LCGISN
GeoSpatial Search
Program

User Manual

Department of the Interior
U.S. Geological Survey

LCGISN GeoSpatial Search Program

USER MANUAL

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ACKNOWLEDGEMENTS

Table of Contents

The Basics

Menus & Procedures

WELCOME TO LCGISN

Welcome

The LCGISN GeoSpatial Search Program was developed to provide a means for locating sources of information about Louisiana's coastal zone. Users can search the LCGISN data base for catalog records describing data held by participating institutions. Search results provide detailed descriptions of the data ("metadata") along with the names of potentially valuable contacts: individuals working in universities, private organizations, and local, state, and federal agencies who may assist users in accessing these data.

In addition to performing searches by subject terms, authors, and dates, users can search the LCGISN data base geographically. The ability to define searches by interacting with a base map of Louisiana allows users to narrow searches to records dealing with a specific location without having to know the geographic coordinates of the area of interest.

Users can, of course, specify location by latitude and longitude or by Universal Transverse Mercator (UTM) coordinates, but they may also key in a place name, choose from a list of quadrangles for the state, point to a USGS 7.5-min. quadrangle on the base map, or draw a box (a minimum bounding rectangle or MBR) on the base map, enclosing their area of interest.

This ability to restrict searches to a particular geographic area and to specify a location by disparate means makes the LCGISN GeoSpatial Search Program a unique, versatile, and powerful research tool.

Data Types in the System

The LCGISN data base contains references to many forms of information or data types, including maps, aerial photographs, satellite imagery, tabular data, geotechnical data, and "grey literature" (research findings, reports, and proceedings not typically included in library catalogs).
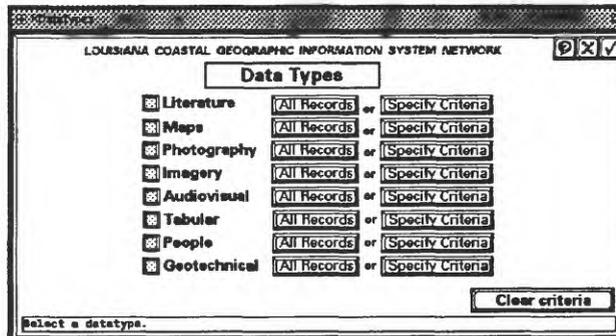
Figure 1. The Data Types Menu

The Data Types Menu is used to select the object of your search, the kind of data for which you are searching. The search can apply to **All Records**, meaning that each record of the selected data type will be included in the search. You may also **Specify Criteria**, defining the specific characteristics of the data that will be included in your search.

At the end of the search, users are provided with information concerning the data located by the program. Along with a summary of the data set and a record of its contents, users can also access information about its processing, appropriate use, and distribution.

All users can contribute records of their data holdings to the system. A GeoSpatial Cataloging Program has been developed to help users describe their data and contribute catalog records of their data to the system.

Base Map Layers

The LCGISN base map is a composite map of Louisiana that incorporates a variety of data from multiple sources. State, parish, and USGS quadrangle boundaries, roads and rivers, cities and towns, and offshore lease blocks are among the data layers that may be displayed. A satellite image (1993 Thematic Mapper data) provides an aesthetic and very accurate foundation upon which these other layers are displayed.

The Set Base Maps Menu is used to control the information displayed on the base map.
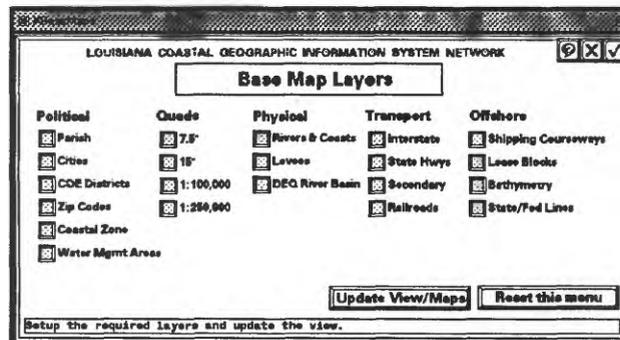
Figure 2. The Base Map Layers Menu

When you first log into the GeoSpatial Search Program, the base map will not appear immediately. To display the base map, click on **Set Base Maps** on the Main Menu and select one or more layers from those listed. Clicking on either the **Check Mark** or the **Display on Map** button on the Specify Location Menu will cause the base map to appear.

Any combination of base map layers in any of the five categories can be activated at the same time. (Keep in mind that the more layers that are displayed, the longer it will take the system to redraw the screen.)

The base map layers are described in Appendix 1.

Technical Support

To continue to develop the GeoSpatial Search Program and related supporting software, we need feedback from users. Please keep us informed about your work and information needs. This information will help us to continue to develop the system.

As a means of collecting feedback, the LCGISN technical committee has included a **Send to LCGISN** button on the Pocket Menu, which is accessible from any of the program's menus. Chapter 6.2 describes the Pocket Menu utilities, including the message feature.

While using the program, please take a moment to describe problems, evaluate features of the program, or suggest additional capabilities that would improve the system.

An effective means of letting us know about your work is to fill out the questionnaire included in the March 1994 LCGISN Newsletter. Completing this form will place you on our mailing list for future publications.

To receive information and report problems concerning the GeoSpatial Search Program, contact the Information Services Division (ISD) of the LSU Center for Coastal, Energy, and Environmental Resources (CCEER). A toll-free phone number (funded by the Louisiana Department of Natural Resources) may be used to report problems, request printed information, or submit LCGISN search requests (for users without Internet access). The number to call is 1-800-256-3742.

The LCGISN Technical Committee is dedicated to improving and expanding access to highly functional computer tools for referencing and locating information about Louisiana's environment and natural resources. We encourage users to explore the GeoSpatial Search Program, to discover ways that the system could better meet their needs, and to fully participate in the development of the system and its data base.

Submitting Records to LCGISN

The value of the GeoSpatial Search Program depends on the size and scope of its data base. Users are encouraged to catalog their data and submit as many records as possible to LCGISN.

Existing database files in Oracle-compatible database formats can be loaded directly into LCGISN from PCs, mainframes, or Unix-based workstations that are connected to the Internet. To help users inventory their data holdings, a PC-based software application has been developed that provides a consistent format for cataloging spatial data.

The **GeoSpatial Cataloging Program** provides a framework for users to describe their data in detail, producing the metadata ("data about data") that can then be submitted to LCGISN or any other database system. For more information about the GeoSpatial Cataloging Program, see the November 1994 LCGISN Newsletter or call 1-800-256-3742.

At all times, individuals or agencies who submit catalog records to LCGISN will maintain possession of their data and control the terms of access to their data. For all catalog records submitted to LCGISN, the controlling agency will prepare metadata, which will include descriptions of the data, their collection and processing, and the conditions under which they may be accessed.

LCGISN provides spatial data users with a detailed collection of database fields that follow cataloging standards established by the Federal Geographic Data Commission (FGDC) and the Library of Congress. By introducing these standards into organizations and agencies in Louisiana, LCGISN can provide a gateway to further efforts to share and exchange geospatial data.

LCGISN users are encouraged to become participants in the effort to catalog data concerning the Louisiana coast. LCGISN provides an effective means of filing and retrieving information about the contents and locations of data holdings. We encourage organizations to adapt the system to meet their specific information and data management needs.

Contents of This Document

This document describes the major features of the GeoSpatial Search Program and introduces the reader to the software. The manual is organized in four major parts and includes a glossary of unfamiliar terms and an index. The four parts of the manual are: Welcome to LCGISN, System Basics, a Tutorial, and Menus and Procedures.

Each section of the manual is composed of chapters describing the program and the procedures for interacting with its menus and maps. The chapters include headings along with decimal numbers (1.0, 2.0, 3.0, etc.). Each chapter is composed of one or more sections that are also decimal numbered (chapter 1.0 is followed by section 1.1).

Conventions Used in the Manual

The first letters of the names of all menus are capitalized and generally followed by the word "Menu." Sometimes, however, the name will be shortened. Therefore, the statements "Go to the Set Base Maps Menu" and "Go to Set Base Maps" are used interchangeably.

Names of buttons appear in bold and are usually preceded by a verb that instructs the user to take some action, such as "Click on **Set Base Maps**." In this case, the boldface type makes it clear that Set Base Maps is a button and not a menu.

Terms that require some explanation may also appear boldfaced. All boldfaced terms appear in the glossary.

The verb "select" is used interchangeably with "click on."

A command that should be entered at the keyboard appears in all caps inside brackets. For example, an instruction to press the enter key (called the return key on a typewriter will appear in the form shown below.

[ENTER]

THE BASICS

1.0 Overview of a Search

The LCGISN GeoSpatial Search Program is similar to other database tools, with the exception of several additional features. First, the search program allows geographic locations to be included in database searches. Customized menus are used to define searches, and geographic locations can be added to searches by either typing a name (or a coordinate) into a menu or by using the mouse to designate a position on the base map.

The GeoSpatial Search Program uses a base map on which various data layers are displayed, including roads and rivers, parish boundaries, and USGS 7.5-min. quadrangle boundaries. Users can vary the contents, scale, display area, and level of detail of this base map to make it easier to locate a geographic area of interest and include it in a search.

Conducting a search can be conceptualized as the process of telling the computer how to restrict the results of your search to those records that match particular characteristics—**search criteria**—that you define. The goal is to define search criteria as precisely as possible.

The steps of a search process do not have to proceed in any particular order. Searches begin at the Main Menu (Figure 3) with the selection of a data type. (The first button, **Set Base Maps**, is used to change the information displayed on the base map and does not actually affect searches.)

For each data type, you have the option of either returning all records of that data type or limiting your search to the records matching criteria that you specify.

Geographic locations may be entered by drawing a box called a Minimum Bounding Rectangle (MBR) directly on the base map, by entering latitude and longitude or Universal Transverse Mercator (UTM) coordinates into the program, or by selecting a USGS 7.5-min. quadrangle from a scrolling list. The program will display the location on the base map before you actually add it to your search.

From the Main Menu (Figure 3), you can perform the following tasks:

1. select the data type that will be the object of your search,
2. specify criteria, the characteristics of the data for which you are searching,
3. restrict your search to a particular geographic location,
4. define subject terms to add to the search, and
5. execute the search that you have created.
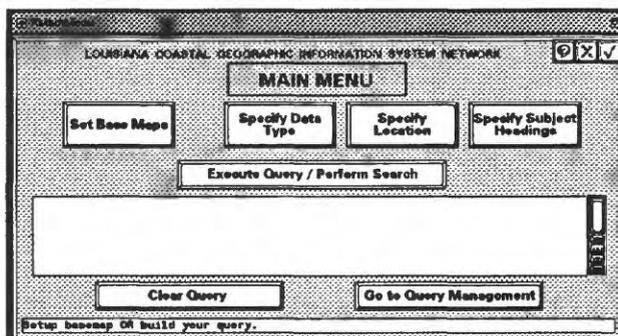
Figure 3. The Main Menu

Selecting **Set Base Maps** takes you to the Base Map Layers Menu (see Figure 2), where you change the information displayed on the map.

The other three buttons on the Main Menu are used to define a search. **Selecting Specify Data** Type takes you to the Data Types Menu (Figure 1), where you specify the kind of data that will be the object of your search. From the Data Types Menu, you may also define the characteristics of the data you would like to find. This process is described in Chapter 9.0 (Data Types Menu).

On the following page is a diagram of the GeoSpatial Search Process. Notice that after selecting a data type and specifying data type criteria, you return to the Main Menu to add a location and/or subject heading (keyword) to your query. From the Main Menu, you may also return to any of the menus and modify your selections.

Conceptual Diagram of a
GeoSpatial Search

1. Searches begin at the Main Menu, to which you must return to define each part of a search or to execute a search.

2. Select a data type and specify the characteristics of the data for which you are searching.

3. Specify a location or subject heading(s). The computer will use your input to construct a search query.

Main Menu

Select
Data Type

Main Menu

Change
Base Map

Specify
Location

Select
Subject
Headings

4. When satisfied with your search, return to the Main Menu to execute it.

5. Results may be displayed, saved, or printed. Additional information concerning the processing and availability of the data is also provided.

Main Menu

Search
Results

2.0 Logging In

The LCGISN GeoSpatial Search Program can be accessed by any Unix workstation running X-Windows with a direct connection to the Internet. The program resides on an Intergraph server in the Computer-Aided Design Geographic Information System (CADGIS) computer lab at LSU. The first step in running the GeoSpatial Search Program is to initiate a telnet session with the server at LSU.

From your command line type: **telnet lcgisn.lsu.edu** [ENTER]

A login prompt should appear asking for your user name and password. Log into the system using the user name and password shown below.

<div align="center">

user name: lcguser1

password: beta1994

</div>

When the system accepts your login name and password, the information shown in Figure 4 will appear.

Figure 4. The LCGISN login screen

The text at the top of the screen provides some general information about the LCGISN server (named "gisnet") and the version of Unix that is running (CLIX System V), along with copyright information and the date and time of your last login.

At the bottom of the screen, the computer asks you to confirm your machine name, which it captured during the login procedure.

For the LCGISN server to display the GeoSpatial Search Program's menus and base map, it must know your machine's **Internet Protocol (IP) address**, the unique number that identifies the machine from which you have logged into gisnet.

Your machine's IP address can be presented in the form of either a series of numbers separated by periods or a series of words or acronyms separated by periods.

For example, a user has logged into LCGISN from a machine named **wetlands.ga.lsu.edu**. The name of this user's machine is wetlands, the machine is located in the Department of Geography and Anthropology (ga) at LSU, which is an educational (edu) Internet site. The numeric IP address for this machine is 130.38.128.75, but for most people, wetlands.ga.lsu.edu is easier to remember.

The system requests confirmation of the IP address. The LCGISN server needs this information in order to display the program's menus and maps. If *wetlands.ga.lsu.edu* is the correct address, the user would type a "y" to confirm it.

If the machine name shown on the screen is incorrect, the user would type an "n," to which gisnet will respond with a message similar to the one shown below.

```
LCGISN will attempt to display to 'wetlands.ga.lsu.edu'.
Is this correct? [y/n/q]
==> n

Please enter to where LCGISN should display.
Enter a . to use 'wetlands.ga.lsu.edu'.
==>
```

When the program prompts you for an IP address, you can give the correct machine name (either the alphabetic or numeric IP address), type "q" to quit, or type a period (.) to accept the original name (in this case wetlands.ga.lsu.edu) as valid.

After you confirm that the IP address is correct, you should see more information, and eventually the LCGISN Welcome Menu will appear (see Figure 5).

If the Welcome Menu does not appear, you may have to instruct your machine to allow LCGISN to display its menus and maps on your monitor. To do this, you add the gisnet's IP address to your machine's **host table** (a list of addresses that have permission to display the output that your computer creates).

On a Unix workstation, open the Console window and type:

xhost gisnet.cadgis.lsu.edu [Return]

On a PC, you may have to enter gisnet's IP address into a file in your X-Windows software package. This procedure varies depending on the version of X-Windows you are using. Consult your documentation for instructions about adding gisnet's IP address to your version of X-Windows.

2.1 Welcome Menu

After logging in, the Welcome Menu appears (Figure 5). This menu prompts you for a **Username** and **Password**.

The first time you log into the system, click on the first large button labeled **New users click here**. A separate menu will appear prompting you for a user name and password.

Your username is the name by which the system will recognize you in the future. This name can be up to eight letters long, it may contain a mixture of capitals and lowercase letters, but should contain no special characters, such as periods, commas, asterisks, etc.

Use either your complete last name, your last name preceded by one or two initials, or a shortened version of your last name (if it is more than eight letters long).

If another user has already chosen the name that you enter, the program will prompt you to choose another user name. Each time you log into the system, type the name exactly as you entered it the first time.
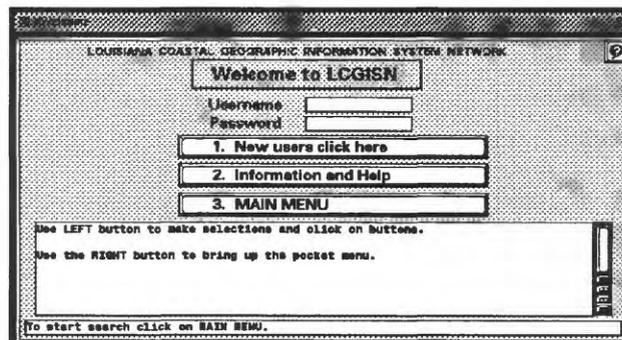
Figure 5. The Welcome Menu

Also accessible from the Welcome Menu is information about the GeoSpatial Search Program, the LCGISN data base, and its user community. Click on **Information and Help** to access this material.

Information and Help includes overviews of the menus, search methods, and database contents of the GeoSpatial Search Program. This section also informs users of updates to the program. Be sure to check the contents of this section periodically for information about changes to the system or new additions to the data base.

In the top right-hand corner of each menu is a **Question Mark** button, which activates the online help system. The help system can remain active as you continue to use the system.

The final button on the Welcome Menu takes you to the Main Menu. The Main Menu is the heart of LCGISN, the place where you begin defining your searches and where you return to execute them.

3.0 Online Help

Each menu includes one or more Menu Control Buttons in its upper-right corner. One of these, the **Question Mark**, activates online help describing the use of each menu. An example of online help is shown in Figure 6.

Online help represents a shortened version of the information contained in the LCGISN Users Manual. In some cases, however, the information available online may be more current, reflecting recent modifications or additions to the program.
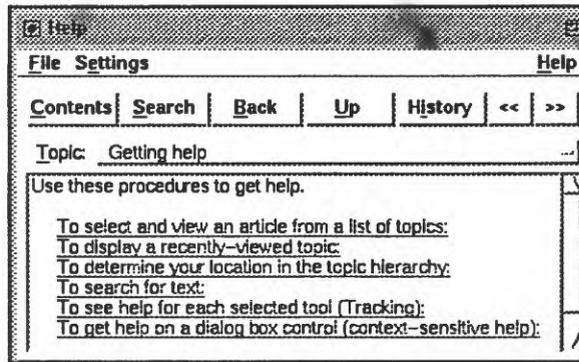
Figure 6. Online Help Table of Contents

The Help Menu can remain open as you use the program or you may close it (by clicking on File and then selecting Exit) and re-open it as you need it. The help system is context sensitive, meaning that when you invoke the Help Menu (by clicking on the Question Mark on any of the program's menus), it will automatically acess the help topic relevant to the part of the program in which you are working.

The underlined text on the menu in Figure 6 (which will appear blue on a color monitor) are hypertext links. Point to one of the topics and click the left mouse button to go to that section of the online help files. (You can change the color of these online links by clicking on **Settings** and then selecting **Display** from the available options.)

Contents: Displays the table of contents for the help file.

Back: Returns to the last topic you viewed in the online help window.

Search: Opens the Search Menu and allows you to search the contents of the online help files.

Up: Moves one level up the hierarchy of help topics.

History: Displays a list of all the topics you have viewed, allowing you to click on the one to which you want to return.

The Left Arrow: Takes you to the previous topic in the structure of the online help file. Use the arrow buttons to move through the sequence of information as it was arranged by the program's developers.

The Right Arrow: Takes you to the next topic in the structure of the online help file.

Click on the **Topic bar** to see a list of the topics you have most recently viewed. Clicking on one of the topics will return you to that part of the online help file.

For more information on using online help, click on **Help** on the Help Menu and select **Using Online Help**.

When you are finished viewing the help files, click on **File** and then select **Exit** from the available options.

4.0 Screen Conventions

As shown in Figure 7, the GeoSpatial Search Program's screen has three parts: the base map, which displays a map of Louisiana along with various layers of information (roads, parish boundaries, USGS quadrangles); the menus used to define and execute searches; and a message bar along the bottom of the menus that provides information about program operations.
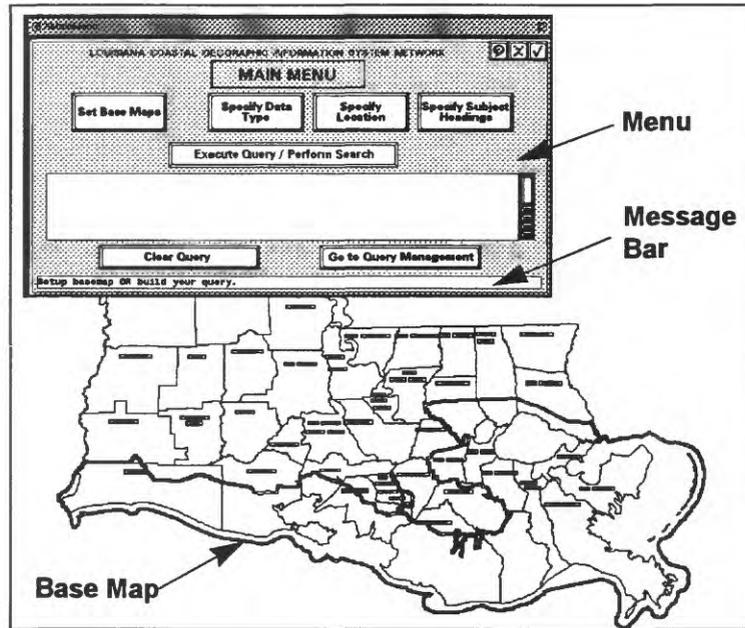
Figure 7. The three parts of the LCGISN screen

The screen in Figure 7 shows the Main Menu and the base map with two active layers: parish boundaries and the coastal zone.

The message bar located along the bottom of each menu provides general instructions for using a particular menu or performing an operation. In the screen above, the message bar reads, "You may set up your base map or build your query." Prompts for particular actions or reminders of available options will appear on the Message Bar as you use the program.

4.1 Menu Controls

The three Menu Control Buttons in the top right-hand corner of each menu are used to control your movement through the system. Each button is used consistently throughout the program. The uses of the three Menu Control Buttons are described in Figure 8.

The most important of these is the **Check Mark**, on which you click after making a selection that you want the program to accept as part of your search criteria.

☑	**The Check Mark button tells the program to add the selection(s) on the current menu to your search.**
☒	**The X button rejects all selection(s) on the current menu and goes back to the previous menu.**
？	**The Question Mark button brings up the online help system.**
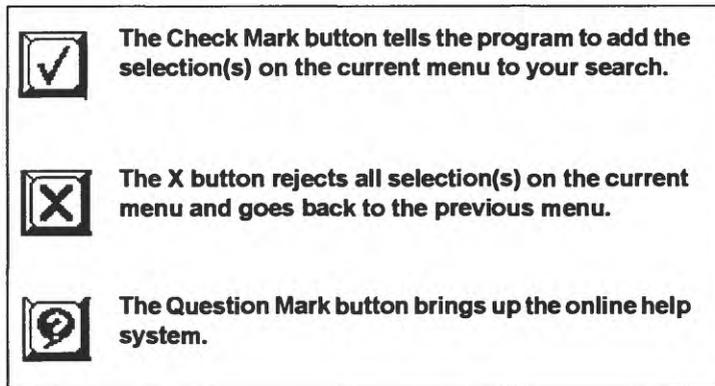
Figure 8. The Menu Control Buttons and their functions

No selection actually becomes part of the query used by the program to conduct a search until the **Check Mark** for that menu is clicked. (To reject criteria and return to the previous menu, click on the **X** button.)

Clicking on one of the four large buttons in the middle of the Main Menu (see Figure 7) takes you to another menu that provides additional options for refining a search. These options may lead to other menus as well. Therefore, after defining a search on a number of menus, it is sometimes necessary to click on the **Check Mark** on more than one menu to return to the Main Menu and continue defining a search.

4.2   Mouse Controls

Most of the commands for executing searches are entered by pointing to a menu or the base map and clicking on the left mouse button. Although many search criteria can be keyed in, you must use the mouse to move through the program by clicking on the Menu Control Buttons.

The GeoSpatial Search Program supports a two-button mouse. (On a three-button mouse, use the left and right buttons and ignore the middle button.)

> Use the **Left Button** to make selections on the menus and base map;
>
> Use the **Right Button** to reset a selection on the base map or bring up the Pocket Menu (described in Section 6).

In many cases, using the mouse to define searches is faster and more reliable than using the keyboard. For example, the program contains many pull-down lists of typical selections (see Figure 9). Using the mouse to make selections from these lists allows you to control and modify the terms that the program uses to conduct a search.

The main liability of using the keyboard is that varying spellings or terminology can produce inaccurate search results. Whenever possible, take advantage of pull-down lists, which give some idea of the contents of the data base and the range of appropriate selections at a particular place in the program.

Use the keyboard to enter search criteria that do not appear or cannot be selected from a list, such as geographic coordinates or the name of an author or title.

Composing effective searches requires a match between the terms being used to search for information and the terms by which that information is stored in the system. Therefore, becoming more familiar with the contents of the data base will improve your chances of producing accurate and useful search results.

4.3   Pull-down Lists and Key-in Boxes

Although the mouse is used to move from one menu to another in the GeoSpatial Search Program, many menus contain key-in boxes that allow entries to be typed directly into the search program.

To enter text into a key-in box, move the mouse until the cursor is inside a box, click the left mouse button, and begin typing. Entries can be capitalized or entered in all lowercase; none of the menus in the GeoSpatial Search Program are case sensitive.

Some key-in boxes include a pull-down list of possible selections. In the Subject Heading Menu shown in Figure 9, a pull-down list of terms at the top of the hierarchy can be accessed by clicking on the **pull-down control bar** located on the right side of the key-in box.
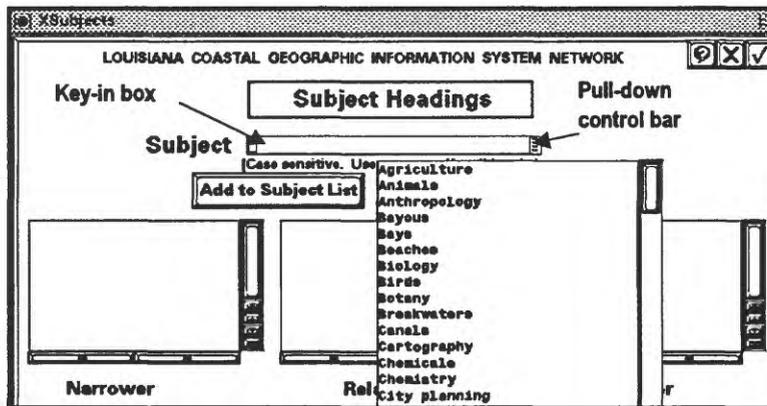


Figure 9.   Key-in boxes and pull-down controls

In most case, entries can be typed into a key-in box or selected from a list accessed by clicking on a pull-down control bar.

Clicking on one of the items in a pull-down list selects it, causing it to appear in the key-in box. In Figure 9, clicking on Biology from the pull-down list would select it; it would then appear in the Subject box.

4.3.1   Scroll Bars

Some of the lists that appear in the program contain text that extends beyond the area displayed by the box (as shown in Figure 10). Scroll bars appear along the right side of these boxes and, if necessary, along the bottom as well. Click on the right or left horizontal scroll bar to scroll through the text and read it.

