Environmental Drivers of Ecosystem Carbon Fluxes from Minutes to Years (Version 1.0)
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Module Description:
In this group lab activity, students build on fundamental concepts of ecosystem production and carbon cycling, combining this knowledge with open long-term data from ecological (NEON and FLUXNET) and meteorological (NOAA) networks to uncover the environmental drivers of carbon fluxes for an array of different ecosystems. An optional exercise challenges students to develop a simple predictive model from carbon cycling and environmental data.

The following resources are included in this module:

1. Suggested readings and background presentation materials (including slides) to prepare students for the lab exercise
2. Lab activity instructions for students
3. An image-based slide tutorial for instructors and, optionally, students, which can be used during the lab activity as a guide

Teaching Setting:
This activity assumes fluency in general ecological concepts related to ecosystem production and the carbon cycle. Prior to the group lab activity, instructors may choose to prepare students via lecture material and readings,
which are provided in this module package. The first and second sections of
the lab activity require 3-4 hours of time and are tailored for introductory biology
majors. This activity uses a “predict-observe-explain” pedagogy to help students
understand and articulate the patterns of ecosystem productivity at a variety of
locations. A third optional exercise is more advanced and is best suited to upper
level students and graduate classes.

QUBES Citation:
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Related Materials and Opportunities:
The authors will present a poster describing this resource at the American
Geophysical Union (AGU) Fall 2018 meeting in Washington, D.C. on December
14, 2018. View and/or download a draft of the poster here. If you will be
attending AGU this fall, you are encouraged to visit their poster to meet the
authors and discuss their resource in person.

The authors created this resource while participating in a National Ecological
Observatory Network (NEON) Data Education Fellows Faculty Mentoring
Network (FMN).

NEON is offering another FMN during the Spring 2019 semester for faculty
interested in implementing or adapting existing NEON teaching materials to
their educational settings. Faculty who already teach using NEON data and
would like to use the FMN to improve and transition it to an open educational
resource are also invited to participate. More information on NEON educational
materials can be found on the Teaching Resources page. Applications are due
December 14, 2018. Please visit
https://qubeshub.org/community/groups/neon2018 for additional information and
instructions on how to apply.

NEON is one of the collaborating organizations behind the Environmental Data
Science Inclusion Network (EDSIN), whose goal is to strengthen initiatives
across existing alliances and organizations to recruit and retain individuals from
underrepresented groups in data science careers. EDSIN is hosting a
conference, Bringing Conversations on Diversity and Inclusion in Data Science
to the Environmental Sciences, on April 2-4, 2019 in Boulder, Colorado.
Applications for in-person participation is now closed. However, you can
participate in the conference remotely. Find more about remote participation
options here.

This resource was nominated for the ROW by a professor at the University of
Richmond. If you would like to nominate a QUBES resource for the ROW,
please send your nominations to Elia Crisucci at emc22 “at” pitt.edu. It is helpful
if you include a short description of why you think the resource should be
featured as a ROW.
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