Welcome to *SiteSeer*

Introduction

The objective of this exercise is to introduce you to *SiteSeer* public-domain software and the pollen database available at the NOAA National Climatic Data Center for Paleoclimatology. *SiteSeer* allows the user to browse contents of a pollen data base, displaying summary information and summary pollen diagrams. *SiteSeer* allows searching by Site Name or Contact Person. It also allows limited filtering of the data by Age, Range, Location, and Taxon.

SiteSeer is a teaching tool to explain how to use and interpret pollen data. Up-to-date information on pollen sites, as well as the actual data, are available from the National Climatic Data Center web page: http://www.ncdc.noaa.gov/paleo/pollen.html. The Data Search tool and Web Mapper on that web page are also tools for obtaining site information and downloading data.

This *SiteSeer* exercise will ask you questions about the North American Pollen Data Base (NAPD), and explain the best way to retrieve this information. Working through this material will help you examine the vegetation history of North America.

To Download *SiteSeer*

SiteSeer runs under any version of Microsoft Windows and includes a map and a datafile for each of the databases represented.

To access SiteSeer, go to free software link on NCDC webpage: http://www.ncdc.noaa.gov/paleo/softlib/softlib.html and follow instructions. You want to download the North American data for this exercise.

How the Program Works

Begin by starting *SiteSeer*.

Individual operations in *SiteSeer* can be performed using the mouse.

The *SiteSeer* window is divided into two halves. Start with the right panel--the map of North America. The red squares show the location of pollen records now available in the NAPD. You select sites on the map by placing the cross-hair over a red square and clicking. Notice that the selected site becomes highlighted in blue.

To enlarge a section of the map, place the cursor in the upper left corner of the section that you to expand. Hold the left mouse button down and move the mouse to the lower right corner of the section. Release the button and Voila! You should have an enlarged map view. You can keep zooming in on ever-small view areas until you are focusing on one square. To return to North America, click on Initial. To return to the previous enlargement, click on Previous.

The left panel provides information about a highlighted site, including the name, location, analyst, number of radiocarbon dates, and age range in maroon. Notice that as you move the cursor around the map, the latitude and longitude are displayed in the left panel. At the bottom of the left panel are two buttons “Publications” and “Diagram”. Publications will provide the bibliographic reference for the site. Diagram will plot the 15 most abundant pollen types in a percentage diagram, based on a sum of all terrestrial pollen and spores. To exit the diagram window go to the Diagram menu and select Close, or click on the close bar in the upper left-hand corner of the window, or press Escape, which will return you to the main window and keep the diagram in the background.

Getting Started

Main screen maneuvers

Click on the site in southeastern Washington.

Site Name _____

Analyst _____

Age range _____

a. Click on the Diagram button. What are the four dominant pollen types during the last glacial maximum (ca. 20,000-16,000 yr B.P.)?_____
_____

b. Where is this record published? _____

Search, Find

Go to Search in the menu bar at the top of the screen. Click on it. Click on Find in the submenu. This submenu allows you to locate a site by name or by analyst. ("Sigle" is the Code Word for the site in NAPD, ignore this button.)

a. In what state is Kirchner Marsh? Click on the Site Name and then type "Kirchner Marsh" in the Find What: box. Click on Ok. The site information should appear in the left panel, and the map location will flash in the right panel _____

b. Where does P.M. Anderson work? In the Search, Find dialog box , click on Contact Person, and type P.M. Anderson in the Find What: box. Click on Ok.
_____

Search, Find Next

To find all of Patricia Anderson's sites, click on Search, Find Next dialog box. The next site of Anderson and the site information should be displayed. Continue clicking until no more sites appear.

How many sites does P. M. Anderson have in the data base? _____

Options, Filter

Move to the Options Menu and click. Select the Filter dialog box and click. There are a lot of options here that let you select sites according to criteria specified in the Filter dialog box and then view their locations.

1. Selection of sites By Entity Type. Cores are lake cores, Sections are fossil records from bogs or riverine exposures, Surface Samples include cores or sections with surface (i.e. present day) samples. In the "By Entity Type" section of the Filter dialog box, click on the squares to deselect Cores and Sections, and click on Surface Samples to select it. Click on Ok.
A message box appears with count information and the sites are displayed on the map.

a. How many surface samples are in the data base?_____

2. Reselect Cores and Sections and deselect Surface Samples under By Entity Type in the Filter dialog box.

3. Selection of sites By Age Range. Unrestricted will give you all sites for all ages. Click on Age Range to find all sites of a particular age. Type in desired range and click on Ok.

a. How many sites have records that span the period from 25000 to 35000 yr B.P.? _____

b. What is the name of the site in Missouri? _____ (Click on the red square in Missouri on the map, to get this information.)

4. Reselect Unrestricted Age.

5. Selection of sites By Taxon. This panel allows a search for a particular pollen type and/or for a given percentage of a taxon.

a. Click on Name, then move cursor to down arrow on right side of Name box and click. A list of all the pollen types in the data base should appear. Scroll down to *Magnolia*. Click on *Magnolia* to select it. Click on Ok. What state(s) contain sites with *Magnolia*? (Be careful, you may have to zoom in on the map to answer this question correctly)_____ Why do you think there are not more sites with *Magnolia* pollen? _____.

6. Reselect None under By Taxon, and click the Initial button under the map.

Options, Diagram

This submenu allows you to format the pollen diagram. The diagram can be plotted by age or depth. You can show a shaded curve that is an exaggeration of the black curve. Once you've set these parameters, they become the default and are used to make a diagram when you click Diagram in the left panel of the main screen.

Options, Quiz

This submenu is good practice for the class. When you click on Quiz an unlabelled pollen diagram will be displayed. Try to guess where it is from. To get the answer, double click on ??? in the upper left corner. The map of North America will show the highlighted site and site information will appear in the left panel.

To call up another site, return to the Quiz menu and click again or press F6. To close the diagram window, use the Diagram Close submenu or double click on the close bar

File, Exit

To exit *SiteSeer*, select Exit under the File menu.

Study Questions

1. Look at a series of sites on the Atlantic Coastal Plain from South Carolina to Maine, and note the age when *Fagus* (beech) pollen first becomes abundant. Next look at the record of *Fagus* in a series of sites in southern lower Michigan and southern upper Michigan. Describe the Holocene migration history of beech in general terms based on the pattern implied by these records.

2. The prairie/forest border that lies in western Minnesota today shifted dramatically eastward in the middle Holocene during a warm/dry period. The pollen evidence of this are the high percentages of *Quercus* (oak), *Artemisia* (sagebrush), *Ambrosia* (ragweed), and Poaceae (grass) in the middle Holocene period. What Minnesota sites show the "prairie period"? How far east did the ecotone shift and when did it reach this limit? (Hint: Be sure you look at sites that have an age range that spans the last 10,000 years. Don't forget Bog D!)