Hurricane modification
Hurricane protection
Hurricane control
Hurricane rehabilitation
Hurricane Carla, 1961
Carla, Hurricane, 1961
Hurricane Elena, 1985
Elena, Hurricane, 1985

Vertical Scroll Bars

Horizontal Scroll Bars
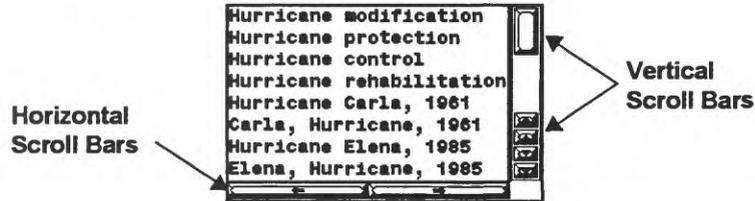
Figure 10. Scroll controls

Click on the vertical scroll bar, hold down the mouse button, and drag the bar to move through the contents of the list. You may move through a list either one line or one screen at a time by using one of the four buttons located at the bottom of the scroll bar, as shown in Figure 11.

Hold down the left mouse button and scroll through the list

Scroll one screen at a time

Scroll one line at a time
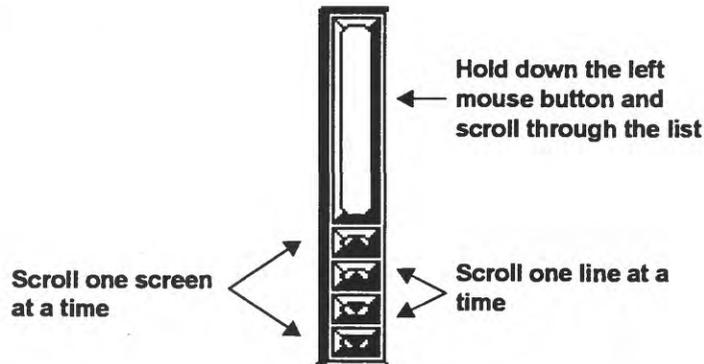
Figure 11. Detail of a vertical scroll bar

Clicking on the inside arrows moves through the list one item at a time; clicking on the outside arrows advances the list a screen at a time.

5.0 Base Map

The Geospatial Search Program allows information to be searched geographically: you specify a location or area on a map and then search for records referenced to that particular location. The base map is used to locate and define the precise geographic area of your search.

The Geospatial Search Program base map can be adjusted to make it easier to specify a location. Changing the information displayed on the base map is referred to as **Setting the Base Map.** Parish boundaries, roads, rivers, and cities are among the available data layers. Once you have located your area of interest, you need to add it to your search criteria by **Defining a Location for a Search.**

This chapter describes the procedures used to set the base map and define a location for a search. An overview of the program's **Spatial Search Methodology** serves as an introduction to the chapter, explaining the methods used to include geographic locations in search instructions.

Chapter 6 describes another important function related to the base map: the process of modifying the area of the map displayed on the screen. The Pocket Menu is used to change the window area of the base map by resetting the base map to its original condition, centering the map on a location, or zooming in or out.

5.1 Spatial Search Methodology

The basic search strategy is to define the particular type of data as the object of the search and then add a geographic location to your search instructions. Precise geographic locations can be combined with conventional search criteria (i.e., authors, dates, titles, key words, film type and scale, holding agency, map type, or theme) to develop effective searches for hard-to-find data that is rarely treated in other reference sources.

Each data type is referenced to a particular geographic location, using a set of coordinates defining an upper-left and lower-right corner. Data are referenced uniquely; that is, some data may be referenced to a very specific location, perhaps smaller than a USGS 7.5-min. quadrangle, while other data are referenced very broadly (i.e., to a very large MBR such as a parish or a region like the coastal zone or the Gulf of Mexico).

The location selected on the Specify Location Menu is used to execute the spatial part of your search. After the program executes the nonspatial components of the search, the program finds those records that are referenced to an MBR that overlaps the area you define.

Non-spatial **data type criteria** such as author, title, publisher, and keywords are based on US MARC cataloging standards and the Library of Congress Subject Headings. For aerial photography, imagery, and digital maps, the FGDC Content Standard for Digital Geospatial Metadata provided a format for both cataloging and the report format of search results.

The size of the area to which catalog records are referenced depends on the data type and the rigor of the cataloging methodology. For many data types, a USGS 7.5-min. quadrangle is a reasonable approximation of a typical geographic reference. The GeoSpatial Search Program provides USGS 7.5-min. quadrangles as a layer on the base map; additionally, the USGS 7.5-min. Quadrangle Index, which can be accessed from the Specify Location Menu, provides a useful means of selecting locations based on quadrangle boundaries.

5.2   Set the Base Map

When you log into the GeoSpatial Search Program, only menus appear on the screen. No base map is displayed. The map does not appear until you use the Set Base Map Menu to select one or more layers of information to display. The base map also will appear when you click on the **Display on Map** button on the Specify Location Menu.

The primary reason to use the base map is to help locate the area of the state for which you need information (your area of interest). A number of base map layers are provided to make it easier to specify a location that the program will add to your search criteria.

To change the information displayed on the base map, click on the **Set Base Map** button located on the Main Menu. This will bring up the menu shown in Figure 12.
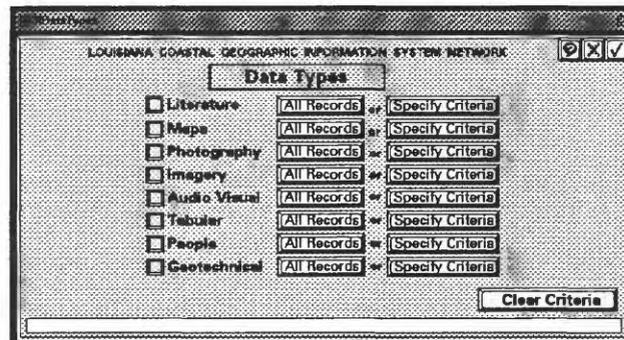

Figure 12. Base Map Layers Menu

The base map and the various layers of information that may be displayed are provided to orient you to the geography of the Louisiana coastal zone and to specify a particular geographical location for your search.

5.3   Define a Location for a Search

Including a geographic location in a search tells the program to search the data base and list all records dealing with a particular part of Louisiana. The list below describes the easiest ways to specify a location as part of a search:

1. use the mouse to draw a box enclosing the area of interest;
2. scroll through a list of USGS 7.5-min. quadrangles and click on the one(s) to add to the search;
3. use the mouse to point to a spot on the base map (the program will use the coordinates of the USGS 7.5-min. Quadrangle for that location in your search).

To specify a location, go to the Main Menu and click on **Specify Location**, bringing up the menu shown in Figure 13.
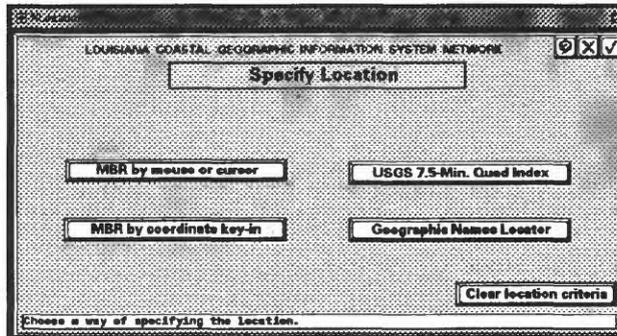
Figure 13. The Specify Location Menu

The data records contained in the LCGISN data base are referenced to specific geographic coordinates, usually in the form of an MBR. Some data (core samples are an example) may be referenced to a very small MBR or even to a single point location. In general, search results are obtained by comparing the MBR defined as part of your search criteria with the MBR of the database records. If the MBRs overlap, the record is added to the pool of search results.

6.0 Pocket Menu

Occasionally, it will be desirable to change the area displayed on the base map. Among the ways to do this are zooming in or out, changing the area displayed on the screen, centering the map on a particular location, or refitting the map to its original condition depicting the entire state. The Pocket Menu (Figure 14) provides access to the Map View Controls used to change the area displayed on the base map.

Reminder: The Set Base Map Menu is used to define the particular information displayed on the base map. The Map View Controls on the Pocket Menu change the area of the map displayed and the map's scale.

The Pocket Menu is accessible from any menu in the program. To invoke the Pocket Menu, place the pointer on any program menu and click the right mouse button.

The **Pocket Menu** controls the base map and provides access to certain utilities. The Pocket Menu provides

- a button to activate or deactivate the base map;
- the ability to **zoom** in and out on the map, modify the display's **window area**, **center** the map on a certain area, and **fit** the map (return to the original view);
- access to the **bulletin board**, a **notepad**, and **communication** with LCGISN via a message button;
- a **calculator**;
- a **calendar**.
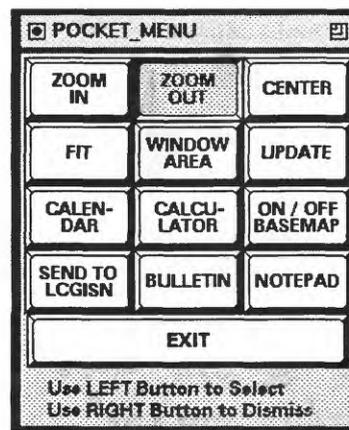
Figure 14. The Pocket Menu

This chapter is divided into two parts:

6.1 Map View Controls, and
6.2 Pocket Menu Utilities.

6.1 Map View Controls

The Pocket Menu controls the area of the base map displayed as you use the program. Use the Pocket Menu to change the display window, to zoom in or out, to center the display on a particular point, and to reset the map to its original condition (showing the entire state).

6.1.1 Window Area

The display window is the area of the base map that is currently displayed by the screen. The **Window Area** button on the Pocket Menu allows you to control the map display by drawing on the base map a rectangle, which the program will enlarge to fill the screen.

Figure 15 shows the base map where the window area has been redrawn to include only the southeastern portion of the state.
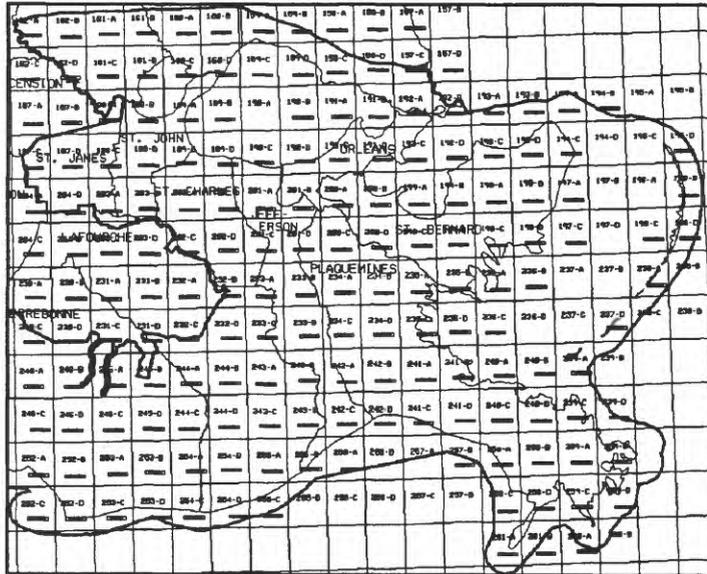

Figure 15. Window Area showing the SE Louisiana coastal zone

Use the following steps to redraw the Window Area.

1. Place the cursor on any menu and click the right mouse button to activate the Pocket Menu.
2. Click on the **Window Area** button on the Pocket Menu. Move the mouse until the arrow is pointing to one corner of the rectangle containing the location or area of interest.
3. Click the left mouse button once to anchor the corner of your rectangle.
4. Move the mouse until the rectangle encloses your area of interest. When the rectangle reaches the desired dimension, click the left mouse button again to anchor the other corner of the rectangle.

To reset your selection at any time during the process, click the right mouse button. Clicking the right mouse button always resets selections on the base map.

6.1.2   Zoom

The zoom feature enlarges a particular portion of the base map to make it easier to see more details or reduces it to include more map area on the screen at one time. Use the following steps to use the zoom feature.

1. Place the cursor on any menu and click the right mouse button to activate the Pocket Menu.
2. Click on the **Zoom** button on the Pocket Menu. Move the mouse until the arrow is pointing to the center of the area you want to zoom in on and click the left mouse button.
3. The program will redraw the base map twice as large, and the location you selected will become the center of the new display window.

Zoom out works just like zoom in. The location where you click on the base map becomes the center of the new map display, which is redrawn half as large.

Figure 16 shows the screen after zooming in on the base map shown in Figure 15.
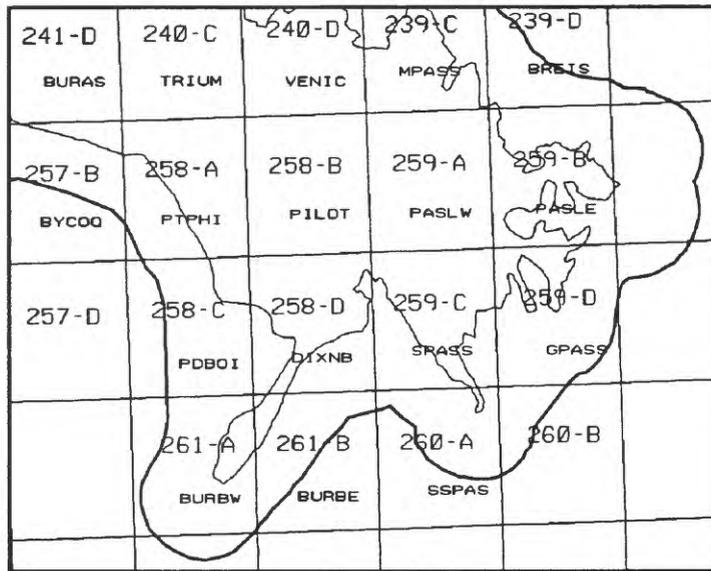
Figure 16. The base map in Figure 15 after a zoom.

6.1.3   Center

The **Center** button on the Pocket Menu allows you to click on a point anywhere on the base map and make it the center point of the display.

1. Click on the **Center** button on the Pocket Menu.
2. Move the mouse until the arrow points to the location that you would like to be the center of the new screen window. Click the left mouse button.
3. The program will redraw the base map with the point you selected as its center point.

Center the map on the part of the state that contains your area of interest. By doing this, you will be able to add a specific location to the criteria that the program uses to perform the search.

6.1.4   Fit

To specify a location on the base map (by clicking on a point or drawing an MBR around a location), the location must be visible on the screen. To display this area of interest, it will sometimes be desirable to return the map to its original appearance, showing all of the state. To do this, use the **Fit** button on the Pocket Menu.

1. Click on the **Fit** button on the Pocket Menu.
2. The program will return the screen window to its original default setting, which shows the entire state of Louisiana.

6.1.5 Tips for Maximizing Performance

Although the GeoSpatial Search Program base map provides considerable functionality, enlarging the size of the map and displaying numerous data layers can slow the system's performance. Keep in mind that map display is not integral to performing searches on the system; the map is provided to support program search capabilities by helping you define an area of interest.

The base map will not appear when you first log onto the program. After locating your area of interest or adding an MBR to the search, you may even want to turn off the base map.

Generally, only a few base map layers should be displayed at any one time. It also may be helpful to keep the size of the base map as small as possible.

Another way to maintain system speed is first to define all parts of a search except the location and then set the base map. This way you place a minimum amount of strain on the network and get the maximum amount of performance from the system.

6.2   Pocket Menu Utilities

The Pocket Menu also includes a number of other useful utilities. The most useful may be the messaging features built into the program—the Bulletin Board, Notepad, and Send a Message. The other two utilities—the calendar and the calculator—are shown below.

All of these utilities can be accessed from anywhere in the program through the Pocket Menu. To access the Pocket Menu, move the mouse until the arrow is on any menu and click the right mouse button.

All of the features described in this chapter can remain on the screen in their own windows (or as icons) as you use the program.

6.2.1   User Message for LCGISN

Messages to LCGISN can serve a number of useful purposes. Your opinions, impressions, and needs are important in defining future developments or refinements of the system. By providing information about your work and your experiences using the system, you are directly contributing to the development and improvement of the GeoSpatial Search Program.

When you click on the Pocket Menu button labeled **Send to LCGISN**, the menu shown in Figure 17 appears.
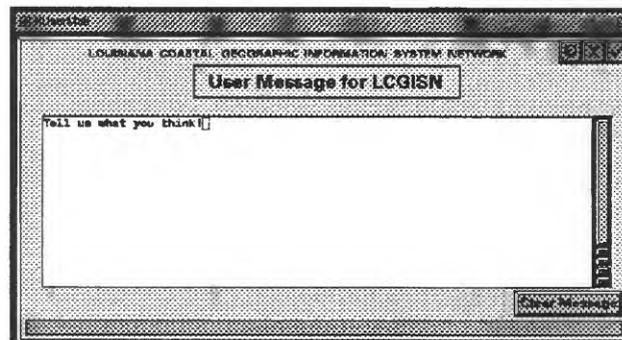
Figure 17. The User Message Menu

Type your message into the box. The message can be as long as you like, and you can send as many messages as you like while using the system.

After typing your message, click on the **Check Mark** to send the message to the LCGISN staff. The message will automatically include your name, the time it was sent, and the screen you were on when you sent it.

If you make a mistake, use either the delete or the backspace key to erase the error, and then type the correction. If you want to start over, click on the **Clear Message** button. Click on the **X** button if you decide you do not want to send a message and wish to return to the program.

6.2.2   Notepad

A Notepad is provided where you can enter text that will be saved to a file and retrieved after you log off the system. You enter text into the Notepad much like you use the User Message to LCGISN Menu. If you make a mistake, use the arrow keys to move around in the block of text and the delete key to erase the error.

Any messages written in the Notepad will remain in the Notepad until you exit the GeoSpatial Search Program. Each time you open the Notepad, you will see the messages that have been written since you logged onto the system.

For example, if you make some notes in the Notepad when first logging onto the system and then close the Notepad and open it again (by once again calling up the Pocket Menu and clicking on the **Notepad** button), the notes will appear exactly as they were written.

The Notepad functions differently than the Send a Message to LCGISN feature. Notes are held in the Notepad even after clicking on the **Check Mark** to close the menu. When using the Send a Message to LCGISN feature, the program sends your message (via e-mail) each time you click on the **Check Mark**.

6.2.3   Bulletin Board

From the Pocket Menu, click on the **Bulletin Board** button to access a list of announcements and information related to LCGISN, coastal Louisiana, and spatial data. Figure 18 shows the Bulletin Board.

Users can read but cannot write messages to the Bulletin Board.

If you would like to post a message to the Bulletin Board, please use the Send a Message to LCGISN feature to send us the body of the message you want to add. We will respond to all requests concerning messages that users would like to place on the Bulletin Board.
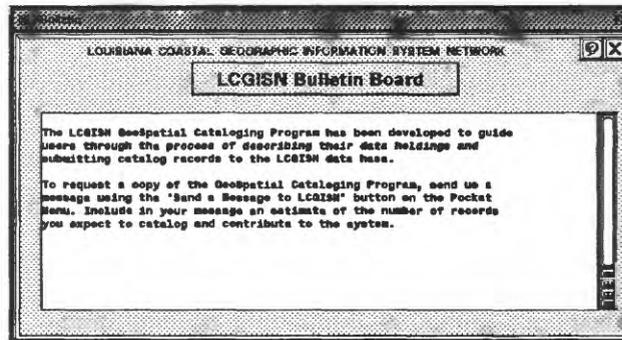

Figure 18. The LCGISN Bulletin Board

MENUS & PROCEDURES

8.0 Main Menu

The Main Menu is the most important screen in the GeoSpatial Search Program. All searches begin at the Main Menu, and you must return to the Main Menu to execute a search. Furthermore, each step in a search is defined by responding to menus that must be accessed from the Main Menu. Therefore, you usually return to the Main Menu after fulfilling each of the four major tasks used to develop searches—setting the base map, selecting a data type, specifying a location, and specifying subject headings.

As shown in Figure 19, the Main Menu has three parts:

1. **the four buttons on the top of the menu** are used to define and execute a search;

2. **a large text box in the middle of the menu** displays the Structured Query Language (SQL) statement that the program uses to perform a database search. The system uses this statement to locate within the LCGISN data base records that match the criteria contained in the query.

3. **three longer, narrower buttons along the bottom of the menu** initiate actions based on the query that you have defined. **Execute Query/Perform Search** tells the computer to process the search instructions that you have defined; **Clear Query** erases the currently defined search; and **Go To Query Management** brings up a separate menu where you can save your queries and recall queries that you defined during previous sessions using the program.

The Query Management Menu allows more advanced users to compose original queries or edit queries that have been developed by interacting with the program's menus (see Chapter 13.0). Query Management also allows query statements to be saved and recalled for future use.
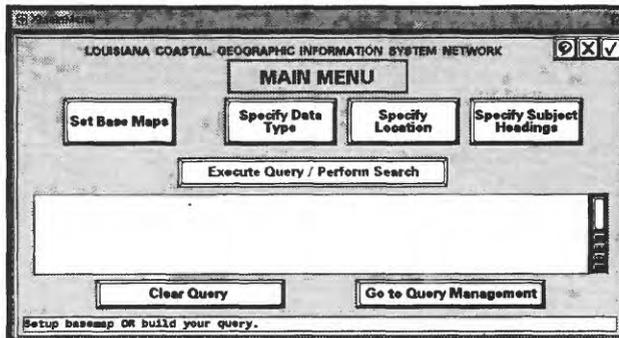
Figure 19. The Main Menu

The Main Menu (Figure 19) provides access to all the menus used to define and execute spatially based searches. The first step in defining a search is to specify a data type. In fact, specifying a data type is the only step that is required of all searches.

Additional menus that restrict the search to records that meet certain characteristics (Data Type criteria) are available. On the Specify Data Types Menu, click on **Specify Criteria** to define the characteristics of the data for which you are searching.

To add a geographic location and subject terms, click on the **Specify Location** and **Subject Headings** buttons, respectively. The **Set Base Maps** button controls the information displayed on the base map.

As you interact with the menus and define your search, the program produces an SQL statement that appears in the large box at the center of the Main Menu.

After defining search criteria, return to the Main Menu and click on the button labeled **Execute Query/Perform Search**. After a few moments, the search results, catalog records, and information about accessing the data will appear.

9.0   Data Types Menu

The data type is the object of your search, the kind of information that you want the GeoSpatial Search Program to find. The Data Types Menu shown displays the data types that can be searched using the program. To select a data type, click on one of the data types listed, and then click on the **Check Mark** to tell the program to accept your selection.

For example, to find aerial photographs of a particular location, click on **Photography** on the Data Types Menu. Each search can either return **All Records** or the user can **Specify Criteria** (define more precisely the characteristics of the data that are the object of the search).
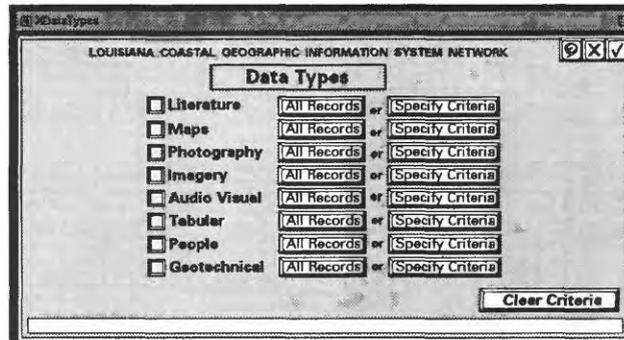
Figure 20. The Data Types Menu

When you click on **Specify Criteria** for a particular data type, a menu appears showing the options that are available for restricting a search for that data type. For example, the Photography Search Criteria Menu allows users to specify the date, scale, film type, percentage of cloud cover, quality, and season of the photo records that the system returns.

The Specify Criteria Menu for each data type is described in the following sections.

All Records

When searching for a particular data type, the program will search all records stored in the data base **unless you choose to specify criteria**. Clicking on the name of one of the data types listed and on the **Check Mark** on the Specify Data Types Menu tells the program that the search will apply to all records of that data type in the data base.

Note that even if no search criteria are specified on the Specify Data Types Menu, a search can still be conducted by clicking on one of the other buttons on the Main Menu and defining a location (**Specify Location**) or a keyword (**Specify Subject Headings**).

Specify Criteria

Clicking on the **Specify Criteria** button beside a particular data type brings up a Specify Criteria Menu that allows the search to be restricted to records that meet certain requirements. This is one of the most important features of the GeoSpatial Search Program, providing great control over the details of searches.

Clear Criteria

Clicking on **Clear Criteria** resets the data type criteria to the default, which is to include All Records in the search. Use this button to reset the search criteria before redefining them.

9.1   Literature Search Criteria Menu

Literature includes published works such as books and articles; however, the LCGISN data base contains records of many hard-to-find forms of literature, including reports, technical papers, and conference proceed-ings. Literature searches can be narrowed by defining the author, title, publisher, or publication date.

Clicking on the **Specify Criteria** button for Literature on the Data Types Menu brings up the menu shown in Figure 21.

Figure 21. The Literature Search Criteria Menu

Entries on this menu are not case sensitive. Title words and the names of authors and publishers can be capitalized or entered in all lowercase.

The program automatically encloses any single word, part of a word, or phases (a series of words) typed into the Author, Title, or Publisher boxes with wild card signs (the percent sign %). The wild card sign instructs the program to locate that combination of letters, no matter where it appears in the title or author name.

Author

The name of the person(s) or organizations that produced the work. If the work has more than one author, the work will be listed alphabetically by the first name listed.

Title

The name by which the work is known. Titles for literature are generally quite formal. Other data types have less "official" titles. In that case, the work will be referred to by its common name (a Thematic Mapper image, for example), or it will be given a generic, descriptive title.

Date

The date of publication. For unpublished data, such as a satellite image that is transferred electronically rather than as hard copy, date will be the date of its collection. Date can be entered by a key-in menu, which is described in section 9.1.1.

Publisher

The organization responsible for producing or disseminating the work. The publisher can be a commercial publisher, an agency or organization, a school, or an individual (as in the case of self-published or electron-ically published works).

9.1.1 Date Key-in Menu

Dates can be included as part of a search either as a single date or a range of dates. Dates are entered on the Search Criteria Menu for any data type by selecting one of the options from the date pull-down menu or by clicking on **Key-in**. The Date Key-in Menu is shown in Figure 22.

