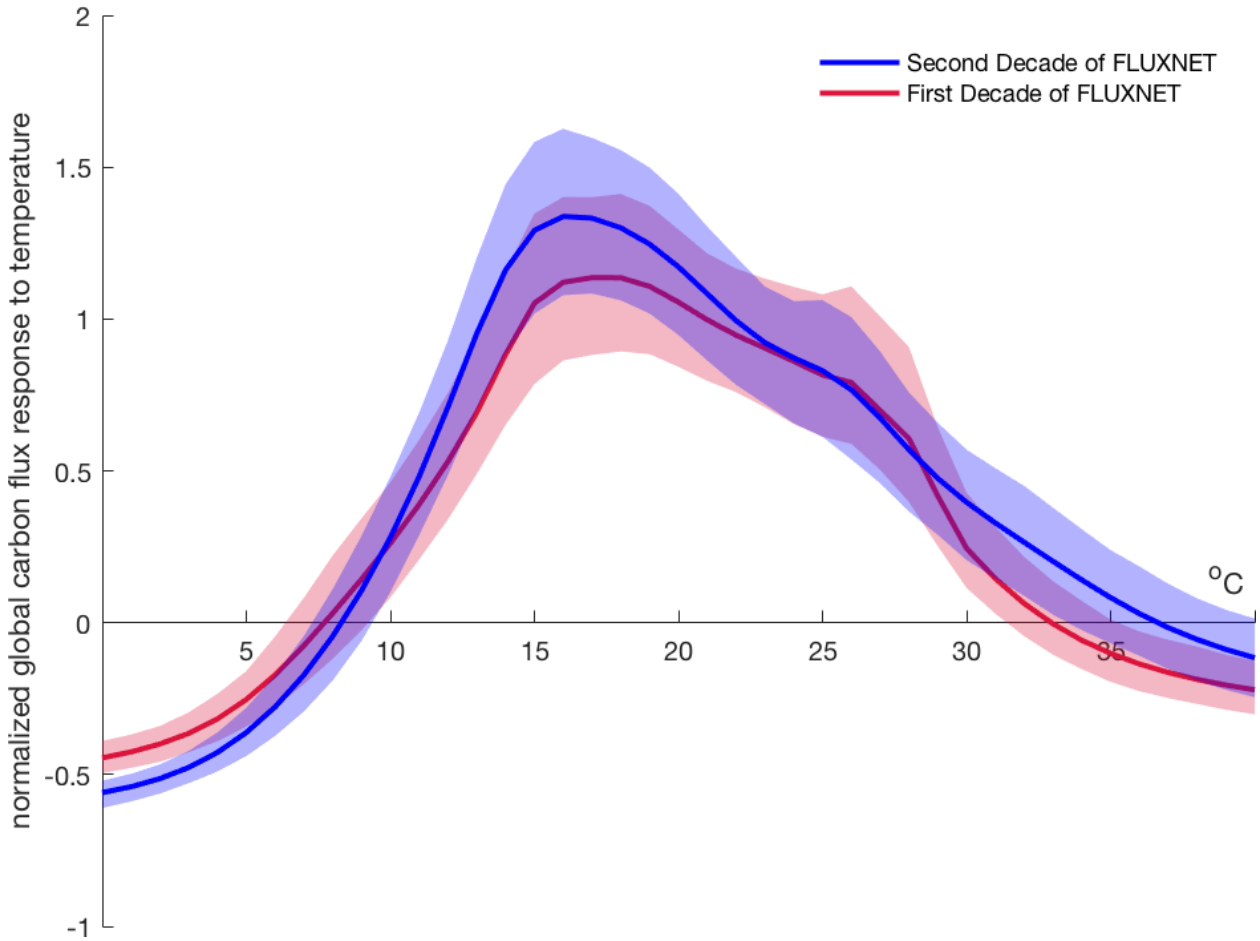

Fig. S6 Temperature dependence of global photosynthesis separated by decade. To check for evidence of acclimation in global photosynthesis FLUXNET 2015 synthesis data was filtered for sites which spanned both the first and second decade of the record. Observations were partitioned by decade and fit with MMRT *(12)* to evaluate whether the temperature dependence curve shifted given the warmest decade on record. As the 90% CI of both decades overlap, we see no evidence of an upward shift in $\boldsymbol{T_P^{max}}$, and therefore no evidence of acclimation.

Table S1.

Total Ecosystem Respiration (TER) MMRT Parameters by FLUXNET site, with the number of daily estimates used for fitting MMRT (n).

