

SGS-LTER

GIS DATA AND TOOLS AVAILABLE AT SGS-LTER

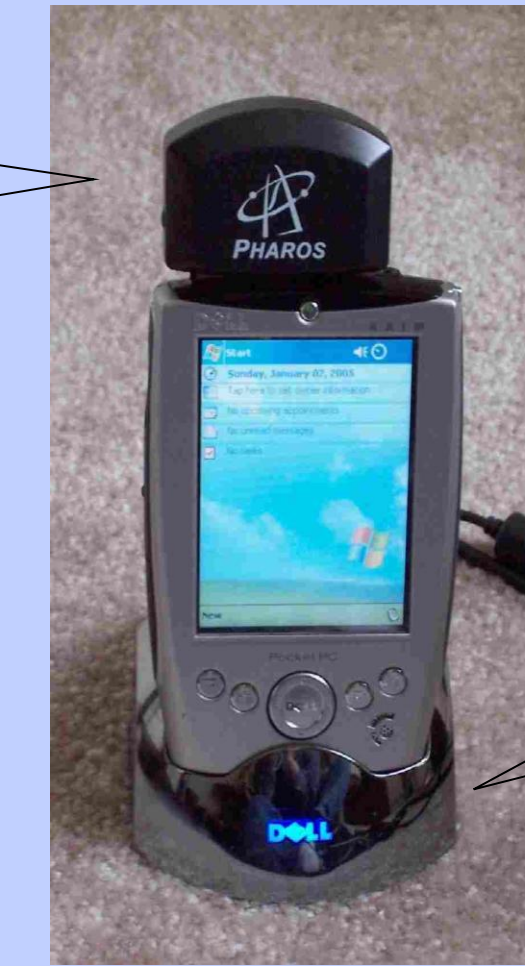
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User views layers of data surrounding field site and can record additional data while at the site.