Click on the scroll bar on the right side of the box with the word "between" in it to see a pull-down list of operators that can be used to define either a date or a range of dates.
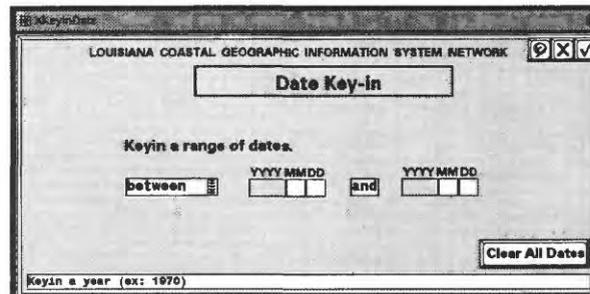
Figure 22. The Date Key-in Menu

The Date Key-in Menu can be used for any data type, and in all cases, it operates the same. Move the mouse to one of the boxes, click with the left mouse button to cause a cursor to appear, and type an entry. After typing each entry, click on the **Check Mark** to move back to the Specify Criteria Menu.

Dates can be entered as a year; a month and a year; or a day, month, and year. Years must contain four digits (represented on the menu by YYYY); months and days must be entered as two digits.

For example, January 4, 1992, would be entered as shown.

9.2 Photography Search Criteria Menu

Defining criteria for an aerial photography search is accomplished by interacting with the Photography Search Criteria Menu (Figure 23). Use this menu to define the percentage of cloud cover, date, scale, the source (holding agency), the film type, sensor class, and the season during which the photography was taken.
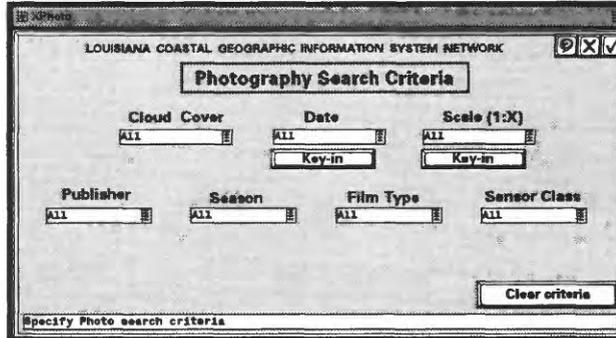
Figure 23. The Photography Search Criteria Menu

Click on the scroll bar at the right side of each of the criteria boxes to see a pull-down list of selections. Click on one or more of these selections or type an entry directly into the text box.

For example, clicking on both black-and-white and color infrared under Film Type causes the query to include both of these film types. The pull-down boxes are included to help speed up the process of composing effective searches and to reduce the chance of typing errors that might otherwise limit the accuracy of a search.

Each of the criteria for aerial photography is described in this section. Two of the criteria (date and scale) can be entered via Key-in Menus and are therefore discussed separately. The Date Key-in Menu is discussed above in Section 9.1.1. The Scale Key-in Menu is discussed in Section 9.2.1.

Cloud Cover

The pull-down list for cloud cover is used to define the maximum amount of cloud cover for the aerial photography that is the object

of the search. For most purposes, a smaller percentage of cloud cover is desirable.

Date

On the Photography Search Criteria Menu, date refers to the date of content, when the photography was taken. The dates that appear in the pull-down list are Newest, 1990–present, 1980–89, 1970–79, 1960–69, 1950–59, and Oldest. Clicking on **Newest** or **Oldest** will bring up the most recent or oldest single record in the data base, respectively.

Click on the button labeled **Key-in** to bring up the Date Key-in Menu, which is discussed in Section 9.1.1.

Scale

Aerial photography of different scales provide varying levels of detail and typically are used for different purposes. You can add a scale to your search by typing the denominator of the scale into the key-in box (for example, type "24,000" to specify a scale of 1:24,000).

A pull-down list of typical aerial photography scales appears when you click on the **pull-down control bar**. You may click on one or more of these scales.

Click on the button labeled **Key-in** to bring up the Key-in Scale Menu, discussed in Section 9.2.1.

Publisher

Click on this button to scroll through a list of the agencies or organizations that originally contracted for the flight on which the photography was taken.

Season

The time of the year during which the imagery was recorded.

Film Type

A number of different types of film are used for aerial photography. Among the film types that appear in the pull-down list are color, color infrared, black-and-white.

9.2.1   Scale Key-in Menu

Clicking on **Key-in** under Scale text entry box on the Photography Search Criteria Menu brings up the Scale Key-in Menu shown in Figure 24.
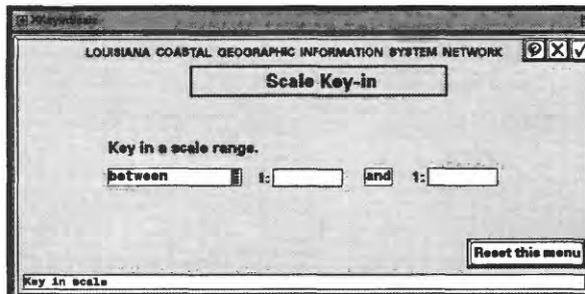
Figure 24. The Scale Key-in Menu

Click on the **scroll bar** on the text box to pull down a list of operators which can be applied to the entries made in the key-in boxes. Listed below are the available operators:

> between,
> greater than,
> less than, and
> equal to.

For any operator other than **between**, only a single value need be specified. When only a single entry is needed, the second text entry box (the one after the word "and" on the menu) will be shaded to indicate that it is inactive.

To find a particular type of photography, click on **equal to** and enter the appropriate number in the first scale box.

To find a range of scales, it is sometimes most effective to click on one of the ranges accessible from the Photography Search Criteria Menu described in Section 9.2.

9.3 Map Search Criteria Menu

Along with aerial photography and satellite imagery, maps are used in coastal, geophysical, and other types of environmental research. Maps are particularly well-suited for geographic searches. The LCGISN data base contains records of current and historical hardcopy maps, as well as records of digital maps such as those associated with geographic information systems (GIS).

The Map Search Criteria Menu shown in Figure 25 is used to define searches for all kinds of maps both hard copy and digital (including both raster and vector.
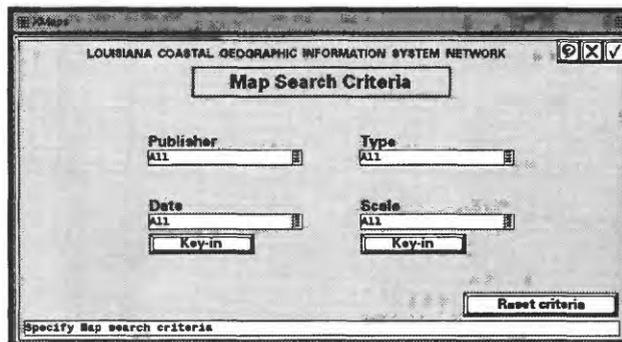
Figure 25. The Map Search Criteria Menu

The GeoSpatial Search Program makes a distinction between hardcopy, raster, and vector maps according to their holding status. The same map may exist in hardcopy and digital formats at several locations in the state. The records retrieved by the program are referenced to the particular formats of the maps held by agencies or organizations.

Therefore, to restrict a search to a particular format (hard copy, raster, and vector), click on the **Digital Only** button on the Search Results Menu (Chapter 14).

Publisher

The map publisher is the agency or organization that issued the map. Maps may be issued without being available for sale to the general public.

Maps may be issued internally by an organization or group, without being generally available outside the organization or group. Saying that a particular data type is published implies that it is available to the public, perhaps but not necessarily for a fee.

Date/Period

The pull-down list for Date/Period provides a list of dates from which a selection can be made. Click on one of the periods. To specify a specific date or range of dates, click on **Key-in** and follow the instructions in Date Key-in Menu (described in Section 9.1.1).

> Newest
> 1990–present
> 1980–89
> 1970–79
> 1960–69
> 1950–59
> Oldest

Theme

Typical map types appear in this pull-down list. This list is derived from the Defense Mapping Agency's Digital Chart of the World.

Thefollowing themes are included: Aeronautical, Atmospheric, Cultural, Drainage, Hypsography, Land Cover, Ocean Features, Hypsography, Political/Oceans, Populated Places, Railroads, Roads.

Scale

The pull-down list for Scale contains a list of typical map scales. Click on one of the scales to add it to your search. To select a range of scales, click on **Key-in**. (See Section 9.2.1 for a discussion of the Scale Key-in Menu).

9.4 Imagery Search Criteria Menu

Another data type important to environmental researchers is imagery. Imagery originates from satellites and aircraft. The GeoSpatial Search Program allows users to search for imagery by specifying criteria associated with other data types (date and publisher) along with the platform and sensor, the particular instruments used to produce the image.

In addition, the season during which the imagery was recorded also can be included in a search.

The menu in Figure 26 is used to define search criteria for imagery.
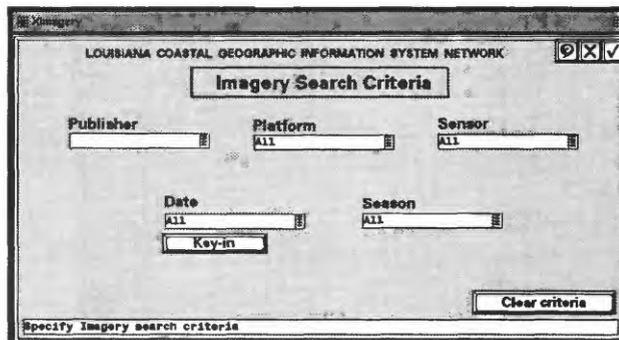
Figure 26. The Imagery Search Criteria Menu

Imagery can be in one of two possible formats: digital (which implies raster) and hard copy. You may restrict your search to one of these formats from the Search Results Menu after your initial search is complete.

Note: If a particular image contains vector overlays, a classification scheme, or an attached data base, the GeoSpatial Search Program will recognize it as a map.

The publisher of an image is considered to be the agency or organization that distributes the data; this may not be the same as the agency or organization that originally collected the data, which the GeoSpatial Search Program treats as the author of the image.

Date

This is the date of content—the day when the imagery was collected. Instructions for specifying a date appear in Section 9.2.

Season

The season is the time of the year during which the imagery was recorded. There are five possible selections: All (the default), Spring, Summer, Fall, and Winter.

Season is determined by the beginning and end dates as they appear on the calender.

Specifying the season of the imagery offers an alternative means of including a date in your search. If both a date and a season are entered, the season takes priority and will be used during the search. Therefore, if you specify a particular date for the search, do not also specify a season.

Platform

In LCGISN, platform represents the type of satellite employed on the mission. In addition to aircraft (airplanes in addition to satellites are used to collect imagery), the pull-down list offers a number of options, including such typical forms of platforms as Landsat, Spot, and AVHRR.

Sensor Type

A sensor is the instrument used to collect imagery data. The pull-down list shows many of the typical instruments: Multi-spectral, TM, Pan, Radar, CAMS, and RBV.

9.5 Audiovisual Search Criteria Menu

The GeoSpatial Search Program includes the menu shown in Figure 27 as a means of searching for a wide range of audiovisual materials, including slides, photographs, audio and video tapes, and computer software.

Figure 27. The Audiovisual Search Criteria Menu

Search criteria available on the Audiovisual Search Criteria Menu except **Type of Material** were described in Section 9.1 (Literature Search Criteria Menu).

Type of Material

Audiovisual data include a number of different media. Clicking on the pull-down menu control bar for **Type of Material** makes the following list appear.

> Slides
> Video
> Audio
> Photography
> Software

By default, the program searches for all audiovisual records held in the data base. Click on a **Type of Material** to limit your search to a particular form of audiovisual material.

9.6　Tabular Search Criteria Menu

Tabular data are numerical data that usually appear in rows and columns. The Tabular Search Criteria Menu shown in Figure 28 can be used to search for the wide range of scientific information that appears as tabular data.
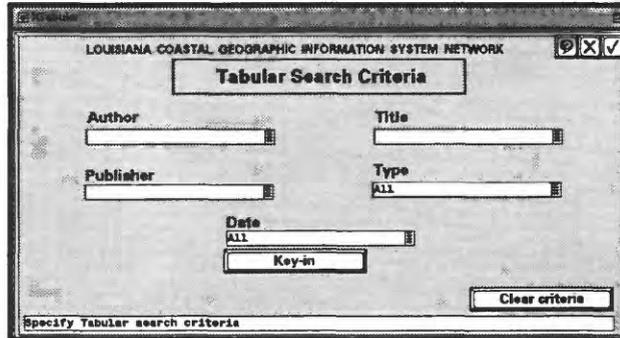
Figure 28. The Tabular Search Criteria Menu

Except for **Type**, each of the other criteria on the Tabular Search Criteria Menu was described in Section 9.1 (Literature Search Criteria Menu).

Type

In addition to the criteria that apply to all data types, tabular data can be searched by *Type*, the discipline or field in which the data originated or to which they relates. The following are among the options that appear in the pull-down list for Type: Habitat, Soils, Water Quality, Meteorology, Infrastructure (engineering, roads, etc.), and epidemiology/public health.

Tabular data that appear in the LCGISN data base may or may not be attached to a GIS.

9.7 Geotechnical Search Criteria Menu

An important type of data that the GeoSpatial Search Program is designed to store and query is geotechnical data. The Geotechnical Search Criteria Menu (Figure 29) is used to search for a variety of geotechnical data covered by the LCGISN data base.
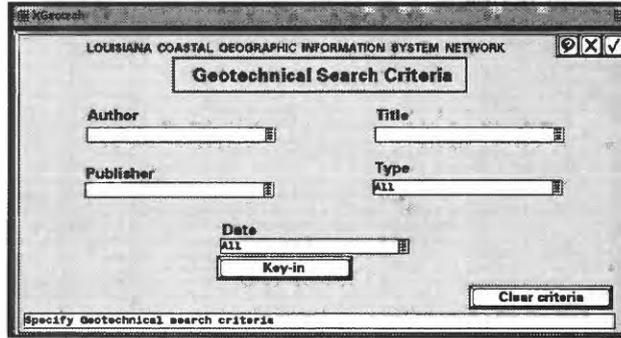
Figure 29. The Geotechnical Search Criteria Menu

Except for Type, each criteria on the Geotechnical Search Criteria Menu is described in Section 9.1 (Literature Search Criteria Menu).

Type

Geotechnical data comprise a number of subtypes. Clicking on the **pull-down control bar** for Type accesses the following list of typical geotechnical data.

> Sediment Sample
> Core/Boring
> Geophysical
> Other

By default, all the records in the data base are searched when geotechnical data is selected as the data type. Clicking one of the geotechnical data types listed above restricts the search to those records.

10.0 People & Organization Search Menu

The GeoSpatial Search Program enables users to search for people as if they were a data type. When users sign up to use the system, their names are placed in the LCGISN data base, along with information about their place of work, their research interests, and the geographic location(s) affected by their work.

The user may search the data base for information concerning these contacts using the same procedures they would to search for any other kind of data. After selecting People as a data type and setting certain criteria (name and/or organization), a geographic location and/or subject headings may be added to the search.

Search results provide information about contacts, including an address, phone number, and e-mail address (if available), and a short description of their research interests and data holdings.

To begin a search for people from the Main Menu, click on **Specify Data Type** and then click on **People** on the Data Types Menu. The menu shown in Figure 30 will appear.
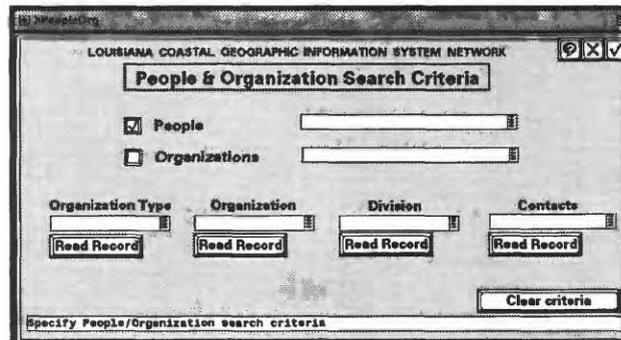
Figure 30. The People & Organization Search Menu

This menu consists of two parts: pull-down menus for Organization Type, Organization, Division, and Contacts along the bottom of the menu, and Name and Organization boxes along the top half.

Because organizations are represented hierarchically in the data base, with a complete listing of their departments and offices, the pull-down lists can be used to search for contacts by browsing the organizations and divisions where they might work. Section 10.1 (Hierarchical Searches of Organizations) describes this feature.

Clicking on the pull-down control bar for the box to the right of either People or Organization to access a list of all the names and organizations contained in the data base. Figure 31 shows the list of names, which has been opened by clicking on the pull-down control bar.
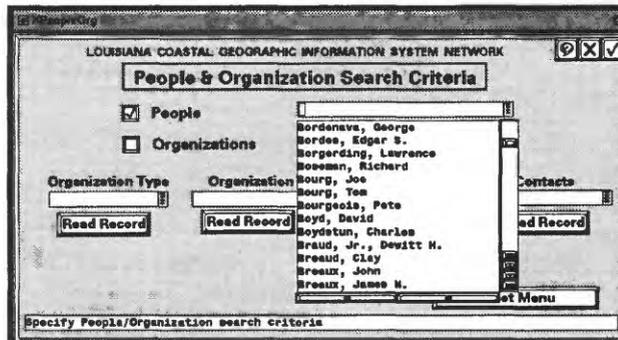
Figure 31. The pull-down list of people names

Specify the object of your search by clicking on the box beside either People or Organizations.

A name can be typed directly into the text box for either People or Organizations. The program will insert the wild card symbol (%) at the beginning of the name automatically. The menu is not case sensitive.

Read Record

A short-cut has been provided that makes it easier to view information about people and organizations without going through the entire process of defining and executing a search.

The record for any organization or contact that appears in the pull-down list for either Organization or Contact along the bottom half of the screen can be read by clicking on the **Read Record** button.

10.1 Hierarchical Searches of Organizations

The second way to use the People and Organization Search Menu is to browse the hierarchical arrangement of organizations held in the GeoSpatial Search data base. The four boxes that extend across the bottom half of the People and Organization Search Menu—Organization Type, Organization, Division, and Contacts—provide access to the hierarchy within which people and organizations are stored by the system.

Searching this menu by filling in the hierarchy from left to right allows you to reduce the pool of database records with each selection you make, making it easier to locate the name of a particular organization or person (contact) even if the name (or its spelling) is not completely known.
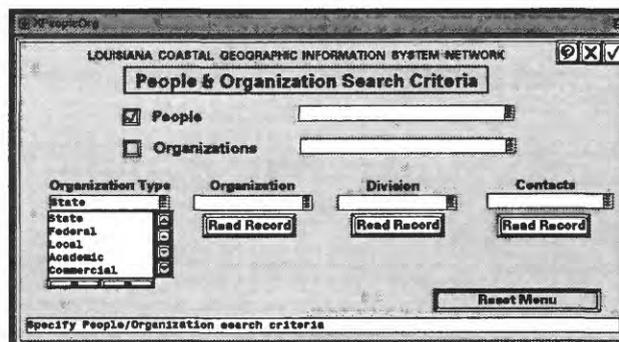
Figure 32. The pull-down list of organization types

Clicking on one of the Organization Types populates the Organization list to its immediate right with the names of all organizations of that Organization Type. Clicking on one of the organizations in the Organization list populates the list to its right, the Division list.

Click on one of the Divisions listed to populate the Contacts list. Brief descriptions of Organizations and Contacts can be accessed by clicking on the **Read Record** button under their boxes.

11.0   Specify Location Menu

After configuring the base map and selecting a data type, the next step in defining a search is to specify a geographic area. Although it is possible to skip this step and search for all data in the coastal zone, it is usually more effective to narrow the search by restricting it to a particular location or area. Doing so will generally return a smaller, more manageable number of catalog records.

Click on the **Specify Location** button on the Main Menu to bring up the menu shown in Figure 33. It gives you four choices for specifying a location.
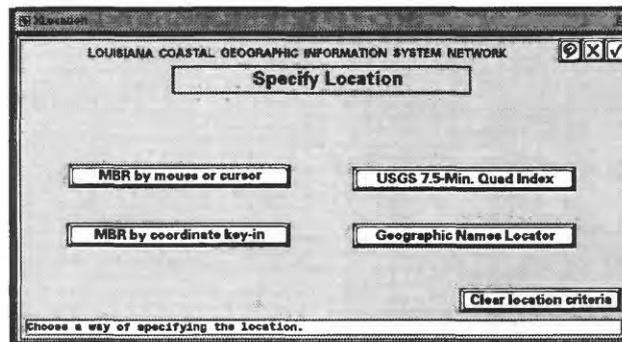
Figure 33. The Specify Location Menu

MBR stands for **Minimum Bounding Rectangle**, a graphic representation of a rectangular boundary encompassing some area of interest on a map. An MBR can be represented by the coordinates of two corners located diagonally from one another. LCGISN uses the coordinates of the northwest and southeast corners to define the location of an MBR.

To execute a geographic search, a particular location is defined. The system provides a number of ways to add a location to a search, as shown on the Specify Location Menu in Figure 33.

1. **MBR by Mouse**. Use the mouse to draw a rectangle directly on the base map.

2. **MBR by Coordinate Key-in**. Enter the latitude and longitude or Universal Transverse Mercator (UTM) coordinates directly into the program.

3. **USGS 7.5-Min. Quadrangle Index.** Scroll through a list of the quadrangles for Louisiana and the adjacent areas of the coastal zone. Choose one or more quadrangles from the list, or click somewhere on the base map. The boundary of the quadrangle for that location will be added to your search.

4. **Geographic Names Locator**. Enter the name of any location in the state and the program will display its location on the map and add its boundary to your search criteria.

The choice of which method to use to specify a location depends on many factors. Your familiarity with the geography of the state and the data for which you are searching, the level of geographic detail needed in a search, and the number of records of a particular data type in the data base influence which of the four methods is most useful.

For example, for a literature search, using the mouse to select a location on the base map or typing a place name into the geographic names index should be adequate because literature may not be referenced to a specific geographic location.

However, when searching for aerial photography or a map, the geographic location might need to be defined very precisely. In this case, keying in the latitude and longitude of the location or changing the base map layers to activate the USGS 7.5-min. quadrangle boundaries would allow very precise coordinates to be added to a search.

11.1 MBR by Mouse

One of the easiest ways to specify a location for a search is to use the mouse and draw a rectangle (a Minimum Bounding Rectangle or MBR) around the area directly on the base map.

1. Move the mouse until the cursor on the screen is pointed at one corner of your area of interest.
2. Click the left mouse button and move the mouse to create a rectangle encompassing your area of interest.
3. Press the left button again when the MBR is the desired size.

The MBR will remain visible on the screen, and the location will be added to your search (when you click on the **Check Mark** on the Specify Location Menu).
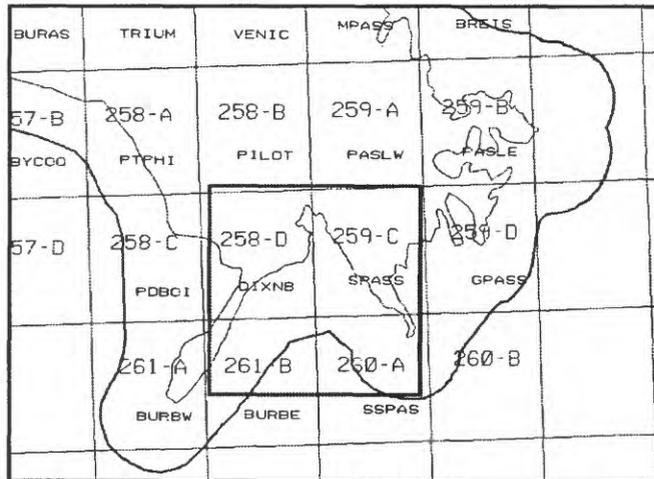
Figure 34. An MBR drawn with the mouse

Reminder: You *never* have to hold down a mouse button as you move the mouse on the base map. Release the mouse button, move the mouse, and then click the button a second time when the MBR is the size you want. Click the **right mouse button** to reset the location and start over.

11.2 Coordinates Key-in Menu

Another means of specifying a location is to enter coordinates directly into the program. This can be done by manually editing the Structure Query Language (SQL) statement the program uses to execute your search or by using the Coordinates Key-in Menu shown in Figure 35.

If you know the latitude and longitude or UTM coordinates of the area about which you want information, you can enter this information directly.

On the Specify Location Menu, click on MBR by Coordinate Key-in.
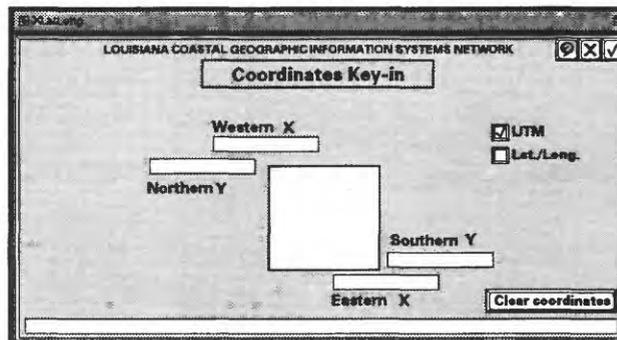
Figure 35. The Key-in Coordinates Menu

Click on the box at the top middle of the screen to change the coordinate type from UTM to latitude/longitude, or vice versa.

Key in the coordinates of the upper left (Western X and Northern Y) and lower right (Eastern X and Southern Y) to create an MBR encompassing your area of interest.

11.3 USGS 7.5-Min. Quadrangles Index Menu

The program can display USGS 7.5-min. quadrangle boundaries as a layer of the base map (see Section 5.1). However, clicking on **Select by Block** on the 7.5-Min. Quadrangles Index Menu shown in Figure 36 forces the program to display the outermost USGS 7.5-min. quadrangle boundaries of any MBR drawn with the mouse.
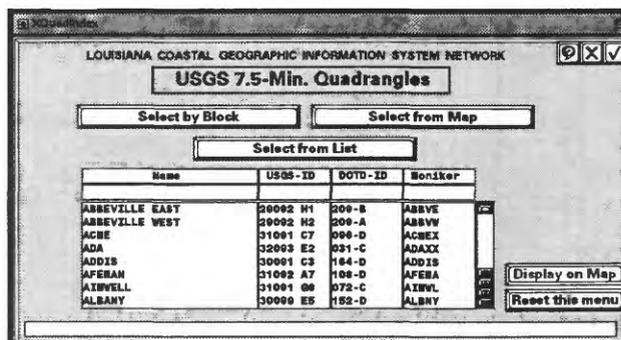
Figure 36. USGS 7.5-Min. Quadrangle Index Menu

The three buttons in the center of this menu provide three ways to specify a location using the Quad Index. Each of these methods is described below.

> **Select from List**—scroll through a list of quadrangles for the state.
> **Select by Block**—displays the outer quadrangle boundaries of an MBR.
> **Select from Map**—point to the base map to select an MBR.

Using the USGS 7.5-min. Quadrangle Index is a convenient way to specify a search, but it is not always the most precise. Because the GeoSpatial Search Program uses the specific coordinates to which a catalog record is referenced, it may often be most precise to define a unique MBR that doesn't conform to USGS quadrangle boundaries.

