

# Data Mapper User's Guide

## Purpose

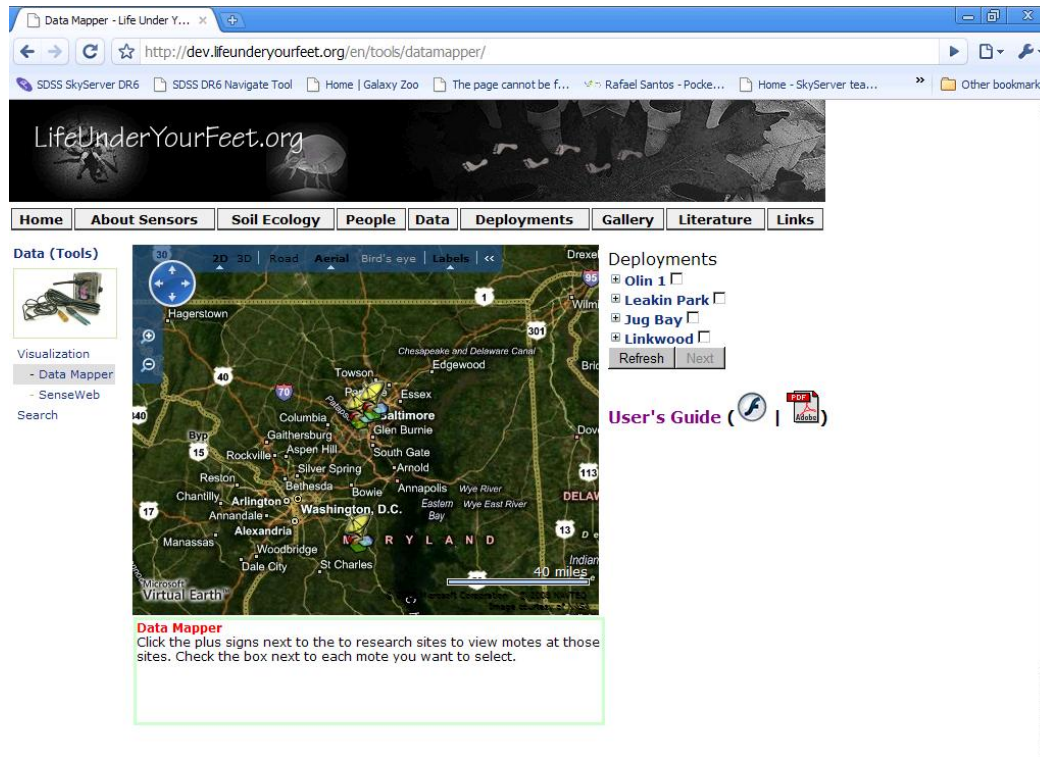
The Data Mapper serves two purposes. First, it shows the locations of the Life Under Your Feet sensor network deployments. Each deployment is located in a different ecological environment, so taking measurements in each of these environments helps us understand how soil organisms and their environment relate in different places.

Second, the Data Mapper is the easiest way to access data from the LUYF Database. The Data Mapper allows you to select exactly what data you want to see, from any of the deployments (and the notes that are deployed there), and from any time when notes were deployed. To help compare data from different notes and times, the Data Mapper can also create plots of our sensor data.

## Selecting Deployments and Motes

The Data Mapper is located under the Data section of the Life Under Your Feet website. To use the Data Mapper, choose the "Data Mapper" option, either from the left-hand menu or the main text of the Tools page.

