FLUXNET Newsletter

Contents:

Welcome to the first edition of the FLUXNET Coop newsletter! FLUXNET is an international community of networks, committed to advancing the science of ecosystem-atmosphere exchange, with a focus on understanding the carbon, water, and energy cycles of terrestrial ecosystems.

The FLUXNET Co-op, funded by the National Science Foundation (NSF), is focused on supporting the FLUXNET community, through a variety of workshops, committees, research exchanges, and networking opportunities. The goal is to encourage collaboration and communication within the global FLUXNET community, collectively building the next generation of the FLUXNET international network of networks.

We started in January 2022, and have had a very busy year, including 24 meetings of the FLUXNET community council, 2 funded workshops, 8 funded early career research visits abroad, 9 active FLUXNET committees, and a FLUXNET annual meeting for which planning is well under way. And we're just beginning!

The FLUXNET Coop is excited to facilitate building community among member networks. We believe that strong partnerships are critical to advancing the frontiers of science, and we are excited to bring together researchers and networks from around the world to work collaboratively towards our shared goals. Through this newsletter, we hope to build connections, share our successes, and inspire each other to continue pushing the boundaries of our field.

We invite you to join us on this exciting journey as we work together to tackle some of the most pressing questions in Earth system science. Together, we can make a difference, and we look forward to sharing our progress with you in future newsletters. Thank you for your support and interest in the work of the FLUXNET Coop.

Trevor, Kyle, Dave and Kim

FLUXNET Community Council Members

(from top left: Trevor Keenan, Kyle Delwiche, Jamie Cleverly, Dennis Baldocchi, Gregor Feig, Kazuhito Ichii, Minseok Kang, Natalia Kowalska, Stefan Metzger, Caitlin Moore, David Moore, Magna Moura, Jacob Nelson, Kim Novick, Dario Papale, Tonantzin Tarin, Gabriela Shirkey)

Flux science from around the world

Photo credit: Débora Roberti

Brazil: The Brazilian pampa region has been used for livestock production for over 500 years. Ecology studies describe cattle as part of the pampa for the maintenance of natural biodiversity. Our eddy covariance studies have shown that although cattle in the pampa biome emit methane, these emissions are offset by the absorption of carbon dioxide by the native vegetation that feeds the cattle. We are interested in properly estimating carbon dioxide and methane exchanges in the native pastures of the pampa biome to estimate the carbon balance and demonstrate that it is possible to produce quality animal protein without destroying the natural ecosystem, preventing the pampa from being converted into agricultural crops (such as occurs with soy and forestry, which has also changed the scenic landscape of this biome). Submitted by Débora Regina Roberti, Universidade Federal de Santa Maria, Brazil.

Photo credit: Mikhail Mastepanov

Photo credit: Bibek Kandel
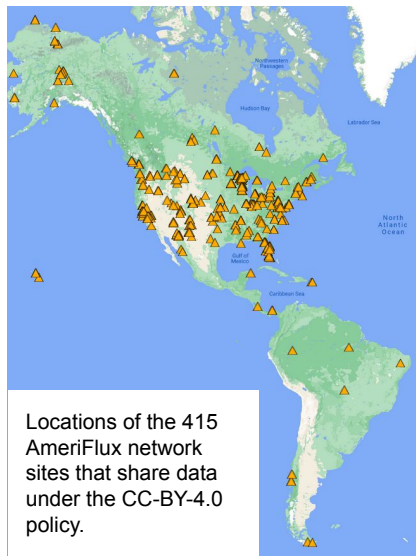

Photo credit: Bibek Kandel

USA: Molecular level measurements of water exchange using US-ULM tower at a Bottomland Hardwood Forest in Northeast Louisiana reveal, on average, a single tree (with average tree area of $50m^2$) recycles about 15,120 gallons of water per year back into the atmosphere, highlighting their importance in regulating water cycle. Submitted by Bibek Kandel, University of Louisiana Monroe, USA.

Norway: Greenhouse gas (GHG) fluxes (carbon dioxide, methane, nitrous oxide) have been continuously monitored at a cultivated boreal peatland in Pasvik, northern Norway. Through the observations in 2022, we found that carbon dioxide flux dominated the GHG balance and its warming potential in the ecosystem. Rewetting that increases the water level to > 0.5 m could turn the drained peatland from a GHG source to a sink. Submitted by: Junbin Zhao, NIBIO, Norway

Interested in featuring your science in our next FLUXNET newsletter? Email us at fluxnet.cc@gmail.com.