Site	n	MMRT Parameters		
		$\Delta H^{\ddagger}_{T_0}$	$\Delta H^{\ddagger}_{T_0}$	$\Delta C^{\ddagger}_{P}$
AR-SLu	468	11476.34611	-228.8013346	-7738.572128
AU-Cpr	1468	39183.04499	-134.6414882	-1953.878741
AU-Cum	703	-5829.852816	-288.596772	-3984.619958
AU-DaP	1931	18046.67935	-201.541278	-958.9153952
AU-Emr	884	19000.99485	-202.3518779	-5490.615258
AU-Gin	980	11364.00323	-228.3540881	-4242.449675
AU-Rig	1106	13178.5469	-223.8373382	-5323.34855
AU-Whr	1005	41233.46262	-125.9287334	-434.0584595
CA-Obs	3789	-2380.85237	-219.1910905	-4.237301745
CA-Qfo	2172	-2344.643903	-220.472327	-2.881020776
CH-Dav	4566	-2342.242057	-221.4438925	-2.598638379
DE-Tha	5382	-2382.256905	-217.8701885	-4.439051214
ES-Amo	1606	-6368.014492	-289.9651804	-6020.044173
ES-LJu	3079	21555.01254	-195.5302912	-4855.734628
FR-Pue	4119	25490.71558	-180.8827671	-2500.307655
GF-Guy	3199	-2499.5622	-239.4263311	-28.85341941
GH-Ank	747	-76163.10168	-528.7871014	-4872.047942
IT-CA1	929	5932.226394	-247.8111433	-4542.210066
IT-CA2	824	-2154.441887	-277.9348695	-4009.70695
IT-CA3	829	8779.068662	-236.9539391	-4980.852656
IT-Ro1	2624	10461.55269	-230.6872988	-3966.394906
IT-Ro2	2995	13213.11592	-222.607422	-3916.260434
JP-SMF	1145	-2383.894791	-218.7078886	-4.271561756
RU-Cok	1105	-756.3685084	-232.2896427	62.97654157
SD-Dem	846	62199.17023	-61.9100076	-2861.711991
US-AR1	1165	33895.65906	-151.3274412	-4615.717156
US-ARM	3124	47462.97983	-105.2136527	-2569.293763
US-Blo	3016	55041.12622	-82.81742901	-2877.012328
US-Cop	1140	41259.30584	-127.8981611	-3001.83852
US-GLE	2617	-2374.218655	-221.2947969	-3.821398704
US-IB2	2063	-2376.993018	-218.8827493	-4.208595455
US-NR1	2725	-2332.169843	-223.7076887	-1.852265464
US-SRC	2002	48380.92631	-105.4514333	-2284.320943
US-SRG	2374	38150.01407	-139.1024744	-1284.210105
US-SRM	3949	44118.47834	-119.4743473	-1450.712642

US-Ton	4523	34019.86353	-153.2384802	-2038.099675
US-Var	4776	40219.12899	-130.7487378	-1758.096452
US-WPT	876	-2401.849156	-215.4211068	-5.210511803
US-Whs	2734	43124.15373	-123.5344947	-1959.321537
US-Wi6	367	-2446.187283	-205.6769929	-6.960438653
US-Wkg	3867	41164.93948	-128.5421675	-2569.552244
ZM-Mon	675	32022.08813	-155.6471875	-925.3577715

Table S2.

Photosynthesis MMRT Parameters by FLUXNET site, with the number of daily estimates used for fitting MMRT (n).

