National Soil Carbon Network

A Brief Guide to Using the Database

DATABASE STRUCTURE

The database contains attributes that apply to soil observations from three hierarchical scales: layers, profiles, and sites. Chemical and physical data are available for the individually sampled and analyzed layers that comprise complete soil profiles, of which there may be one or more per site. Layers, profiles, and sites are linked with unique identifiers. Within this relational framework, there is an almost unlimited capacity to associate new attributes (*e.g.*, ancillary data, images, documents) with soil observations at any hierarchical level, thanks to significant server capacity and programming flexibility within the SQL code and SharePoint content management software that drive the database.

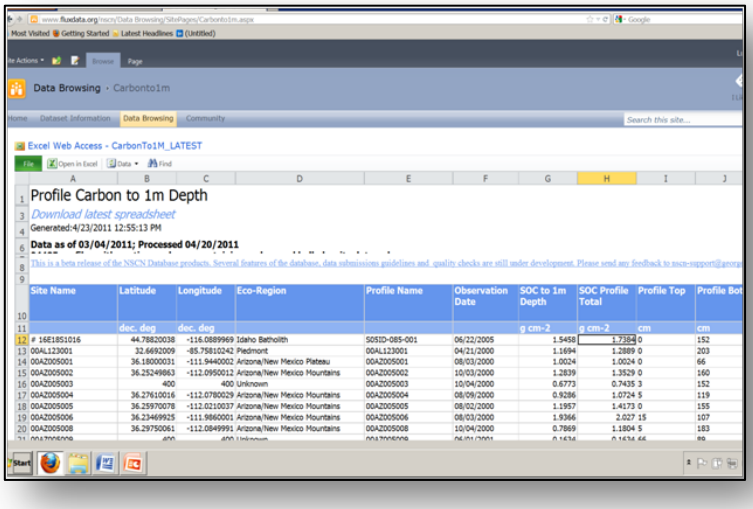
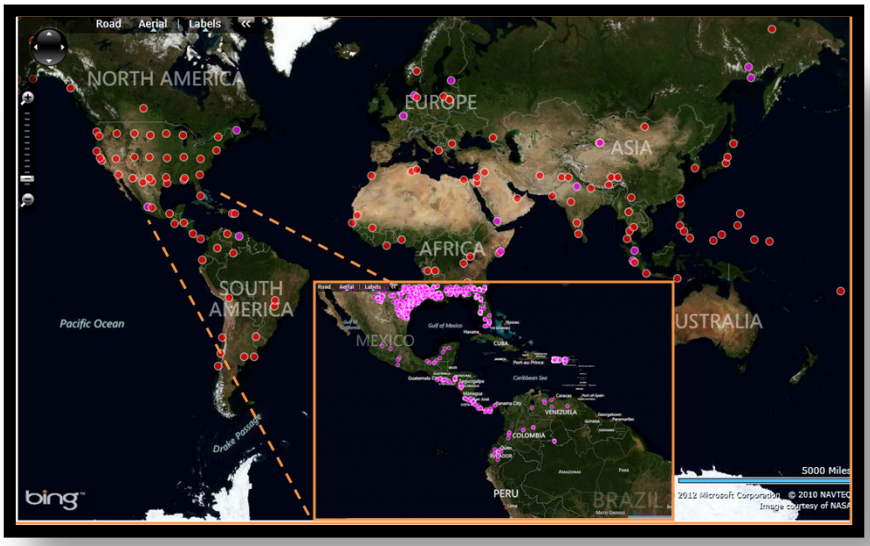


Figure 1. Viewing profile C stocks with Excel Web Access.



Map of sites in the NSCN Database. Coverage is greatest for the United States, though the Database holds a growing body of information on soils from other locations around the globe. **Inset:** Magnified view of data coverage in the southern U.S. and northern Neotropical Zone (red symbols on the global map indicate high regional densities of individual sites in pink).

DATABASE ACCESS

Access is provided on the NSCN website via Excel files which may be viewed online or downloaded. Basic information about the contents of the database is freely available on the Dataset Information page; membership is required to access the files containing carbon, other chemical and physical data on the Data Access page. Rules for fair use and acknowledgement of data contributors are specified in a Data Policy.

Visit us online at www.soilcarb.net

DATABASE SUPPORT AND DEVELOPMENT TEAM

The database is a collaborative product with Lawrence-Berkeley Nat'l Lab, UC Berkeley Water Center, Microsoft Research, and University of Virginia. Its prototype was built for the AK Deep Soil C Project, a data synthesis effort by the USGS and Univ. Alaska-Fairbanks. Support for continued database growth and curation derives from the USDA-Forest Service, Northern Research Station and Global Change Program, as well as a competitive award from USDA-CSREES, Agriculture and Food Research Initiative.

Key variables available for the observations in the database

Spatial / Temporal	Ecologic	Soil Chemical &Physical	Metadata	In progress
Lat/long	Soil taxonomy	%C, %N, isotopes	Contributor contact info	Spectral data
Country	Ecoregion (EPA)	Bulk density	Citations for published data	Soil fractions
State	Covertype (NLCD)	Layer depth	Sampling methods	Disturbances
County	MAP/MAT	Horizon design	Analytical methods	Exp. treatments
Obs. date	Elevation/aspect	Particle size dist.	Data handling methods	
	Geomorphology	Coarse fragments	Linked ancillary datasets	

DATABASE DEVELOPMENT DIRECTIONS

Developments in 2012 have increased the amount of basic, georeferenced soil C data stored in the database, added new types of data, and increased international data availability. Ongoing data contributions from NSCN members and other networks will add thousands more profiles of soil C and associated data, increasing the density and diversity of data sources. Other NSCN members are working on a system to store spectral data, as well as data from various soil fractionation schemes.

DATA CONTRIBUTION

The NSCN eagerly accepts quality data contributions. Standard, georeferenced soil C datasets are prepared for input to the database using a template system, which features an online questionnaire to generate a template with the specific variables needed for each dataset. Tutorial materials and an upload function on the Dataset Contribution page complete the process for basic data contributions. The NSCN database team also accommodates contributors whose data submissions require special handling, such as the creation of new variables or template components, or special scripts for batch transfers of datasets too large for the template. Data may be submitted and held in embargo until the contributor approves release; linkages to author-provided bibliographies facilitate appropriate use and accurate citation of contributed data.

DATABASE BY THE NUMBERS

	Current Total
Data contributions	22
Number of soil profiles	41,068
Profiles with computed C stocks	30,691
Number of sampled layers	257,246

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