Once you have selected "Data Mapper," you will see the following screen:

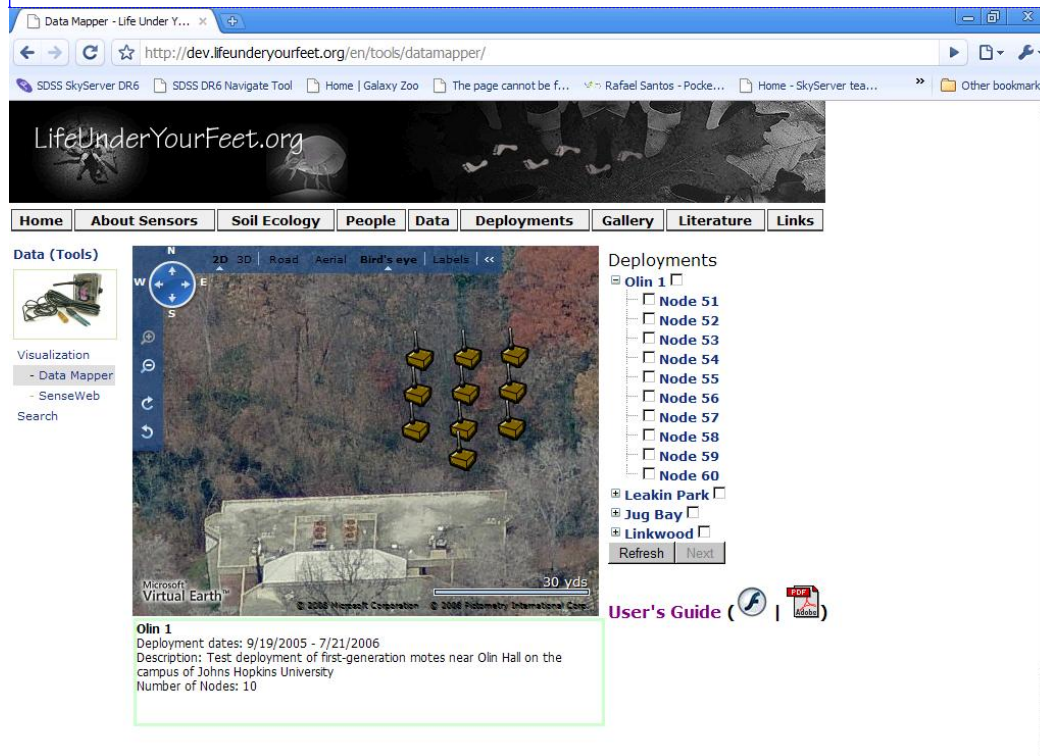


The screenshot shows a web browser window displaying the "Data Mapper" tool on the Life Under Your Feet website. The browser's address bar shows the URL <http://dev.lifeunderyourfeet.org/en/tools/datamapper/>. The website's navigation menu includes links for Home, About Sensors, Soil Ecology, People, Data, Deployments, Gallery, Literature, and Links. The main content area is divided into three sections: "Data (Tools)" on the left, a central map, and "Deployments" on the right. The "Data (Tools)" section includes a "Visualization" menu with "Data Mapper" selected and "SenseWeb" as an option. The central map is a satellite-style map of the Washington, D.C. area, showing various research sites marked with plus signs. The "Deployments" section lists four sites: "Olin 1", "Leakin Park", "Jug Bay", and "Linkwood", each with a checkbox. Below the list are "Refresh" and "Next" buttons. A "User's Guide" link is also visible. A green box highlights a text box below the map with the following instructions: "Data Mapper: Click the plus signs next to the to research sites to view motes at those sites. Check the box next to each mote you want to select."

The map, and the links to the right of the map, will help you locate our sensor network research deployments. For more on these sites, see the "Deployments" section.

You can drag the map to move around in it, or click the magnifying glasses to zoom in or out. Research sites are marked on the map by yellow antennas. Click on one of the antennas to go see an aerial photo of the research site. You can also go to the aerial photo by clicking on the research site names listed on the right side of the screen. The aerial photo for the "Olin 1" research site is shown below:

**Comment [JR1]:** One research site figure is enough.

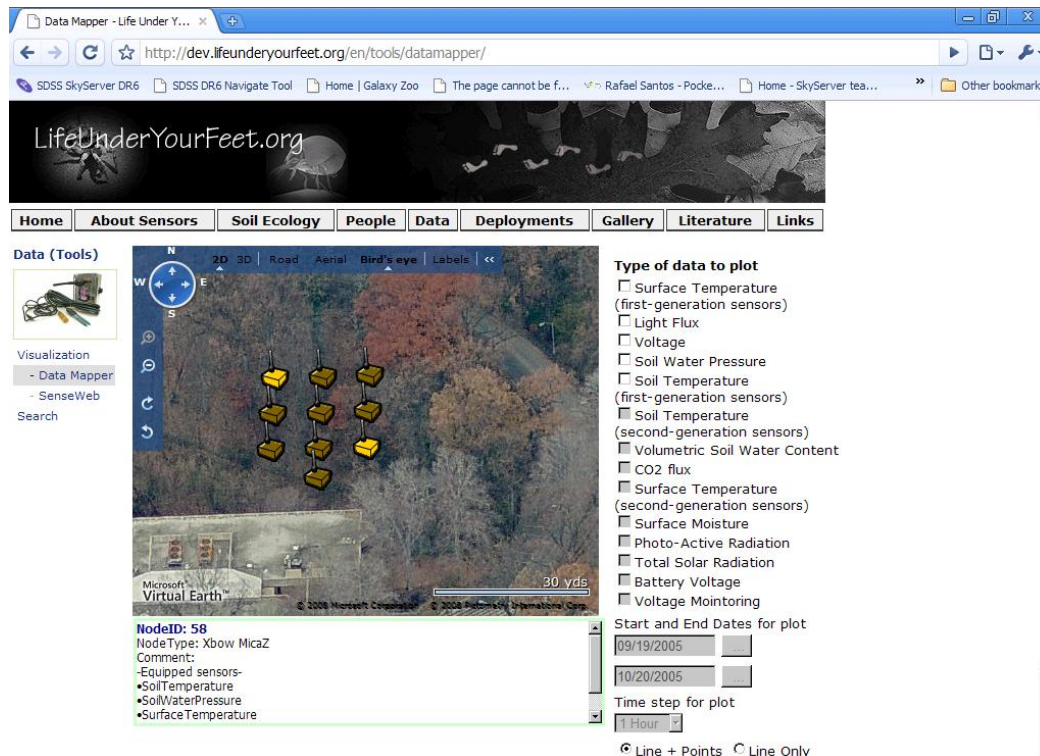


When you are ready to view data from one of the deployments, click on one or more motes in that deployment. Motes are represented by yellow boxes; click on a box to select that mote. Once you are done making your selections, click on the "NEXT" button directly below the listing of research sites.

**\*\* Be sure to watch the comments that appear in the box directly below the map\*\***

## Selecting Data to Plot

After you click Next, the right-hand menu changes, now listing types of data that you can plot. This list allows you to select what data to see for each mote you selected. The screen will look like this:



In this new menu, you will see many different variables listed, such as "Surface Temperature (first-generation sensors)," "Light Flux," etc. These variables are some of the things that the sensors on the motes measure. Sometimes, you will not be able to choose a particular variable for a particular deployment. This is because the motes at that deployment did not have sensors to measure that variable. Thus, your selections in this menu may be limited depending on the deployment that you are analyzing.

To select a particular variable, check the box immediately to the left of that variable's name. When you do this, some or all of the remaining variables will become grayed out, meaning that you will not be able to select them. This is because you can only select sensor data types that have the same unit. For example, if you select "Surface Temperature," everything but other Sensor Types that measure temperature will become deselected.

## Choosing Start and End Dates

The next step is to choose a time frame from which you'd like to see data. You can choose this time frame by selecting a Start Date and End Date from the menu on the right side of the map. You can input a date in two ways – by entering it manually or by choosing a date from the accompanying calendars. The calendar can be found by clicking on the blank grey box immediately to the right of the box where you would input either your start or end date. The screenshot below shows the calendar.

The screenshot shows the LifeUnderYourFeet.org website interface. At the top, there is a navigation menu with links: Home, About Sensors, Soil Ecology, People, Tools, Deployments, Gallery, Literature, Links, and Upcoming!. Below the menu is a 'Tools' section with a 'Getting Started' link and a search bar. The main area features a map of a forested area with several yellow sensor icons. A calendar for November 2008 is overlaid on the map, showing dates from 1 to 30. The calendar is titled 'November, 2008' and has a 'Today' button. The dates are arranged in a grid with columns for Sun, Mon, Tue, Wed, Thu, Fri, and Sat. The date 02/20/2007 is entered in the 'StartDate and EndDate' field. A '-NOTICE-' box is visible on the left side of the calendar, stating: 'You can only display sensor data for data types with'. The calendar also includes a '+ Points' button and a 'Select date' button at the bottom.