Site	n	MMRT Parameters		
		$\Delta H^{\ddagger}_{T_0}$	$S^{\ddagger}_{T_0}$	$\Delta C^{\ddagger}_{P}$
AR-SLu	468	-2273538.635	-8010.576515	-270830.0511
AR-Vir	393	-1510238.261	-5431.210664	-149929.8095
AT-Neu	3135	-1032845.441	-3835.414815	-67813.44291
AU-Ade	558	-217116.688	-1002.352686	-51532.40008
AU-Cpr	1468	184299.2191	338.1169569	-79248.91997
AU-Cum	703	-1211623.992	-4431.457078	-96083.87184
AU-DaS	2429	-35640.96307	-396.0605139	-13203.25193
AU-Dry	1749	2995.897107	-263.9260666	-10500.44828
AU-Emr	884	-40636.67719	-409.984901	-16403.79077
AU-Gin	980	-183744.2938	-896.8618252	-47851.51662
AU-How	4125	-46818.76232	-429.3502542	-13470.62504
AU-RDF	621	-66475.509	-494.8173485	-23008.52595
AU-Rig	1106	-143572.1352	-764.9567094	-14498.14286
AU-Tum	4115	-2265625.298	-8099.74917	-144520.1401
AU-Whr	1005	-3260800.757	-11493.00585	-226297.0634
AU-Wom	1161	1228297.313	4190.692262	-167142.9185
AU-Ync	551	-59370.80595	-474.3367152	-17299.46792
BE-Bra	4426	-532578.5175	-2113.133637	-35855.01461
BE-Lon	3073	-1694440.425	-6107.676182	-114861.8638
BE-Vie	5786	-140160.156	-754.5045382	-16889.37953
BR-Sa1	2578	-3825346.715	-13494.9974	-228473.8923
BR-Sa1	2578	-3825346.715	-13494.9974	-228473.8923
BR-Sa3	1317	-258195.5723	-1161.067601	-27087.64333
CA-Gro	3234	-867052.9448	-3255.494507	-65291.50094
CA-NS2	1130	-2790332.605	-9915.760702	-166471.3151
CA-NS3	1424	-859862.892	-3231.215211	-65287.35904
CA-NS4	761	-424721.3509	-1730.424305	-38132.83061
CA-NS5	1250	-4175515.646	-14671.46189	-268819.4968
CA-NS7	1115	-1654512.817	-5992.517204	-104614.5282
CA-Oas	4753	-341547.6276	-1442.960828	-31916.62506
CA-Obs	3789	-631769.5024	-2447.510929	-49551.37904
CA-SF2	665	-432329.9779	-1765.394586	-33119.09503
CA-TP1	2520	-546162.9045	-2144.911124	-45544.01364
CA-TP4	3904	-381332.7266	-1589.130407	-28880.864

CA-TPD	952	-487319.5956	-1941.931372	-41340.34995
CH-Cha	2462	-444040.7521	-1800.627554	-32644.85481
CH-Dav	4566	-3473265.646	-12332.23387	-182420.0338
CH-Fru	2352	-3122220.17	-11096.60814	-168343.5722
CH-Lae	3256	-411030.1347	-1695.701732	-28395.85993
CH-Oe1	1494	-425244.637	-1730.255517	-34200.46391
CH-Oe2	2746	-997783.8485	-3709.282037	-69365.26105
CN-Cha	917	-656754.2633	-2531.78468	-52368.74036
CN-Cng	1120	-693742.0765	-2641.783386	-75065.30392
CN-Dan	714	-2788975.801	-9948.492078	-152072.1731
CN-Din	876	-6.48467E+11	-2254257921	-46876657225
CN-Qia	910	-124787.113	-655.8498548	-72005.08255
CN-Sw2	378	-1444428.048	-5204.616751	-150725.2759
CZ-BK1	3437	-244308.9501	-1111.331559	-21874.84565
CZ-BK2	2001	-525129.4772	-2081.846794	-37326.53679
CZ-wet	2483	-621286.6561	-2416.6195	-42464.22919
DE-Geb	4296	-238333.1678	-1087.747937	-24090.28652
DE-Hai	4214	1070.487616	-266.5181182	-6051.521186
DE-Kli	2889	-150148.652	-782.6496675	-18266.23298
DE-Lnf	2531	-2771315.276	-9864.141606	-160022.189
DE-Obe	2187	-2714746.31	-9688.374132	-145920.7767
DE-RuR	786	-807545.9351	-3060.168005	-53359.43361
DE-RuS	504	-910817.9354	-3409.093126	-62629.00778
DE-Seh	617	-2993783.284	-10625.51344	-174503.3842
DE-SfN	730	-7441875.844	-25868.80516	-486597.6387
DE-Spw	1354	-506916.6355	-2014.259113	-41035.36385
DE-Tha	5450	-16995.53094	-335.1462922	-5519.117344
DE-Zrk	494	-3991907.544	-14141.49477	-201639.6024
DK-Sor	5142	-926298.2128	-3465.527734	-62779.47765
DK-ZaH	1884	-6.38285E+14	-2.29322E+12	-2.35739E+13
ES-LgS	843	-4443791.308	-15518.00695	-347140.9641
FI-Hyy	5413	-684036.0203	-2637.945028	-45202.18217
FI-Jok	1025	-2282018.533	-8168.99047	-130969.0996
FI-Let	964	750890.7272	3998.859268	-767099.0108
FI-Lom	942	-2936519.82	-10471.0834	-151495.3859
FI-Sod	4294	-789511.4388	-2997.304219	-53798.00435
FR-Fon	2279	-939211.0945	-3509.607937	-64070.49498
FR-Gri	2264	-149719.8647	-784.3192961	-16783.37737
FR-LBr	2864	-228176.6888	-1052.660363	-24761.69635
FR-Pue	4119	-37665.24961	-396.667364	-11332.94291

