
A42D-01: NEON's eddy-covariance: interoperable flux data products, software and services for you, now

Thursday, 14 December 2017

10:20 - 10:35

📍 *New Orleans Ernest N. Morial Convention Center - 398-399*

Networks of eddy-covariance (EC) towers such as AmeriFlux, ICOS and NEON are vital for providing the necessary distributed observations to address interactions at the soil-vegetation-atmosphere interface. NEON, close to full operation with 47 tower sites, will represent the largest single-provider EC network globally. Its standardized observation and data processing suite is designed specifically for inter-site comparability and analysis of feedbacks across multiple spatial and temporal scales. Furthermore, NEON coordinates EC with rich contextual observations such as airborne remote sensing and in-situ sampling bouts.

In January 2018 NEON enters its operational phase, and EC data products, software and services become fully available to the science community at large. These resources strive to incorporate lessons-learned through collaborations with AmeriFlux, ICOS, LTER and others, to suggest novel systemic solutions, and to synergize ongoing research efforts across science communities. Here, we present an overview of the ongoing product release, alongside efforts to integrate and collaborate with existing infrastructures, networks and communities.

Near-real-time heat, water and carbon cycle observations in “basic” and “expanded”, self-describing HDF5 formats become accessible from the NEON Data Portal, including an Application Program Interface. Subsequently, they are ingested into the AmeriFlux processing pipeline, together with inclusion in FLUXNET globally harmonized data releases.

Software for reproducible, extensible and portable data analysis and science operations management also becomes available. This includes the eddy4R family of R-packages underlying the data product generation, together with the ability to directly participate in open development via GitHub version control and DockerHub image hosting. In addition, templates for science operations management include a web-based field maintenance application and a graphical user interface to simplify problem tracking and resolution along the entire data chain.

We hope that this presentation can initiate further collaboration and synergies in challenge areas, and would appreciate input and discussion on continued development.

Plain Language Summary

For a sustained period of time the eddy-covariance and boundary layer communities have invested technical and scientific expertise into the construction of the National Ecological Observatory Network (NEON). In January 2018 NEON enters its operational phase, and the time has come for our communities to reap the first fruits of their efforts!

This presentation intends to create awareness of the resources that become available to our communities: interoperable flux data products, software and assignable asset services.

We focus on how these resources will permit to elucidate interactions at the soil-vegetation-atmosphere interface for decades to come: continuous eddy-covariance observations of the surface-atmosphere exchange are tightly coordinated with rich contextual data such as airborne remote sensing and in-situ sampling bouts. In this way new investigative dimensions are provided to capture land-atmosphere feedbacks across multiple spatial and temporal scales.

Authors

Stefan Metzger *

*National Ecological
Observatory Network*

Ankur R Desai

*University of Wisconsin
Madison*

David Durden

*National Ecological
Observatory Network*

Jörg Hartmann

*Alfred Wegener Institute
Helmholtz-Center for
Polar and Marine
Research Bremerhaven*

Jiahong Li

LI-COR Biosciences

Hongyan Luo

*National Ecological
Observatory Network*

Natchaya Pingintha Durden

*National Ecological
Observatory Network*

Torsten Sachs

*GFZ German Research
Centre for Geosciences*

Andrei Serafimovich

*GFZ German Research
Centre for Geosciences*

Cove Sturtevant

*National Ecological
Observatory Network*

Ke Xu

*University of Wisconsin
Madison*

[Find Similar](#)

View Related Events

Day: [Thursday, 14 December 2017](#)