For example, in Figure 37, notice that two MBRs have been specified: one that follows the boundary of the USGS 7.5-min. quadrangles and one that does not.
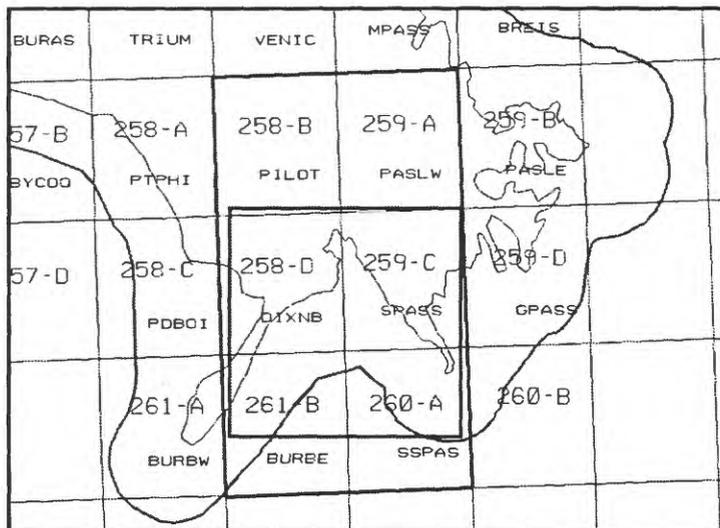
**Figure 37. An MBR by Mouse (the inner box) and the coordinates used by the GeoSpatial Search Program (the larger,
outer box)**

The larger box follows the boundaries of the USGS 7.5-min. quadrangles that are overlapped by the MBR drawn with the mouse. Notice that in this example, if the user is searching for data about the coast, the MBR drawn with the mouse encompasses two inland quadrangles (258-B and 259-A) that are not needed.

This problem might be avoided by drawing an MBR using the mouse or by keying the coordinates of your area of interests directly into the program.

11.3.1 Select from List

The table in the middle of the USGS 7.5-Min. Quadrangle Index Menu (Figure 36) displays the names of all USGS 7.5-min. quadrangles in Louisiana. The name of each quadrangle is displayed along with the USGS identification number, the Louisiana Department of Transportation and Development (DOTD) identification number, and a five-letter DOTD moniker.

Key-in Boxes

Name	USGS-ID	DOTD-ID	Moniker
ABBEVILLE EAST	29092 H1	209-B	ABBVE
ABBEVILLE WEST	29092 H2	209-A	ABBVW
ACME	31091 C7	096-D	ACMEX
ADA	32093 E2	031-C	ADAXX
ADDIS	30091 C3	164-D	ADDIS
AFEMAN	31092 A7	108-D	AFEMA
AINWELL	31091 G8	072-C	AINWL
ALBANY	30090 E5	152-D	ALBNY

Figure 38. Scrolling list of USGS 7.5-Min. Quadrangles

To use this list to specify the location for a search follow these steps.

1. Click on **Select from List** on the USGS 7.5-Min. Quadrangle Index Menu (Figure 36).
2. Scroll through the quad list, and with the left mouse button, click on one or more quad names.
3. Click on **Display on map** to display the location of the quadrangle(s) on base map.
4. Click on the **Check Mark** to add the location of the quadrangles to your search.

Entries also may be typed directly into one of the key-in boxes under the table titles. Follow the steps below to key in entries on the USGS 7.5-Min. Quadrangle Index.

1. With the **left mouse button**, click inside the appropriate key-in box.
2. Type the name or number you would like to enter into the search, and press [ENTER].
3. If the entry is a valid selection, it will appear highlighted in the list. Press [ENTER] again to accept it. If the entry you typed is not found, try another spelling or scroll through the list to find it.
4. Click on the **Check Mark** to add the location to your search.

Reset this menu: Click on **Reset this menu** to clear any selections that have been made on the menu and respecify the quadrangle boundaries that will be used in a search.

Display on Map: After selecting a quad from the list by clicking on its name, click on **Display on Map** to display the location of the quadrangle on the base map.

Adding More Than One Quadrangle to a Search

If more than one quadrangle is selected, the program will perform the search using the smallest possible MBR containing both quadrangles. For quadrangles that are far apart from one another, the MBR created is likely to contain a large number of quadrangles that may be unwanted.

Always click on **Display on map** before adding a location to a search to be sure that the location that the program is using to conduct the geographic component of a search includes only your area(s) of interest.

11.3.2 Select by Block

Use Select by Block to draw an MBR on the base map and allow the program to determine the coordinates of the USGS 7.5-min. quadrangles that your MBR overlaps and add their outer boundary to the criteria used to perform a search.

1. Click on **Select by Block** on the 7.5-Min. Quadrangle Index Menu (Figure 36).
2. Move the mouse until the arrow is pointing to the base map and draw a small rectangle on the screen.
3. The modified rectangle that is displayed on the base map will include all the quadrangles overlapped by the MBR drawn on the base map, as shown in Figure 39.

The MBR on the base map may appear quite a bit larger than the one drawn with the mouse.
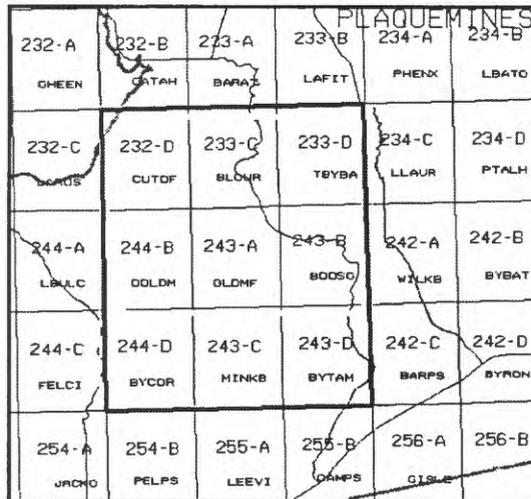
Figure 39. MBR by Block

Select by Block displays a modified rectangle containing the all of the USGS 7.5-min. quadrangles overlapped by the rectangle drawn on the base map with the mouse.

11.3.3 Select from Map

Another way to enter geographic coordinates for your search is by pointing to a particular place on the base map and allowing the program to create the MBR for your search (the boundaries of all the USGS 7.5-min. quadrangles that are overlapped by the MBR of your search area).

1. Click on **Select from Map** on the USGS 7.5-Min. Quadrangle Index Menu (Figure 36).
2. The program will ask whether you want to view information about each of the quadrangles you select. Click on either **Yes** or **No**.
3. Point to the your area of interest on the base map and click the **left mouse button**. The USGS 7.5-min. quadrangle boundary of the location you clicked on will be highlighted.
4. Continue clicking on other areas with the **left mouse button**.
5. When you are satisfied with your selections, click anywhere on the map with the **right mouse button**.

The information pages provided for each 7.5-min. quadrangle include details such as the latitude and longitude of the quadrangle boundaries, the USGS number, and the Louisiana Department of Transportation and Development's (DOTD) five-letter moniker for that quadrangle.

After you click on the quadrangles to add to your search, the program creates an MBR containing all the quadrangles that were selected. In some cases, this may result in unwanted quadrangles being added to the search.

11.4 Geographic Names Locator Menu

Another way to define a location for a search is by using the Geographic Names Locator Menu shown in Figure 40. You can enter a Region Name (such as the Chenier Plain), Parish Name, or Geographic Name found on a USGS 7.5-min. quadrangle map for Louisiana.

Clicking on **Locate on map** instructs the program to highlight the USGS 7.5-min. quadrangle boundary of the area you have chosen; individual places such as cities are marked in red. To reject the location and choose another, click on **Reset this menu** at the bottom right of the screen.

If the highlighted area is acceptable, click on the **check mark** at the top right of the screen to include it as part of your search.
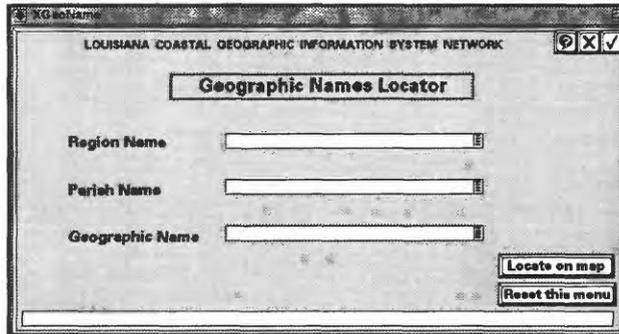
Figure 40. The Geographic Names Locator Menu

The GeoSpatial Search Program uses the Geographic Names Information System (GNIS) to display the locations of place names. Some place names contained in GNIS are referenced more precisely than you might like (for example, only one USGS 7.5-min. quadrangle is used to reference the Mississippi River). Be sure to evaluate the location displayed on the map to be sure that its coordinates are acceptable.

12.0 Subject Headings Menu

The Subject Headings Menu (Figure 41) allows up to five subject terms (keywords) to be included in a search. The terms are derived from a subset of the Library of Congress Subject Headings (LCSH).

Clicking on the **pull-down control bar** to the right of the Current Subject box brings up a list of the broadest terms in the data base (Figure 42).

Clicking on one of these terms moves it to the Current Subject box and causes the narrower, related, and broader terms associated with it to appear in the large boxes in the middle of the screen. Click on one of these narrower, related, and broader terms, and it becomes the current subject and its narrower, related, and broader terms will appear.
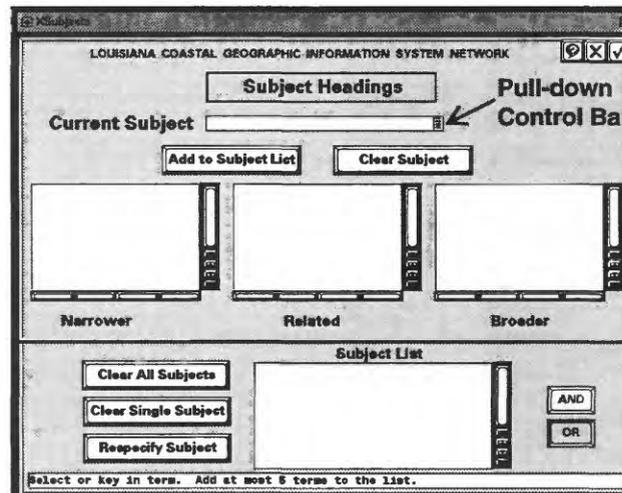
Figure 41. The Subject Headings Menu

Subject terms are not added to your search criteria until you click on the **Add to Subject List** button and move them to the Subject List box at the bottom of the menu.

Up to five subject terms can be added to a search by moving each term to the Subject List at the bottom of the screen. Subject terms do not become part of searches until they appear in the Subject List and the **Check Mark** for the Subject Heading Menu is clicked.

An unlimited number of subject headings can be added to a search, though more than two or three can have the undesirable effect of significantly reducing the number of records found in the search. After selecting the appropriate subject terms and adding them to the Subject List, click on the **Check Mark** to add the terms to the search criteria and go back to the Main Menu, where the search can be executed.

Add to Subject List moves the Current Subject to the Subject List at the bottom of the menu. Subject headings must be moved to the Subject List to become part of searches.

Clear Subject removes the current subject.

Clear All Subjects removes all the terms from the Subject List, allowing a new set of subject headings to be specified. Click on **Clear All Subjects** and then click on the **Check Mark** to reset the search criteria so that it includes no subject headings.

Clear Single Subject removes only those terms from the Subject List that you have highlighted (by clicking on them); the Current Subject remains unchanged.

Respecify Subject removes the highlighted term from the Subject List and makes it the Current Subject, redisplaying its narrower, broader, and related terms.
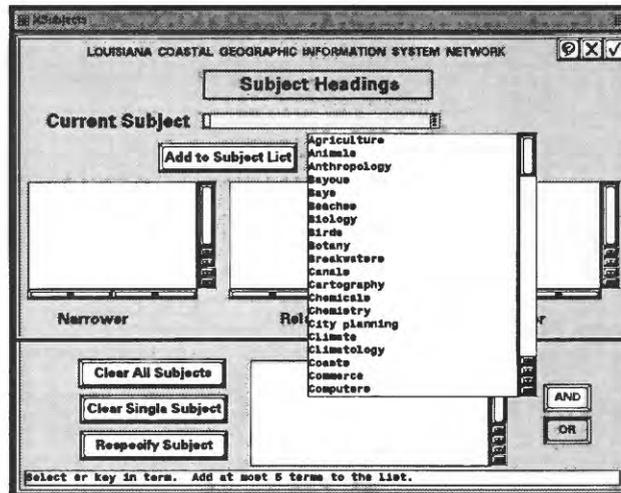
Figure 42. Pull-down list of broadest subject terms

Example: In the menu shown in Figure 42, clicking on the **pull-down control bar** next to the Current Subject box has accessed a list of broad terms related to coastal studies and spatial data. This list can be scrolled to find a term relevant to your search. The term is not added to the search until it is moved into the Subject List at the bottom of the menu.

The Subject Heading Menu allows users to browse the hierarchy of subject terms used by the GeoSpatial Search Program. Clicking on a term in the pull-down list causes its narrower, related, and broader terms to be displayed. Using the Subject Headings Menu to browse the terms associated with each subject term enables users to experiment with different combinations of subject headings in their searches.

For example, clicking on the term **Cartography** in the list shown in Figure 42 produces the menu shown in Figure 43.
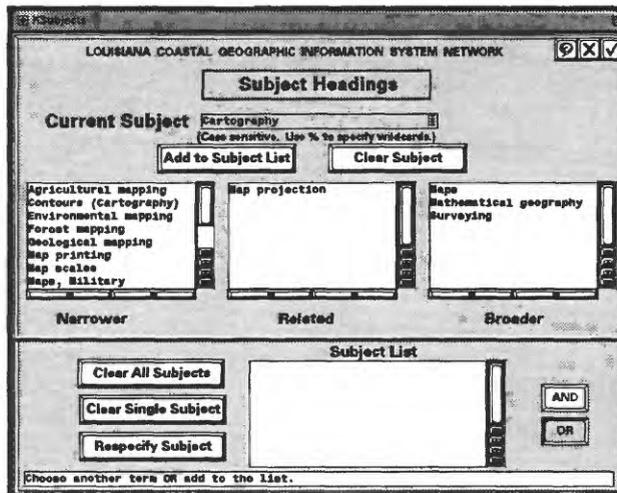
Figure 43. Cartography as the Current Subject

By repeating this process of selecting terms and browsing the narrower, related, and broader terms, you can find the keywords that best describe the information for which you are searching.

In Figure 43, for example, you might decide that "cartography" is too broad to lead to the information you need. Two subjects that seem more relevant to your search are "Environmental mapping" and "Agricultural mapping." Clicking on Environmental mapping produces the menu shown in Figure 44.
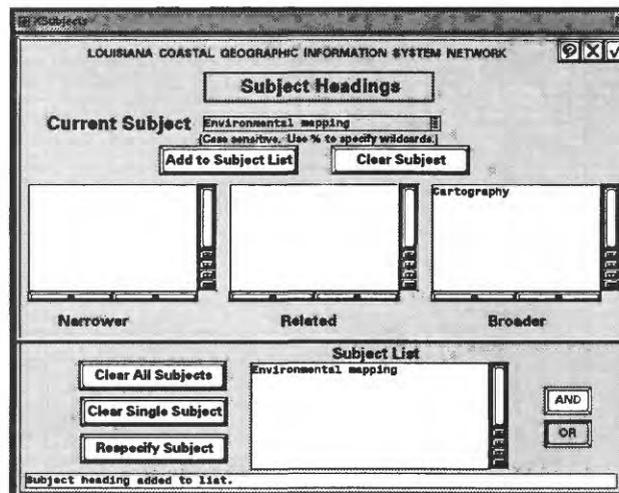
Figure 44. Environmental mapping as the Current Subject

If this term seems like it may produce the kinds of results you need, add it to your search by clicking on **Add to Subject List**. In Figure 44, Environmental mapping has been added to the Subject List at the bottom of the screen.

To see the narrower, related, and broader terms related to the second term, Agricultural mapping, click on **Cartography,** which is listed as a broader term. (If Environmental mapping is a narrower term under Cartography, Cartography has to be a broader term under Environmental mapping.)

Clicking on Cartography produces the original menu shown in Figure 43. On this menu, clicking on **Agricultural mapping** produces the menu shown in Figure 45.
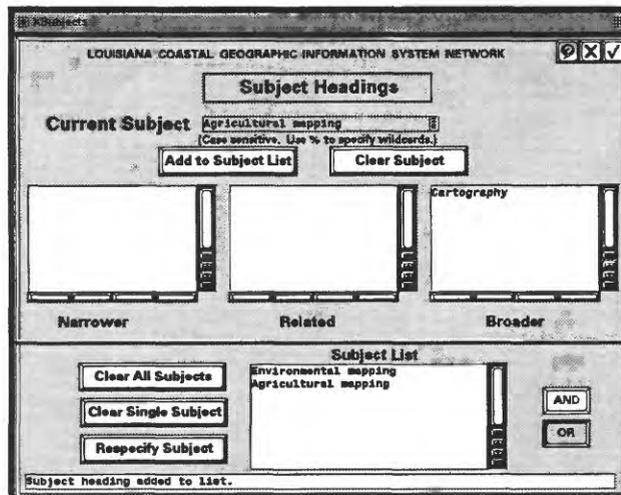
Figure 45. Agricultural mapping as the Current Subject

No narrower terms appear for either Environmental mapping or Agricultural mapping. Therefore you decide to add Agricultural mapping to your search by clicking on the **Add to Subject List** button. To add these terms to your search and return to the Main Menu, click on the **Check Mark.**

12.1 Tips for Using Subject Headings

Because it is difficult to tell what combinations of search terms will produce the most useful results, it may be necessary to experiment with different combinations of broader, narrower, and related terms. A number of searches may have to be executed to find the most effective search strategy.

For example, in the example described previously, it is impossible to know whether the two narrower terms, "Agricultural mapping" and "Environmental mapping," will produce better results than adding the broader term "Cartography" to the search criteria. A good general approach is to perform multiple searches with different combinations of Subject Terms, varying one term at a time.

Subject headings are more useful for some data types than others. For literature, audio-visual data, and most maps, subject headings provide a very effective means of focusing a search. This is because these types of data have traditionally had subject terms associated with them. Other data, such as photography and imagery, usually do not have subject terms associated with them.

This situation may change as more data are cataloged and added to the LCGISN data base. The GeoSpatial Cataloging Program provides a means of associating standard sets of subject headings with all kinds of data. (Contact the LCGISN Technical Committee for more information about the GeoSpatial Cataloging Program.)

The Subject Headings Menu gives users access to the hierarchical relationships that the program uses to perform subject searches of the data base. These parent and child terms appear as lists of broader, related, and narrower terms for each subject term moved to the Current Subject box.

Interactively broadening and narrowing search terms provides a means of evaluating and executing a variety of possible search strategies.

13.0   Query Management

Query Management allows experienced users to edit and save the SQL statements they generate with the GeoSpatial Search Program. Selecting **Go to Query Management** on the Main Menu will bring up the menu shown in Figure 46.

The Query Management Menu has two primary uses: saving your search queries for future use and editing the SQL statements that the program uses to conduct searches. Query Management is quite useful for executing a search at a later time, finding those records that might have been added to the system since you last used it.
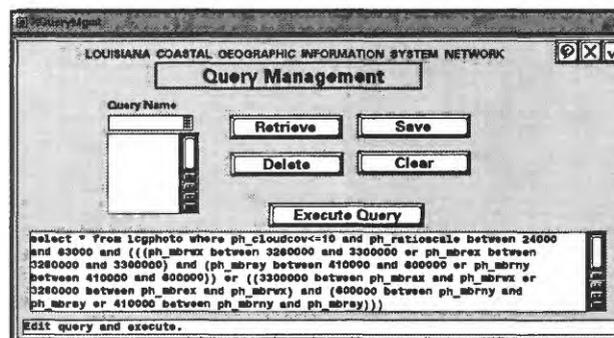
Figure 46. Query Management Menu

The large text box in the center of the Query Management Menu contains the SQL statement that was constructed as you interacted with the program's menus. To edit this statement, click on **Edit** and use the arrow and delete keys to modify the SQL statement.

Clicking on **Save Current Query** brings up a menu that allows you to give a name to your query and save it in a file on the LCGISN server. At a later time, you can recall this query by clicking on **Retrieve Old Query** and selecting the name of the query from a menu.

Queries can be executed from the Query Management Menu by clicking on **Execute Query / Perform Search**.

14.0 Search Results Menu

You are ready to perform a search when you have specified a data type, defined the geographical area, and entered one or more subject terms into the Specify Subject Headings Menu.

Actually, the only required step is specifying a data type; in other words, it is possible to conduct a data type search without specifying geography or subject headings, a geographical search without including subject terms, or a subject term search without specifying a geographical area.

As you define your search, a description of your search appears in the large box below the **Execute Query/Perform Search** button (see Figure 47).
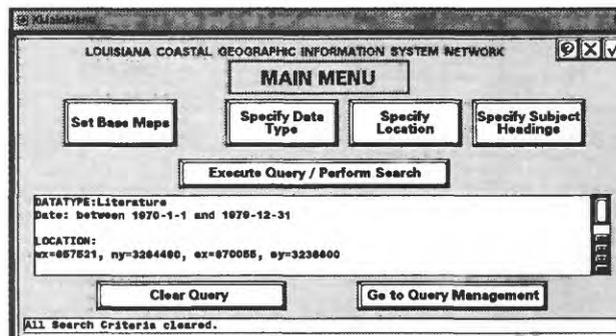
Figure 47. The Main Menu showing search criteria

If you are familiar with SQL, you can modify your search by editing the SQL statement. To do this, click on the **Go To Query Management** button on the bottom right of the screen. See Chapter 13.0 for details about using the Query Management feature.

Clicking on the **Execute Query/Perform Search** button sends the instructions shown in the SQL statement to the data base and displays the catalog records that match the criteria you defined.

When you have defined your search and clicked on the **Execute Query/Perform Search** button, the system will take a moment to

perform the search. When the search is completed, you will see a form such as the one shown in Figure 48.
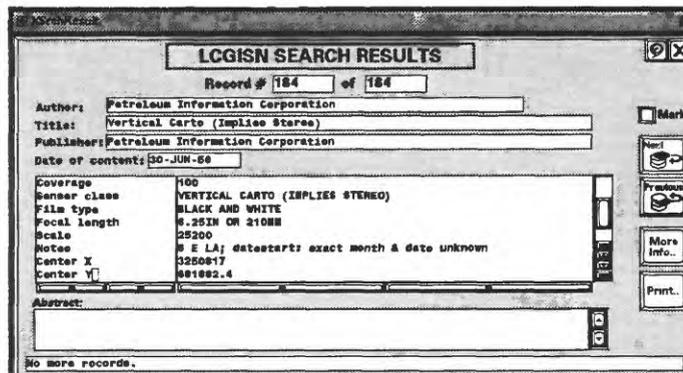
Figure 48. Search Results Menu

The top of the screen shows the number of records found (# Records Found) and the number of the record being displayed (Current Record #).

Next and **Previous** buttons are used to scroll through all of the records that matched your search criteria.

More Info provides additional holding information for a particular record. This information appears in tabular form and includes details about the availability and cost (if any) for the data described by a particular record.

Print sends the current record to your printer.

A large number of records found indicates that the search criteria may need to be narrowed. If too few records are found, broaden the search parameters slightly by eliminating some of the data type criteria or including more or broader subject terms and/or a larger geographical area.

14.1 General Search Strategies

Specifying criteria allows great control over the precise contents of your search. To use the GeoSpatial Search Program most effectively, learn to define the most precise criteria for each type of data to return the records you need.

When you specify a location as part of your search, the search will be most effective if you understand something about the way the program handles place names and geographic coordinates.

Using the Geospatial Search Program most effectively will probably require some experience to become familiar with the nuances of the system. When defining and refining LCGISN search instructions (queries), keep the following general guidelines in mind.

The Specify Subject Headings Menu is not an effective means of specifying a location because subject terms in the GeoSpatial Search Program lack geographic components.

The best way to ensure that your search includes a minimum geographic area while still encompassing your area of interest is to conduct a separate search for each USGS 7.5-min. quadrangle overlapped by your area of interest.

To do this, set up all your search criteria except geographic area. On the Specify Location Menu, click on the **USGS 7.5-Min. Quadrangle Index**. Click on **Select from Map** but include only one quadrangle. Execute your search and save or print out your search results.

Conduct another search keeping all the search criteria except geographic location the same. Click on **USGS 7.5-Min. Quadrangle Index** and **Select from Map**. Click on a different quadrangle in your area of interest. Return to the Main Menu and execute the search again.

For each search you conduct, change only the quadrangle added as the geographic component of your search criteria.

15.0 Tutorial

The following tutorial describes the basic procedures used in the LCGISN GeoSpatial Search Program. Reading "The Basics" and then completing this tutorial should provide an adequate introduction to the system.

The best way to learn the program is to use the program; do not hesitate to experiment with the system. Let us know your ideas about expanding or improving it.

Skills Needed to Complete This Tutorial: Before beginning this tutorial, users should become familiar with the GeoSpatial Search Program mouse and menu conventions, which are described in Part One of the manual. It also will be helpful to spend some time experimenting with the many ways of navigating the system before working through the tutorial.

Reminder: Entries made on menus do not become part of the search criteria (the algorithm that the program will use to find the object of your search) until you click on the menu's **Check Mark**, which tells the program to accept a particular selection. Remember to click on the **Check Mark** to tell the program to add your selection to the search criteria and go on to the next task.

Click on the **X** button to cancel an entry and start over or to go back to the previous menu.

Sometimes you must click on the **Check Mark** of two or more menus to continue a search. For example, after defining search criteria on the Photography Criteria Menu, you have to "Check Out" of both that menu and the Specify Data Types Menu to return to the Main Menu and either continue to define or execute the search.

Contents: This tutorial describes two types of searches: one for aerial photography and one for literature (a journal article). Both searches deal with a similar geographic location and type of ecosystem. The major difference is the data type, which as you will see also affects the search strategies that are likely to be effective.

15.1 Photography Search

This tutorial has two parts, each of which describes a particular type of search for records related to a research project dealing with environmental changes in coastal Louisiana.

As you work through the tutorial, imagine that you are involved in a project to study coastal erosion around the Atchafalaya Bay area of Louisiana. You have an immediate need for two kinds of data: aerial photography of the coast, preferably for a range of dates, and literature, an article that may have been published in a conference proceedings.

The first part of the tutorial describes a search for aerial photography covering your area of interest (Atchafalaya Bay) over a range of dates. Specifically, you would like to find the earliest and latest photography available for the coastline around Atchafalaya Bay.

(Other materials, such as samples of photography for intervening years or historical maps, also might be useful, but these searches are beyond the scope of this tutorial. You may want to experiment with them on your own, however.)

The Photography Search Process

1. Log into LCGISN
2. Begin Your Search from the Main Menu
3. Select the Data Type
4. Specify Search Criteria
5. Specify Location
6. Enter Atchafalaya Bay on the Geographic Names Locator
7. Execute Your Search

1. Log into LCGISN

If you have not already done so, follow the instructions in Section 2.0 to get LCGISN running on your machine. When you see the Welcome Menu (shown in Figure 49), move the cursor to the box labeled User Name and use the left mouse button to click anywhere in the box.