GF-Guy	3199	-79519.29375	-545.0677804	-6689.093786
IT-BCi	2302	-144924.8388	-761.1918326	-18968.35164
IT-CA1	929	-11272.04349	-304.8565749	-7467.628382
IT-Col	4420	-97854.52302	-608.0266808	-13001.01033
IT-Isp	583	-1030259.291	-3815.843803	-76946.95226
IT-La2	518	-5833276.123	-20531.25046	-298251.4544
IT-Noe	2808	-772961.9805	-2935.965249	-55684.83046
IT-Ren	4645	-4588641.445	-16264.65854	-217398.9812
IT-SR2	582	-1016956.872	-3720.216697	-93363.71444
JP-MBF	484	-3268534.402	-11672.89406	-151304.4504
MY-PSO	2232	-2150141.052	-7680.743759	-143979.2654
NL-Loo	4069	-4389691.463	-15417.30961	-277270.0387
PA-SPs	988	-1790892.122	-6430.689282	-125843.1749
RU-Che	547	-4505352.304	-15901.80438	-236993.7283
RU-Fyo	4999	-6251488.497	-21881.09253	-365795.7958
RU-Sam	1676	-2724893368	-9609804.715	-127773067.1
RU-SkP	489	-38968.98386	-403.3757676	-10133.87648
RU-Tks	1171	-376595.5435	-1413.135298	-86014.78347
SE-St1	427	-2539710.211	-9053.265976	-147319.5836
US-AR2	1081	24597.47445	-183.5211875	-8518.982573
US-CRT	745	-523494.4285	-2061.83204	-44893.05501
US-GBT	548	-12492269.33	-43761.17626	-641550.4679
US-GLE	2638	-3141601.929	-11127.0773	-191942.2904
US-Goo	1471	-249212.989	-1119.008038	-26182.79973
US-Ha1	6621	-341200.7299	-1447.018876	-27384.50022
US-IB2	2063	-254165.5041	-1141.297299	-24879.9864
US-Ivo	1043	-6135737.638	-21563.44602	-317926.7817
US-Lin	377	-114688.5582	505.6638443	-383544.8653
US-MMS	5294	-36684.7626	-392.8099496	-11144.68989
US-Me3	1739	23633.07145	-191.0863811	-9286.710654
US-Me5	846	-1296953.83	-4664.544355	-203195.7191
US-Me6	1285	501059.4352	1662.659117	-871089.8098
US-Myb	1078	-7558945.49	-26327.14141	-482848.1534
US-NR1	4843	-818464.5315	-3097.872315	-59645.51922
US-Ne2	3217	-281060.9891	-1230.173152	-28282.90234
US-Ne3	3518	-82751.04036	-550.8578229	-13545.97482
US-Oho	2894	-368942.7372	-1539.262289	-30409.82854
US-PFa	5768	-747872.5367	-2852.890729	-51101.81981
US-Prr	1316	-2813184.011	-9997.862251	-168555.5612
US-SRC	2002	-90986.25998	-582.4290696	-45426.16196
US-Sta	712	23581.19457	-188.6963305	-9385.860591

US-Syv	2183	-3769115.01	-13290.73995	-228532.6964
US-Tw3	389	-195255.4947	-933.6799892	-29347.13164
US-Twt	1215	-341218.776	-1443.047273	-36578.41133
US-UMd	2490	-49785.91907	-435.8150613	-13071.39041
US-WCr	3689	-1401270.013	-5119.214825	-83322.13449
US-WPT	876	-299351.6623	-1299.61747	-26735.29015
US-Whs	2734	6311.813125	-249.5863143	-12978.11558
US-Wi3	396	-616290.5616	-2386.004728	-50848.80558
ZA-Kru	3646	-77791.50977	-535.2890349	-13491.13625

Table S3.

FLUXNET sites and years used in this analysis, along with relevant reference paper, DOI and funding acknowledgement.