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Regional Network Updates

Locations of the 415 AmeriFlux network sites that share data under the CC-BY-4.0 policy.

AmeriFlux network overview

The AmeriFlux network spans the American continents, from site US-A10 in Alaska to AR-TF1 at the southern tip of Argentina.

Over 600 registered sites provide data that is available to the research community at ameriflux.lbl.gov.
2500 site data years from 415 sites (see map) are available under a CC-BY-4.0 data use policy. This license allows data use as long as attribution is provided. The required citation with DOI and an email list of AmeriFlux PIs for the downloaded sites is provided to the data user with the data download.

FLUXNET data products update

After the release of the FLUXNET2015 dataset, regional networks took on the task of generating updated versions of the data for new sites, with 79 new or updated sites published for AmeriFlux and 82 for ICOS/EUDB, making the record reach up to 2021 data. These newer data can be accessed in the AmeriFlux website (look for the AmeriFlux FLUXNET data product) and in the ICOS Carbon Portal (look for FLUXNET Product or ETC L2 FLUXNET under the "data type" field). These products are all generated using the ONEFlux pipeline, and are all compatible with FLUXNET2015 data and can be used within the same analyses. Stay tuned for more information about the ONEFlux pipeline and plans for the FLUXNET data product in future FLUXNET Newsletters!

Year of Remote Sensing

AmeriFlux recently launched the Year of Remote Sensing (YoRS) as our next Theme Year for Community action. The goal of the YoRS is to encourage research that combines eddy covariance and remote sensing at all levels, from ground to spaceborne, throughout the AmeriFlux community. For more information or to get involved, please contact Koong Yi at koongyi@lbl.gov.
The committee recently hosted a 3 part tutorial series to introduce remote sensing theory overview, data sources and tools, and data analysis. If you missed the tutorial series, watch the recordings now on YouTube!

AmeriFlux Annual Meeting

We held our annual meeting (hybrid mode for the first time) in September, 2022 at the University of Michigan Biological station (near sites US-UMB, US-UMd). We were excited to welcome over 50% early-career scientists. Site PIs and meeting co-hosts Gil Bohrer and Christopher Gough led 3 exciting days of plenary talks, breakout sessions, a field site visit, and more!
Rewatch the oral presentations now on YouTube!

Network highlight for the Americas

Partnership Overview

NEON Newsletter

Other AmeriFlux news:

- Agricultural and Forest Meteorology is developing a Special Issue to celebrate the 25th anniversary of the AmeriFlux network.
- Save the date for the next Data-Tech Workshop, held in Berkeley CA, on May 10-11 2023 - more details coming soon!

Regional Network Updates

OzFlux

FLUXNET
A Global Network

Overview of OzFlux

OzFlux is an ecosystem research network set up to provide Australian, New Zealand and global ecosystem modelling communities with consistent observations of energy, carbon and water exchange between the atmosphere and key Australian and New Zealand ecosystems.

The network comprises ~30 active sites and supplies over 340 site-years of data. Some sites have been operating for over 20 years. Data can be accessed via the OzFlux Data Portal and some sites are also available through the FLUXNET2015 dataset.

PyFluxPro Processing Tool

A new version of PyFluxPro (V3.4.8) was released in December 2022 and provides a suite of new features. Find out more by visiting the PyFluxPro Github page, and also via the very detailed Wiki linked with Github.

Latest News

Despite the challenges of extreme weather in Auckland, New Zealand, the iLEAPS-OzFlux joint conference was a big success.

With four days of presentations and exhibits from key industry suppliers in the land-atmosphere monitoring space, there was something for everyone at the conference.

Pictured below is the group who participated in the Waikato regional flux tower network tour, including the Kopuatai Peat bog, Owl Research Farm and Gamma Farm sites. Read more about New Zealand flux activities in OzFlux's Site of the Month feature on Kopuatai Bog.

Key Publications

A substantial recent publication from OzFlux was it's 20 year celebration paper published in Global Change Biology. The paper reviewed 8 key lessons learned from the network over its 20 years and mapped out a vision for its future.
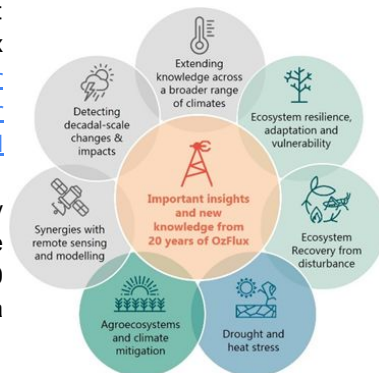
Links with TERN

Australia's Terrestrial Ecosystem Research Network partially supports the OzFlux network, sharing strong links in both networks' combinedmission of observing ecosystem processes. Like OzFlux, TERN provides a vast range of ecosystem data products and facilities available to support research. Find out more: https://www.tern.org.au/.

tern
Ecosystem Research Infrastructure

Regional Network Updates

AsiaFlux Network Overview

AsiaFlux is a regional research network bringing together scientists from universities and institutions in Asia to study the exchanges of CO_2, H_2O, and energy between terrestrial ecosystems and the atmosphere across daily to inter-annual time scales.