The calendar shows both the inactive and active dates for node(s) you selected. The inactive dates are shown in a light gray color, while active dates are shown in black.

Next, choose a time step for your plot. A time step is the increments of time (within your selected time frame) that the chart represents your data with. For example, do

you want to see data displayed every hour, every six hours, or every day? If you have selected a longer period of time to plot, you should select a larger time step.

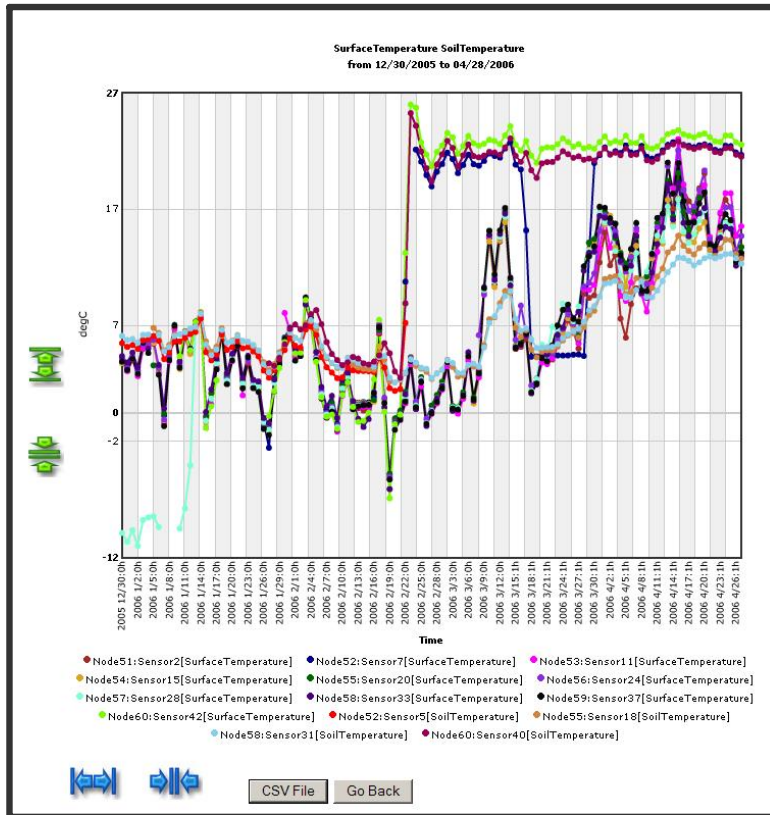
Once you have chosen your time step, choose a way in which you would like your data plotted: line only, or line + points.

**At this point, you should have chosen at least one type of data for the chart, a start date and end date, a time step for the data, and whether or not to connect the points with a line.**

**When you are satisfied with your choices in these menus, click the SUBMIT button at the bottom.**

## Viewing Your Plot

Once your data have been plotted, you will see a chart similar to the one shown below. In this plot, the x- and y-axes are appropriately labeled, and the chart has a title indicating which types of Soil Sensors were used, along with dates for the data sample. Below the chart, under the y-axis label, you will find a chart color key. This key shows which colors correspond to which nodes you have chosen.



If this chart is not what you expected, you can always click on the GO BACK button at the bottom of the screen to go back and change your plot settings. You can also get a comma-separated value (CSV) file, which can be opened by many spreadsheet programs, by clicking on the button at the bottom of the chart that reads "CSV FILE."

You can also use the green and blue buttons on the bottom and left side of the chart to change the size of the chart. The first green button from the top enlarges the chart, by stretching it vertically, and the second green button compresses the chart vertically. The blue buttons at the bottom of the screen enlarge and compress the chart horizontally.