Site ID	Years of Data Used	Reference Paper	DOI	Funding Acknowledgement
'AR-SLu'	'2009-2011'	Ulke, A. G., Gattinoni, N. N. and Posse, G.: Analysis and modelling of turbulent fluxes in two different ecosystems in Argentina, Int. J. Environ. Pollut., 58(1-2), 52–62, 2015.	-	-
'AR-Vir'	'2009-2012'	Posse, G., Lewczuk, N., Richter, K. and Cristiano, P.: Carbon and water vapor balance in a subtropical pine plantation, iForest, 9(5), 736–742, 2016.	-	-
'AT-Neu'	'2002-2012'	Wohlfahrt, G., Hammerle, A., Haslwanter, A., Bahn, M., Tappeiner, U. and Cernusca, A.: Seasonal and inter-annual variability of the net ecosystem CO2 exchange of a temperate mountain grassland: Effects of weather and management, J. Geophys. Res., 113(D8), D08110, 2008.	-	-
'AU-ASM'	'2010-2014'	Cleverly, J., Boulain, N., Villalobos-Vega, R., Grant, N., Faux, R., Wood, C., Cook, P. G., Yu, Q., Leigh, A. and Eamus, D.: Dynamics of component carbon fluxes in a semi-arid Acacia woodland, central Australia, J. Geophys. Res. Biogeosci., 118(3), 1168–1185, 2013.	-	-

'AU-Ade'	'2007-2009'	Beringer, J., Hacker, J., Hutley, L. B., Leuning, R., Arndt, S. K., Amiri, R., Bannehr, L., Cernusak, L., Grover, S., Hensley, C., Hocking, D., Isaac, P., Jamali, H., Kanniah, K., Livesley, S., Neininger, B., Tha Paw U, K., Sea, W., Straten, D., Tapper, N., Weinmann, R., Wood, S. and Zegelin, S.: SPECIAL—Savanna Patterns of Energy and Carbon Integrated across the Landscape, Bull. Am. Meteorol. Soc., 92(11), 1467–1485, 2011b.	-	-
'AU-Cpr'	'2010-2014'	Meyer, W. S., Kondrlovà, E. and Koerber, G. R.: Evaporation of perennial semi-arid woodland in southeastern Australia is adapted for irregular but common dry periods, Hydrol. Process., 29(17), 3714–3726, 2015.	-	-
'AU-Cum'	'2012-2014'	Beringer, J., Hutley, L. B., McHugh, I., Arndt, S. K., Campbell, D., Cleugh, H. A., Cleverly, J., Resco de Dios, V., Eamus, D., Evans, B., Ewenz, C., Grace, P., Griebel, A., Haverd, V., Hinko-Najera, N., Huete, A., Isaac, P., Kanniah, K., Leuning, R., Liddell, M. J., Macfarlane, C., Meyer, W., Moore, C., Pendall, E., Phillips, A., Phillips, R. L., Prober, S. M., Restrepo-Coupe, N., Rutledge, S., Schroder, I., Silberstein, R., Southall, P., Yee, M. S., Tapper, N. J., Gorsel, E.	-	-

		van, Vote, C., Walker, J. and		
'AU-DaP'	'2007-2013'	Beringer, J., Hutley, L. B., Hacker, J. M., Neininger, B. and Paw U, K. T.: Patterns and processes of carbon, water and energy cycles across northern Australian landscapes: From point to region, Agric. For. Meteorol., 151(11), 1409–1416, 2011a.	-	-
'AU-DaS'	'2008-2014'	Hutley, L. B., Beringer, J., Isaac, P. R., Hacker, J. M. and Cernusak, L. A.: A sub-continental scale living laboratory: Spatial patterns of savanna vegetation over a rainfall gradient in northern Australia, Agric. For. Meteorol., 151(11), 1417–1428, 2011.	-	-
'AU-Dry'	'2008-2014'	Cernusak, L. A., Hutley, L. B., Beringer, J., Holtum, J. A. M. and Turner, B. L.: Photosynthetic physiology of eucalypts along a sub-continental rainfall gradient in northern Australia, Agric. For. Meteorol., 151(11), 1462–1470, 2011.	-	-
'AU-Emr'	'2011-2013'	Schroder, I., Kuske, T. and Zegelin, S.: Eddy Covariance Dataset for Arcturus (2011-2013), Geoscience Australia, Canberra, , doi:102.100.100/14249, 2014.	-	-