AsiaFlux has 115 sites registered as of March 2023, with observation data for 37 sites available across very wide ranges of climate (from tropics to boreal) and vegetation type.
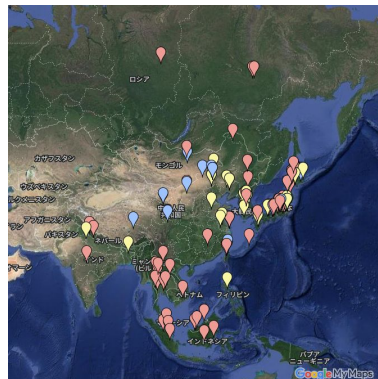
AsiaFlux Conference 2022

AsiaFlux Conference 2022 was successfully held at Tropical Peat Research Institute (TROPI), Malaysia on September 18-23, 2022 after a two years extension from the original schedule. More the 200 participants from 14 countries met in person and enjoyed in-person meeting. After the conference, we took a 4-hour bus ride from TROPI to Linga, Sarawak, where we stayed one night and visited the Flux Tower site in Maludam National Park. We arrived at the site after a 30-minute boat ride, followed by a 2-hour walk through the rainforest. We were able to see the tropical ecosystem and a variety of observation equipment.

ChinaFLUX 20th Anniversary Conference

ChinaFLUX was established in 2002 and is one of the key members of FLUXNET and AsiaFlux. All the ChinaFLUX sites.
ChinaFLUX 20th Anniversary Conference was successfully held in Beijing on February 16-17 2023. It summarized the development experience for 20 years, exchanged a series of research results in ecosystem carbon, nitrogen, and water flux monitoring and carbon sink function assessment, and jointly discussed the new opportunities and challenges faced by China's flux observation career in the new era. See full news and Schedule
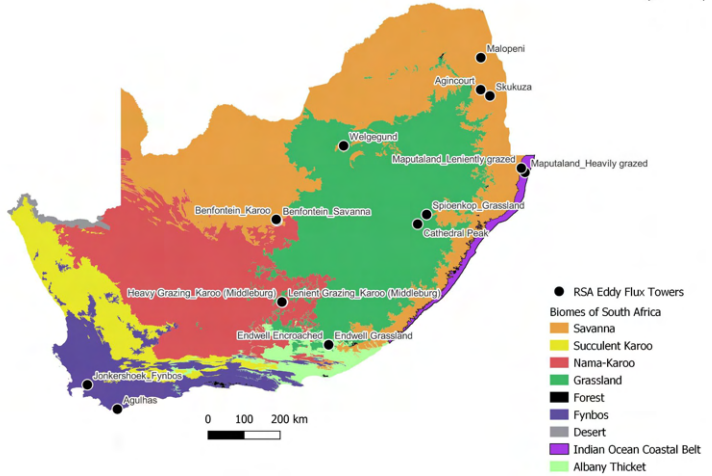

Future Events

A3 Foresight Program International Workshop A3 Foresight Program is the collaborative research program by integrating the three networks (ChinaFlux, JapanFlux, and KoFlux) to conduct network-to-network integrative research on carbon cycle studies, and to improve land surface models by regional data assimilation, so as to synthetically quantify and understand the terrestrial carbon budget in Northeast Asia and its roles in the global carbon cycle. We will hold the first A3 annual workshop (hybrid mode) in April, 2023 at Haeundae, Busan, Republic of Korea. Workshop website

AsiaFlux Conference 2023 We will hold the annual conference of AsiaFlux in November, 2023 at Jeju Island, Republic of Korea. Please join the annual conference and visit a beautiful Jeju Island! Conference website

