

SEMINAR

The NEON tower network: from scientific strategy to long-term operation**Stefan Metzger and Cove Sturtevant****National Ecological Observatory Network (NEON)**

Abstract: 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. In addition to a standard suite of meteorological and soil variables, 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.

Software for reproducible, extensible and portable data analysis and science operations management also becomes available in NEON's operational phase. This includes the eddy4R family of R-packages underlying the data product generation, R-packages for quality control and monitoring, and mobile application templates for recording site maintenance and disturbance activities. Publically available software is accompanied by the ability to directly participate in open development via GitHub version control and DockerHub image hosting. We hope that this presentation can initiate further collaboration and synergies in challenge areas, and would appreciate input and discussion on continued development.

Stefan Metzger is an atmospheric physicist, leading NEON's eddy-covariance algorithm and data product development. He has been working with several measurement platforms, ground-based, airborne and space-borne, each of which providing different spatio-temporal coverage and resolution of environmental phenomena. His objective is to close the representativeness-gap between such disparate environmental observations and their mechanistic representation in earth system models. For this purpose, Stefan is pioneering model-data fusion concepts that utilize machine learning for extracting functional relationships from multi-dimensional datasets.

Cove Sturtevant is a biometeorologist and data-scientist, leading NEON's QA/QC effort for instrumented systems. His goal at NEON is to implement an efficient data quality monitoring and management system that ensures the continuity of quality information throughout the data generation chain. His research projects focus on understanding the biophysical controls of greenhouse gas exchange between ecosystems and the atmosphere, making use of advanced analysis methods such as neural networks, wavelet analysis, and information theory to disentangle complex datasets.

Date: Monday, November 13, 2017; **Time:** Refreshments 3:15pm, Seminar 3:30pm
NCAR Foothills Laboratory - 3450 Mitchell Lane, Boulder, CO 80301

FL2-1022, Large Auditorium

Live webcast: <http://ucarconnect.ucar.edu/live>

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