When the cursor darkens, type the name that you will use to log into the LCGISN GeoSpatial Search Program.
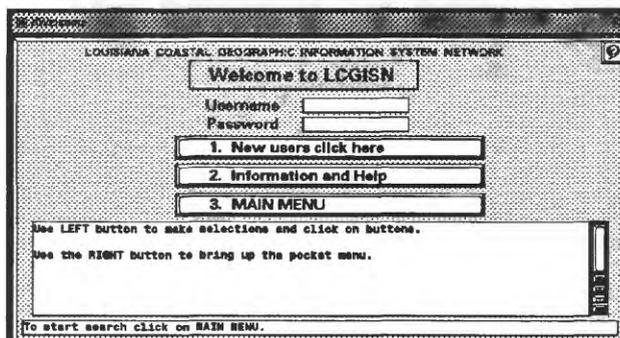
Figure 49. The Welcome Menu

When the system accepts your name, the buttons in the middle of the menu will darken to indicate that they have become active, and the base map will appear.

Click on the **Main Menu** button to begin defining your search.

2. Begin Your Search from the Main Menu

The Main Menu (shown in Figure 50) is the centerpiece of the
GeoSpatial Search Program: it is where you begin defining your
searches and where you must return to execute them.
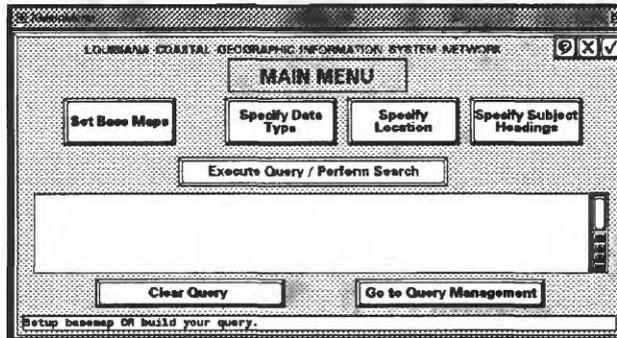
Figure 50. The Main Menu

The four buttons in middle of the Main Menu are used to access the
various parts of the program. The **Set Base Maps** button is used to
control the information displayed on the base map and doesn't
directly affect searches. For information about the base map, see
Section 5.2.

The first step in defining a search is to select a data type.

3. Select the Data Type

On the Main Menu, click on **Specify Data Type**, which will bring up the Data Types Menu shown in Figure 51.
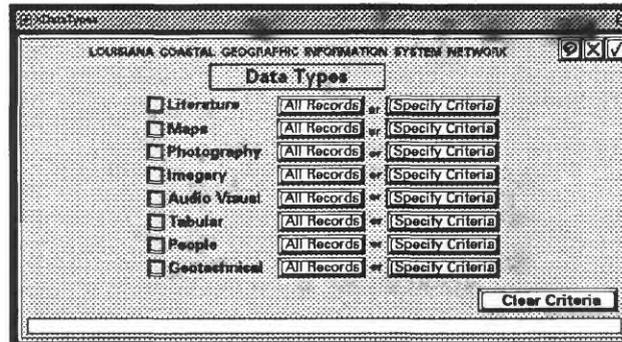
Figure 51. The Data Types Menu

The object of the current search is aerial photography, so click on **Photography** on the Data Types Menu.

By default, the program will find all photography, represented on the menu by the **All Records** button, which is depressed when the menu appears. Because you want to limit your search to records meeting certain conditions, click on the **Specify Criteria** button to the right of Photography. You should see the Photography Search Criteria Menu shown in Figure 52.

Your object is to find aerial photography for a range of dates. You have several choices concerning the way that the program conducts your search. One option is to conduct separate searches for the earliest and latest photography. Alternatively, you could search for all photography in your area of interest and then scroll through the list to find the dates you need.

4. Specify Search Criteria

For each data type, the GeoSpatial Search Program provides
different possible search parameters. When you select a data type,
you have the option of changing the data type criteria as well. The
Aerial Photography Criteria Menu is shown in Figure 52.
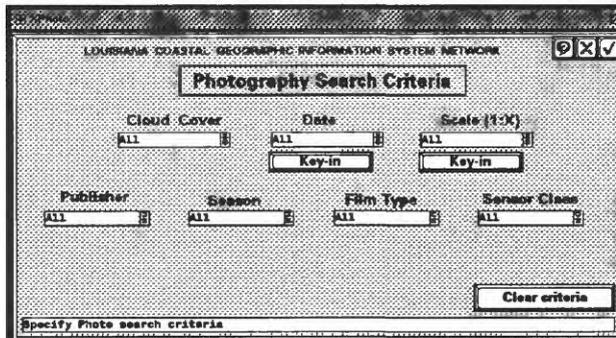
Figure 52. Photography Search Criteria Menu

The first step is to limit your search to photographs that meet your
needs with a minimum of cloud cover.

Click on the **pull-down control bar** to the right of the box under
"Scale (1:X)" and click on three lines: **<10,000**; **10,000 to 24,000**;
and **24,000 to 63,000**. This will cause your search to return records
of all photography at a scale of 1:63,000 or less.

Next, click on the **pull-down control bar** to the right of the Cloud
Cover box and click on **<10 percent**.

Click on the **Check Mark** on both the Photography Search Criteria
Menu and the Specify Data Types Menu to return to the Main Menu.
From the Main Menu, you will continue to define your search by
specifying a location.

5. Specify Location

Because the research you want to locate deals with Atchafalaya Bay, you need to add this location to the search. The four buttons in the center of the Specify Location Menu shown in Figure 53 represent the four ways to include a location as part of a search.
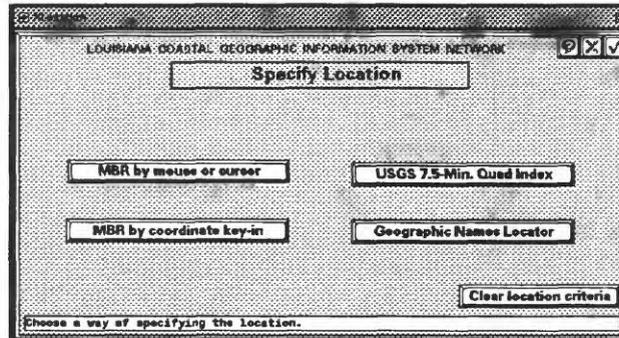
Figure 53. The Specify Location Menu

There are four ways to restrict searches to data dealing with a particular location.

1. Click on **MBR by Mouse** to draw a rectangle on the base map, enclosing the location of your area of interest and adding its coordinates to your search.
2. Click on **USGS 7.5-Min. Quadrangle Index** to scroll through a list of the 7.5-min. quadrangles for Louisiana, click on one of them, display its location on the base map, and add its coordinates to your search.
3. Click on **MBR by Coordinate Key-in**, type the coordinates of your area of interest, and add them to your search.
4. Click on **Geographic Names Locator** and type in a location name to include in your search.

To add a location to your aerial photography search, click on **Geographic Names Locator**.

6. Enter Atchafalaya Bay on the Geographic Names Locator

Type "Atchafalaya Bay" in the box labeled **Geographic Name** at the bottom of the menu.

Click on the button labeled **Geographic Names Locator** on the Specify Location Menu to bring up the menu shown in Figure 54. On this menu, you can type the name of a location, either a region ("Acadiana"), body of water ("Lake Pontchartrain"), or a particular location, such as a town or city, and add its coordinates as the location part of your search criteria.
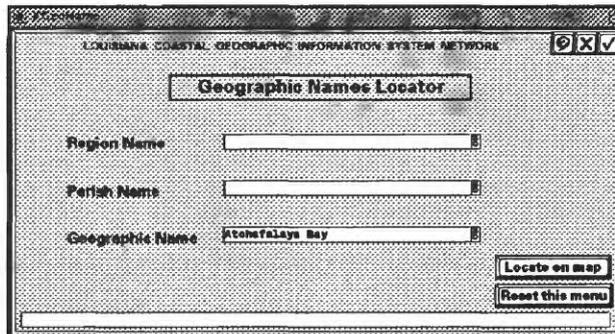
Figure 54. The Geographic Names Locator Menu

The Geographic Names Locator is useful when you know the name of your area of interest but are unsure of its precise location. Displaying the location of a place name on the base map prior to adding its coordinates to a search can ensure that the MBR the program is using to conduct your search matches the location you have in mind.

When you have typed a location into the Geographic Name box, click on **Locate on Map** (or the **Check Mark**). The program will outline the quadrangle containing the location in red and, in some cases, place a red dot showing the exact location of the name. When the location of "Atchafalaya Bay" is displayed, the base map should look like Figure 55.

The latitude and longitude of two USGS 7.5-min. quadrangles highlighted in Figure 55 will be added to your search when you click

on the Check Mark on the Geographic Names Locator and the
Specify Location Menus.
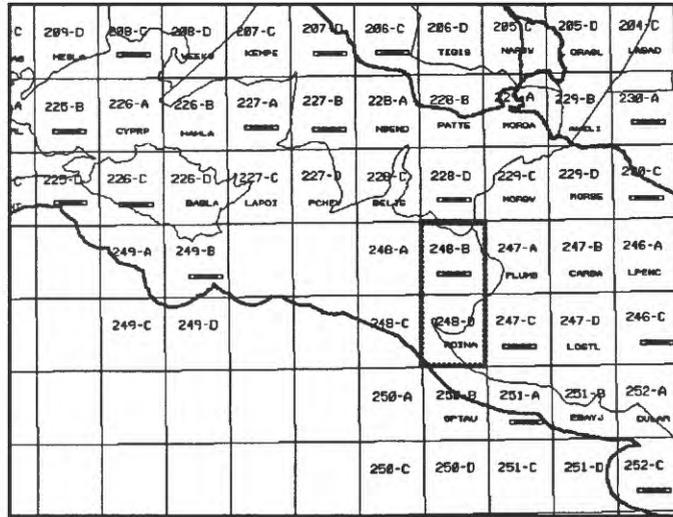
Figure 55. MBR for Atchafalaya Bay

While this MBR is adequate, notice that it does not include all of the
coastline around the mouth of the Atchafalaya River. Specifically,
quadrangle number 247-A, which encompasses the area east of the
river, is currently not included in your search.

You have some options as to how to execute this search. One
approach is to search for photography in each quadrangle
individually (performing a total of six searches, three for the oldest
and three for the most recent). Another option is to conduct two
searches: one for quadrangle numbers 248-B and 248-D, and a
second for quadrangle number 247-A.

To add quadrangle number 247-A to your search, go to the USGS
7.5-Min. Quadrangle Index.

Click on **Select from Map**. The base map will appear, and the
program will ask if you want to see an information page about each
screen. Click on **No**.

On the base map, point to quadrangle 247-A and click the left mouse button. Click the right mouse button to return to the menus.
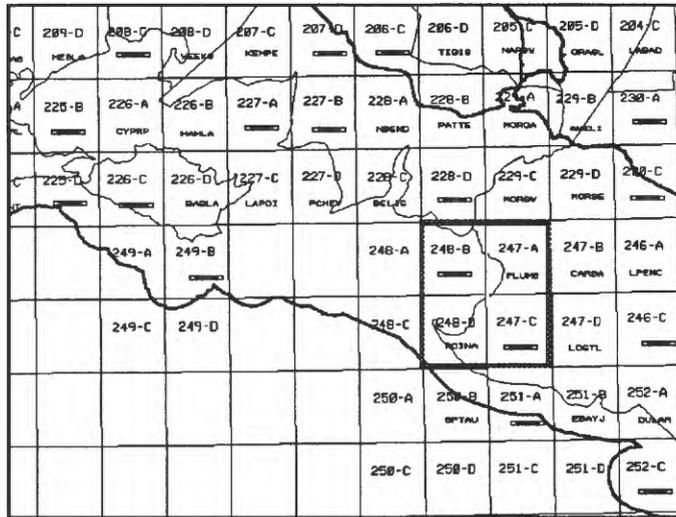
Figure 56. Base map showing the MBR for the photography search

In Figure 56, notice that when you clicked on the third 7.5-min. quadrangle for your area of interest, the program created an MBR that included a fourth quadrangle that completed the rectangle. Unfortunately, this fourth quadrangle does not contain any of the aerial photographs you need.

There are other options for adding a location to this search. You could have selected one quadrangle at a time and conducted three separate searches. Separate searches for the oldest and most recent photography for each quadrangle is also an option, though a time-consuming one.

Before doing this, however, try executing the query the way it was defined and see how many records are returned. If the program finds too many records using these search criteria, you can go back and limit the search criteria further.

Reminder: Use the left mouse button to click on menus. The right mouse button is used to bring up the Pocket Menu (by clicking anywhere on any menu) and to reset selections on the base map.

7. Execute the Search

Click on the **Check Mark** on both the USGS 7.5-Min. Quadrangle Index and the Specify Location Menu. Your selection will become part of your search, and the program will return you to the Main Menu. Click on **Execute Query/Perform Search**. After a few moments, you should see results similar to Figure 57.
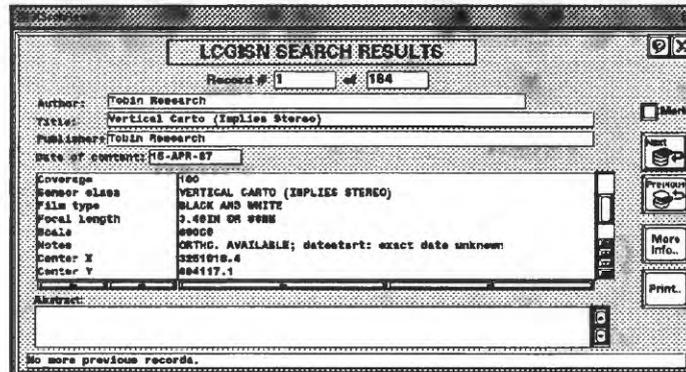
Figure 57. The Search Results: Record #1

The program found 154 records that satisfy the search criteria. Click on the **Next** and **Previous** buttons to scroll through your search results. The program displays the most recent records first (Figure 57). The oldest record, number 154, is shown in Figure 58.
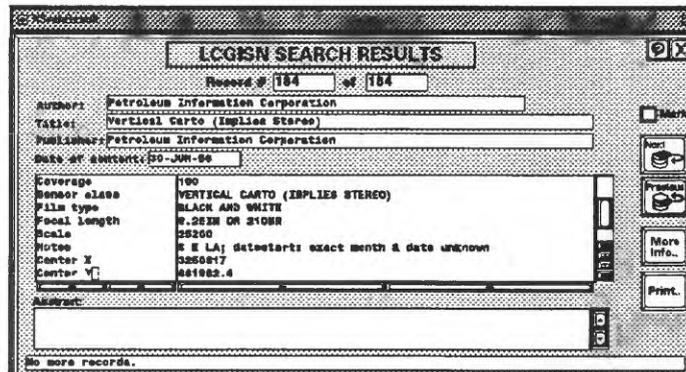
Figure 58. Search Results: Record #154

15.2 Literature Search

In this second part of the tutorial, your first goal will be to locate an article about a project to use computer simulations to model the Louisiana coast around the mouth of the Atchafalaya River. You don't recall the author of the study but believe that its results may have been published sometime in the late 1970's. The only information you have is that the project used mathematical simulation techniques and dealt with that particular area of the coast.

To define a new search, this time specifying literature rather than aerial photography as your data type, begin at the Main Menu. Although you could click on the button **Clear Query** and start over defining your search, you can also leave the query statement in place and change only the criteria necessary to define a new search.

The Literature Search Process

1. Log into LCGISN
2. Begin Your Search from the Main Menu
3. Click on Specify Data Types
4. Specify Criteria for the Literature Search
5. Narrow Your Search to a Range of Dates
6. Add a Geographic Location to the Search
7. Enter Atchafalaya Bay on the Geographic Names Locator
8. Add a Subject Heading
9. Execute the Search
10. Initial Search Results
11. Add a Title Term to Your Search
12. Execute the Search (Again)

1. Log into LCGISN

If you have not already done so, follow the instructions in Section 2.0 to get LCGISN running on your machine. When you see the Welcome Menu (Figure 59), move the cursor to the box labeled **Username** and use the left mouse button to click anywhere in the box.

When the cursor darkens, type the name that you will use to log into the LCGISN GeoSpatial Search Program.
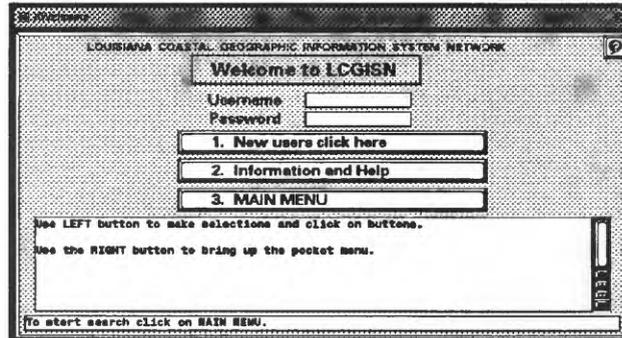
Figure 59. The Welcome Menu

When the system accepts your name, the buttons in the middle of the menu will darken to indicate that they have become active, and the base map will appear.

Click on the **Main Menu** button to begin defining your search.

2. Begin Your Search from the Main Menu

The Main Menu (shown in Figure 60) is the centerpiece of the GeoSpatial Search Program: it is where you begin defining your searches and where you must return to execute them. The first step in defining a search is to select a data type. To do this, click on the **Specify Data Type** button on the Main Menu.
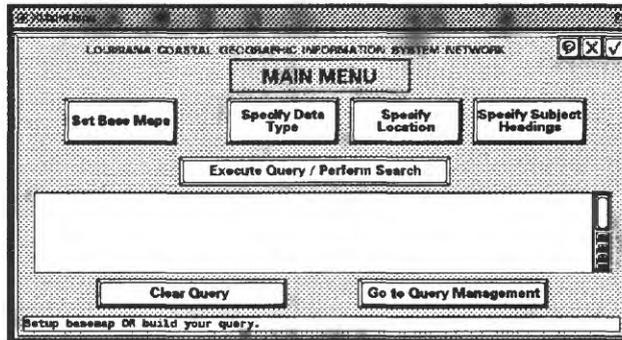
Figure 60. The Main Menu

You are not sure that the article you need even exists because you have been unable to find it in your university library. However, you remember hearing about the project and seem to recall that it was presented at a conference during 1978 or 1979. You cannot recall the author or the precise title of the article, but you know that you need to read this article before you begin your study.

All you know is that the project occurred sometime during the late 1970's, and that it had something to do with simulations and Atchafalaya Bay. Fortunately this is enough information for an LCGISN search.

3. Click on Specify Data Types

The LCGISN data base contains records describing a range of data types listed on the Data Types Menu (Figure 61).
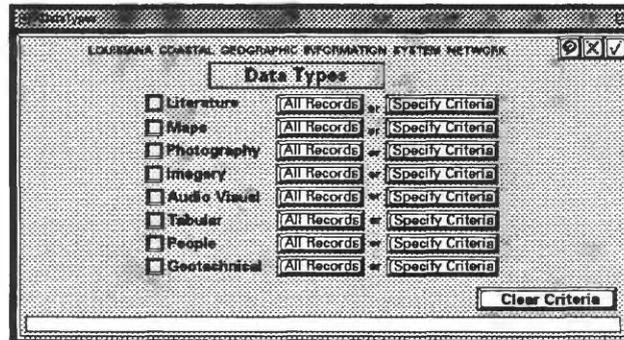
Figure 61. The Data Types Menu

The object of this search is an article (a type of literature) about a project using mathematical models to simulate coastal erosion. Begin the search by clicking on **Literature** on the Data Types Menu.

By default, LCGISN searches all records of a particular data type. Because you know an approximate publication date, it can be used to restrict your search to works of literature published between 1970 and 1980.

Click on the **Specify Criteria** button beside Literature to specify a date of publication for your search. The Literature Search Criteria Menu will appear, as shown in Figure 62.

4. Specify Criteria for the Literature Search

For each data type, a menu has been designed for you to use to specify detailed search criteria, the characteristics of the data for which you are searching. The Literature Search Criteria Menu is shown in Figure 62.
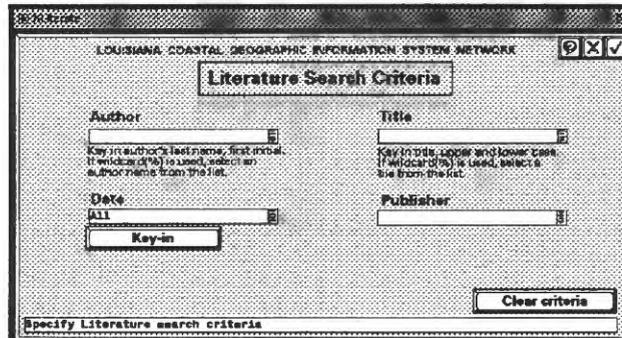
Figure 62. The Literature Search Criteria Menu

This menu allows you to specify the author, title, publication date, and the publisher, which the program will use to conduct your search. Only those criteria for which entries on the menu are made will affect your search; the default is for the search to include all records in the data base. If you Specify Criteria, you instruct the program to include in your search results only those records matching your criteria.

Because the only information you have about the article is an approximate date of publication, that is the only criterion that you will select at this time.

Click on the button labeled **Date** to bring up the Date Key-in Menu shown in Figure 63.

Reminder: Use the left mouse button to click on menus. The right mouse button is used to bring up the Pocket Menu (by clicking anywhere on any menu) and to reset selections on the base map.

5. Narrow Your Search to a Range of Dates

Although you do not know the exact date of publication, you know
that the article appeared during the 1970's. You can add a range of
dates to your search criteria (in this case from 1970 to 1980),
covering its likely date of publication.
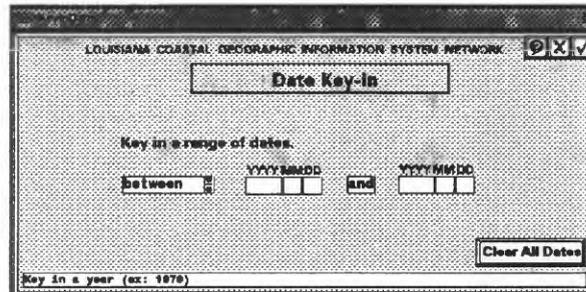
Figure 63. The Date Key-in Menu

Click on the **scroll bar** on the right side of the first box. This will
bring down a list of operators you can use to include a date in your
search. Click on **between** and type "1970" in the first year box and
"1980" in the second. (Leave the MM [month] and DD [day] boxes
empty.)

After adding the publication date (between 1970 and 1980) to the
literature search criteria, you must return to the Main Menu to either
define more search criteria or to execute the search. Click on the
Check Mark on the Date Key-in Menu, the Literature Criteria
Menu, and the Specify Data Types Menu to tell the program to
accept your entries and return to the Main Menu.

6. Add a Geographic Location to the Search

So far, you have chosen literature as your data type and added a
publication date (1970–1980) to your search criteria.

The next step is to add a location to your search. If you performed
the aerial photography search described in the first part of this
tutorial, the location criteria you used in that search should still be
active and may be used for this literature search. The MBR used in
the first part of the tutorial is shown in Figure 64.
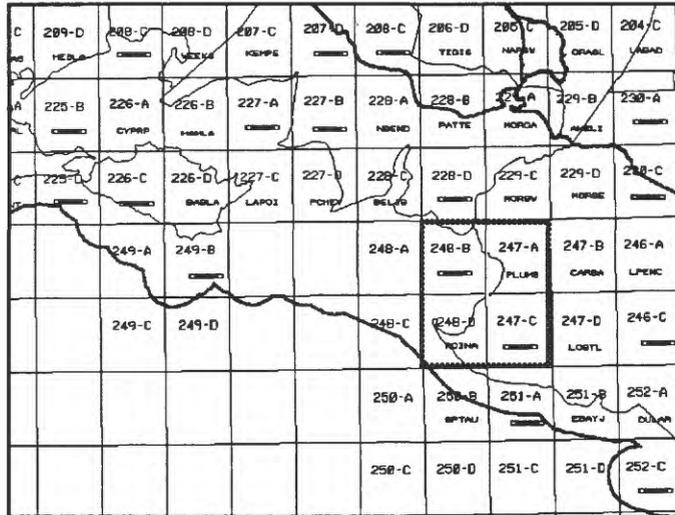
Figure 64. The base map used in the aerial photography search

Follow the directions in section 7 to add a location to your search if
you have not added one (because you either did not complete the
first part of tutorial during this session on the system or reset the
location part of your search criteria).

7. Enter Atchafalaya Bay on the Geographic Names Locator

Because the research you want to locate deals with Atchafalaya Bay, you need to add this location to the search. The four buttons in the center of the Specify Location Menu shown in Figure 65 represent the four ways to include a location as part of a search.
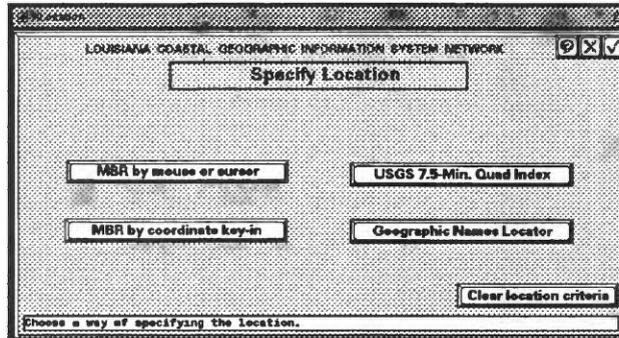
Figure 65. The Specify Location Menu

Click on the button labeled **Geographic Names Locator** on the Specify Location Menu to bring up the menu shown in Figure 66.

Type "Atchafalaya Bay" in the box labeled **Geographic Name** at the bottom of the menu.
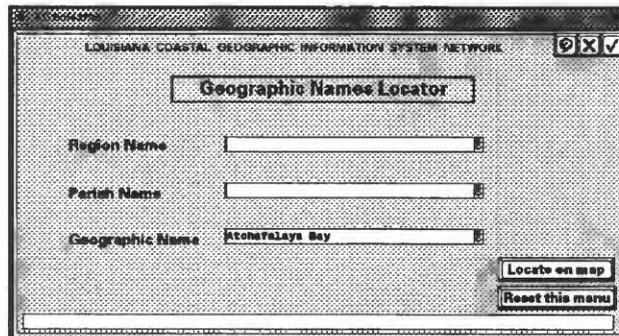
Figure 66. The Geographic Names Locator Menu

The Geographic Names Locator is useful when you know the name of your area of interest but are unsure of its precise location. Displaying the location of a place name on the base map prior to adding its coordinates to a search can ensure that the MBR the program is using to conduct your search matches the location you have in mind.