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Regional Network Updates

South African Flux Measurement Network

RSA Eddy Flux Towers ●

Biomes of South Africa
- Savanna
- Succulent Karoo
- Nama-Karoo
- Grassland
- Forest
- Fynbos
- Desert
- Indian Ocean Coastal Belt
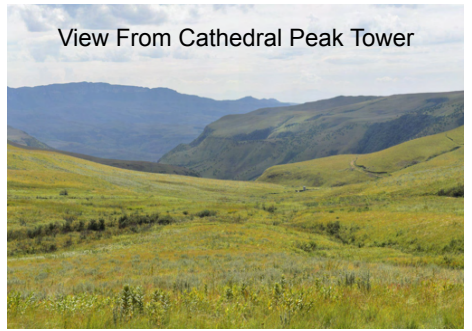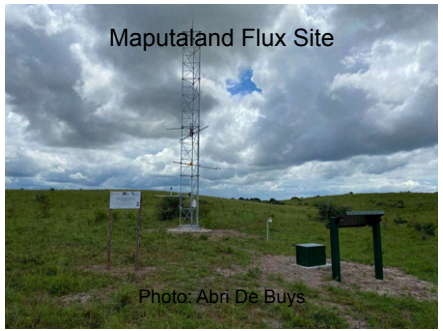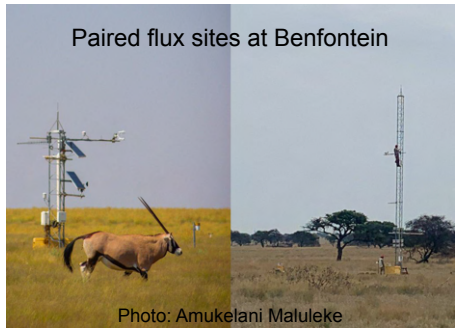- Albany Thicket

0   100   200 km

The network of ecosystem flux measurement sites in South Africa is undergoing a rapid expansion. This is largely being led through South African Environmental Observation Network (SAEON), which hosts the Expanded Freshwater and Terrestrial Environmental Observation Network (EFTEON).

The primary objectives of the ecosystem flux network in South Africa is to improve our understanding of ecosystem processes, particularly related to carbon and water exchange, their long term changes and the drivers of such change. The geographical range covers the different biomes in South Africa and a range of climatic gradients including:

- Savanna Sites, these include the Skukuza site (ZA-KRU) in operation since 2000 in a pristine conservation setting this is paired with the Agincourt site in a periurban setting, a site in the dry Mopani systems at Malopeni (all operated by the CSIR) , the Savanna /Grassland transition site at Welgegund (operated by North West University), and two Savanna/Grassland sites operated by SAEON at Benfontein and Spioenkop
- Karoo (shrub) systems, with sites under different grazing regimes at Middelburg (operated by Thuenen Institute) and the Benfontein Karoo site
- Grassland site at Cathedral Peak, operated by SAEON
- Fynbos Biome: one at Jonkershoek operated by SAEON and one in the Agulhas plain operated by the University of the Western Cape
- Albany Thicket: paired sites at Endwell in the Thicket/ Grassland Transition and a site with woody encroachment
- Indian Ocean Coastal Belt: paired sites under differing land utilisation intensities

These cover the range from pristine, peri urban and differing intensities of extensive rangeland utilisation.

The data is currently open access on request, efforts are underway to make it easily downloadable from the SAEON observations database and in future it will be available on FLUXNET.

Paired flux sites at Benfontein
Photo: Amukelani Maluleke

Maputaland Flux Site
Photo: Abri De Buys

View From Cathedral Peak Tower

Regional Network Updates

MexFlux network overview

MexFlux officially started in 2011, and currently has more than 20 sites. MexFlux covers some highly important, yet understudied, ecosystem types such as drylands, tropical dry forests, mangroves, as well as other interesting systems, such as managed grasslands and forests. The network is continually growing and diversifying, aiming for better geographical representation to study the megadiverse Mexican ecosystem.

La Colorada shrubland site (picture by Cesar Hinojo Hinojo)

Collectively, we are providing basic understanding on the variation of ecosystem-atmosphere exchange of carbon dioxide, water, energy, and greenhouse gases across Mexican ecosystems, and the causes of such variation. With this information, MexFlux is assessing the potential of Mexican ecosystems to mitigate climate change, and the impacts of extreme climatic events (e.g. droughts, hurricanes), biodiversity change, and management practices over ecosystem functions. In our long-term vision, by answering these pressing topics, we aim to contribute to a better future, by informing conservation efforts, plans for the sustainable management of ecosystems and natural resources, and national policies

Ecoregions
- Mediterranean California
- North American Deserts
- Southern semiarid highlands
- Great plains
- Warm humid forests
- Warm dry forests
- Temperate sierras

