PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION

Initial coordinators: Wenping Yuan & Jiquan Chen

Collaborators needing access to data:

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DATASET PROPOSED

We request access to the whole LaThuile data set.

TITLE OF PAPER AND OUTLINE

TITLE: Global analyses of energy balance and partition over different vegetation types based on paired eddy covariance sites

The energy balance and partition play an important role in driving the Earth's climate from local to global scales. The energy partition is controlled by factors such as climate, land cover characteristics, hydrological. In addition to natural and anthropogenic disturbances like fire, grazing, harvest and defoliation also can affect surface albedo, leading to a local energy partition change. Thus, understanding the relative roles of climate versus vegetation or land cover on energy exchange processes is critical for predicting how ecosystems will respond to future physical and biological perturbations.

Over the past decade, the eddy covariance (EC) method has become a standard tool to study the exchange of energy, water vapor, and carbon between the terrestrial ecosystems and atmosphere. Especially, numerous of paired sites have been built at the different land cover types while with the same climate background. It provides the unique chance to examine the impact of land cover change on energy balance and partition. The main objectives of this study are (1) to examine the seasonal and interannual variation in energy balance, (2) to determine the effects of the seasonal change in vegetation and soil water conditions on energy partition, and (3) to understand the factors controlling the interannual variation in energy partition.

PROPOSED SITES TO BE INVOLVED

We propose using 90 paired sites, corresponding to the availability of MODIS albedo, LAI data products. Data availability may limit the number of sites used in the final results as at least one continuous year of measurements is needed. Please see table below for site list.

Site Name	Country	Name	Latitude	Longitude
AU-Fog	Australia	Fogg Dam	-12.54	131.31
AU-How	Australia	Howard Springs	-12.49	131.15
BR-Ji1	Brazil	Rond.- Faz. Nossa Senhora-i Parana-pasture	-10.76	-62.36
BR-Ji2	Brazil	Rond.- Rebio Jaru Ji Parana- Tower A	-10.08	-61.93
BR-Sa1	Brazil	Santarem-Km67-Primary Forest	-2.86	-54.96
BR-Sa2	Brazil	Santarem-Km77-Pasture	-3.01	-54.54
BR-Sa3	Brazil	Santarem-Km83-Logged Forest	-3.02	-54.97
BW-Ghg	Botswana	Ghanzi Grass Site	-21.51	21.74
BW-Ghm	Botswana	Ghanzi Mixed Site	-21.20	21.75
CA-Ca1	Canada	British Columbia-Campbell River - Mature Forest Site	49.87	-125.33
CA-Ca2	Canada	British Columbia-Campbell River - Clearcut Site	49.87	-125.29
CA-Ca3	Canada	British Columbia-Campbell River - Young Plantation Site	49.53	-124.90
CA-NS1	Canada	UCI-1850 burn site	55.88	-98.48
CA-NS2	Canada	UCI-1930 burn site	55.91	-98.52
CA-NS3	Canada	UCI-1964 burn site	55.91	-98.38
CA-NS4	Canada	UCI-1964 burn site wet	55.91	-98.38
CA-NS5	Canada	UCI-1981 burn site	55.86	-98.49

CA-NS6	Canada	UCI-1989 burn site	55.92	-98.96
CA-NS7	Canada	UCI-1998 burn site	56.64	-99.95
CA-Oas	Canada	Sask.- SSA Old Aspen	53.63	-106.20
CA-Obs	Canada	Sask.- SSA Old Black Spruce	53.99	-105.12
CA-Ojp	Canada	Sask.- SSA Old Jack Pine	53.92	-104.69
CA-SF1	Canada	Sask.- Fire 1977	54.49	-105.82
CA-SF2	Canada	Sask.- Fire 1989	54.25	-105.88
CA-SF3	Canada	Sask.- Fire 1998	54.09	-106.01
CA-SJ1	Canada	Sask.- 1994 Harv. Jack Pine	53.91	-104.66
CA-SJ2	Canada	Sask.- 2002 Harvested Jack Pine	53.95	-104.65
CA-SJ3	Canada	Sask.- SSA 1975 Harv. Yng Jack Pine	53.88	-104.65
CH-Oe1	Switzerland	Oensingen1 grass	47.29	7.73
CH-Oe2	Switzerland	Oensingen2 crop	47.29	7.73
CN-Do1	China	Dongtan 1	31.52	121.96
CN-Do2	China	Dongtan 2	31.58	121.90
CN-Do3	China	Dongtan 3	31.52	121.97
CN-Du1	China	Duolun_cropland	42.05	116.67
CN-Du2	China	Duolun_grassland	42.05	116.28
CN-Ku1	China	Kubuqi_populus forest	40.54	108.69
CN-Ku2	China	Kubuqi_shrubland	40.38	108.55
CN-Xi1	China	Xilinhot fenced steppe (X06)	43.55	116.68