ArcPad software on Pocket PC allows for viewing and modifying data in the field.

GPS integrates with Pocket PC using Compact Flash slot for navigation to research sites.



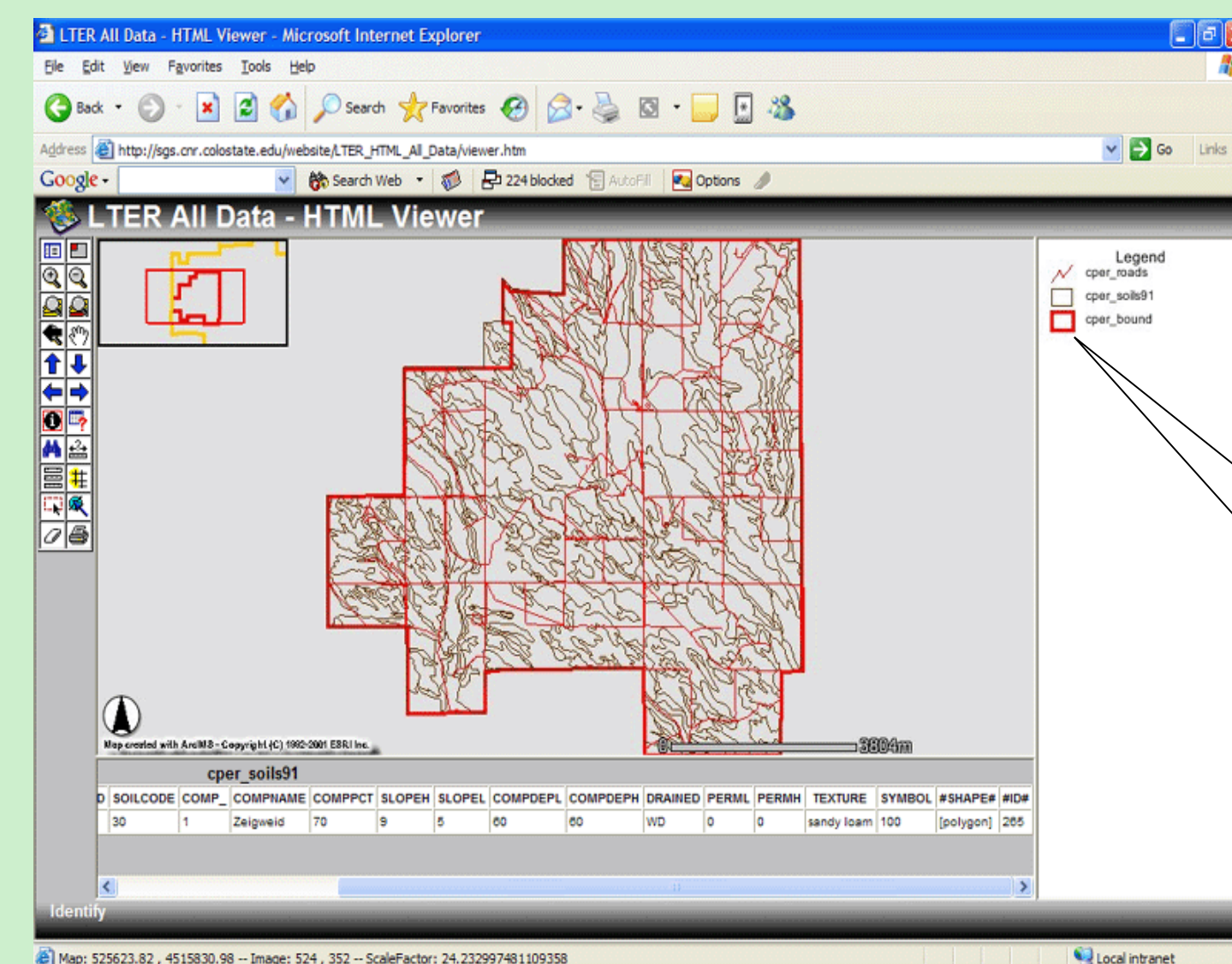
Docking station allows transfer of recorded GIS data in the field to the database.

