Poster #9-17

NGEE-Tropics Data Management and Products

Charuleka Varadharajan[1*], Gilberto Pasterello[1], Boris Faybishenko[1], Danielle Christianson[1], Val Hendrix[1], Bradley Christoffersen[2], Matteo Detto[3,4], Kolby Jardine[1], Robinson Negron-Juarez[1], Bruno Gimenez[5], Charlotte Grossiord[2], Thomas Powell[1], Luiza Maria Aparecido[7], Gretchen Miller[7], Georgianne Moore[7], Heidi Asbjornsen[8], Carter Berry[8], Damien Bonal[9], Jeffrey Warren[6], Brett Wolfe[3], Jeffrey Chambers[1,10], Lara Kueppers[1,10], Nathan McDowell[11], and Deb Agarwal[1]

[1]Lawrence Berkeley National Laboratory, Berkeley, CA
[2]Los Alamos National Laboratory, Los Alamos, NM
[3]Smithsonian Tropical Research Institute, Washington, DC, and Panama
[4]Princeton University, Princeton, NJ
[5]National Institute of Amazonian Research (INPA), Manaus, Brazil
[6]Oak Ridge National Laboratory, Oak Ridge, TN
[7]Texas A&M University, College Station, TX
[8]University of New Hampshire, Durham, NH
[9]INRA-UMR, French Guiana
[10]University of California, Berkeley, CA
[11]Pacific Northwest National Laboratory, Richland, WA

Contact: cvaradharajan@lbl.gov

BER Program: TES
Project: NGEE-Tropics
Project Website: http://ngee-tropics.lbl.gov

NGEE-Tropics generates and utilizes ecological, hydrological, and meteorological datasets from tropical forests in Central and South America for scientific analysis and model parameterization and benchmarking. The overall goals of the Data Management and Synthesis objective is to work with the project team to: 1) host all project data in a community accessible archive and publicly release those data with appropriate citation and usage information, 2) standardize data and metadata collection for cross-site comparison, 3) curate data collected by the project and help acquire external data to create modeling testbeds, and 4) create priority data products such as meteorological model drivers, processed data with Quality Assurance/Quality Control (QA/QC), and cross-cutting synthesized datasets. Project data are archived for internal use in the NGEE- Tropics Archive, which has a portal to upload and search for data packages. A public listing of all data shared publicly and with the team are available at http://ngt-data.lbl.gov/dois, where authorized users can download data. All NGEE-Tropics data will migrate to the ESS-DIVE archive in March 2019. A metadata reporting framework FRAMES was developed for reporting sensor-based observations, and enabling cross-site and cross-method comparison, data interpretability, and QA/QC. Six core NGEE-Tropics field sites in Brazil, Panama, and Puerto Rico, as well as collaborators, have used the metadata templates to submit data packages to the NGEE-Tropics Archive. The standardized FRAMES templates have been used to synthesize the sapflux measurements collected across 9 field sites during the 2015-2016 El Niño. The synthesized dataset includes data collected from independent field efforts and incorporated community input from over 20 researchers. There were several challenges involved in synthesizing and comparing the data, including the variety of sensors used, data formats, units, and processing methods. Other key data products include several rounds of QA/QC of meteorological model drivers for three sites in Panama (BCI, San Lorenzo, and Parque Metropolitano), including air temperature, relative humidity, solar radiation, barometric pressure, wind speed and wind direction. The QA/QC-ed datasets have already been used as input data for the Ecosystem Demography model (ED2-hydro) and FATES simulations. The meteorological drivers along with other project data and relevant external datasets are being assembled into testbeds to spin-up and validate model simulations.

Together, the NGEE-Tropics Data Management and Synthesis objecting is focused on the long- term preservation of project data, and also create data products required to transform diverse and complex ecohydrological data into scientific understanding.