MX-MoX, MX-EMg, MX-ToS, MX-Iit, MX-Hes, MX-Oak, MX-Ray, MX-Sgt, MX-CoM, MX-Hno, MX-CoB, MX-Hvd, MX-CLS, MX-Tes, MX-Yva, MX-Aca, MX-Tob, MX-Asi, MX-Nap, MX-Aog, MX-ISD, MC-Lpa, MX-Gra, MX-Pal, MX-Atx, MX-PMm, MX-BRN, MX-Cha, MX-Esc, MX-Ord, MX-Izt, MX-Eja

MexFlux Observatories
Years with data
2 4 8 12

Studies focused on:

- Seasonality
- Representativeness of EC sites in Mexico
- Ecohydrology and ecophysiology studies
- Urban site studies

Follow us on:

- https://mexflux.gitlab.io/
- @MexFlux
- @MexFlux
- https://www.youtube.com/channel/UCWwkN35RlHWdFEgpJKS4UQg

Eddy covariance instrumentation in Puerto Morelos mangroove site (picture by Susana Alvarado)

Eddy covariance instrumentation in a subtropical shrubland in Rayon Sonora (picture by Enrico A. Yepez)

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Regional Network Updates - Brazilian towers

Flux towers in Brazil - beyond the Amazon

The studies with flux towers in Brazil started with the large-Scale Biosphere-Atmosphere Program in the Amazon (LBA), a multidisciplinary program that seeks to understand the functioning of Amazonian ecosystems. This program was very important to better understand how the Amazon ecosystem responds to rapid and intense environmental changes (land use, land cover, climate, biological, chemical and physical processes) in addition to its interaction with the regional and global climate.

In addition to the Amazon, the Atlantic Forest, Caatinga, Cerrado, Pampa and Pantanal biomes are now equipped with flux towers in Brazil. The exchanges of carbon dioxide, water and energy between land and the atmosphere crucially document carbon sequestration and water dynamics in these ecosystems. The first flux tower installed in the Caatinga biome was settled in 2004, and comprise an natural ecosystem-oriented observatory for the largest South American seasonally dry tropical forest.

Nowadays, in Brazil the eddy correlation and environmental sensors are mounted in approximately 30 active (we counted 22 inactive) flux towers installed on natural vegetation - pristine and under restoration, but also in others important land use in Brazil, such as pasture, eucalyptus plantations, sugar cane, soybean, wheat, cacti forage, and other crop systems. We aimed to monitor the effects of climate and management practices on carbon sequestration, water use, phenology, light use efficiency and biomass productivity.
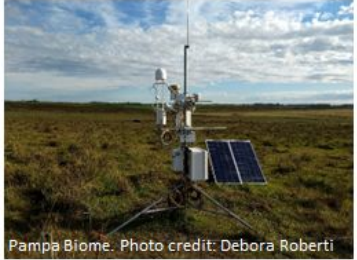
The Brazilian flux towers are organized in regional networks such as the LBA program (https://lba2.inpa.gov.br) in the Amazon coordinated by the National Institute of Amazonian Research (INPA); the South Brazilian Network of Superficial Fluxes and Climate Change - SulFlux (http://www.sulflux.ufsm.br) which is hosted by Federal University of Santa Maria (UFSM); the National Observatory of Water and Carbon Dynamics in the Caatinga Biome - ONDACBC (www.ondacbc.com.br). In addition, many flux towers were installed and maintained by individual or small groups of researchers and by private companies (Projeto Eucflux, www.ipef.br/eucflux2; MataFlux, https://treedivnet.ugent.be/ExpMataDIV.html).

We hope in the future to have the Brazilian Flux Network fully operational!

Programa de Grande Escala da Biosfera-Atmosfera na Amazônia
The Large Scale Biosphere-Atmosphere Research Program in the Amazon

Caatinga-FLUX

Sulflux

OndaCBC

EUCFLUX

Flux Towers in Brazil 2023

Caatinga Biome. Photo credit: Magna Moura

Pampa Biome. Photo credit: Debora Roberti

Crops. Photo credit: Higo Dalmagro

Pasture. Photo credit: Higo Dalmagro

Eucalyptus. Photo credit: Joannès Guillemot

Forest restoration. Photo credit: J. Guillemot

Regional Network Updates

ICOS | INTEGRATED CARBON OBSERVATION SYSTEM

ICOS is a European Research Infrastructure that in its ecosystem component has been built on the experience of the EuroFlux and CarboEurope communities. Funded by the participating countries and by hundreds of research institutions and universities, it is composed by a measurement network operating under exactly the same technical and scientific standards, chrome collection to processing, to enable high-quality climate change research and increase usability of the research data.