Tools for gathering and viewing GIS data in the field

Handheld (Pocket) PC's now provide a means for gathering spatial data for LTER experiments. With these devices and ArcPad software, field workers can view, navigate to and record research site information. Research site data can then be stored in the GIS database.

Pocket PC loaded with ArcPad software

Pocket PC on docking station



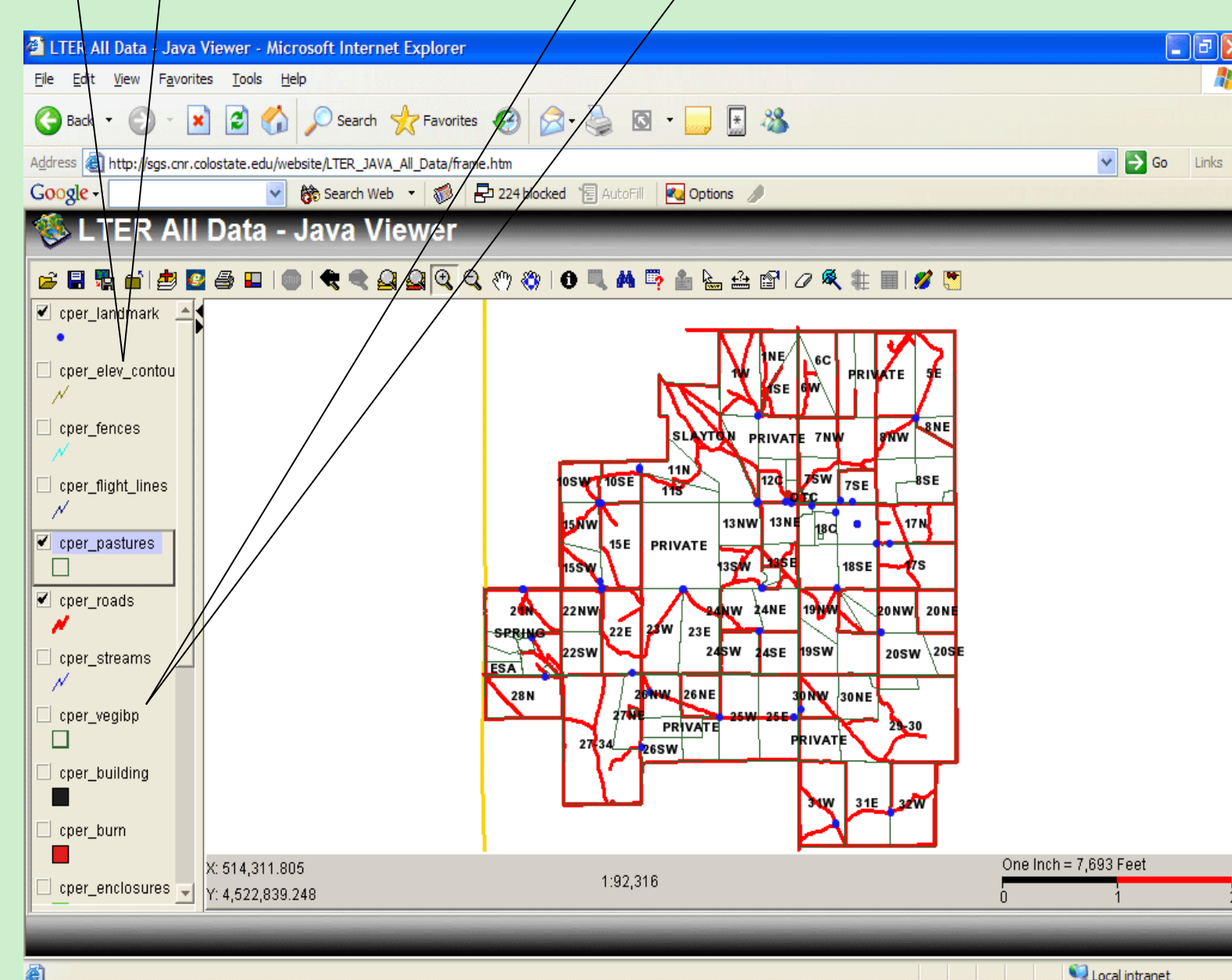
Basic HTML map viewing tool using website GIS data