When you have typed a location into the Geographic Name box, click on **Locate on Map** (or the **Check Mark**). The program will outline the quadrangle containing the location in red and, in some cases, place a red dot showing the exact location of the name. When the location of "Atchafalaya Bay" is displayed, the base map should look like Figure 67.

The latitude and longitude of two USGS 7.5-min. quadrangles highlighted in Figure 67 will be added to your search when you click on the **Check Mark** on the Geographic Names Locator and the Specify Location Menus.
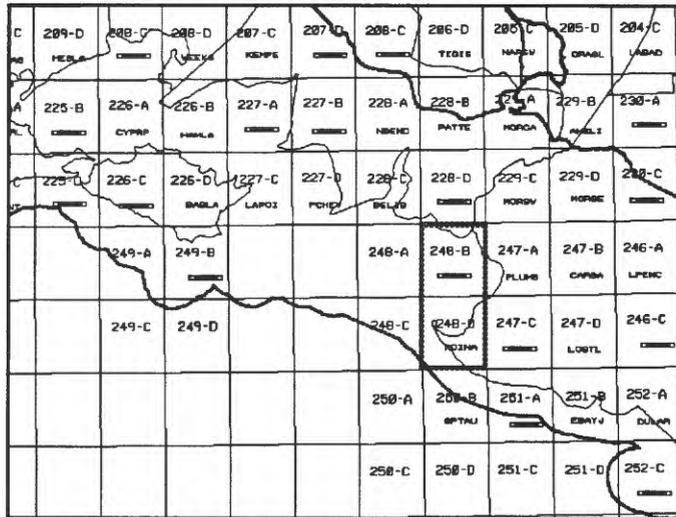
Figure 67. A minimal MBR for Atchafalaya Bay

8. Add a Subject Heading

Subject Headings, also known as subject terms or key words, describe the contents of data. The list of subject headings used by the GeoSpatial Search Program was created from the Library of Congress Subject Headings (LCSH), which are a standardized set of descriptive words and phrases arranged in a hierarchy of broader, narrower, and related terms.

In the previous section, you added a geographic location to your search criteria. Because the information you are seeking deals with the computer models of sediment transport and coastal erosion, adding one or more subject headings may help restrict your search to the records for which you are searching.

From the Main Menu, click on **Specify Subject Headings**. Click on the **pull-down control bar** beside the Current Subject box. When the list of broadest subject terms appears, click on **Computers**, which will produce the menu shown in Figure 68.
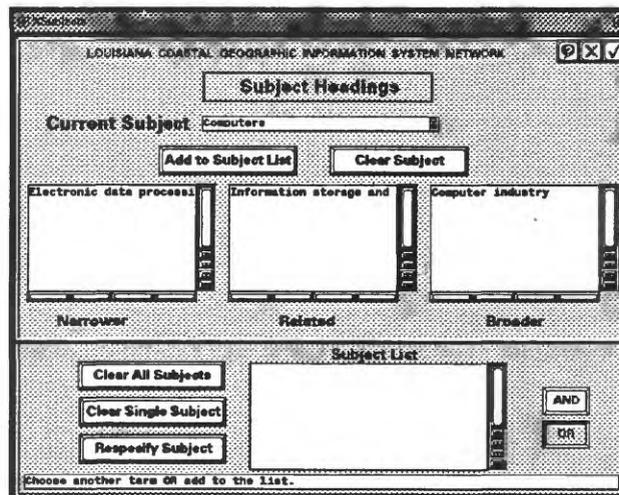
Figure 68. The Subject Headings Menu

None of the narrower, broader, or related terms appear directly relevant to simulations. In the Narrower column, clicking on **Electronic data processing,** the term that seems to have the most potential, will allow you to see its narrower, broader, and related terms. Unfortunately, none of these terms seems likely to produce

the results you want either.

Click on **Computers** to make that term the Current Subject once again, and then click on the **Add to Subject List** to move the term "Computers" to the Subject List at the bottom of the screen. The menu should now look exactly like Figure 68. Click on the **Check Mark** to accept this selection as part of your search and return to the Main Menu.

9. Execute the Search

After each step of this tutorial, you had to click on the **Check Mark**, return to the Main Menu, and then click on the button for the next menu needed to continue defining the search.

Specifically, after choosing a data type and adding a date, you clicked on the **Check Mark** on three menus (Date Key-in, Literature Criteria, and Specify Data Type) to return to the Main Menu. Then after specifying a location, you again clicked on two **Check Marks** to return to the Main Menu. The next step is to execute the search.

As mentioned above, the heart of the GeoSpatial Search Program is the Main Menu. From the Main Menu you access the other menus needed to define a search; after defining the search, you return to the Main Menu to execute it.

Search criteria are displayed in the large window on the Main Menu, as shown in Figure 69.
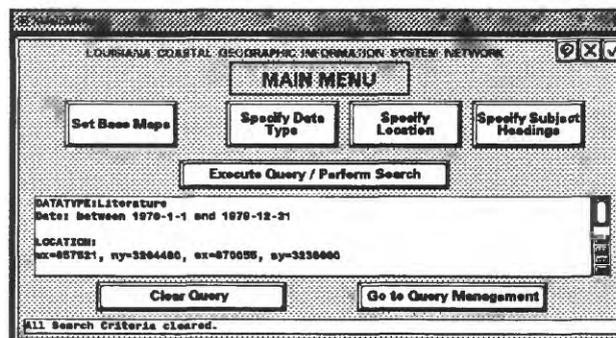
Figure 69. The Main Menu showing the search criteria

Looking closely at the example above, you will probably recognize some of the terms used to represent the search that you have created so far in this tutorial. (Scroll down to see that you have added one subject heading—computers.)

On the Main Menu, click on **Execute Query/Perform Search**. After a few moments, the program will return the results.

10. Initial Search Results

The Search Results Menu returned at the end of this search is shown in Figure 70.
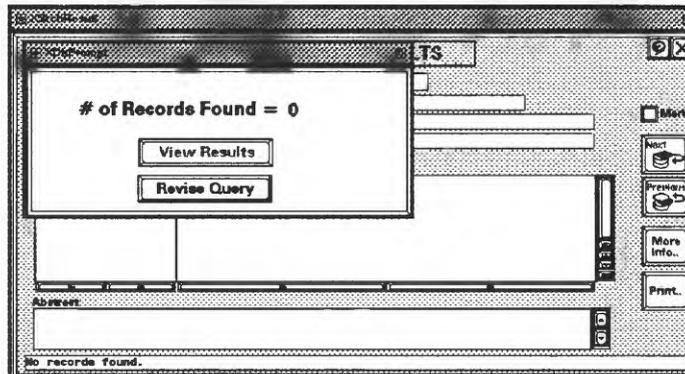
Figure 70. The Initial Search Results

A window ("XDbPrompt") tells you that your search has resulted in no records found. Normally, this window not only tells you the number of records found, but also gives you the option of viewing the results or revising your query. Since in this case, there are no results to view, you must click on **Revise Query** and go back to the Main Menu to modify your query.

The most likely explanation for this result (or lack of result) is that no records matching both your subject term and the geographic location appear in the data base. To correct this, we will repeat the search after eliminating the subject heading (Computers) from the search criteria and adding a title term (a word appearing in the title of the article) in its place.

11. Add a Title Term to Your Search

Click on **Literature** on the Main Menu to bring up the Literature Search Criteria Menu shown in Figure 71. Add a title term ("Simulation") to your search criteria. Click anywhere in the **text box** under the word "Title"; a cursor will appear allowing you to type in the box.

Figure 71. The Literature Search Criteria Menu

Type the word "Simulation" in the box beside the word title (the first letter may be capitalized or lowercase). The program will automatically place a wild card character (%) before and after any word(s) you type. This wild card character allows your entries to be "truncated," shortened to cover many possible variant endings. For example, typing "simulat" rather than simulation would find such variants as simulation, simulations, and simulate.

Click on the **Check Mark** to accept this new addition to the Literature Criteria Menu. Next, we must reset the Subject Headings Menu so that no Subject Heading term appears as part of our search.

On the Main Menu, click on **Specify Subject Headings**. On the Subject Headings Menu, click on **Clear All Subjects** to reset all the menus. Then click on the **Check Mark** to incorporate this change into your search criteria and return to the Main Menu.

12. Execute the Search (Again)

Execute the search by clicking on the button labeled **Execute Query/Perform Search**. After a few moments, you should see the Search Results Menu shown in Figure 72.
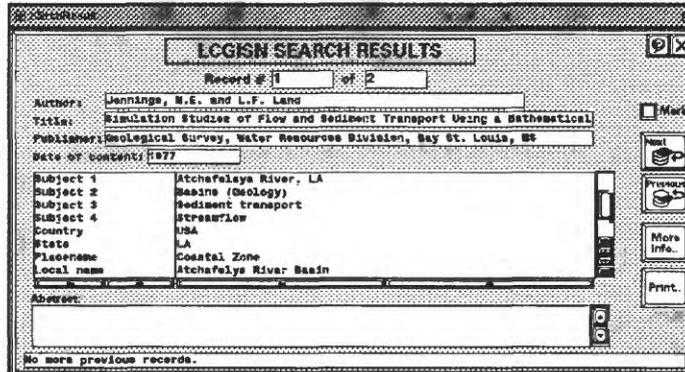
Figure 72. The Search Results Menu

The search produced two records. Click on the **Next** button to examine the second record (Figure 73).
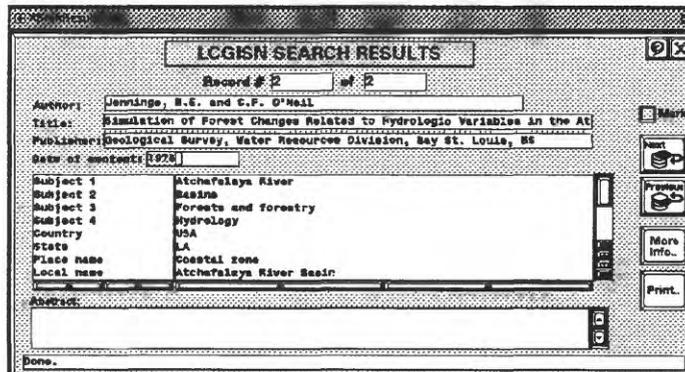
Figure 73. Search Results: Record #2

In this tutorial, we narrowed our search by specifying a publication date (between 1970 and 1980), and a specific geographic location ("Atchafalaya Bay"). We executed the search, which produced no results. We then decided that the subject term might have been

responsible for producing this undesirable output. We decided to add a title term ("Simulation") to the search.

After eliminating the Subject Heading term "Computers" on the Subject Heading, we returned to the Main Menu and executed the search. The new search criteria produced a very narrow range of search results (two records) that provided exactly the information we were seeking.

Narrowing searches for other data types would require different search strategies. For example, if the object of our search had been aerial photography, we would not have used author or title as search criteria because they are not associated with that data type. Instead, we would use criteria characteristic of aerial photography. For instance, we might have specified a scale, holding agency, or sensor class. Experimenting with the program will help you to develop search strategies that result in adequate numbers of returns.

Conclusion: This tutorial described two fairly typical geospatial searches. First, a search for aerial photography. The search criteria specified that air photos at scales of less than 1:63,000 and cloud cover of less than 10 percent would be acceptable. A geographic location was added to the search and defined as the area around Atchafalaya Bay. This search returned 154 records that were arranged in reverse chronological order (most recent first).

Next, a literature search was described. In this search, you sought an article published between 1970 and 1980, geographically referenced to the same location as the first search, containing "Simulation" as part of its title. This search located two records that met the criteria.

For details about the role of spatial references in GeoSpatial Program searches, see Section 5.1 (Spatial Search Methodology) and Section 15.0 (General Search Strategies). For more information about using Subject Headings, see Section 12.0 (Subject Headings Menu).

Glossary

Introduction

Developing a comprehensive glossary for the GeoSpatial Search Program was challenging because of the inclusive, multidisciplinary nature of the project and the diverse group of potential users. It would be very difficult to cover all possible terms and definitions in a way that satisfies professionals in the many fields this project encompasses. This glossary does not attempt this kind of comprehensive treatment.

What follows might be called a "functional glossary," a collection of definitions of terms and processes the user is likely to encounter when using the GeoSpatial Search Program.

Most of the relevant technical and special terms related to geographic information systems (GIS), remote sensing, cartography, library and information science, computer networking, and the Internet have been included. When possible, the definitions also clarify the difference between conventional meanings of a term and the use of the term in the GeoSpatial Search Program.

Rather than looking on this glossary as a finished product, it may be more useful to see it as the beginning of an ongoing effort to develop a standard terminology related to spatial indexing and geospatial metadata.

Please send any additional definitions or corrections to the LCGISN technical committee by e-mail or by using the **Send to LCGISN** utility in the GeoSpatial Search Program.

Glossary

Abstract
A brief narrative summary of the data set. The abstract should provide information about the sources and processing of the data set. The abstract, along with a statement of the purpose or intended use of the data, provides a complete overview of the data.

access
The process of obtaining data from or placing data into storage in a computer.

Access Constraints
Restrictions and legal prerequisites for accessing the data set. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the data set.

Access Instructions
Instructions on the steps required to access the data set.

access time
A measure of the time interval required for the data to be retrieved from storage and delivered to the user. Indicating the size of the file (in kilobytes) provides the user with an idea of the relative access time.

accuracy
The closeness of the results of observations, computations, or estimates to true values or values accepted as being true. Accuracy relates to the quality of a result and is distinguished from precision, which relates to the quality of the operation used to obtain the result.

accuracy assessment
Comparison of a classification to geographical data assumed to be true. Usually, the assumed-true data are derived from ground truthing.

accuracy report
A list of the percentages of accuracy computed from the error matrix in a classification accuracy assessment.

ACSM
American Congress on Surveying and Mapping.

address
See Internet Protocol (IP) address and Universal Resource Locator (URL).

ADP
Automated data processing.

ADPE
Automated data processing equipment.

AEC
Army Environmental Center.

aerial photograph
Generally, any photograph of the terrain taken with a camera mounted in an aircraft. Aerial photography is called simply Photography in LCGISN's data base.

aerial photographs, composite
Aerial photographs made with a camera having one principal lens and two or more surrounding and oblique lenses symmetrically placed. The several resulting photographs may be rectified in printing to permit assembly as verticals with the same scale.

aerial photographs, oblique
A photograph taken with the camera axis directed between the horizontal and the vertical. (1) High oblique: an oblique photograph in which the apparent horizon is shown. (2) Low oblique: an oblique photograph in which the apparent horizon is not shown.

aerial photographs, vertical
An aerial photograph made with the optical axis of the camera approximately perpendicular to the earth's surface and with the film as nearly horizontal as is practicable.

Aerial Photography Summary Record System (APSRS)
A computer-based information system maintained by the National Cartographic Information Center (NCIC) for recording and retrieving details pertaining to aerial photography held by numerous federal, state, and private organizations.

AI
See Associate Investigator (AI).

American Standard Code for Information Exchange (ASCII)
A seven-bit code adopted as a standard to facilitate interchange of data between various machines and systems.

AM/FM
Automated Mapping/Facilities Management.

AML
ARC Macro Language.

annotation
The writing of notes, sketching of geologic contacts, or any other explanatory markings on an aerial photograph or map. Computer mapping and image processing software usually have this capability for digital products.

anonymous FTP
A process for retrieving files using the File Transfer Protocol. Users log on as "anonymous," and use their e-mail address as a password.

ANSI
American National Standards Institute.

APA
American Planning Association.

API
Application Programming Interface.

archie
A software system on the Internet for locating files stored on FTP servers that matches keyword entries to file names. (Archie is to anonymous FTP servers as Veronica is to Gopher servers.)

area
Level of spatial measurement referring to a two-dimensional defined space. A polygon on the earth as projected onto a horizontal plane is an example of an area.

area of interest
The geographic location for which the user is searching for information. After locating the area of interest on the GeoSpatial Search Program's base map, the location is added to the query statement using the Specify Locations Menu.

ARPA
Advanced Research Projects Agency.

array

(1) A series of items arranged in a meaningful pattern. (2) A series of addressable data elements in the form of a grid or matrix.

ASCE

American Society of Civil Engineers.

ASCII

See American Standard Code for Information Exchange (ASCII).

aspect ratio

The ratio of the length of a feature in relation to its width.

Associate Investigator (AI)

An associate or assistant to a PI on a research problem, task, or subtask.

attribute

A set or collection of datum that describes the characteristics of real-world entities or conditions. Attribute data are usually alphanumeric. Attribute data are used to describe the graphic representation of an entity on a map such as a label, e.g., a polygon label. Large amounts of attribute data such as those associated with a GIS are usually maintained as separate attribute data sets and are related to a map by names or codes.

author

The originator of a data set. May be an individual, agency, or institution.

AVHRR

Advanced Very High Resolution Radiometer. A sensor on NOAA satellites.

axis

(1) A straight line around which a plane figure may rotate to produce a solid; a line of symmetry. (2) One of a set of reference lines for a coordinate system.

azimuth

(1) The direction of a line given as an angle measured clockwise from a reference direction, usually north. (2) In radar remote sensing, the direction at right angles to the antenna beam; in side-looking radar, the direction parallel to ground track.

azimuth line

A line on an aerial photograph representing a true direction between two points, generally from the photographic center point to some second point.

azimuthal projection

A map projection that is created from projecting the surface of the earth to the surface of a plane.

back-up

Making a copy of a file or a whole disk for safe keeping in case the original is lost or damaged.

band

A defined range or interval of frequencies or wavelengths of the electromagnetic spectrum that exhibits common characteristics.

base map

(1) A map showing certain fundamental information, used as a base on which additional data of specialized nature are compared or compiled. (2) A map containing all the information from which maps showing specialized information can be prepared; a source map. The LCGISN GeoSpatial Search Program uses a base map as a refer-

ence to enable users to specify locations to include in data base queries.

baud rate
A measure of the speed of data transmission between a computer and the other devices—equivalent to bits per second.

bit
An abbreviation of binary digit. A single character of a language employing only two distinct kinds of characters or values, 0 or 1.

bit map
A pattern of bits (i.e., ON/OFF) on the grid stored in memory and used to generate an image on a raster scan display.

BLM
Bureau of Land Management (under the U.S. Department of Interior).

BLOB
Binary large object.

BMP
Microsoft Windows bitmapped image format.

Boolean operators
The terms and, or, and not as used to relate several search results. LCGISN allows the boolean operators *and* and *or* to be associated with subject headings (key words) as part of a search.

Bounding Coordinates
The limits of coverage of a data set expressed by latitude and longitude values in the order westernmost, easternmost, northernmost, and southernmost. For data sets that include a complete band of latitude around the earth, the West Bounding Coordinate shall be assigned the value -180.0, and the East Bounding Coordinate shall be assigned the value 180.0.

BPI
Bits per inch. Measures the number of bits stored in a linear inch of a track on a recording surface, such as a disk or tape.

bps
Bits per second.

browser
Another term for viewer. A browser is a software package that permits you to explore the World-Wide Web. NCSA Mosaic is a browser.

BTW
By the way.

bytes
A unit of eight contiguous bits or binary digits within the internal memory of a computer. One byte contains a sufficient number of bits to represent any alphabetic or numeric character in binary form, so that it forms a basic unit for designating capacity of computer storage.

CAD
Computer-Assisted Design/Drafting/ Drawing.

cadastral map
A map showing the boundaries of subdivisions of land to describe and record ownership. A cadastral map also may show culture, drainage, and other features relating to the value and use of land.

CAD/CAM
Acronym for Computer-Aided Design/Computer-Aided Mapping. Differs from a geographic information system (GIS) in that the system can only create displays. It cannot analyze or process the base data.

CADD
Computer-Aided Design and Drafting.

CADGIS
The Computer-Aided Design Geographic Information System (CADGIS) Computing Lab located in the New Design Building at LSU. LCGISN resides on a server located in this lab.

CAE
Computer-Assisted Engineering.

CAI
Computer-Assisted Instruction (same as CAL).

CAL
Computer-Assisted Learning (same as CAI).

CAM
Computer-Assisted Manufacturing.

CAN
Cooperative Agreement Notice.

CAST
Center for Advanced Spatial Technologies.

catalog
(1) A collection of information arranged in a systematic way that enables consistent searching and referencing. (2) The process of preparing materials to be placed into a system that enables them to be searched and referenced as consistently and as accurately as possible.

catalog records
A restricted body of text containing standard and repeating elements or fields defining the features that characterize a particular type of object or information. The LCGISN GeoSpatial

Search Program provides a means for searching and retrieving catalog records describing the contents, uses, and availability of eight types of data.

CBD
Commerce Business Daily. Advertises projects for bid.

CC
Carrying Capacity.

CCEER
See Center for Coastal, Environmental, and Energy Resources (CCEER).

CDR
Corel Draw format.

CD ROM
Compact Disk Read-Only Memory.

CE
Corps of Engineers.

CECER
U.S. Army Corps of Engineers Construction Engineering Research Laboratory.

CEDD
Committee for the Exchange for Digital Data.

cell
A defined geometric shape that stores data or defines an area that is labeled. The most common mapping cell is a square.

cell library
A file in which cells are stored and later accessed during a design session and used to place cells or symbols within a design file.

cell size
The area that one pixel represents, measured in map units. For example, one cell in the image may represent an

area 30 meters by 30 meters on the ground. Sometimes called "pixel size".

center
To click on a point on the base map, making it become the new center of the display window. To "center" the base map, click on the Center button on the Pocket Menu.

Center for Coastal, Environmental, and Energy Resources (CCEER)
A consortium of twelve research and teaching units at Louisiana State University in Baton Rouge, LA.

center point
The point at the exact center of a photograph, corresponding in position to the optical axis of the camera.

central processing unit (CPU)
The part of a computer that controls the interpretation and execution of instructions. A CPU does not include main memory, peripherals, or interfaces.

CERN
The European Laboratory for Particle Physics in Geneva, Switzerland where the World-Wide Web was originated by Tim Berners-Lee. The acronym CERN comes from the earlier French title *Conseil Europeen pour la Recherche Nucleire*.

CGM
Computer Graphic Metafile format.

check mark
One of the three menu control buttons in the top right-hand corner of most GeoSpatial Search menus that are used to control movement through the program. Clicking on the Check Mark button accepts a command and returns the user to the previous menu.

CIR
Color infrared.

Citation
Information used to reference the data set. The citation section of metadata includes such fundamental information as the name of the author (originator), the title, publication date, and publisher (or issuing agency).

class
A surface characteristic type or category that is of interest to an investigator or user; for example, forest by type, vigor, or condition, or water by color or temperature.

classification
The process of assigning individual pixels of a multispectral image to categories, generally on the basis of spectral reflectance characteristics.

clearinghouse
A distributed network of geospatial data producers, managers, and users linked electronically. Establishing spatial data clearinghouses is a major goal of the National Spatial Data Infrastructure (NSDI). The plan encourages data providers to develop means to describe available data in an electronic form, and to provide these descriptions (or "metadata") using means that can be accessed over a communications network.

client
Computers running client software connect to server machines holding information. The client makes requests to a server for documents and is responsible for displaying the infor-

mation. NCSA Mosaic is an example of client software. Currently, the LCGISN GeoSpatial Search Program is not client software because all of its code resides on the server at LSU.

Cloud Cover
The area of a data set obstructed by clouds, expressed as a percentage of the spatial extent.

CMY
Cyan, magenta, yellow.

CNRI
Corporation for National Research Initiatives.

color composite
Color image produced by assigning colors to three selected compounds of a multi-image.

color composite image
A color image prepared by projecting individual black-and-white multi-spectral images in color.

Color Infrared (CIR) film
Photographic film sensitive to energy in the visible and near-infrared wavelengths. Color infrared film is especially useful for detecting changes in the condition of the vegetative canopy, often manifested in the near-infrared region of the spectrum. By convention blue color is assigned to the recorded green band; green color to the red band and red color to the near-infrared band. NOTE

Color-infrared film is not sensitive in the thermal infrared region and therefore cannot be used as a heat-sensitive detector.

composite map
A single map created by joining together several separately digitized maps.

composite photograph
A photograph made by assembling the separate photographs, made by the several lenses of a multiple-lens camera in simultaneous exposure, into the equivalent of a photograph taken with a single, wide-angle lens.

concatenate
To connect in a series. To link or append.

conic projection
A map projection that is created from projecting the surface of the earth to the surface of a cone.

Contact Information
Identity of, and means to communicate with, person(s) and organization(s) associated with the data set.

contour
Line joining points of equal vertical distance above or below a datum.

contour interval
The vertical distance between two adjacent contours. Frequently known as the vertical interval (V.I.).

contour map
A topographic map that portrays relief by means of contour lines.

control, ground
(1) Control obtained by ground surveys as distinguished from control obtained by photogrammetric methods; (2) Ground (in-situ) observations to aid in interpretation of remote sensor data.

controlling agency
The agency that is responsible for deciding the terms under which a particular type of data can be accessed. Sometimes the controlling agency is the same as the holding agency, the location where data physically reside.

control point
A point with a given horizontal position and a known surface elevation to be used in estimating unknown elevations elsewhere in the area to be mapped.

coordinate pair
A set of Cartesian coordinates describing the location of a point, line, or area (polygon) feature in relation to the common coordinate system of the data base.

covariance
The measure of how two variables change in relation to each other. If larger values of X are associated with larger values of Y, the covariance is positive. The covariance is negative if larger values of X are associated with smaller values of Y. The covariance approaches zero if the variables have no association.

CPU
See Central Processing Unit (CPU).

CRDA
Cooperative Research and Development Agreement.

criteria
See search criteria.

CSI
See Coastal Studies Institute (CSI).

Currentness Reference
The basis on which the time period of content information is determined.

DARPA
Defense Advanced Research Projects Agency.

data
Measurements or observations about real-world entities. A single datum has three potential components:

(1) attribute information that describe the substance, characteristics, variables, values, and similar qualities of the datum; (2) geographical information that describes the position of the datum in space relative to other data; and (3) temporal information that describes the instant or period of time for which the datum is valid.

data class
Those pixels in an overlay representing a specific ground condition and carrying the same data value.

data compression
Any technique that condenses the available data so as to make data storage or transmission more efficient with minimal loss of information.

data definition
A specific statement of the particular features that differentiate one data set of a particular data type from another of the same data type. After selecting a data type, users of the GeoSpatial Search Program define the particular features of that data type for which they would like the program to search.

data dictionary
Repository of information about the definition, structure, and usage of data. It does not contain the actual data.

data layer
Data having similar characteristics being contained in the same plane or overlay (e.g., roads, rivers). Usually information contained in a data layer is related and is designed to be used with other layers for analysis in a GIS.

