

NEWS

AmeriFlux Network Aids Global Synthesis

The carbon cycle science community has called for demonstrable progress in streamlining terrestrial-atmosphere observations into a global network to enable syntheses and regional to global modeling of the role of terrestrial ecosystems in climate change. The AmeriFlux network of about 100 research sites is the primary research group and data provider for large syntheses on terrestrial carbon cycling in the Americas. To broaden the value of the network, AmeriFlux has developed a database design and new guidelines for the submission of micrometeorological, meteorological, and biological data to the archive.

The database, which includes atmospheric, plant, and soils data, was designed with significant input from Microsoft and the Berkeley Water Center (California). AmeriFlux is also working with international organizations such as CarboEurope and the Global Terrestrial Observing System to standardize terrestrial observations and data products for global analyses.

The AmeriFlux network aims to quantify and explain the influences of climate and disturbances such as wildfire and land use on carbon, water, and energy exchange between terrestrial ecosystems and the atmosphere. An essential component that enables large-scale analyses is the consistency of the data.

AmeriFlux guidelines for data submission reflect input from data providers and users as well as recommendations from database designers and data managers to improve the efficiency of access and automation, especially for global syntheses and spatial modeling activities that include data assimilation techniques. One of the fundamental requirements of network participants to maintain membership in the network is to submit micrometeorological and meteorological data within 1 year of collection, and biological data within about 2 years of collection to the AmeriFlux data repository at the Carbon Dioxide Information Analysis Center (CDIAC), at the Oak Ridge National Laboratory in Tennessee.

Biological observations represent a particular challenge in that they are collected at disparate scales, such as, for example, fast processes (photosynthesis, soil respiration) and slow processes (carbon pools, nitrogen content). The data submission requirements address this challenge by requesting variables in time and space scales that are most likely to be useful to a broad group of users. Controlled vocabularies are used for metadata and site characteristics such as disturbance histories. The system has checks on expected ranges of variation, controlled

vocabularies, and formats. The specified formats are being used to standardize existing data in the collection and new observations by investigators in AmeriFlux and the North American Carbon Program (NACP), in which AmeriFlux plays a major role.

The NACP research strategy recommends an integrated data and information management system that will enable researchers to access, understand, use, visualize, and analyze large volumes of diverse data at multiple thematic, temporal, and spatial scales. Managing and integrating data for NACP requires an overarching data policy to ensure that participants have full, open, and timely access to data in order to promote the exchange of quality-controlled and quality-assured data. This is needed to protect intellectual property rights and to ensure that proper credit is given to data originators through authorship, citation, or acknowledgment. The development of the AmeriFlux data and information system will be an important asset to the NACP. Additional information on the NACP is located at <http://www.nacarbon.org>.

In an effort to make data broadly available and yet allow data providers time to conduct original analyses within and among similar networks, AmeriFlux requests that users follow the Data Fair Use Policy posted on the AmeriFlux Web site. The AmeriFlux database is located at <http://public.ornl.gov/ameriflux>.

—BEVERLY E. LAW, AmeriFlux Network, Oregon State University, Corvallis; E-mail: bev.law@oregon-state.edu