Tools on the SGS website for viewing and obtaining GIS data.

The SGS Map Viewing Tool is available on the SGS Website (using ArcIMS) for viewing, printing, capturing images, and downloading GIS data. The basic version only requires an internet browser, while the advanced version uses a freely downloadable tool for customizing maps.

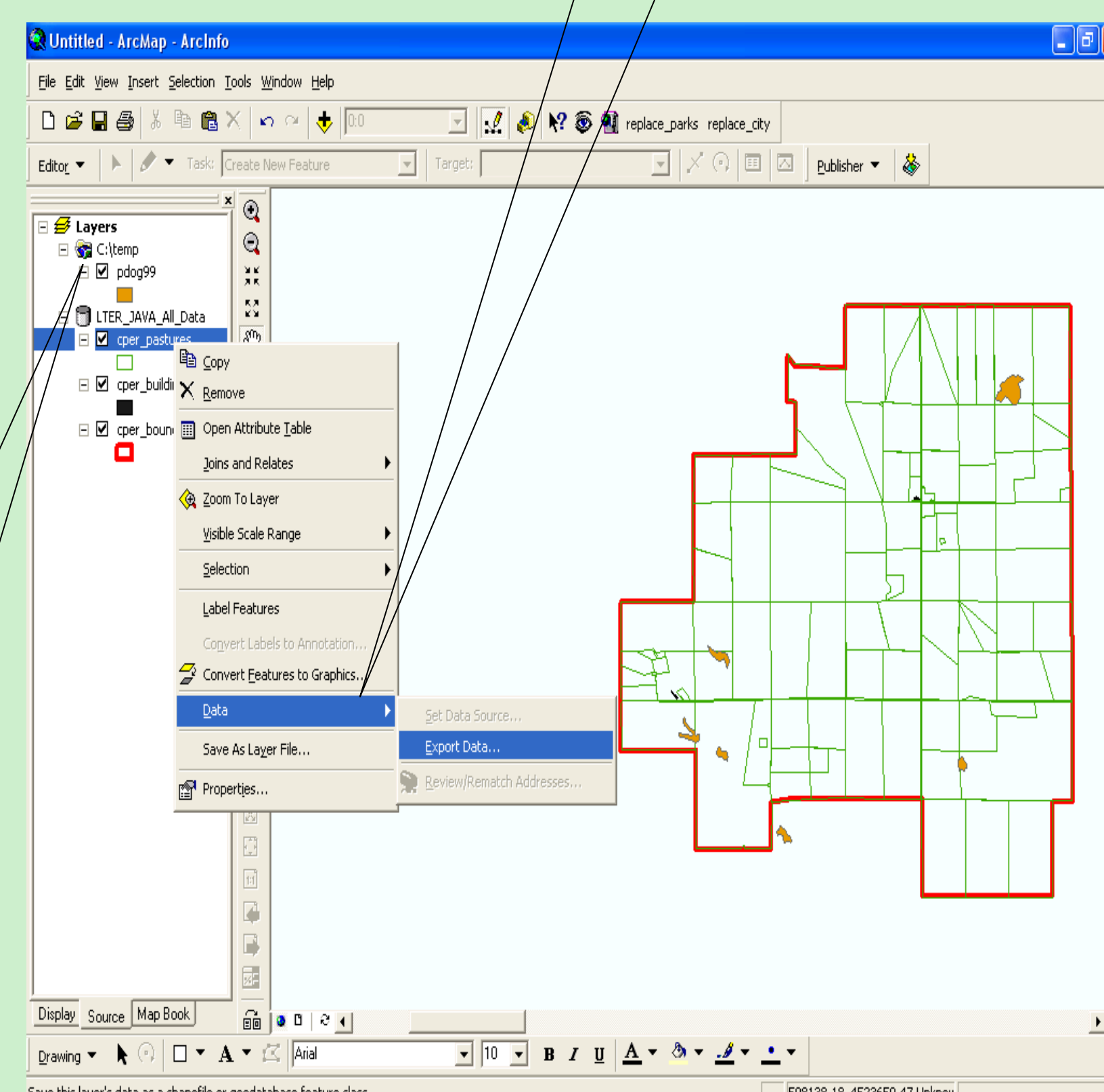
Users can manipulate order, color, and symbols for features.

