Global Change Monitoring Portal: Features and Functions

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12 February 2016
Features and Functions of the GCMP

Home Page

Overview

A significant challenge faced by climate scientists and land managers in the public and private sectors is the need for reliable and complete information about the status of ecosystem components that may be influenced by climate change. While many organizations monitor one or more aspect of aquatic and terrestrial ecosystems, these monitoring programs are seldom coordinated and the associated data are not readily discoverable.

The Global Change Monitoring Portal (GCMP) is a project of the DOI Southwest Climate Science Center and aims to support the efforts of multiple federal, state, and other organizations by providing a centralized, comprehensive catalog of observational networks associated with aquatic and terrestrial ecosystems in the southeastern United States. The Southeast GCMP region of interest encompasses all or part of several Landscape Conservation Cooperatives (LCCs) in the six-summer US and Caribbean.

The GCMP is in the first phase of development of a national data framework. We are seeking to know about other observational networks and their data. Please contact Carl Furrness at the SE Climate Science Center: Carl.Furrness@usgs.gov for more information.

Database

Information about existing and historical monitoring programs and sites are classified:
- the type of media being monitored
- the general type of measurement
- the general type of parameter measured
- and the general type of parameters monitored

Monitoring locations are detailed when made available by a monitoring network. Sites are classified according to several geographic criteria: State, Landscape Conservation Cooperative, Level II Ecoregion, and 8-digit Hydrologic Unit.

In the GCMP, monitoring network and site information can be displayed and searched using geographic and/or measurement categories.

Observational data are not stored in the database, but links for accessing data from a monitoring program are provided when available.

Main Navigation to Primary Functions and Information Resources. All pages open in new tab

Info and contact for updating or adding program metadata

Map graphic of example monitoring sites links to Main Map page

Text provides general information about GCMP and general description of metadatabase

Updates / Adding Programs

Details about monitoring programs and sites are not dynamically updated, but can be modified if updated information is supplied by a monitoring network. The most recent update to information about a particular network or site is indicated on each page.

Want to contribute? If you are a monitoring program representative, please contact Carl Furrness (carl.furrness@usgs.gov) for a simple spreadsheet upload template. If you are aware of corrections to information currently in the GCMP, please also contact us.

https://my.usgs.gov/gcmp
Features and Functions of the GCMP
Main Map Page

Legend Box allows overlay of geographic layers. Sampling sites displayed with color based on Media Type.

Display of program acronym with full name mouseover and number of sites. User can select Monitoring Program(s) to display sites on map.

ESRI Basemap - user can switch to different map views, e.g. Gray Canvas, Topographic, OpenStreetMap.

https://my.usgs.gov/gcmp
Features and Functions of the GCMP Main Map Page

Legend Box allows overlay of geographic layers. Sampling sites are displayed with color based on Media Type.

Display of program acronyms [mouseover shows full name] and number of sites. User can select Monitoring Program(s) to display sites on map.

Clicking on a site point on map opens a summary box with links to Program Page and Site Page.

ESRI Basemap – user can switch to different map views, e.g. Gray Canvas, Topographic, OpenStreetMap.

https://my.usgs.gov/gcmp
### Features and Functions of the GCMP

**Dictionaries**

<table>
<thead>
<tr>
<th>Biological Parameter Type</th>
<th>Type</th>
<th>Other Biological may include: Bacteria, Fungi, Algae</th>
</tr>
</thead>
</table>
| Chemical Parameter Type   | Type of chemical parameter measured (Metals, Nutrients, Organic, Other Chemical) | \[
| Other Chemical may include: inorganic chemical species; measurements such as pH, salinity, solubility; chlorophyll-a; chemical constituents such as toxins, dissolved organic carbon, total organic carbon |
| Ecoregion (Level II)      | Ecoregions denote areas of ecosystems that have similar types, quality, and processes of vegetation and other communities, and serve as spatial frameworks for management, research, and conservation. | \[
| Ecosystem Biological Parameter Type | Examples include measures of biodiversity and productivity of soil-organisms and micro-organisms. | \[
| Hydrologic Physical Parameter Type | Examples include: measures of flow and level; field parameters such as temperature, pH, specific conductance, total hardness, dissolved oxygen; physical properties such as light attenuation, turbidity. | \[
| Hydrologic Unit (5-digit) | Hydrologic units are identified areas of surface drainage within the US system for cataloging drainage areas. A hydrologic unit can accept surface water directly from upstream drainage areas and indirectly from associated surface areas, such as remnant areas, noncontributing areas, and diversions, to form a drainage area with single or multiple outlet points. | \[
| Landscape Conservation Cooperative | Landscape conservation cooperatives (LCCs) are conservation science partnerships among the US Fish and Wildlife Service, US Geological Survey, and other federal agencies, states, tribes, NGOs, universities, and stakeholders. LCCs are developed for the purpose of better integrating science and management to address climate change and other | \[

*This table provides definition of terms using in various parts of the GCMP, with examples in some cases.*

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**Adding a program entry populates this reference table**

[https://my.usgs.gov/gcmp](https://my.usgs.gov/gcmp)
Features and Functions of the GCMP
Dictionaries

Sortable table of HUC8 Codes and corresponding HUC Names
Features and Functions of the GCMP
Browse Programs

Page displays a scrollable table of all program entries plus some metadata elements. Each column is sortable; default is Program name ascending.

