

SEMP Data Repository Annual Report
01 October 2000 – 30 September 2001
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Repository Location and Setup

The SEMP Data Repository is located at <http://206.166.205.173/>. See Figure 1.



Figure 1. SEMP Data Repository Home Page

Access to the repository is currently password protected. Passwords are issued only to those individuals that have been verified to be working with/for one of the six SEMP research groups, Fort Benning staff, and SERDP staff; forty-five passwords have been issued. A Repository User's manual is available on the site, and was emailed to the current users. The repository resides on an NT server connected to the Internet via a T1 line and a commercial ISP

Repository Conceptual Design

The conceptual design for the SEMP Data repository is both simple and functional. It is designed specifically and primarily to provide data access and exchange among the SEMP study partners and serve as a stable, long-term data archive mechanism to protect the SERDP investment. The approach was to build a simple, functional, well-documented data repository that has low long-term maintenance requirements. The SEMP repository is designed to operate as a stand-alone archive that can be directly or remotely accessed by other more complicated systems and data archives. It is a file-based repository organized using a directory structure based on the Spatial Data Standards for Facilities, Infrastructure and Environment (SDS/FIE) entity set.

Several important design decisions guided the development of the SEMP/ECMI repository. These decisions were made early in the program to ensure early availability of the repository and to remain within the projected budget. The most important of these design considerations were as follows:

- 1) The SEMP repository does not function as a graphic map product server.
- 2) The SEMP repository does not function as an enterprise level geospatial data warehouse for operational use at Ft. Benning.
- 3) The SEMP repository is file based rather than RDBMS based.

Four main design components of the SEMP Data Repository are illustrated in Figure 2. These components are Data Storage, Repository Index/Data Catalog, The User-Web Interface, and the User Profile Information.

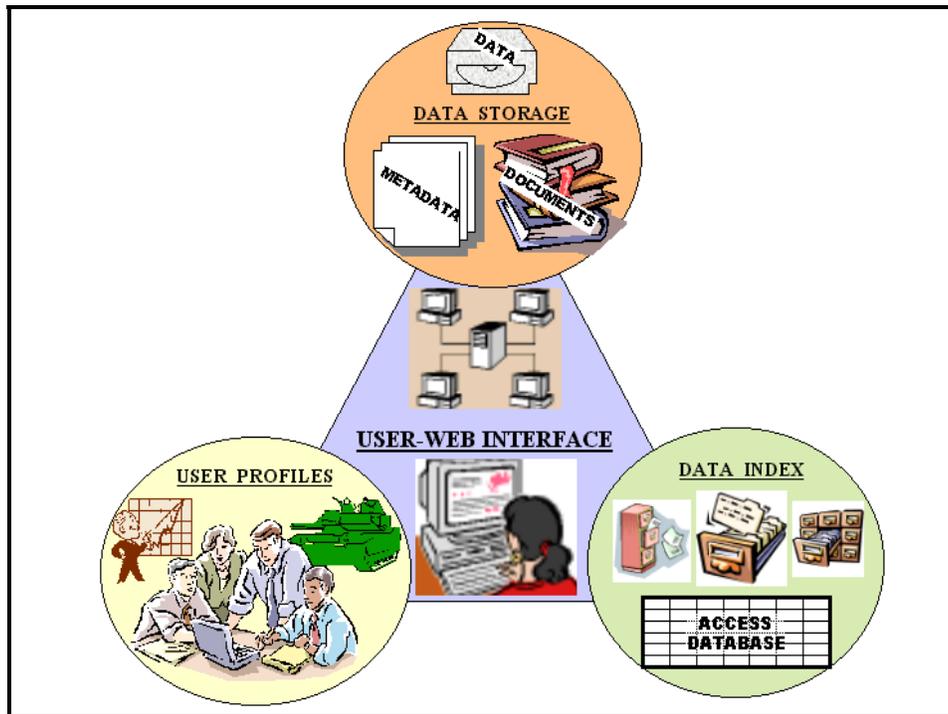


Figure 2. SEMP Repository Conceptual Design Components

1. Data Storage Component

All data storage and retrieval in the SEMP repository is file based. This system is designed to organize, store, index, catalog, and retrieve electronic files rather than individual data values. The fundamental organization of the repository content is a directory structure based on the entity set as defined in the Spatial Data Standard/FIE. The SEMP Repository Data Catalog demonstrates the use of the SDS entity set directory structure.