GIS Data from your local PC can be added to website data.



Advanced download Java mapping tool using website server data

Data from local PC can be combined with website data for viewing and analysis.



Advanced ArcMap software with local and website data loaded

Static physical data: boundaries, elevation, water, soils, pastures

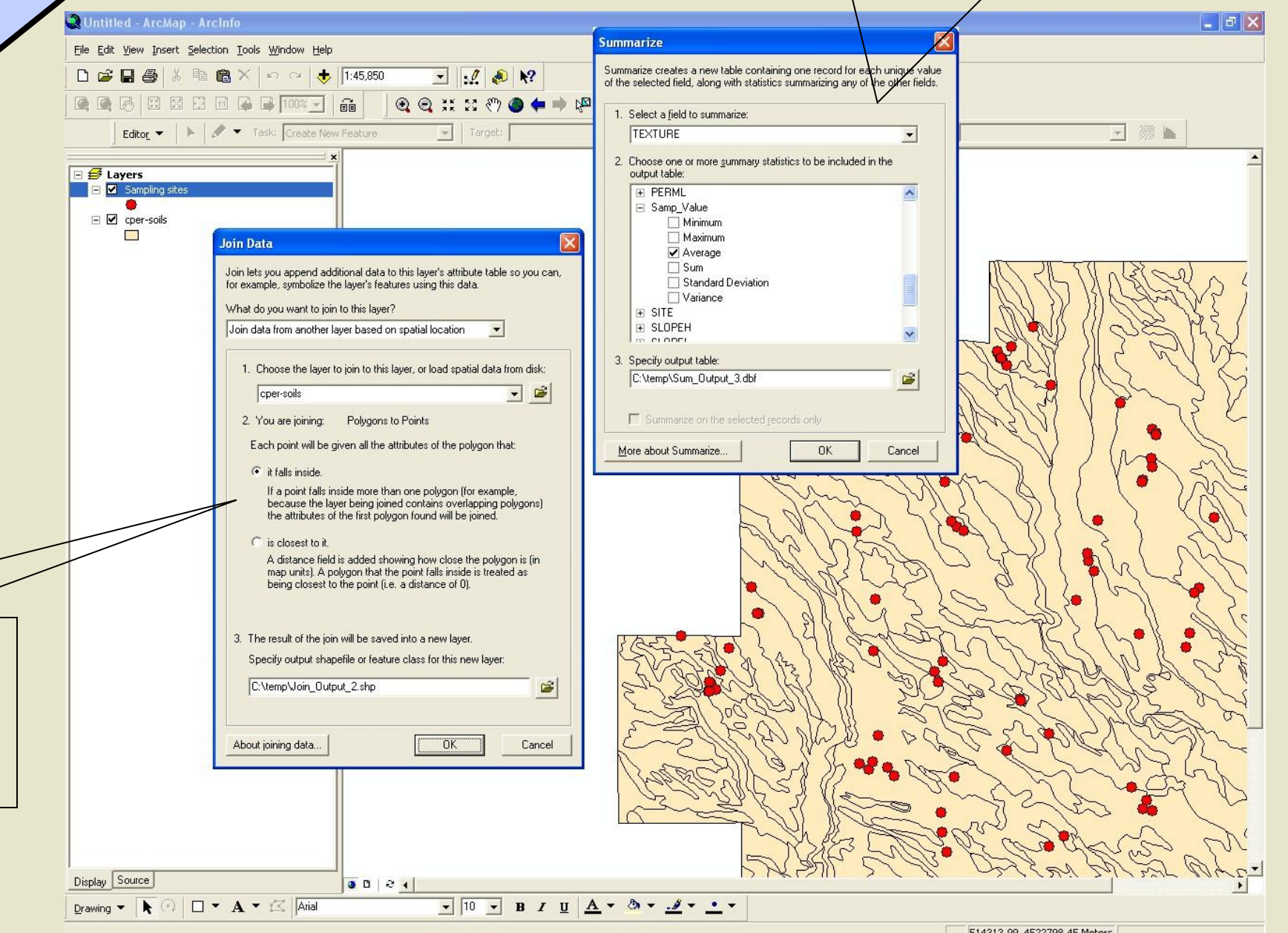
Dynamic data: prairie dog towns, burn areas, exclosures

Experimental site data: treatments, trapping, transects

Multispectral imagery: satellite images, aerial photography

GIS database

Various GIS data layers are available to researchers at the SGS LTER.



Tools for Join and summarizing GIS data

Joined site and texture data can then be grouped by a category (eg. texture) for correlation analysis with other variables measured at the site.