Data Quality Information

A general assessment of the quality of the data set. (Recommendations on information to be reported and tests to be performed are found in "Spatial Data Quality," which is chapter 3 of part 1 in the Spatial Data Transfer Standard (SDTS), Department of Commerce, 1992.

data records

Representation and storage of data items, e.g., a single map, a single sheet of statistics, a fixed or variable length machine-readable record.

data reduction

Transformation of observed values into useful, ordered, or simplified information.

data set

(1) A file or files that contain related geometric and attribute information; a collection of related data. (2) A named collection of logically related data records arranged in a prescribed manner. The physical set of data of one data type being referred to or being used in the context of a data processing operation. (3) A specific collection of related data elements used for a particular task; may include data from many sources and in many formats.

data type

The name of a data set based on the nature of the real-world entities or conditions described by the data. Examples include forest stand data, soil type data, campsite locations data, habitat type data, insect damage map, ownership boundaries. When the data are represented and stored on maps the term is synonymous with "map layer".

Data Type

The term used to refer to the many kinds of data treated by the GeoSpatial Search Program. Data Types include literature, aerial photography, maps (hardcopy, raster, and vector), satellite imagery, audiovisual materials, as well as tabular and geotechnical data. People also are treated as a data type because the system contains details about its users as well as data contacts and allows users to search for information (phone numbers, addresses, areas and topics of interest) about people.

Database Management System (DBMS)

A specialized piece of computer software used to process structured information in various ways. The DBMS used by LCGISN include Oracle and Microsoft FoxPro.

DBMS

See Database Management System (DBMS).

DDL

Data Definition Language.

default

A value automatically assigned, or an action automatically taken, unless otherwise specified.

DEM

Digital Elevation Model (USGS brand of a DTM). Elevation data is produced by the USGS at scales of 1:24,000 and 1:250,000.

Description

A characterization of the data set summarizing the data sources and processing and a statement of purpose describing its intended use and limitations. Also called an abstract. A

description of each data type record appears in the data base and can be accessed from the search results menu by selecting Additional Information.

Detailed Description
Description of the entities, attributes, attribute values, and related characteristics encoded in the data set.

DGN
Intergraph MicroStation design file.

DIGEST
Digital Geographic Exchange Standard.

digital data
Data in the form of numbers. In geographic processing, both the X, Y, and Z coordinates of location and attribute characteristics are represented by numbers.

digital elevation model (DEM)
A file with terrain elevations recorded for the intersection of a fine-grained grid and organized by quadrangle as the digital equivalent of the elevation data on a topographic base map.

digital image
A two-dimensional array of regularly spaced picture elements (pixels) constituting a picture.

digital line graph (DLG)
A digital computer file containing lists of point coordinates describing boundaries, drainage lines, transportation routes, and other linear features, organized by quadrangle as the digital equivalent of the linear hydrographic and cultural data on a topographic base map.

digital terrain model (DTM)
A land surface represented in digital form by an elevation grid or lists of three-dimensional coordinates.

Digital Transfer Option
The means and media by which a data set is obtained from the distributor.

digitizing
The process of converting an image recorded originally on photographic material into numerical format or digital numbers for computer processing.

display resolution
The number of pixels that can be viewed on the display device monitor, horizontally and vertically.

display window
The area of the base map that is currently visible on the screen to the user. To change the display window, activate the Pocket Menu by clicking the right mouse button while pointing to the body of any menu. The following commands are available for changing the display window: zoom in, zoom out, fit, center, and window area.

distortion
Any shift in the position of an image on a photograph that alters the perspective characteristics of the photograph. Causes of image distortion include lens aberration, differential shrinkage of film or paper, and motion of the film or camera.

distributed processing
A method of organizing data processing so that both processing and data can be distributed among different machines in one or more locations.

Distribution Information
Information about the distributor of and options for obtaining the data set.

DL
Digital library.

DLG
Digital Line Graph.

DNS
Domain Name System. A distributed database system for translating computer names (like ruby.ora.com) into numeric Internet addresses (like 194.56.78.2) and vice versa.

DOC
Department of Commerce.

documentation
The written specifications indicating a computer program's goals, memory requirements, data structures, and logarithms. The description and format for the data to be entered and the description and format of the results should be included in a program's documentation.

Document Type Definition (DTD)
A specific markup language written using SGML. HTML is an example of a DTD.

DOD
Department of Defense.

DOE
Department of Energy.

Domain Name System (DNS)
A general purpose distributed, replicated, data query service chiefly used on the Internet for translating hostnames into Internet addresses. DNS can be configured to use a sequence of name servers, based on the domains in the name being looked for, until a match is found. DNS is usually installed as a replacement for the hostname translation offered by Sun Microsystem's Network Information System (NIS). Whereas NIS relies on a single server, DNS is a distributed data base. It can be queried interactively using the command "nslookup". The Domain Name System refers to both the way of naming hosts and the servers and clients that administer that information across the Internet.

DOS
Disk operating system.

DOT
Department of Transportation.

DOTD
Department of Transportation and Development.

DPI
Dots per inch.

DSS
Decision support system.

DTD
See Document Type Definition (DTD).

DTED
Digital Terrain Elevation Data (DMA brand of a DTM).

DTM
Digital terrain model.

DXF
AutoCAD Data Exchange Format (for CAD data).

e-mail
Electronic mail.

EA
Environmental Assessment.

EDI
See Electronic Document Interchange (EDI).

EDM
Electronic distance measuring.

EEWS
Environmental Early Warning System.

EIS
Environmental Impact Statement.

Electronic Document Interchange (EDI)
A common means for intercompany transfer of information. Data such as purchase orders can be sent between companies, speeding the process of ordering materials and cutting administrative costs.

element
The smallest item of interest in a survey. It is a single entity of vector data, such as a point, a line, or a polygon.

enhancement
The process of altering the appearance of an image so that the interpreter can extract more information. Enhancement may be done by digital or photographic methods.

EOF
End of File.

EOS
Earth Observing System.

EOSAT
Earth Observation Satellite Company.

EPA
Environmental Protection Agency.

EPS
Encapsulated PostScript format.

ER
Entity-relation model.

ERDAS
Earth Resource Data Analysis System.

EROS
Earth Resource Observation System—a remote sensing agency administered by U.S. Geological Survey.

error
The difference between an observed or computed value of a quantity and the ideal or true value of that quantity. Metadata should include statements about a data set's accuracy or error, including the results of error-checking tests.

ESRI
Environmental Systems Research Institute, Inc.

ETIS
Environmental Technical Information System.

FAQ
Frequently asked questions.

FCC
Federal Communications Commission.

FD
Functional description.

FE
Facilities Engineer or Engineering.

featheredging
The thinning of overlapping edges of photographs before assembling into a mosaic in order to make match lines less noticeable. When overlapping

edges are feathered, shadows and sharp changes in contrast are reduced or eliminated. Also called feathering.

feature
An object or aspect of the earth's surface, such as a road, vegetation, or townsite. On a map, a "map feature".

Federal Information Processing Standards (FIPS)
Official source within the Federal Government of information processing standards. Developed by the Institute for Computer Sciences and Technology at the National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards.

FEMA
Federal Emergency Management Agency.

FGDC
Federal Geographic Data Committee.

FHA
Federal Highway Administration.

field
A group of characters or words that is treated as a unit of data.

File Decompression Technique
Recommendations of algorithms or processes (including means of obtaining these algorithms or processes) that can be applied to read or expand data sets to which data compression techniques have been applied.

file server
A centralized information strorage device that can be accessed by the users of a network.

FIPS
Federal Information Processing Standard.

fit
To return the LCGISN GeoSpatial Search Program display window to its original (default) appearance, causing the base map to show the entire state of Louisiana. Click on the Fit Button on the Pocket Menu to "fit" the base map to the display window.

flight line
(1) A line drawn on a map or chart to represent the track over which an aircraft has been flown or is to be flown. (2) The line connecting the principal points of vertical aerial photographs.

FOIA
Freedom of Information Act.

Format Name
The name of the data transfer format.

Format Version Date
Date of the version of the format.

FSTS
Federal Secure Telephone Service.

FTP
File Transfer Protocol. Internet (TCP/IP) software that allows files to be transferred between a host and a remote computer. Programs based on this protocol are also called FTP.

GEM
Digital Research graphical environment manager format.

GEMS
Global Environmental Monitoring System.

geodesy
The science that treats the determination of the size and figure of the earth (geoid) by such direct measurements as triangulation, precise traverse, trilateration, leveling, gravimetric observations, satellite triangulation,

and Doppler methods. The applied science of geodesy takes account of the figure and size of the earth.

geographic coordinates
A coordinate system for explaining the surface of the earth. Geographical coordinates are defined by latitude and by longitude (Lat/Long), with respect to an origin located at the intersection of the equator and the Prime (Greenwich) Meridian.

geographic data
A collection of data that are individually or collectively attached to geographic location. See also geospatial data.

geographic information system (GIS)
A unique system designed for a particular application that stores, enhances, combines and analyzes layers of geographic data to produce interpretable information. A GIS may include computer images, hardcopy maps, statistical data, or any other data included in a study, as well as computer software and human knowledge. GISs are used for solving complex geographic planning and management problems.

georeference system
An X, Y, or X, Y, Z coordinate system that locates points on the surface of the earth as a reference to points on a map. Systems include latitude-longitude, Universal Transverse Mercator, and State Plane Coordinate.

georeferencing
The process of assigning map coordinates to image data and then resampling the pixels of the image to conform to the map projection grid.

GeoSpatial Cataloging Program
A distributed application that enables users to catalog data for inclusion in the Louisiana Coastal GIS Network data base. Developed using Microsoft FoxPro for Windows, the program guides users through the process of developing metadata in accordance with the FGDC's Content Standard for Digital Geospatial Metadata.

geospatial data
Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth. This information may be derived from, among other things, remote sensing, mapping, and surveying technologies.

GeoSpatial Search Program
A program available on the Internet that enables users to search and retrieve metadata by interacting with a base map. Funded by USGS, the GeoSpatial Search Program was developed as part of the Louisiana Coastal GIS Network (LCGISN) at Coastal Studies Institute, Louisiana State University, Baton Rouge, LA.

GIF
CompuServe Graphic Image Format.

GILS
Government Information Listing Service.

GIS
See geographic information system (GIS).

GLIS
Global Land Information System. An interactive computer system developed by the U.S. Geological Survey (USGS) for scientists seeking sources of information about the earth's land

surfaces. GLIS contains metadata (descriptive information about data sets). Through GLIS, scientists can evaluate data sets, determine their availability, and place online requests for products. GLIS is more than a mere list of products. It offers online samples of earth science data that may be ordered through the system.

Gopher
Menu-driven system on a server machine that presents files available for retrieval in hierarchical fashion. Gopher is considered easy to use because of its menu system.

Gopherspace
Term for the interconnected Gopher servers.

GPO
Government Printing Office.

GPS
Global Positioning System.

GRASS
Geographic Resources Analysis Support System.

gray literature
Hard-to-find texts such as conference proceedings, reports, and technical papers. LCGISN contains references to gray literature, which is generally not found or hard to find in public and university libraries.

gray scale
A monochrome strip of shades ranging from white to black with intermediate shades of gray; used in a setup for a color photograph and serves to balance the separation negatives and positive dye images.

grid
A system of lines superimposed on aerial photographs, maps, or charts that permit identification of ground locations with respect to the indicated reference system.

Grid Coordinate System
A plane-rectangular coordinate system usually based on, and mathematically adjusted to, a map projection so that geographic positions can be readily transformed to and from plane coordinates.

ground data
Supporting data collected on the ground, and information derived therefrom, as an aid to the interpretation of remotely recorded surveys, such as airborne imagery, etc. Generally, ground data should be collected concurrently with the airborne survey. Data concerning weather, soils, and vegetation types and conditions are typical.

ground truth
Information concerning the actual state of the environment at the time of a remote sensing overflight.

GSA
General Services Administration. An agency responsible for volume purchases for government agencies.

GUI
Graphical user interface.

hard copy
Any map, chart, or graphic presentation recorded on a sheet in such a manner that it may be stored or transported.

HCI
Human-Computer Interaction.

hierarchical database structure
A method of arranging computer files or other information so that the units of data storage are connected by a

hierarchically defined pathway. From above to below, relations are one-to-many.

holding agency
The agency or institution where a particular data set resides and from which that data may be obtained. Sometimes but not always the same as the controlling agency, who decides the terms under which a particular type of data can be accessed.

Home Page
Start-up document that serves as home base for Internet exploration.

host
A computer connected to a network. Also called a node.

host computer
The primary or controlling computer in a data network.

hostname
The unique name that is used to identify a computer on a network, used to identify it for electronic mail, Usenet News, and other forms of electronic communication. The hostname is an ASCII text string that is translated into a numeric IP address by the "etc/hosts" file, a domain name system (DNS), or resolver.

HPGL
Hewlett-Packard Graphics Language. A standard plotter format.

HTML
Hypertext Markup Language. The collection of styles used to define the various components (e.g., bulleted list, link, citation, emphasis) of a hypertext document. HTML is an SGML DTD.

hydrographic map
A map showing a portion of the waters of the earth, including shorelines, the topography along the shores and of the submerged portions, and as much of the topography of the surrounding country as is necessary for the purpose intended.

hyperlink
Word or graphic in a file displayed on screen with some form of highlighting (color or underlining or both). The word or graphic represents hidden text containing the URL information of another document, which is displayed when you click on the highlighted word or graphic.

ICA
International Cartographic Association.

Identification Information
Basic information about the data set.

IEOS
International Earth Observing System.

IFB
Invitation for Bid.

IFF
Commodore Amiga interchange format file.

IGES
Initial graphics exchange specification.

image
(1) The likeness of any natural or manmade features, objects, and activities. Images can be acquired directly on photographic materials using cameras, or indirectly if non-imaging types of sensors have been used in

data collection. (2) The physical representation of a scene as recorded by a remote-sensing system. Although image is a general term, it is commonly restricted to representations acquired by nonphotographic methods.

image classification
Quantitative decision rules that classify or identify objects or patterns on the basis of their multispectral radiance values; as such the normal output is analogous to an image map requiring no visual interpretation.

image processing
Encompasses all the various operations that can be applied to photographic or image data. These include, but are not limited to, image compression, image restoration, image rectification, image enhancement, preprocessing, quantization, spatial filtering, and other image pattern recognition techniques.

imagery
The visual representation of energy recorded by remote sensing instruments. In the LCGISN data base, imagery does not include aerial photography (which is treated as the data type Photography) or a digital map (which could be constructed using one or more images, to which line work, classification information, and possibly labels have been added).

IMG
Digital Research GEM image format.

Information Services Division (ISD)
The unit in CCEER that handles the development, production, and dissemination of information. ISD is a point of contact for information about

LCGISN and the GeoSpatial Search Program.

infrared (IR)
Name assigned to an extensive band of invisible, long wavelength electromagnetic radiations that continue the spectrum beyond visible red light. We can perceive a portion of the infrared spectrum as heat, and some special films are capable of recording energy in the near infrared.

INGRES
Interactive Graphics and Retrieval System. A relational data base management system.

interpretation
The act of analyzing imagery to produce significant, reliable and detailed information concerning the environmental features of an area and determining the significance of the presence, conditions, or use of these features.

IP address
Internet Protocol address. A unique computer address consisting of a series of numbers separated by periods in a form such as 128.39.28.139. To make IP addresses easier to remember, short words or abbreviations are usually used in place of numbers in IP addresses. Domain Name Systems translate the name back to its numeric equivalent.

IR
See infrared.

IRC
Internet Relay Chat. IRC is a software tool that makes it possible to hold real-time keyboard conversations online.

IR color film
Infrared color film. Film consisting of three layers in which the red-imaging responds to photographic IR radiation ranging in wavelength from 0.7 to 0.9 μm. The green-imaging layer responds to red light, and the blue-imaging layer responds to green light.

IRM
Information Resources Management.

ISD
See Information Services Division (ISD).

ISO
International Standards Organization.

ISOC
Internet Society.

ISPRS
International Society of Photogrammetry and Remote Sensing.

ITC
International Training Centre for Aerospace Survey and Earth Sciences (The Netherlands).

ITD
Institute for Technology Development (under NSTL).

iterative
A process in which some operation is performed repeatedly.

JPL
Jet Propulsion Laboratory.

JSC
Johnson Space Center (NASA).

key-in boxes
Boxes on many of the GeoSpatial Search Program's menus that allow the user to type entries directly into the program. Many key-in boxes also contain pull-down lists, providing the most common entries for a particular entry.

kilobyte
A unit of memory representing 1,024 bytes and often designated with the symbol K, as in 4K for 4 kilobytes. The symbol K is also used to refer to 1,024 words of any specified size.

Lambert conic conformal projection
A map projection on which all geographic meridians are represented by straight lines that meet at a common point outside the limits of the map, and the geographic parallels are represented by a series of arcs having this common point as a center.

LAN
See Local area network (LAN).

Landsat
A series of earth-orbiting satellites that gather Multispectral (MSS) and Thematic Mapper (TM) imagery. Designed primarily for the collection of earth resources data. Operated by EOSAT, a commercial company.

Larger Work Citation
The information identifying a larger work in which the data set is included.

lateral-oblique photograph
An oblique aerial photograph taken with the camera axis as nearly as possible normal to the flight line. Also called lateral oblique.

latitude
A system of dividing the earth's surface into equal bands that run east-west. Latitude is measured in degrees, minutes, and seconds from the equator.

layer

(1) An integrated, areally distributed, set of spatial data usually representing entity instances within one theme, or having one common attribute or attribute value in an association of spatial objects. In the context of raster data, a layer is specifically a two-dimensional array of scaler values associated with all or part of a grid or image. (2) A component of a GIS data base that contains all of the data for one theme. A layer consists of a GIS file and also may include descriptors, a trailer, and other data. See also data layer.

LCD

Liquid Crystal Display. A display technology.

LED

Light Emitting Diode. A display technology.

legend

The reference that lists the colors, symbols, line patterns, shadings, and other annotation used on a map, and their meanings. The legend often includes the map's title, scale, origin, and other information.

library

A collection of standard, often used data, computer subroutines, or symbols in digital form.

line

(1) A level of spatial measurement referring to a one-dimensional defined object having a length, direction, and connecting at least two points. Examples are roads, railroads, telecommunication lines, streams. (2) A vector data element consisting of a line (the set of pixels directly between two points), or an unclosed set of lines. (3) A row of pixels in a data file.

Lineage

Information about the events, parameters, and source data that constructed the data set, and information about the responsible parties.

LIS

Land Information System.

local area network (LAN)

A computer network spanning a small geographic area (e.g., an office or building) that allows information and device sharing.

longitude

A system of dividing the earth into bands that run north-south and meet at the poles. Longitude is measured in degrees, minutes, and seconds starting from the "prime meridian," which runs through Greenwich, England.

MacPaint

Apple Macintosh MacPaint format.

macro

A text file containing a series of frequently used operations that can be executed by a single command. Can also refer to a simple high-level programming language with which the user can manipulate the commands in a GIS.

MADTRAN

DMA's Mapping Datum Transformation software.

map

A representation in a plane surface, at an established scale, of the physical features (natural, artificial, or both) of a part of the earth's surface, with the means of orientation indicated. The

LCGISN data base includes records for hard copy, raster, and vector maps.

map coordinate system
A system of expressing locations on the earth's surface.

map grid
Two sets of parallel lines at right angles drawn on a plane surface and used as a rectangular coordinate system for plotting position and scaling distances and directions in surveying and mapping.

map projection
(1) A method of representing the three-dimensional spherical surface of a planet on a two-dimensional map surface by systematically drawing lines on a plane surface to represent the parallels of latitude and the meridians of longitude of the earth. All map projections involve the transfer of latitude and longitude onto an easily flattened surface. Map projections are concerned primarily with minimizing distortion in area, shape, distance, and direction. (2) The basic system of coordinates used to describe the spatial distribution of elements in a GIS.

map, thematic
A map designed to demonstrate particular features or concepts. In conventional use this term excludes topographical maps.

map, topographic
A map showing correct horizontal and vertical positions of features represented.

MARC
See USMARC.

MC&G
Mapping, Charting & Geodesy.

MC&GFDES
Mapping, Charting & Geodesy Feature Data Exchange Standard.

media
The physical devices used to record, store, and (or) transmit data.

menu
(1) A list of options on a display allowing an operator to select the next operations by indicating one or more choices with a pointing device, such as the stylus of a digital tablet. (2) In the LCGISN GeoSpatial Search Program, the user moves through a series of menus to select a data type, specify search criteria, specify a location, and add subject headings (key words) to the search. Each of the customized forms used in this process is called a menu.

menu control buttons
The three buttons in the top right-hand corner of most GeoSpatial Search menus that are used to control movement through the program. Clicking on the Check Mark accepts a command and returns the user to the previous menu; clicking on the X Button cancels a selection and returns the user to the previous menu; clicking on the Question Mark initiates the system's online help utility.

Mercator Projection
A map projection centered along the Equator with evenly spaced meridians perpendicular to parallels spaced progressively farther apart poleward so that compass bearings are not distorted. A transverse Mercator projection uses the same system of projection, but with the projection centered along a meridian to provide low distortion with a zone around the central meridian.

meridian
A great circle on the earth that passes through the geographic poles.

message bar
A text box along the bottom of all of the GeoSpatial Search Program's menus on which are displayed instructions and feedback as you use the program.

metadata
Data about the content, quality, condition, and other characteristics of data. Metadata are the standardized descriptions of data that appear in the LCGISN data base and enable users of the GeoSpatial Search Program to conduct searches. At the end of a search, the user can view, print, or save to a file the metadata record(s) that have been retrieved.

MGE
Modular GIS Environment. Intergraph's GIS packages.

minimum bounding rectangle (MBR)
A rectangle drawn as small as possible while still enclosing a geographic area of interest. One of the ways to specify a location using the GeoSpatial Search Program is to draw an MBR on the base map using the mouse.

model
A set of mathematical, verbal expressions, or steps, that define a set of criteria and create an output.

modem
A device for the conversion of digital and analog signals to allow data transmission over telephone lines. Modem is an acronym for Modulator-Demodulator.

mosaic
An assemblage of overlapping aerial or space photographs or images whose edges have been matched to form a continuous pictorial representation of a portion of the earth's surface.

Mosaic
A distributed hypermedia system developed by NCSA Software Development Group which uses hypertext to navigate remote collections of information. Mosaic allows information discovery and retrieval using the global Internet.

mouse
A computer input device that is generally used in conjunction with but doesn't replace a keyboard.

mouse buttons
The LCGISN GeoSpatial Search Program uses a two-button mouse. The left button is used for making selections on menus, clicking on control buttons, and drawing on the base map. Use the right button to reject a selection on the base map and to activate the Pocket Menu (by clicking on the body of any menu). If your mouse has three buttons, ignore the middle button and use the left and right buttons only.

MSAG
Master Street Address Guide.

MSP
Microsoft Paint format.

multispectral image
Multi-image whose components are taken at the same time in different spectral wavelengths.

mylar
A stable base material used for map work that will maintain close tolerance dimensions if temperature and humidity are retained within close limits.

NASA
National Aeronautic and Space Administration.

Native Data Set Environment
A description of the processing environment in which the data was produced, including items such as the name of the software (including version), the computer operating system, the file name (including the host-, path-, and filenames), and the data set size.

NCDCDS
National Committee for Digital Cartographic Data Standards.

NCGA
National Computer Graphics Association.

NCGIA
National Center for Geographic Information and Analysis.

NCIC
National Cartographic Information Center.

NCSA
National Center for Supercomputing Applications at the University of Illinois, Urbana-Champaign.

near-infrared, photographic
That portion of the electromagnetic spectrum between visible light and thermal infrared with wavelengths from 0.7 to 1 microns. Black-and-white infrared refers to the film type used to image in the portion of the spectrum from 0.7 to 0.9 microns.

network
Two or more computers connected to each other for the purpose of exchanging information or sharing computer equipment such as devices and peripherals.

Network Address
The electronic address from which the data set can be obtained from the distribution computer. See also IP address and URL.

Network File System (NFS).
Sun Microsystems' file system that allows data to be shared with many users.

NFS
See Network File System (NFS).

NGDC
National Geophysical Data Center (under NOAA).

NIC
Network Information Center.

NII
National Information Infrastructure.

NISC
Network Information Systems Center.

NIST
National Institute of Standards and Technology.

NMAS
National Map Accuracy Standards.

NOAA
(1) National Oceanic and Atmospheric Administration. (2) An acronym for a satellite that, when followed by a number, is used to designate a particular satellite in the family of weather satellites launched by NOAA.

node

(1) A station, terminal, computer, or other device in a computer network. (2) A zero-dimensional object that is either a topological junction of two or more links or chains, or an endpoint of a link or chain.

NOST

The NASA/OSSA Office of Standards and Technology.

notepad

One of the utilities available to users of the LCGISN GeoSpatial Search Program that provides an electronic note tablet for recording information that can be saved to a file when the user logs off the system. The notepad is activated by clicking on the Notepad button on the Pocket Menu.

NOV

Notice of Violation.

NPS

National Park Service (under USDI).

NREN

National Research and Education Network.

NSDI

National Spatial Data Infrastructure.

NSDICCAP

NSDI Competitive Cooperative Agreements Program.

NSF

National Science Foundation.

NWI

National Wetlands Inventory.

oblique photograph

A photograph taken with the camera axis intentionally directed between the horizontal and the vertical.

Offline Media

Name of the media on which the data set can be received.

Offline Option

Information about media-specific options for receiving the data set offline (by mail).

OGF

Open GIS Foundation (used to be Open GRASS Foundation).

OGF

Open GRASS Foundation (later became Open GIS Foundation).

OGI

Office of GRASS Integration.

OGIS

Open Geodata Interoperability Specification.

OGIS

Open Geographic Information Systems.

on-line documentation

Help files that can be read on the system and that provide command descriptions, sequences, and other information to help you use the software. In LCGISN, clicking on the Question Mark button accesses online documentation.

OPAC

Online public access catalog.

open systems

The concept of multiple vendors' hardware and software working together without proprietary boundaries.

Ordering Instructions

General instructions and advice about, and special terms and services pro-

vided for, the data set by the distributor.

ORNL
Oak Ridge National Laboratory.

orthophotograph
A copy of a perspective photograph or aerial photograph from which distortion due to tilt and relief has been removed.

orthophotomap
An orthophotographic map with contours and color-enhanced cartographic treatment, presented in a standard quadrangle format and related to standard reference systems.

orthophoto quad
A photomap made from an assembly of orthophotographs.

OS
Operating system.

OSI
Open System Interconnection. Defined by ISO, OSI is a communications protocol intended to become a standard.

overlap
The area common to two successive photos along the same flight strip. The amount of overlap is expressed as a percentage of photo area. Also called endlap.

overlay
(1) A transparent sheet giving information to supplement that shown on maps; when the overlay is laid over the map on which it is based, its details will supplement the map. (2) A tracing of selected details on a photograph, mosaic, or map to present the interpreted features and the pertinent detail, or to facilitate plotting.

parameter
A property whose value determines the characteristics or behavior of a thing or process.

PCX
PC Paintbrush export format.