2. Index/Data Catalog Component

The INDEX component is the key to maintaining and accessing the data repository. Each file submitted to the repository is described and indexed using a standard procedure. The INDEX component provides the mechanism for tracking the name, location and description of each file, which allows for efficient searching of the repository's contents. All repository searches are executed using INDEX records. Physically, the INDEX is a MS Access database containing 23 fields. Each file in the repository has one unique INDEX record. Table 1 shows the Access Database Index items. Most Index items can be used as search fields. The repository is not searchable by geographic coordinates.

Table 1. Access Database INDEX Items

TITLE	CREATOR	SUBJECT	KEYWORD 1	KEYWORD 2	KEYWORD 3
KEYWORD 4	KEYWORD 5	DESCRIPTION	PUBLISHER	CONTRIBUTOR	DATE
TYPE	FORMAT	IDENTIFIER	SOURCE	LANGUAGE	RELATION
COVERAGE	RIGHTS	COMMENTS	FILE NAME	METADATA FILE NAME	

3. User Interface Component

SEMP Data Repository Users interact with the repository by using a Web browser. Either Microsoft Internet Explorer or Netscape Navigator 4.75 may be used.

4. User Profile Component

Data submissions and retrievals are password protected. Each user issued a password must provide standard profile information (Figure 3) for system administration purposes. This information is required for data contributors, which is the person actually uploading the data, as well as the responsible party, which is the person/organization who “owns” or created the data.

First Name Middle I. Last Name

Organization you are affiliated with

City State 5-digit ZIP

Telephone Fax

e-mail address

Figure 3. Standard Profile Information in order to upload/download data from the Repository

Repository Contents

Initially the repository contained important baseline geospatial data for the Fort Benning Military Installation, and the surrounding region as well as the initial data collected under the Ecosystem Characterization Monitoring Initiative (ECMI). All data were bulk uploaded and documented as the initial starting point for the data repository. Currently, more data collected under the ECMI have been added, as well as biogeochemical soil data set collected by The University of Florida at Gainesville (UFLG), provided by Dr. Bill DeBusk. Figure 4 shows the SEMP Repository Data Catalog. Entity sets that contain data within the repository have a shadowed 3-D appearance.