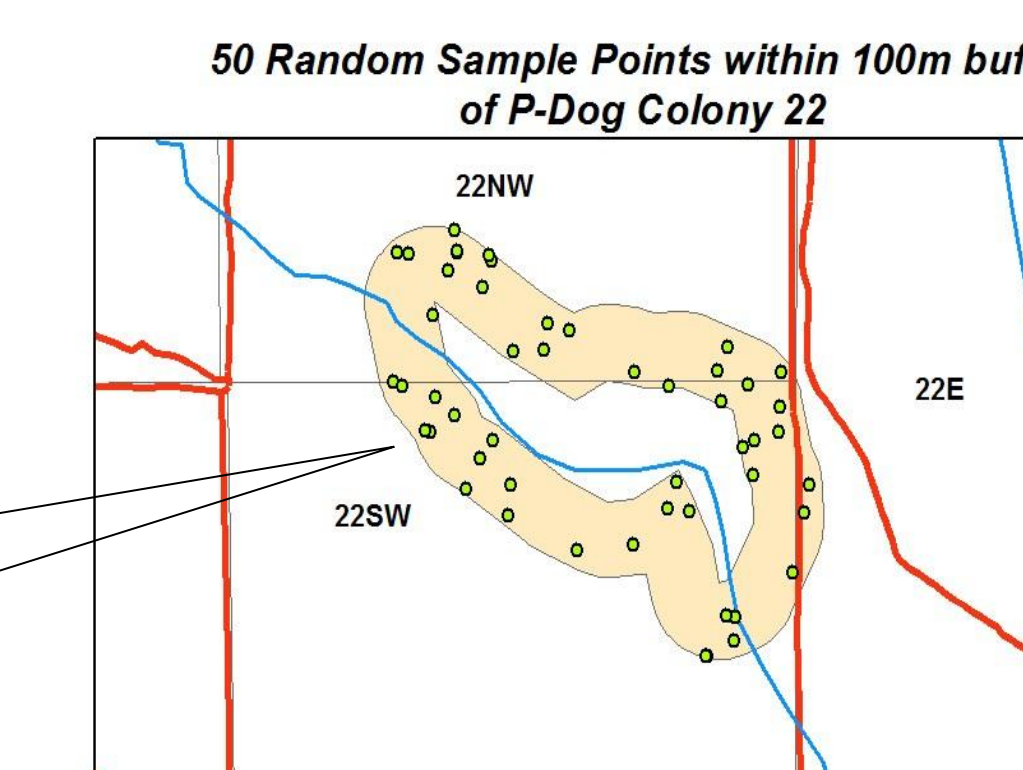
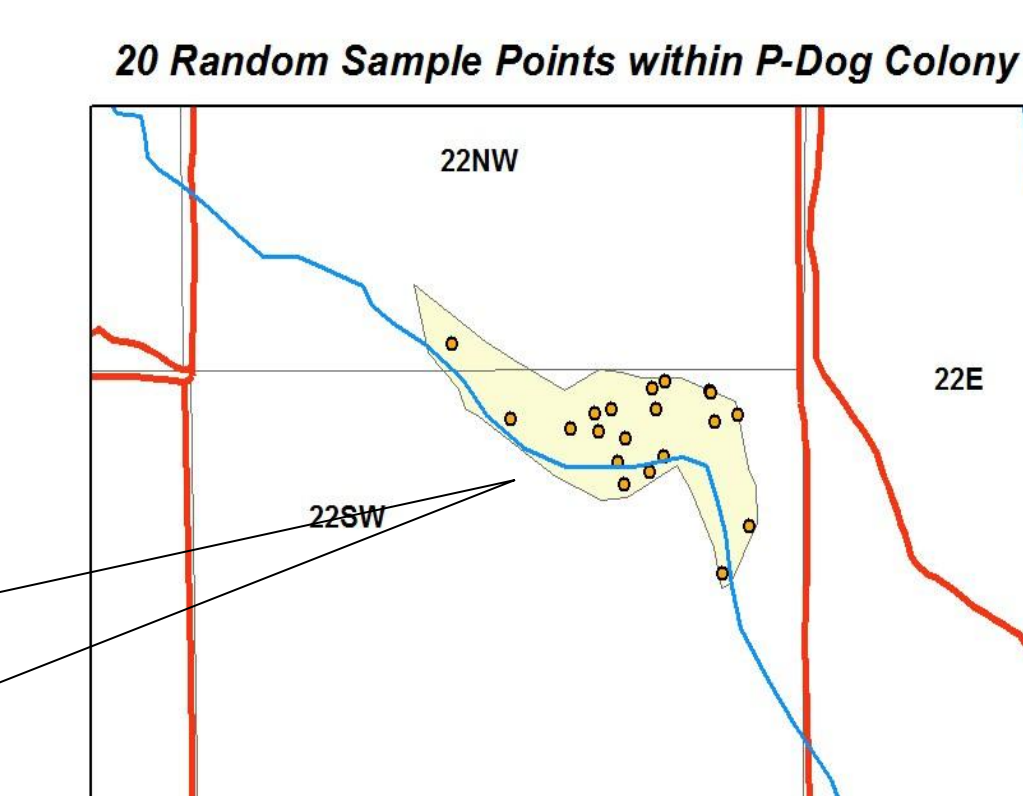
Layers of research sites and soil textures can be joined to obtain the soils texture value for each site.