Open data & CC-BY license

The ICOS data are all open access and CC-BY, from the raw data to the final products. Check on the ICOS Carbon Portal to find the ICOS main data products which include datasets from the ICOS ecosystem component but also from the other European stations. **NOTE**: all the data are also processed with the common ICOS-AmeriFlux tool **ONEFlux** (see AmeriFlux slide for details)

Historic Observational Time Series For ICOS and Non-ICOS Stations

Warm Winter 2020 ecosystem eddy covariance flux product for 73 stations in FLUXNET-Archive format—release 2022-1

This is the release of the observational data product for eddy covariance fluxes at 73 stations in the ecosystem domain, part of them outside the ICOS network, covering the period 1989-2020. The data are in the standard format used for the ICOS L2 ecosystem products and also used by other regional networks like AmeriFlux.
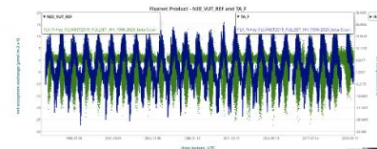
News from ICOS

- Read FLUXES, The European Greenhouse Gas Bulletin edited by ICOS https://www.icos-cp.eu/fluxes
- ICOS is expanding to the urban environment with the same High Quality standards. Data, webinars, campaigns, etc. Learn more in the ICOS Cities page https://www.icos-cp.eu/projects/icos-cities
- The protocols applied in the ICOS ecosystem stations are all translated in Instructions, that are accessible in the ICOS Ecosystem Thematic Centre page https://www.icos-etc.eu/documents/instructions
- ICOS Ecosystem data are also processed Near Real Time and available openly. Check HERE some examples!

The European Fluxes Database

In Europe there are many more stations than in ICOS and historically the European network database hosts also sites from Africa, Russia and some from Asia (managed in general by EU institutions).

ICOS ETC is powering part of the EU database and the data are distributed all in the ICOS Carbon Portal, ensuring consistency and accessibility.

Visit the EUDB at www.europe-fluxdata.eu

Early Career Corner
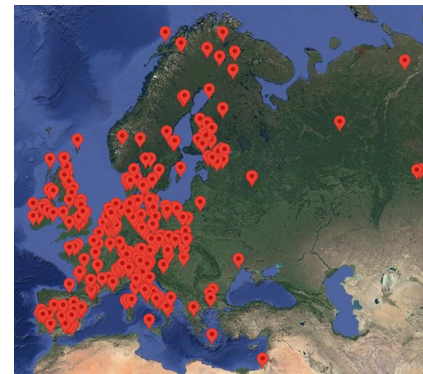
As time moves forward, so too does the leadership of the FLUXNET Early Career Scientist Network. We would like to welcome the next generation of ECN leaders! See some of the new faces here ->

If you would like to get involved, feel free to contact: fluxnet-ecn-owner@fluxdata.org

Jiangong Liu obtained his PhD in physical geography at The Chinese University of Hong Kong in 2020. He is now a postdoc researcher working at Columbia University. Jiangong is interested in wetland biogeochemistry, photosynthetic modelling, and nature-based climate solutions. He currently uses explainable machine learning and meta-learning for better understanding and modelling terrestrial carbon and water fluxes.

Next Webinars:

19th April - A workshop/tutorial on "openeddy", an R package for post-processing of eddy covariance data.

8th May- An introduction to the FLUXNET EO database.

Youmi Oh, a research scientist at NOAA Global monitoring laboratory, estimation of regional and global methane budgets using bottom-up and top-down approaches. Website: https://gml.noaa.gov/staff/youmi.oh

Ossénatou Mamadou Institute of Mathematics and Physics, University of Abomey-Calavi (Benin) Land surface interactions - Boundary Layer Processes

Hojin Lee. I am a PhD student in Interdisciplinary Program in Agricultural and Forest Meteorology (IPAFM), Seoul National University (2020-present). I studied species specific responses to drought using eddy covariance data during my MSc in Dep. of Forest Science, Seoul National University (2017-2019).

Karem Meza I am a PhD student in the department of Civil & Environmental Engineering at Utah State University. My current research is focused on quantifying evapotranspiration drivers in an environment that limit the application of traditional energy and water balance approaches, by studying potential adaptation of energy balance models for vegetation using UAV and satellite information based on better understanding of evapotranspiration drivers in urban environments.