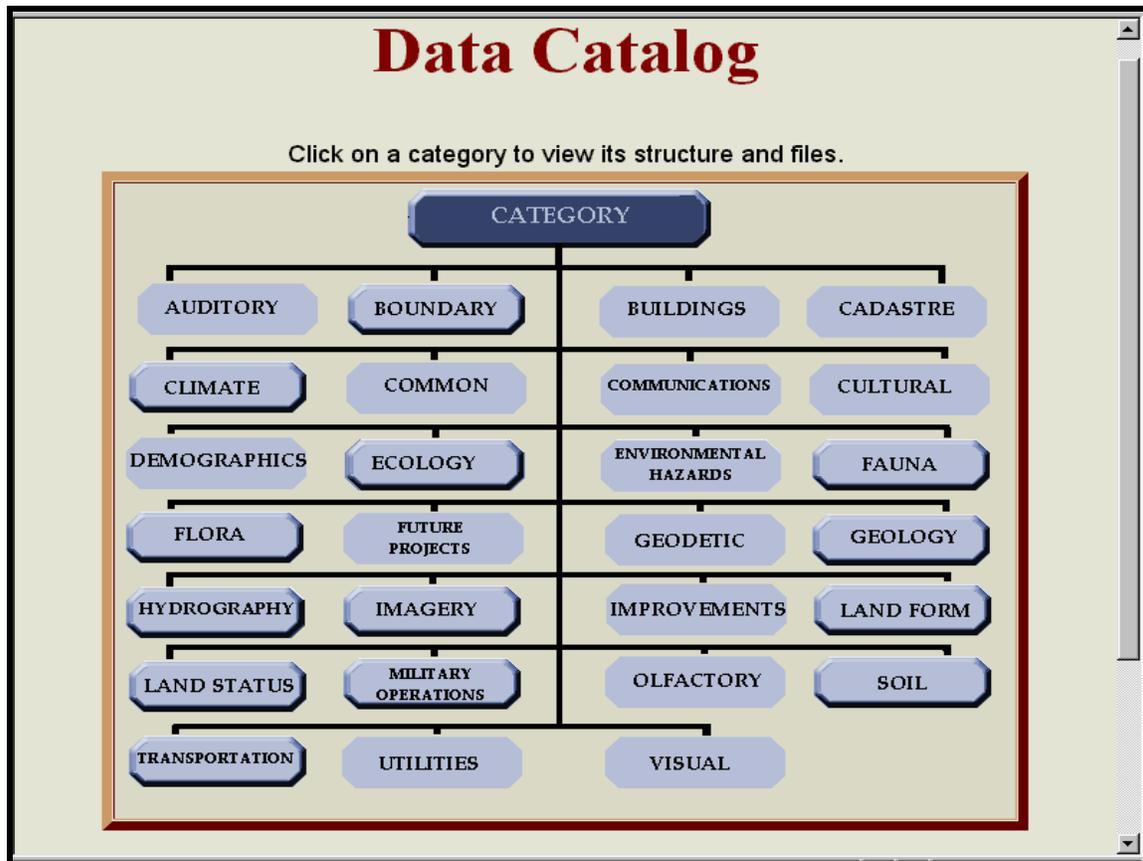


Figure 4. SEMP Data Catalog. Entity sets containing data have a shadowed 3-D appearance.

Repository Access/Usage

Data repository logins/passwords were distributed to several more researchers and their associates. The total number of passwords issued to date is 45.

Repository Modifications

The data repository has been modified to address many of the improvements that were suggested in an evaluation of the repository by Drs. Rose Kress and Marilyn Ruiz during the second quarter FY01. Some of the modifications are listed below.

1. Search pages were simplified resulting in more logically organized data results.
2. Graphical aids were added to help users more easily locate desired data.
3. Overall design made clearer, background was simplified, menu choices were added, and user “how to” explanations have been put into place.

Repository Data

The SEMP Data Repository continues to expand. To date, ECMI, and UFLG have been the only two data contributors from the SEMP Research Community. Listed below are the data that were added during the last quarter.

- 1 ECMI Data:
 - a. Meteorological Data: There are 10 meteorological stations located throughout the Fort Benning Military Installation. See Figure 5.
 - i. Graphical images of each station were created. These images include the ground photographs, Station ID#, and a locational description of each site. The graphical image is linked to the data allowing the user to select a particular station from the graphic to view or download the data. See Figure 5.
 - ii. Monthly weather data are uploaded to the site.
 - iii. Monthly summary sheets were added.
 - iv. Data are organized by Station ID#, Year, then Month. See Figure 5.