Tools for Analysis of SGS GIS data

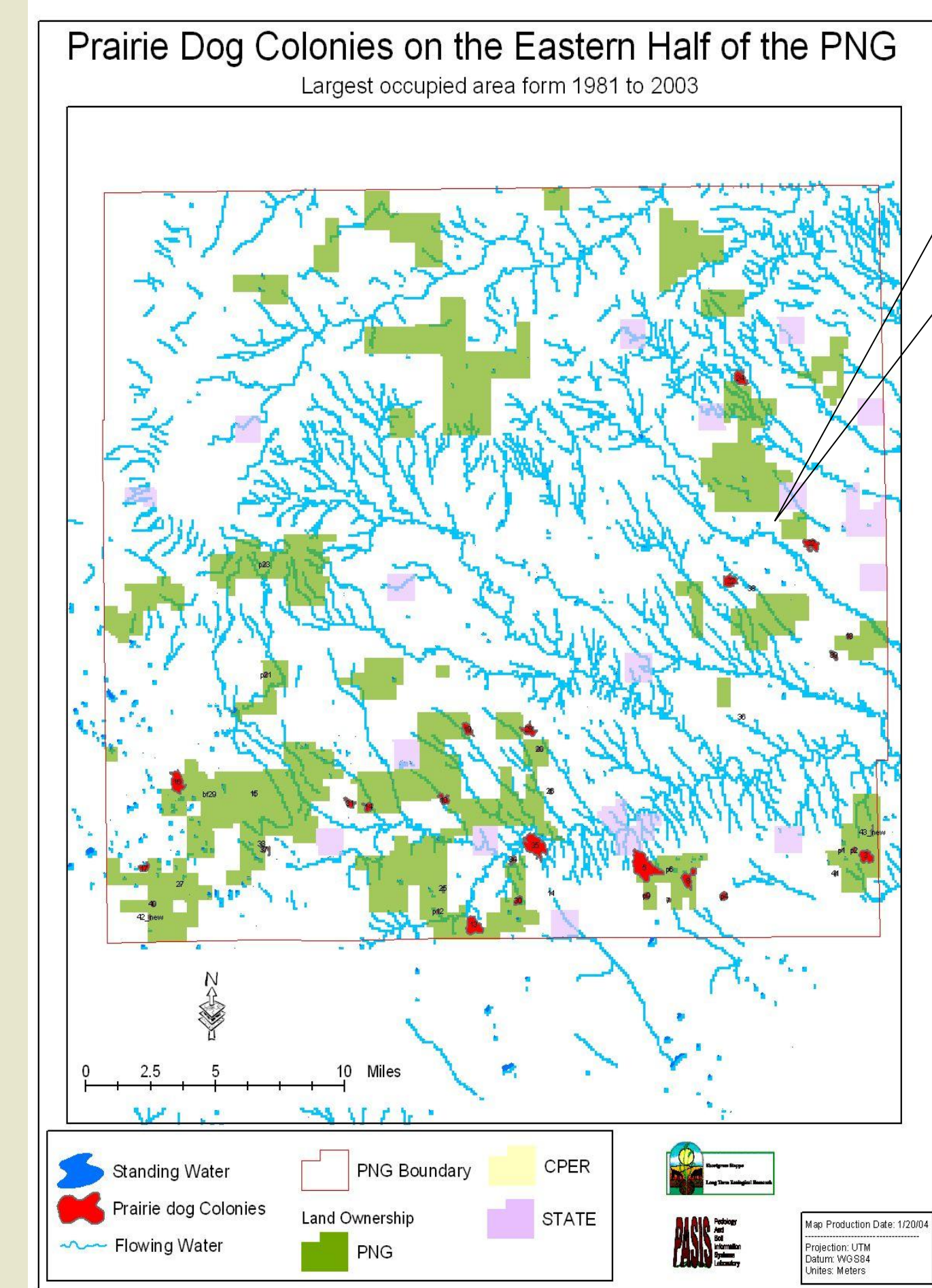
Analysis and modeling of data using GIS software (ArcGIS) is being performed extensively at the SGS LTER. Examples include generation of random sample points, proximity analysis, interpolation of sample data, spatial change over time, spatial correlation, species population and interaction modeling, and climate modeling. These projects utilize existing GIS data and generate new GIS analysis layers.

GIS tools generate random sample points inside the area of the prairie dog town. The field researcher can locate these points using a GPS and record values (plant population/species, soils, etc) while in the field.

GIS tools can generate a buffer area just outside the prairie dog town and within these, generate sample points for data collection or analysis.



GIS tools can be used to design field experiments and sampling



GIS tools can overlay or merge data for analysis of spatial proximity and temporal change

Data layers of land ownership and prairie dog towns can be merged to locate potential field research sites. Also, distances between towns and changes over time can be evaluated.