If a program collects data of more than one Measurement Type (Biological, Chemical, Physical) in more than one Media Type (Air, Land, Water), entry is split by Media Type so that Searches can be effective.

Definitions and examples of measurement classification scheme is in Dictionary of Terms.

Clicking on Program Name opens Program page with full metadata.

Allows user to jump to display of programs matching text string instead of scrolling.

Mouseover for extended text.
Features and Functions of GCMP Program Page

Page provides a view of all metadata elements for Program and map of monitoring sites.

Description includes detail of specific parameters measured.

Suite of parameters measured by whole set of sites are classified here.

Click to display list of all monitoring sites in GCMP for Program.

Legend Box allows overlay of multiple geographic layers on map of sites.

Clicking on a site point on map opens a summary box with link to Site Page.

Date of last update to Program Page.

Reflected all sites in Program; may be estimated.

If different, there may be sites outside GCMP region, or site metadata is not comprehensive or specific (in some cases, available as centroids of state(s) in which Program operates).
Features and Functions of GCMP
Program Site List

Page displays groups of 20 program site entries plus some metadata elements, including Geographic classifications.Sortable by any column; default is Site Code ascending.

Complete site list downloadable as Excel or csv file

Accuracy of coordinates as provided by Program; displayed to 4 decimals

Types of parameters measured may be different for individual sites

Clicking on a site name opens Site Page

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET1
- **Coordinates (WGS84)**: 30.4182/-87.8260
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET10
- **Coordinates (WGS84)**: 30.4181/-87.8281
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET11
- **Coordinates (WGS84)**: 30.4182/-87.8290
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET4
- **Coordinates (WGS84)**: 30.4182/-87.8283
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET5
- **Coordinates (WGS84)**: 30.4182/-87.8283
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET6
- **Coordinates (WGS84)**: 30.4182/-87.8283
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET7
- **Coordinates (WGS84)**: 30.4182/-87.8283
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET8
- **Coordinates (WGS84)**: 30.4182/-87.8283
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205

- **Site Name**: Weeks Bay NERR
- **Site Code**: WKB SET9
- **Coordinates (WGS84)**: 30.4182/-87.8283
- **Media Type**: Land
- **Measurement Type**: Biological, Physical
- **Flora**: Surface elevation
- **HUC**: 031600205
Features and Functions of GCMP Site Page

Site Details

- **Site Name:** Weeks Bay NEPRI
- **Site Code:** WB SET4
- **Site Description:** Salt marsh
- **Monitoring Program:** Weeks Bay National Estuarine Research Reserve Sentinel Site Program Surface Elevation Monitoring
- **Coordinates (WGS84):** 30.4167/-87.9282
- **Proximity:** Approximate
- **Date Span:** 2014 to Present (as of 07/15/2015)

**Geographic Classification:**
- **State:** Alabama
- **LCC:** Gulf Coastal Plains and Ozarks
- **Ecoregion:** Southern Coastal Plain
- **HUC8:** 03190205

**Monitored Parameters:**
- **Media:** Land
- **Measurement:** Biological, Flora
- **Biological:** Surface elevation
- **Chemical:** Physical

**Descriptor:** Indicates how the coordinates represent where measurements are actually made; Proximity definitions are in Dictionary of Terms

**Consistent Legend Box Functionality**: Display of all metadata available for site

**Link back to Program Page**: Indicates period of data record, as of last record update

**Site is always centered in default map display**: Date of last update to Site Page

https://my.usgs.gov/gcmp
Features and Functions of GCMP Search

User can initially choose to Search Programs or also to Search Sites (requires more time). Default is Search Programs.

Search Page allows user to search for programs and/or sites based on Geography criteria and/or Measurement criteria, and display results.

Search Help box stays open to give user guidance for formulating search.

User can clear individual search entries or entire form.

Search results display below Search box, so search criteria remain visible.

User can toggle between display of Programs and of Sites matching search criteria. Clicking Sites tab will initiate Search Sites if Search Programs was initially chosen above.

https://my.usgs.gov/gcmp
Features and Functions of GCMP

Search Sites Results

Search results display below Search box, so search criteria remain visible.

Consistent functionality with geographic layer overlays, point click pop-up on map.

User can toggle back to Search Program Results.

Site Results Total.

Metadata for site search results downloadable as Excel or csv file.

https://my.usgs.gov/gcmp
Features and Functions of GCMP

Search Sites Results

Download file of metadata for sites where biological measurements are made in any media in areas of Georgia or South Carolina that intersect the South Atlantic LCC region.
Features and Functions of GCMP

Example Search

Where are Surface Elevation Tables being measured and by whom in the Peninsular Florida LCC region?
Features and Functions of GCMP

Example Search

I’m interested in the relationship between air and stream temperature in several watersheds in the Blue Ridge Ecoregion. What data resources are available to approach this question?

This search results in 24 programs that make Hydrologic OR Meteorological measurements at some site(s) in the Blue Ridge Ecoregion. Program Descriptions give more detail of types of measurements and link or contact for accessing data of interest.

Note that program entries that do not include specific georeferenced monitoring sites are represented by the centroid of each state in which they operate, so an additional search on the states in the Blue Ridge Ecoregion may reveal additional relevant data resources.