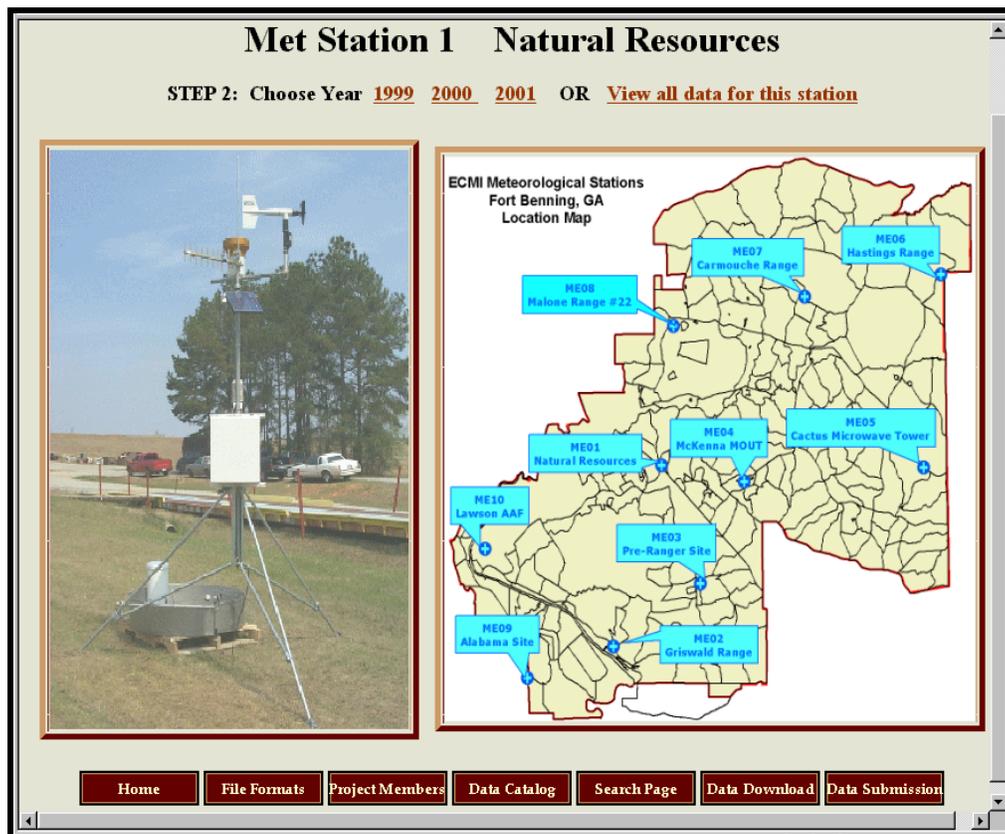


Figure 5. ECMI Meteorological Station One – Natural Resources Office

- b. Hydrological Data: There are currently 6 (Table 2.) locations where hydrological data are collected. (All data added in Sep 01)
 - i. 4 Groundwater well locations.
 - ii. 6 Surface Water monitoring locations.
Includes water temperature and water level measurements.
(5 stations also measure water velocity.)
 - iii. 6 Water Quality Sites.
Bi-weekly manual observations were initiated 25 Jul 01.
 - iv. 6 Stream Cross-Section Profiles were measured in Aug 01.

Table 2. ECMI Hydrological Monitoring

ECMI Monitoring Location	Groundwater Wells	Surface Water** (Level, Temp, Velocity)	Water Quality (DO, DO%, NO3, pH, Depth, Spec .Cond. Temp.)
Bonham		•	•
Sally Branch		•	•
Upatoi	•	•	•
Oswichee	•	•	•
Randall **	•	•	•
Little Pine Knot	•	•	•

** Note: Surface water velocity measurements are not currently taken for Randall Creek.

- c. Erosion/Deposition Data: These data were collected, processed and added to the data repository during FY01.
 - i. Geospatial data layers developed for each Erosion/Deposition site:
 1. Survey Points
 2. Contour Lines
 3. TIN Surface Model
 - ii. Graphics were generated showing the various data layers. These graphics are to scale, and saved in .PDF format. They are currently available for viewing/downloading.
 1. Survey Points
 2. Contour Lines (Interval 0.05 Meters)
 3. Contour Lines shaded by elevation (Interval 0.05 Meters)
 4. TIN Surface Model shaded by elevation
 5. 5-Meter Profile Lines (See Figure 6.)