People
One of the eight data types included in the LCGISN data base. The GeoSpatial Search Program enables users to search for people (contacts) by organization or organization type, keywords (Subject Headings), and geographic location of research interest.

photogrammetry
The art, science, and technology of obtaining reliable information about physical objects and the environment, through processes of recording, measuring, and interpreting images and patterns of electromagnetic radiant energy and other phenomena.

photograph
A picture formed by the action of light on a base material coated with a sensitized solution that is chemically treated to fix the image points at the desired density. Usually now taken to mean the direct action of electromagnetic radiation on the sensitized material.

photographic interpretation
The act of examining photographic images for the purpose of identifying objects and judging their significance. Also called photointerpretation or image interpretation.

Photography
One of the Data Types searchable using the GeoSpatial Search Program. Photography implies aerial photogra-

phy, and it should not be confused with photos, which are treated by LCGISN as an Audiovisual data type.

photomap
A single photo, composite, or mosaic showing coordinates and marginal information.

PI
Principal Investigator.

PIC
Lotus 1-2-3 picture format.

PICT
Apple Macintosh picture format.

PING
Packet Internet Groper—a TCP/IP utility that sends packets of information to a computer on a network, PING can be used to determine whether a computer is connected to the Internet.

pixel
(1) Literally, "picture element". The two-dimensional picture element that is the smallest non-divisible element of a digital image. (2) An individual phosphor element on a display screen. (3) A data element (picture element) having spatial and spectral aspects. The spatial variable defines the apparent size of the resolution cell (in other words, the area on the scanned surface represented by the data values), and the spectral variable defines the intensity of the spectral response for that cell in a particular channel.

pixel depth
The number of bits required to store all of the data file values in a file. For example, data with a pixel depth of 8, or 8-bit data, have 256 values (2e8 = 256), ranging from 0 to 255.

Place Keyword
The geographic name of a location covered by a data set. LCGISN handles place keywords under the Specify Locations by Geographical Name.

plane coordinates
Coordinates that are defined by a column and row position on a grid (x,y) specifying the locations of points in a plane. In cartography the plane usually is a projection of the earth's surface onto a flattenable cone or cylinder, and the x and y values scaled along the rectangular axes are called "eastings" and "northings".

planimetric map
A map that represents only the horizontal positions of features. A planimetrically accurate map shows accurate horizontal distances between features.

plate
See cadastral map.

platform
A vehicle or object used to take remote sensing measurements, such as satellites, airplanes, balloons, kites, or rockets.

plotter
A computer hardware device that produces single or multi-colored pen plots of maps, charts, or figures that are stored in the computer.

PLSS
Public land survey system.

POC
Point of Contact.

point
(1) A graphical element representing a position in space. (2) A zero-dimensional object that specifies geometric

location. One coordinate pair or triplet specifies the location. Area point, entity point, and label point are special implementations of the general case.

Point of Contact
Contact information for an individual or organization that is knowledgeable about the data set.

polarization
The act or process of filtering energy in such a way that the vibrations are restricted to a single plane. Unpolarized energy vibrates in all directions perpendicular to the propagating source.

polygon
A set of closed line segments defining an area.

POTS
Purchase of Telephones and Services.

PPP
Point-to-Point Protocol.

precision
A quality associated with the refinement of instruments and measurements, indicated by the degree of uniformity or identity of repeated measurements. In a somewhat narrower sense, the term refers to the spread of the observations, or some measure of it, whether or not the mean value around which the spread is measured approximates the true value. Contrast with accuracy.

Process Step
A discrete unit of processing that affects either the data or metadata in a data set.

project
To reproduce as a point, line, or area on a surface by motion in a prescribed direction.

projection
A systematic drawing of lines on a plane surface to represent the parallels of latitude and the meridians of longitude of the earth or a section of the earth. See also map projection.

protocol
Sets of rules or standards that describe ways for computer systems to interact with one another to achieve compatibility. These conventions apply to data format, transmission timing and sequencing, and error handling.

PS
PostScript format.

Publication Date
The date when the data set is published or otherwise made available for release.

Publisher
The name of the individual or organization that published the data set. May be an individual, agency, or institution.

pull-down lists
A prepared list of typical entries for a particular text key-in box. On the LCGISN GeoSpatial Search Program, pull-down lists can be accessed by clicking on the pull-down list control bar on the right side of key-in box.

Purpose
A summary of the intentions with which the data set was developed. A statement of Intended Purpose should

accompany each data set, and along with the abstract or description, it provides a complete summary of the data.

quadrangle
A rectangular, or nearly rectangular, area covered by a map or plate. The outline is generally defined by parallels of latitude and meridians of longitude. Usually associated with USGS topographic maps, called quad maps. Often shortened to quad.

quality
An essential or distinguishing characteristic necessary for cartographic data to be fit for use.

Query Management
The part of the LCGISN GeoSpatial Search Program that allows you to save, retrieve, and manually edit SQL statements that the program uses to conduct searches.

Question Mark
One of the three buttons in the upper right hand corner of most GeoSpatial Search menus that are used to control movement through the program. Clicking on the Question Mark button initiates the sytem's online help utility.

R&D
Research and Development.

radar, imaging
An active remote-sensing device that transmits pulses of microwave energy and then receives reflections of the signal from a target. The reflected component is called the echo or backscatter.

RAM
Random Access Memory. Computer memory for the temporary storage of information, instructions, or data.

raster
(1) One or more overlapping layers for the same grid or digital image. (2) The pattern of horizontal, parallel scan lines that make up the image on a CRT screen. Each scan line consists of segments varying in intensity.

raster data
Cell data arranged in a regular grid pattern in which each unit (or cell) in the grid is assigned an identifying value based on its characteristics. Raster data are organized in a grid of columns and rows. Raster data usually represent a planar graph or geographical data.

raster object
One or more images and/or grids, each grid or image representing a layer, such that corresponding grid cells and/or pixels between layers are congruent and registered.

RDBI
Relational Database Interface.

RDBMS
Relational Data Base Management System.

RDMIS
Research & Development Management Information System.

record
A group of items in a file treated as a unit. For example, all data items for a census tract can be grouped as a record and assigned to a single segment of a magnetic tape file for convenient storage and retrieval. See also catalog records.

rectification
The process of making image data conform to a map projection system. In many cases, the image must also be

oriented so that the north direction corresponds to the top of the image.

rectified print
A photograph in which tilt displacement has been minimized from the original negative, and which has been brought to a desired scale.

reference data
Data about the physical state of the earth obtained from sources other than the primary remote sensing data source and used in support of the remote sensing data analysis. May typically include maps and aerial photographs, topographic information, temperature measurements, and other types of ancillary and ephemeral data. In most cases, more useful if collected concurrently with the primary data-collection mission. Also called ground truth, ground data, ground-based measurements.

reference system
The map coordinate system to which an image is registered.

region
An identified subset of the geographical data base. Regions may be permanently defined and named as subsets, such as a watershed, or interactively defined by the user through such methods as outlining an area on the display screen or searching for an area of the database with common attribute values.

relief
The vertical irregularities of a surface. The elevations or inequalities, collectively, of a land surface. Relief is usually represented graphically by contours, shading, or spot elevations.

remote sensing
The measurement or acquisition of data about an object or scene by a satellite or other instrument above or far from the object. Aerial photography, satellite imagery, and radar are all forms of remote sensing.

resampling
Technique for transforming a raster image to a particular scale and projection. During the process data file values may be extrapolated for the pixels in a new grid, after the data have been rectified or registered to the other image.

resolution
(1) A level of precision in data. Spatial resolution is a measure of the smallest angular or linear separation between two objects, usually expressed in radians or meters, with a smaller resolution parameter denoting greater resolving power. (2) The minimum difference between two independently measured or computed values that can be distinguished by the measurement or analytical method being considered or used.

RFB
Request for bid.

RFI
Request for information.

RFP
Request for proposal.

RFQ
Request for quotation.

RGB
Red, Green, Blue. A method of generating colors in a video system.

ROM
Read-Only Memory.

RS
Remote Sensing.

RSDB
Remote Sensing DataBase.

S&T
Science & Technology.

SAIF
Spatial Archive and Interchange Format.

sample
A subset of a population chosen to gather information about the characteristics of the population.

scale
The ratio of distance on a map as related to the true distance on the ground. Scale may be expressed as a ratio, 1:24,000; a representative fraction, 1/24,000; or an equivalence such as 1 in. = 2,000 ft.

scaled map
A georeferenced map that is accurately laid-out and referenced to represent distances and locations. A scaled map usually has a legend that includes a scale, such as "1 in. = 1,000 ft." The scale is often expressed as a ratio, like 1:12,000, where 1 inch on the map equals 12,000 in. on the ground.

scanner
A device for converting images from maps, photographs, or actual objects into digital form for computer processing and viewing.

scanning
Process of using an electronic input device to convert analog information such as maps, photographs, overlays, etc., into a digital format usable by a computer. See also digitizing.

scene
The area on the ground that is represented by an image or photograph.

schema
The definition of table columns, relations, data domain, and other elements of a data base, often illustrated using an entity-relationship diagram.

SCS
Soil Conservation Service (under USDA).

SCSI
Small Computer System Interface—pronounced "scuzzy."

SDBMS
Spatial Database Management Systems.

SDTS
Spatial Data Transfer Specification. A federal spatial data exchange standard.

search criteria
The definition of features used by the GeoSpatial Search Program to conduct metadata searches. Users enter search criteria by keying information into a series of customized menus and specifying locations by pointing to a base map. The program turns these selections into a Structured Query Language (SQL) statement that it uses to conduct a search of the LCGISN data base.

sensor
Any device that is sensitive to levels or changes in physical quantities, such as temperature or electromagnetic intensity, and converts these phenomena into a form suitable for input to an information-gathering system. An active sensor system, such as radar, produces the energy needed to

detect these phenomena. A passive sensor system, such as a multi-spectral scanner aerial photographic camera, depends on already existing energy sources, e.g., the sun.

Series Information
The identification of the serial publication of which the data set is a part.

Server
Computer that provides services (documents, software) to other machines that run specific software (clients) and request those services.

SGML
See Standard Generalized Markup Language (SGML).

sidelap
The area common to two photos in adjacent flight strips. The amount of sidelap is expressed as a percentage of the total photo area. Also called overlap.

signature
Any characteristic or series of characteristics by which a material may be recognized. A category is said to have a signature only if the characteristic pattern is highly representative of all units of that category.

simulation
Using the digital model of the landscape in a GIS for studying the possible outcome of various processes expressed in the form of mathematical models.

SIR
Shuttle Imaging Radar.

SLIP/PPP
An acronym for Serial Line IP/Point-to-Point Protocol. These two protocols allow dial-up access to the Internet through a serial (regular telephone line) link. Most Internet access packages support both, though you can use only one at a time.

SME
Subject matter experts.

Source Information
List of sources and a short discussion of the information contributed by each.

spatial
(1) Refers to phenomena distributed in space and therefore having physical dimensions. (2) Of or pertaining to the location, proximity to, or orientation of objects with respect to one another.

spatial data
See geographic data or geospatial data.

special-purpose map
Any map designed primarily to meet specific requirements. Usually the map information portrayed on a special-purpose map is emphasized by omitting or subordinating nonessential or less important information. A word or phrase is usually employed to describe the type of information for which a special-purpose map is designed to present, for example, a route, tax, or index map. See composite map.

SPOT
Satellite Probatoire d'Observation de la Terre. Earth resource satellites with high-resolution sensors first launched by France in January 1986 and operated by the *Centre National d'Etudes Spatiales*.

spot elevation
A point on a map or chart whose height above a specified reference datum is noted, usually by a dot or a small "x" and elevation value. Elevations are shown, wherever practicable, for road forks and intersections, grade crossings, summits of hills, mountains, and mountain passes, water surfaces of lakes and ponds, stream forks, and bottom elevations in depressions and large flat areas. Also called spot height.

SPSS
Statistical Package for the Social Sciences.

SQL
See Standard Query Language (SQL).

SSC
Stennis Space Center.

standard
An exact value (a physical entity or an abstract concept) established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. A fixed quantity or quality.

Standard Generalized Markup Language (SGML)
A standard for describing markup languages.

Standard Order Process
The common ways in which the data set may be obtained or received, and related instructions and fee information.

Standard Query Language (SQL)
A standardized set of text commands used to conduct searches on relational database management systems.

State Plane Coordinate System (SPSC)
A plane-rectangular coordinate system established for each state in the U.S. by the National Geodetic Survey.

stereo model
A three-dimensional mental impression produced by restricting views of the left and right images of an overlapping pair to the left and right eye, respectively. A stereoscope is used to aid the observer in merging the two views.

stereoscope
A binocular optical instrument for viewing two properly oriented and overlapping photographs or diagrams to obtain the mental impression of a three-dimensional model.

stereoscopic coverage
Aerial photography acquired with sufficient overlap to permit complete stereoscopic analysis. Flights are planned so that photographs will overlap about 60 percent of their width in the line of flight and 10 to 30 percent between flight strips.

stereoscopy
(1) The science or art that deals with three-dimensional effects and the methods by which these effects are produced. (2) The science and art that deals with the use of binocular vision for observation of a pair of overlapping photographs or other perspective views, and with the methods by which such viewing is produced.

STS
Science and Technology Studies.

Subject Headings
Thematic keywords. The GeoSpatial Search Program provides users with a

subset of the Library of Congress Subject Headings that they can use to add subject terms to spatial data searches.

surveying
The science and art of determining relative positions of points above, on, or beneath the surface of the earth, or establishing such points. In a more general sense, however, surveying can be regarded as that discipline encompassing all methods of gathering and processing information about the physical earth and the environment. Conventional ground systems are most frequently used, but aerial and satellite surveying methods also are common.

swath width
In a satellite system, swath width is the total width of the area on the ground covered by the scanner.

synthetic stereo image
A stereo model made by digital processing of a single image. Topographic data are used to calculate the geometric distortion.

TCP/IP
Transmission Control Protocol/Internet Protocol. The communications protocol designed to interconnect a variety of different computer equipment.

telemetry
The science of measuring a quantity or quantities. Measured values are transmitted from remote sensor(s) to a distant station where the quantities are measured, interpreted, or recorded.

telnet
The terminal emulation protocol (or a program based on that protocol) that lets you log on to other computers on the Internet.

TGA
Truevision Targa format.

thematic map
A map related to a topic, theme, or subject of discourse. Also called geographic, special purpose, distribution, parametric, or planimetric maps. Thematic maps emphasize a single topic such as vegetation, geology, or land-ownership.

Thematic Mapper (TM)
Landsat data acquired in seven bands with a spatial resolution of 30 x 30 meters. On board Landsat 4 and 5.

theme
(1) The overall topic of a map in which the spatial variation of a single phenomenon is illustrated. A vegetation theme map, for example, might illustrate such vegetative areas as pinyon-juniper, Douglas-fir, and sage. The LCGISN GeoSpatial Search Program allows searches using thematic key words called Subject Headings, which were developed using a subset of Library of Congress Subject Headings (LCSH). (2) A particular type of information, such as soil type or land use, that is represented in a GIS layer.

Theme Keyword
Commonly used word or phrase that describes the subject of a data set.

TIFF
Tagged Image File Format. A standard graphic file format.

TIGER
Topologically Integrated Geographic Encoding and Referencing. The nationwide digital data base of planimetric base map features developed

by the U.S. Bureau of the Census for the 1990 census.

tile

A part of the data base in a GIS representing a discrete part of the earth's surface. By splitting a study area into tiles, considerable savings in access times and improvements in system performance can be achieved.

Time Period of Content

Time period(s) for which the data set corresponds to the ground.

Title

The name by which the data set is known. If the work has more than one edition, the edition cited must be shown in parentheses after the title.

TM

Thematic Mapper. A multi-spectral scanner on Landsats 4 and 5.

topographic

Indicating elevation. Topographic data are image data in which data file values represent digitizing.

topographic map

A map showing the topography (contours, roads, rivers, etc.) in great accuracy and detail relative to the map scale used. The map should show the horizontal and vertical positions of the features represented. Topographic maps are distinguished from planimetric maps by the addition of relief in measurable form. A topographic map shows mountains, valleys, and plains; and, in the case of hydrographic charts, symbols, and numbers to show depths in bodies of water.

topography

Features on the surface of the earth considered collectively as to their form. A single feature is called a

topographic feature. Topography is subdivided into hypsography (relief features), hydrography (water and drainage features) and culture (man-made features).

topology

The way in which geographical elements are linked together.

Transfer Size

The size, or estimated size, of the transferred data set in megabytes.

TSSDS

Tri-Service Spatial Data Standard.

Turnaround

Typical turnaround time for the filling of an order.

TVP

Topological Vector Profile (of SDTS).

Type of Map

The form of the map through which the data set information is portrayed. Examples include "aerial photograph," "aeronautical chart," "demographic map," "globe," "hydrographic chart," "orthorectified image," "orthophotomap," "political map," "raised relief map," and "topographic map".

Type of Source Media

The medium of the source data set.

UNEP

United Nations Environment Program.

Universal Transverse Mercator (UTM)

A grid system based on the transverse mercator projection, applied between latitudes 84 degrees North and 80 degrees South on the earth's surface.

URISA
Urban and Regional Information Systems Association.

URL
Universal Resource Locator. Server and path information used in an HTML-coded source file to locate another document.

USACE
U.S. Army Corps of Engineers.

USACERL
U.S. Army Construction Engineering Research Laboratory.

USAF
U.S. Air Force.

USAID
U.S. Agency for International Development.

USDA
U.S. Department of Agriculture.

USDI
U.S. Department of the Interior.

Use Constraints
Restrictions and legal prerequisites for using the data set after access is granted. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the data set.

USENET
Informal network linking many sites; bringer of Netnews.

user
The consumer of the information provided by a data-processing system.

user interface
Method by which the human operator communicates with the various data base and applications modules.

USFS
U.S. Forest Service (under USDA).

USFWS
U.S. Fish and Wildlife Service (under USDI).

USGS
U.S. Geological Survey (under USDI).

USMARC
U.S. Machine Readable Catalog.

utilities
A collection of useful tools available to users of the LCGISN GeoSpatial Search Program. The utilities include the Notepad, a calender, a calculator, and a messaging function. All of the utilities are accessed from the Pocket Menu.

UTM
See Universal Transverse Mercator (UTM).

UTM grid
The Universal Transverse Mercator grid, a system of plane coordinates based on 60 north-south trending zones, each 16 degrees of longitudinal width, that circle the globe.

vector
Directed line segment, with magnitude commonly represented by the coordinates for the pair of end points. Vector data refer to data in an array with one dimension.

vector data
Data composed of x-y coordinates representing locations on the earth and taking the form of single points, strings of points (lines), or closed lines (polygons). Only the vertices of vector data are stored, instead of every point that makes up the element.

veronica

A software system on the Internet for locating documents stored in gopher servers.

voxel

A three-dimensional element that is the smallest non-divisible element of a digital volume.

VPF

Vector Product Format (DMA standard) also known as DIGEST-C, VRF and MIL-STD 600006.

VRF

Vector Relational Format (see VPF).

WAIS

Wide Area Information Server. WAIS is software that is used to index large text files in servers. On the client side, it finds and retrieves documents in data bases based on user-defined key words.

WAN

See Wide Area Network.

WES

U.S. Army Waterways Experiment Station.

Wide Area Network (WAN)

A computer network in which the nodes are separated by several miles or by thousands of miles. A WAN may be made up of several local area networks (LANs).

wild card

A character used in a computer search program that represents any possible character. Wild cards are especially useful for locating words with slightly different beginnings or endings than the term being specified in the search. For example, if you were not sure of the form of a particular term appear-

ing in a computer system, adding a wild card to your search would increase the likelihood that the computer would find the term for which you are searching. Therefore, adding the LCGISN GeoSpatial Search Program wild card character (%) to the end of "digitiz" (in the form digitiz%) would find digitize, digitizer, digitizing, digitization.

window area

The area of the base map displayed at a particular time. The window area button on the Pocket Menu enables the user to draw an MBR on the base map and make the area encompassed by the MBR the new base map display window.

Winsock

Short for "Windows Socket," Winsock is an application programming interface (API) designed to allow Microsoft Windows applications to run over a TCP/IP network.

WMF

Windows Metafile Format.

WORM

Write Once Read Many.

WPG

WordPerfect Graphic format.

WWW

World Wide Web. Also called simply "the Web," WWW is a network made up of servers that use hypertext links to find and access files. By way of hypertext, users traverse documents by using browsers such as Mosaic. Web documents can contain graphics, sound, and video in addition to text and are often described as information domains or landscapes.

WYSIWYG

What You See Is What You Get. Pronounced "wizzy-wig." Refers to graphics-based display that shows graphics and text on screen the way the printer will print them.

X button

One of the three buttons in the top right-hand corner of most GeoSpatial Search menus that are used to control movement through the program. Clicking on the X button cancels a selection and returns the user to the previous menu.

X-Windows

A specification for device-independent windowing operations on devices, developed initially by MIT's Project Athena and now a de facto standard supported by the X Consortium. X uses a client-server protocol (the X protocol) and is available on many Unix systems. It has also been described as over-sized, over-featured, over-engineered and incredibly over-complicated. X11R6 (version 11, release 6) was released in May 1994. The LCGISN GeoSpatial Search Program relies on X-Windows for the remote display its menus and base map.

zoom

The capability for proportionately enlarging or reducing the scale of a figure or maps displayed on a CRT. Users may zoom in or out on the GeoSpatial Search Program base map by using the button located on the Pocket Menu.

References

Avery, T.E. and G.L. Berlin. 1992. *Fundamentals of Remote Sensing and Airphoto Interpretation.* 5th edition. Macmillan.

Beatty, F.D. No date. *Glossary: Remote Sensing Training.* EROS Applications Assistance Facility, National Space Technology Laboratories.

Colwell, R.N., ed. 1983. *Manual of Remote Sensing.* 2nd edition. American Society of Photogrammetry.U.S. Army Corps of Engineers. No date. *The All New List of Abbreviations, Acronyms, and Jargon.*

Johannsen, C.J. and J.L. Sanders, ed. 1982. *Remote Sensing for Resource Management.* Soil Conservation Society of America.

ERDAS. 1991. *ERDAS Field Guide.* ERDAS.

GIS World. 1989. *The GIS Sourcebook.* GIS World.

Howe, D.B. *The Free On-line Dictionary of Computing.* (http://wombat.doc.ic.ac.uk).

Moik, J.G. 1980. *Digital Processing of Remotely Sensed Images.* NASA SP-431. National Aeronautics and Space Administration.

O'Dell, Peter. 1989. *The Computer Networking Book.* Vanana Press.

PC Magazine. 1994. "The Argot of the Internet." *PC Magazine.* 13:17 (October 11), p. 128.

Sabins, F.F., Jr. 1987. *Remote Sensing: Principles and Interpretation.* 2nd edition. W.H. Freeman.

Slama, C.C., ed. 1980. *Manual of Photogrammetry.* 4th edition. American Society of Photogrammetry.

Swain, P.H. and S.M. Davis. 1978. *Remote Sensing: the Quantitative Approach.* McGraw-Hill.

Appendix

The LCGISN Base Map includes 21 vector layers provided to assist users in locating their area of interest. The Base Map Layer Menu shown below is used to change the information displayed on the map.
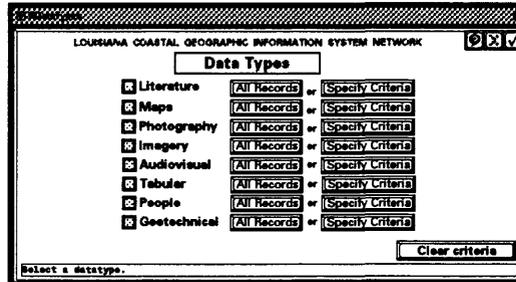
Parish Boundaries
Parish boundaries were originally digitized from 1:250,000 USGS topographic sheets printed on mylar.

Vector data layers: parish lines, parish polygons and parish labels.

Louisiana Cities and Towns
Originally digitized by LA Department of Transportation and Development (DOTD) from 7.5' USGS Topography maps. City locations and names were separated into a different file for the base map.

USACE New Orleans District (NOD) Map
The original design file was supplied by the U. S. Army Corps of Engineers New Orleans District. The CADGIS Lab converted this file from its original projection of Louisiana south zone of State Plane 1927 (Imperial units) to UTM zone 15 north hemisphere (metric units).

Vector data layers: Major city boundaries, river and coast lines and labels, levee lines and labels, USFW Management Areas and labels,

control structures and labels, Intercoastal Canal lines, USACE NOD district lines and labels.

Louisiana ZIP Codes
The data was converted from an Atlas Graphics format into an Intergraph design file. There are known problems with this dataset including missing zip codes. Zip codes are for the late 1980s.

LA Department of Environmental Quality (DEQ) River Basins
Created from subsegment boundaries of waterways as delineated by LA DEQ and digitized by the LSU CADGIS Lab. The base maps were 15' USGS topography maps. Public domain data available from the CADGIS Research Lab in digital form. Time period of the 15' base maps were of the 1950s and 1970s.

Coastal Zone
Legal description of the Louisiana Coastal Zone. Original data from MOSS export file generated at DNR and converted to Intergraph design file format. File format is Intergraph's Design File Format with a type 56 WMS element for projection information. Coordinates are stored in decimeters. (Working unit specification is m:10 dm:1.) Coordinate system is UTM zone 15 northern hemisphere. Geographic coverage is of the boundary of the coastal zone as defined by the Louisiana legislature.

Louisiana Highways
DOTD Louisiana Highways were originally digitized by DOTD from 7.5' USGS Topography maps and converted UTM. The original design file has been reorganized into three levels. All of the labels from this file have been dropped from GeoSpatial Search Program base map layer.

USGS Map Index
The curves for delineating the 7.5', 15', 100,000 scale, 250,000 scale maps were generated by the CADGIS Lab.

Vector data layers: 7.5' map names, 7.5' latitude and longitude labels, 7.5' map lines, 7.5' DOTD numbers, 7.5' DNR monikers, 15' map names, 15' latitude and longitude labels, 15' map lines, 1:100,000 map names, 1:100,000 latitude and longitude labels,

1:100,000 map lines, 1:250,000 map names, 1:250,000 latitude and longitude labels, 1:250,000 map lines, map frame lines.

Oil and Gas Lease Blocks Map
Amoco supplied the original design file. Randy McBride and Farrell Jones fit the file onto a UTM grid for zone 15 northern hemisphere. The spatial accuracy of lease blocks is known to be off by as much as 500 feet.

Vector data layers: shipping courseways lines, lease block (without section) lines, lease block labels, lease section lines, lease section labels, State/Federal water lines, bathymetry contours

Thematic Mapper Image of Louisiana
Converted from ERDAS GIS format into Intergraph raster format for 8 bit color index images. The ERDAS trailer file was converted by a C program into an Intergraph color table file. The color table stored in the file was then embedded into the header of the image file.

Not yet ready for public distribution.

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Index