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'US-Ton'	'2001-2014'	Baldocchi, D. D., Ma, S., Rambal, S., Misson, L., Ourcival, J., Limousin, J., Pereira, J., Papale, D. (2010) On The Differential Advantages Of Evergreenness And Deciduousness In Mediterranean Oak Woodlands: A Flux Perspective, Ecological Applications, 20(6), 1583-1597	10.1890/08-2047.1	This research was supported by the US Department of Energy Terrestrial Carbon Program, grant No. DE-FG03-00ER63013 and DE-SC0005130

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'US-Tw1'	'2012-2014'	Chamberlain, S. D., Verfaillie, J., Eichelmann, E., Hemes, K. S., Baldocchi, D. D. (2017) Evaluation Of Density Corrections To Methane Fluxes Measured By Open-Path Eddy Covariance Over Contrasting Landscapes, Boundary-Layer Meteorology, 237–238(1), 233-245	10.1007/s10546-017-0275-9	Biometeorology Lab, University of California, Berkeley, PI: Dennis Baldocchi
'US-Tw2'	'2012-2013'	Knox, S. H.,, Sturtevant, C., Matthes, J.H., Koteen, L., Verfaillie,J., Baldocchi. D. (2014) Agricultural peatland restoration: effects of land-use change on greenhouse gas (CO2 and CH4) fluxes in the Sacramento-San Joaquin Delta, Global Change Biology, 21(), 750-765	10.1111/gcb.12745	Biometeorology Lab, University of California, Berkeley, PI: Dennis Baldocchi
'US-Tw3'	'2013-2014'	Chamberlain, S. D., Verfaillie, J., Eichelmann, E., Hemes, K. S., Baldocchi, D. D. (2017) Evaluation Of Density Corrections To Methane Fluxes Measured By Open-Path Eddy Covariance Over Contrasting Landscapes, Boundary-Layer	10.1007/s10546-017-0275-9	Biometeorology Lab, University of California, Berkeley, PI: Dennis Baldocchi

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'US-Tw3'	'2013-2014'	Chamberlain, S. D., Verfaillie, J., Eichelmann, E., Hemes, K. S., Baldocchi, D. D. (2017) Evaluation Of Density Corrections To Methane Fluxes Measured By Open-Path Eddy Covariance Over Contrasting Landscapes, Boundary-Layer Meteorology, 207(), 117-126	10.1007/s10546-017-0275-9	California Department of Water Resources, DOE AmeriFlux; Biometeorology Lab, University of California, Berkeley, PI: Dennis Baldocchi
'US-Tw4'	'2013-2014'	Chamberlain, S. D., Verfaillie, J., Eichelmann, E., Hemes, K. S., Baldocchi, D. D. (2017) Evaluation Of Density Corrections To Methane Fluxes Measured By Open-Path Eddy Covariance Over Contrasting Landscapes, Boundary-Layer Meteorology, 122(1), 145-167	10.1007/s10546-017-0275-9	Biometeorology Lab, University of California, Berkeley, PI: Dennis Baldocchi
'US-Twt'	'2009-2014'	Baldocchi, D., S. Knox, I. Dronova, J. Verfaillie, P. Oikawa, C. Sturtevant, J. H. Matthes, and M. Detto. (2016) The impact of expanding flooded land area on the annual evaporation of rice. Agricultural and Forest Meteorology, Agricultural and Forest Meteorology, 223(6), 181-193	http://dx.doi.org/10.1016/j.agrformet.2016.04.001	California Department of Water Resources; USDA/AFRI
'US-UMB'	'2000-2014'	Bond-Lamberty, B. Fisk, J. Holm, J.A. Bailey, V. Bohrer, G. Gough, C.M. (2015) Moderate forest disturbance as a stringent	10.5194/bg-12-513-2015	-

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'US-Var'	'2000-2014'	Baldocchi, D. D., Xu, L., Kiang, N. (2004) How Plant Functional-Type, Weather, Seasonal Drought, And Soil Physical Properties Alter Water And Energy Fluxes Of An Oak–Grass Savanna And An Annual Grassland, Agricultural And Forest Meteorology, 123(1-2), 13-39	10.1016/j.agrformet.2003.11.006	This research was supported in part by the Office of Science (BER), U.S. Department of Energy, Grant No. DE-FG02-03ER63638
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'US-Wkg'	'2004-2014'	Biederman, J. A., Scott, R. L., Goulden, M. L., Vargas, R., Litvak, M. E., Kolb, T. E., Yepez, E. A., Oechel, W. C., Blanken, P. D., Bell, T. W., Garatuza-Payan, J.,	10.1111/gcb.13222	-

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