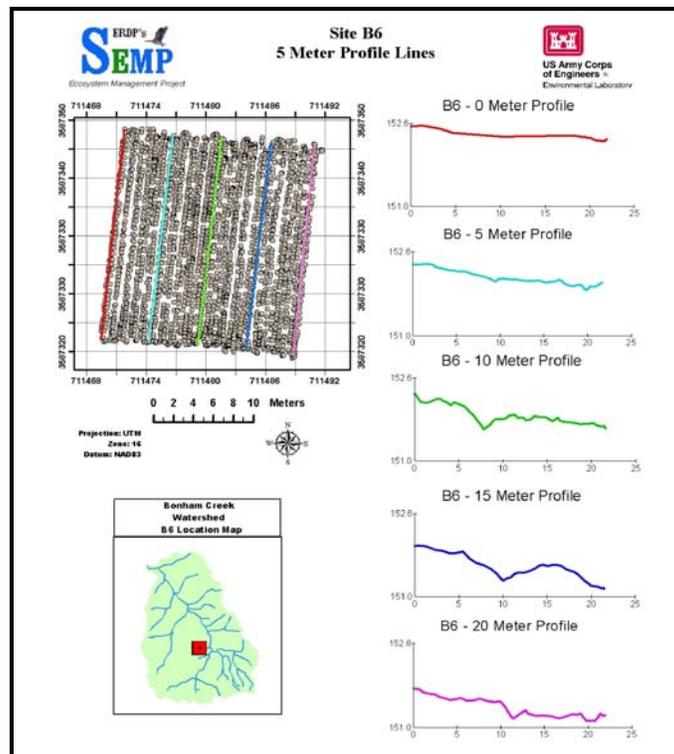


Figure 6. ECMI Erosion/Deposition Profile Lines (Profiles run North to South).

- d. LandSat 7 Enhanced Thematic Mapper Satellite Data:
 - i. Two LandSat 7 images were uploaded
 - 1. July 1999
 - 2. December 1999
 - ii. Landcover Classifications were generated and uploaded to Repository, Sep 01. The July image was used for the classification shown in Figure 7. The Data Repository includes a plot file of landcover classifications, which includes a map legend.

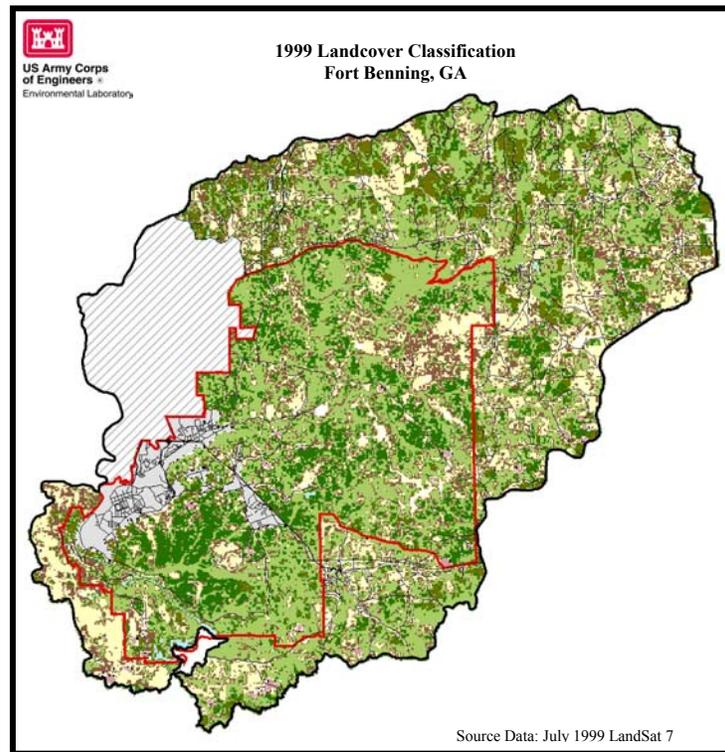


Figure 7. July 1999 LandSat Classification.

- 2 University of Florida-Gainesville Data:
 - a. ECMI field data, and associated metadata files, were sent to the UFLG research team. Those files were used as examples of how to document non-spatial data.
 - b. The UFLG team successfully completed their first data submission to the SEMP Data Repository. Figure 8 shows the UFLG’s soil data contribution.

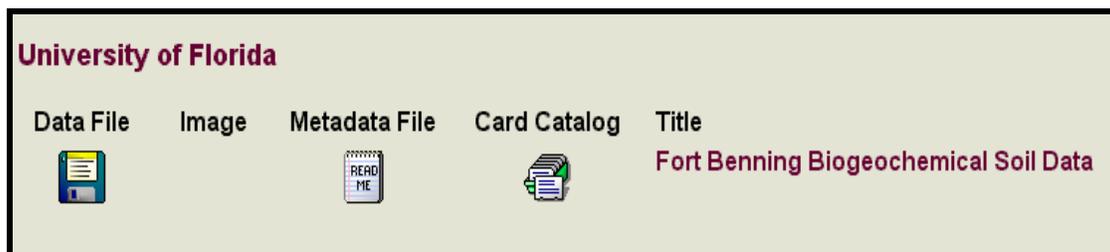


Figure 8. UFLG Biogeochemical Soil Data on the SEMP Data Repository.