

PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION



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Collaborators needing access to data: none
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DATASET PROPOSED

La-Thuille, the complete dataset

TITLE OF PAPER AND OUTLINE

Projections for ecosystem structure and productivity in near future

Gross primary productivity (GPP) is the ecosystem process that supports life on the planet. However, global estimates of current and future GPP are surrounded by uncertainties. While GPP is known to be driven by climatic factors, the impacts of climate strongly depend on the ecosystem properties, which vary in space and time, within and between biomes. It has been shown that going beyond describing biome types and allowing plant traits to vary within biomes can substantially improve ecosystem productivity modeling in process based models, and provides a better understanding of vegetation responses to environmental change in earth system models. In this research, we investigate the effect of climatic factors on key plant traits including specific leaf area (SLA), seed mass, and height and show how projected future climate change may alter global plant community structure and traits, and therefore ecosystem productivity.

Gap-filled daily tower GPP observations from the La-Thuille database will be used with a set of co-located geospatial data for developing general additive model (GAM) predictions of potential GPP based on physical plant traits and climate characteristics. Model GPP estimates will be derived over a global grid using climatic data for current and projected (CMIP-5) future climate. These data will be used to evaluate current global patterns and potential future changes in physical plant traits and productivity.

PROPOSED SITES TO BE INVOLVED

The proposal has a regional focus. 90 La-Thuille sites with at least 2 year of carbon flux data fields will be used.

Site.ID	Country	Longitude	Latitude
AU-How	Australia	131.152	-12.4943
AU-Wac	Australia	145.187	-37.429

BE-Bra	Belgium	4.52056	51.3092
BE-Vie	Belgium	5.99683	50.3055
BR-Ban	Brazil	-50.1591	-9.82442
BR-Cax	Brazil	-51.459	-1.71972
BR-Ma2	Brazil	-60.2093	-2.6091
CA-Let	Canada	-112.94	49.7093
CA-Ojp	Canada	-104.692	53.9163
CA-Gro	Canada	-82.1556	48.2167
CA-Qcu	Canada	-74.0365	49.2671
CA-Obs	Canada	-105.118	53.9872
CA-SF1	Canada	-105.818	54.485
CA-SF3	Canada	-106.005	54.0916
CA-WP1	Canada	-112.467	54.9538
CH-Oe1	Switzerland	7.734333	47.28628
CN-HaM	China	101.2988	37.59583
CN-Du2	China	116.2836	42.04667
CZ-BK1	Czech Republic	18.5384	49.5026
DE-Geb	Germany	10.9143	51.1001
ES-VDA	Spain	1.4485	42.1522
FI-Hyy	Finland	24.2948	61.8474
FR-Hes	France	7.06462	48.67083
FR-Fon	France	2.780147	48.47634
FR-Lam	France	1.234909	43.49583
FR-LBr	France	-0.76819	44.72083
FR-Lq1	France	2.73703	45.6441
FR-Pue	France	3.592775	43.7375
GF-Guy	French Guyana	-52.9119	5.279167
HU-Mat	Hungary	19.72426	47.84583
ID-Pag	Indonesia	114.036	2.345
IL-Yat	Israel	35.0515	31.345
IT-Amp	Italy	13.6052	41.9041
IT-Ren	Italy	11.4347	46.5878
IT-Col	Italy	13.5881	41.8494
IT-Cpz	Italy	12.3761	41.7052
IT-PT1	Italy	9.06104	45.2009
IT-Ro2	Italy	11.9209	42.3903
JP-Tak	Japan	137.423	36.1462
JP-Tef	Japan	142.1062	45.05634
JP-Tom	Japan	141.5149	42.7395
KR-Hnm	Korea	126.57	34.55
NL-Ca1	Netherlands	4.927	51.971
NL-Lut	Netherlands	6.356	53.3989
PL-Wet	Poland	16.3094	52.7622
PT-Mi2	Portugal	-8.02455	38.4765
PT-Esp	Portugal	-8.6018	38.6394
RU-Fyo	Russia	32.92389	56.46167

RU-Che	Russia	161.339	68.6147
RU-Ha1	Russia	90.0022	54.7253
SE-Fla	Sweden	19.45883	64.1125
SE-Deg	Sweden	19.56889	64.1875
UK-Gri	UK	-3.79256	56.60417
UK-PL3	UK	-1.26353	51.44583
US-ARb	USA	-98.0402	35.5497
US-Atq	USA	-157.409	70.4696
US-Aud	USA	-110.51	31.5907
US-Bar	USA	-71.2881	44.0646
US-Bkg	USA	-96.8362	44.3453
US-Blo	USA	-120.633	38.8952
US-Bo1	USA	-88.2904	40.0062
US-Dk3	USA	-79.0942	35.9782
US-FPe	USA	-105.102	48.3077
US-FR2	USA	-97.9962	29.9495
US-Goo	USA	-89.8735	34.2547
US-Ha1	USA	-72.1715	42.5378
US-Ho1	USA	-68.7402	45.2041
US-Los	USA	-89.9751	46.07917
US-LPH	USA	-72.1934	42.54583
US-Ivo	USA	-155.768	68.4875
US-KS2	USA	-80.6727	28.6125
US-Me2	USA	-121.557	44.4523
US-Me3	USA	-121.608	44.3154
US-MMS	USA	-86.4131	39.3231
US-MOz	USA	-92.2	38.7441
US-Ne1	USA	-96.4766	41.1651
US-Ne2	USA	-96.4701	41.1649
US-Oho	USA	-83.8438	41.5545
US-SP3	USA	-82.1611	29.75417
US-NR1	USA	-105.546	40.0329
US-PFa	USA	-90.2723	45.9459
US-SO2	USA	-116.623	33.3739
US-SRM	USA	-110.866	31.8214
US-Syv	USA	-89.3477	46.242
US-Ton	USA	-120.966	38.4316
US-UMB	USA	-84.7138	45.5598
US-WCr	USA	-90.0799	45.8059
US-Wkg	USA	-109.942	31.7365
US-Wrc	USA	-121.952	45.8205
ZA-Kru	South Africa	31.4969	-25.0197

PROPOSED RULES FOR CO-AUTHORSHIP

We will follow guidelines of the La-Thuille data policy and we will be responsive to the needs of the Tower Principal Investigators regarding intellectual property rights of their data. Co-authorship may also be granted to individual PIs who contribute to the intellectual development of the project.