FLUXNET Meeting – July 11-13th 2023

The FLUXNET Community Council is excited to announce the first FLUXNET conference in over five years. Please save the date (July 11-13th 2023) and plan to join us in Brno, Czech Republic. The meeting will be held in-person, with remote virtual participation options, and is graciously hosted by our colleagues at Czech Globe – Global Change Research Institute CAS and Mendel University in Brno, and sponsored by ICOS. We are planning plenary talks, breakout sessions, hands-on workshops and visiting one of the ICOS ecosystem station CZ-Lnz (48.6815483N, 16.9463317E). We will also be hosting an optional field trip on July 14th to the flux site CZ-Lnz and nearby Zámek Lednice castle. We are excited to bring the FLUXNET community together.

Abstract submissions are open and due May 16th, 2023 (submit here: https://s.gwdg.de/fnMrou). Registration will open soon, and will be due June 7th, 2023. More meeting information available at: https://fluxnet.org/community/fluxnet-annual-meeting-2023/.

Eddy Covariance (EC) system installed on top of the tower in ICOS class 1 station (CZ-Lnz)

Global Change Research Institute Czech Academy of Sciences

EC tower in ICOS class 1 ecosystem station (CZ-Lnz)

FLUXNET Committees

The FLUXNET FCC recently recruited community volunteers to lead committee dedicated to FLUXNET science and community-building. The community responded enthusiastically, and we are excited to announce the recent launch of 8 brand-new FLUXNET committees:

- Education – developing educational and training opportunities for FLUXNET. Led by David Moore (davidjpmoore@email.arizona.edu).
- Outreach – disseminate flux science to a broad audience outside the typical domain of research. Led by Maoya Bassiouni (maoya@berkeley.edu) and Jason Kelley (jkelley@asperatusconsulting.com).
- Data Integration – advancing accessibility and utilization of meta/data. Led by Stefan Metzger (smetzger@battelleecology.org).
- Data Processing – designing next generation of flux code processing pipeline. Led by Dario Papale (darpap@unitus.it).
- CH4 and N2O – developing guidelines for methane and nitrous oxide data processing and gap-filling. Led by Sara Knox (sknox01@mail.ubc.ca) and Xiangmin Sun (xsun130@asu.edu).
- Canopy thermal imaging – facilitating installation and utilization of thermal imaging across flux sites. Led by Christopher Still (chris.still@oregonstate.edu).
- Ancillary data processing – identifying ways to incorporate non-flux data into processing pathways. Led by Juergen Knauer (J.Knauer@westernsydney.edu.au).
- Open source code development – establishing, supporting, and promoting open-source development and code sharing in the flux community. Led by Justine Missik (missik.2@osu.edu).

Committees are open to anyone interested in joining. Contributing to a committee is an excellent way to advance your science and grow your professional network, while also helping FLUXNET advance critical science goals. **Please reach out to committee leads listed above for more information.**

Thank you to our FLUXNET Committee leads for leading the charge on new FLUXNET science and initiatives!
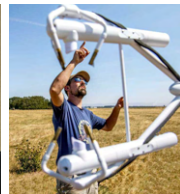

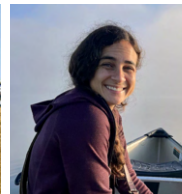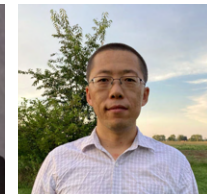Christopher Still   David Moore   Sara Knox   Juergen Knauer   Dario Papale   Jason Kelley   Maoya Bassiouni   Stefan Metzger   Justine Missik   Xiangmin Sun

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Secondment Adventures

The FLUXNET Secondment program launched in 2022, and so far has sent 4 U.S. based early-career scientists abroad to study at host institutions. The Secondment program is designed to increase international connections between scientists using eddy covariance data and to therefore strengthen the FLUXNET network. Secondments are also an excellent opportunity for recipients, allowing them to work and live in a different part of the world for up to 6 weeks while enhancing their research through collaboration.

Secondments are available for early career, US-based researchers wishing to study with an international host. The current Secondment application cycle has closed, and the 2024 applications will open around October, 2023. Please see https://fluxnet.org/community/secondment-program/ for more details and a list of all Secondment recipients.

Theresia Yazbeck takes chamber measurements near site CA-TVC in the Arctic tundra while working with Oliver Sonnentag at the Université de Montréal, Canada. There she worked on modeling the site's carbon flux with the ELM land surface model.

Mostafa Javadian learns how to use a Terrestrial Laser Scanner in Northern Queensland, Australia while working with Dr. William Woodgate at the University of Queensland. Mostafa used canopy temperature data to track carbon uptake and water exchange.