CN-Xi2	China	Xilinhot grassland site (X03)	43.55	116.67
CZ-BK1	Czech Republic	Bily Kriz- Beskidy Mountains	49.50	18.54
CZ-BK2	Czech Republic	Bily Kriz- grassland	49.50	18.54
ES-ES1	Spain	El Saler	39.35	-0.32
ES-ES2	Spain	El Saler-Sueca	39.28	-0.32
FR-Lq1	France	Laqueuille	45.64	2.74
FR-Lq2	France	Laqueuille extensive	45.64	2.74
IT-Ro1	Italy	Roccarespampani 1	42.41	11.93
IT-Ro2	Italy	Roccarespampani 2	42.39	11.92
PT-Mi1	Portugal	Mitra (Evora)	38.54	-8.00
PT-Mi2	Portugal	Mitra IV Tojal	38.48	-8.02
RU-Ha1	Russia	Ubs Nur- Hakasija-grassland	54.73	90.00
RU-Ha2	Russia	Ubs Nur- Hakasija-recovering grassland	54.77	89.96
RU-Ha3	Russia	Ubs Nur-Hakasija- Site 3	54.70	89.08
SE-Sk1	Sweden	Skyttorp1 young	60.13	17.92
SE-Sk2	Sweden	Skyttorp	60.13	17.84
US-ARb	USA	OK - ARM Southern Great Plains burn site-Lamont	35.55	-98.04
US-ARc	USA	OK - ARM Southern Great Plains control site-Lamont	35.55	-98.04
US-ARM	USA	OK - ARM Southern Great Plains site-Lamont	36.61	-97.49
US-Bn1	USA	AK - Bonanza Creek, 1920 Burn site near Delta Junction	63.92	-145.38
US-Bn2	USA	AK - Bonanza Creek, 1987 Burn site near Delta Junction	63.92	-145.38

US-Bn3	USA	AK - Bonanza Creek, 1999 Burn site near Delta Junction	63.92	-145.74
US-Bo1	USA	IL - Bondville	40.01	-88.29
US-Bo2	USA	IL - Bondville (companion site)	40.01	-88.29
US-Dk1	USA	NC - Duke Forest-open field	35.97	-79.09
US-Dk2	USA	NC - Duke Forest-hardwoods	35.97	-79.10
US-Dk3	USA	NC - Duke Forest - loblolly pine	35.98	-79.09
US-Fuf	USA	AZ - Flagstaff - Unmanaged Forest	35.09	-111.76
US-Fwf	USA	AZ - Flagstaff - Wildfire	35.45	-111.77
US-Ha1	USA	MA - Harvard Forest EMS Tower (HFR1)	42.54	-72.17
US-Ha2	USA	MA - Harvard Forest Hemlock Site	42.54	-72.18
US-Ho1	USA	ME - Howland Forest (main tower)	45.20	-68.74
US-Ho2	USA	ME - Howland Forest (west tower)	45.21	-68.75
US-IB1	USA	IL - Fermi National Accelerator Laboratory-Batavia (Agricultural site)	41.86	-88.22
US-IB2	USA	IL - Fermi National Accelerator Laboratory-Batavia (Prairie site)	41.84	-88.24
US-KS1	USA	FL - Kennedy Space Center (slash pine)	28.46	-80.67
US-KS2	USA	FL - Kennedy Space Center (scrub oak)	28.61	-80.67
US-Me1	USA	OR - Metolius - Eyerly burn	44.58	-121.50
US-Me2	USA	OR - Metolius-intermediate aged ponderosa pine	44.45	-121.56
US-Me3	USA	OR - Metolius-second young aged pine	44.32	-121.61
US-Me4	USA	OR - Metolius-old aged ponderosa pine	44.50	-121.62

US-NC1	USA	NC - NC_Clearcut	35.81	-76.71
US-NC2	USA	NC - NC_Loblolly Plantation	35.80	-76.67
US-Ne1	USA	NE - Mead - irrigated continuous maize site	41.17	-96.48
US-Ne2	USA	NE - Mead - irrigated maize-soybean rotation site	41.16	-96.47
US-Ne3	USA	NE - Mead - rainfed maize-soybean rotation site	41.18	-96.44
US-SO2	USA	CA - Sky Oaks- Old Stand	33.37	-116.62
US-SO3	USA	CA - Sky Oaks- Young Stand	33.38	-116.62
US-SO4	USA	CA - Sky Oaks- New Stand	33.38	-116.64
US-SP1	USA	FL - Slashpine-Austin Cary- 65yrs nat regen	29.74	-82.22
US-SP2	USA	FL - Slashpine-Mize-clearcut-3yr,regen	29.76	-82.24
US-SP3	USA	FL - Slashpine-Donaldson-mid-rot-12yrs	29.75	-82.16

PROPOSED RULES FOR CO-AUTHORSHIP

All data contributors making an intellectual contribution will be included as named coauthors. Data contributors not making an intellectual contribution will be included as group coauthors in the author list, if possible with the journal (i.e., "and the FLUXNET Synthesis Group"). Group coauthors will be identified by name in the acknowledgements. We will circulate a summary of initial findings to all data providers, and solicit feedback; this will be followed by a draft manuscript, which we will also circulate for feedback. Data providers who have contributed intellectually and will be included as coauthors will be sent the final version of the manuscript prior to journal submission.

Please see the CV of Jiquan Chen and Wenping Yuan at the following pages.