Julia Yang worked with Dr. Stefan Arndt at the University of Melbourne, Australia, studying forest recovery after fire disturbance. She also got to visit a koala sanctuary.

Tristan Green studied the impact of forest fire on carbon uptake with Dr. Minseok Kang and Dr. Sungsik Cho, two long-term data scientists at the National Center of AgroMeteorology in Seoul, South Korea. Here he is at a Mountain Taehyun forest tower site.

FLUXNET Member spotlight

## Eco-Meteorology group, Max Planck Institute for Biogeochemistry

Recently, the Eco-Meteorology group at Max Planck Institute for Biogeochemistry was established. Our research studies the underlying processes of plant-ecosystem-atmosphere interactions for natural and managed ecosystems (e.g., wetlands, forests, and farms) using field-based measurements (e.g., eddy covariance, stable isotope, and chamber techniques), data analyses, and modelling. The group operates an internationally well-known research station (Majadas de Tiétar), consisting of three flux towers, at a semi-arid tree-grass ecosystem. Besides analyzing flux tower data, we also used lysimeter data to quantify water fluxes and PhenoCam to assess the relationship between phenological changes and ecosystem functioning. Currently, our group has a great interest in the blue carbon ecosystem and we are trying to establish the first salt marsh flux tower in Germany. The group also has collaborations within the institute to advance the potential of data science (e.g., machine learning) in ecosystem ecology and with multiple international partners across Europe, North America, and Asia.

Group leader (second from the right): Sung-Ching (Nick) Lee
Doctoral researcher (left to right): Arvind Gauns, Sinikka Paulus, Laura Nadolski

Majadas de Tiétar site in Spain
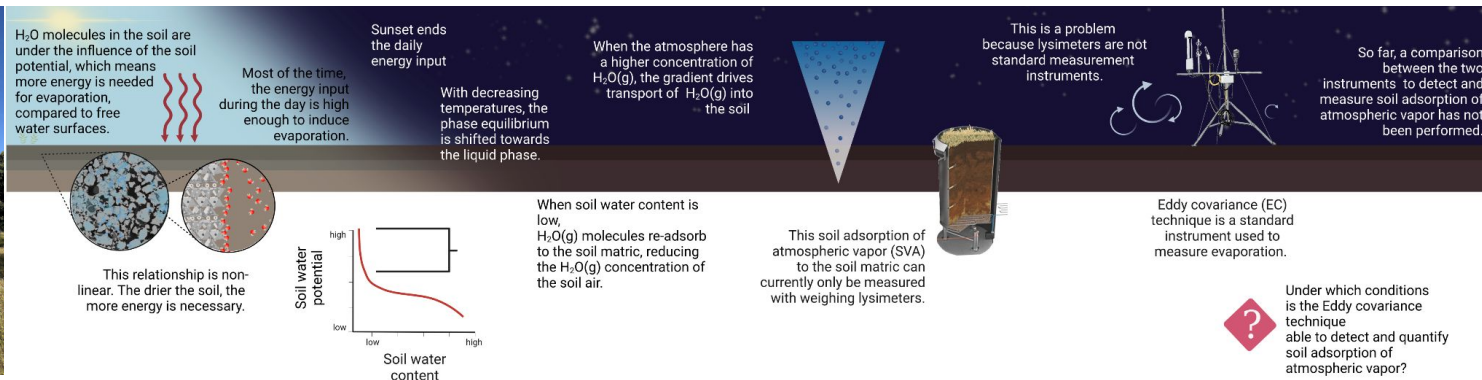
Paulus, S. J. et al. (2023). Interpretability of negative latent heat fluxes from eddy covariance measurements during dry conditions. [Manuscript in preparation]

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Final Details

Want to learn more or get involved?
Sign up for the mailing list (https://fluxnet.org/community/join/), and/or email fluxnet.cc@gmail.com

Join one of our active committees by emailing the committee lead (see here)

Key upcoming events
FLUXNET Meeting abstract submission open and due May 16th, 2023. Submit here: https://s.gwdg.de/fnMrou

FLUXNET Meeting registration opening soon, and due June 7th, 2023. Check https://fluxnet.org/community/fluxnet-annual-meeting-2023/ for updates.

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About the Editor

Kyle Delwiche studies methane emissions from natural ecosystems using eddy covariance, modeling, data synthesis, and other field measurement techniques. (https://kyledelwiche.weebly.com/). She is also the Deputy Director of the FLUXNET Community Council.