Mapping GPS Data

Overview

There are many ways for displaying data from a GPS. This treatment is not intended to be an exhaustive treatment of the various ways of displaying such data put rather a general method using Global Mapper. It should be noted that GoogleEarth provides a tool for reading and displaying waypoints and tracks from a variety of types of GPS (under **Tools>GPS**), Garmin's MapSource program (comes with all Garmin units) downloads and plots data on the Garmin map and will output data to GoogleEarth (under **View>View in GoogleEarth**). The Minnesota Department of Natural Resources distributes a free program, DNRGarmin (http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html), that downloads data from a Garmin GPS and will save it in a number of formats, including as a shapefile.

The method described here can be used with data collected in a variety of ways, including latitude, longitude (or other coordinates) readings recorded in a field note book (not a bad idea btw) or even from a map.

Reading ASCII coordinate data into Global Mapper

We'll start by assuming you have successfully downloaded data from your GPS (following the instructions and/or software that came with the device) or copied it from some other source to an ASCII text file (Figure 1).

Once we have the data file with the coordinates saved, we can open Global
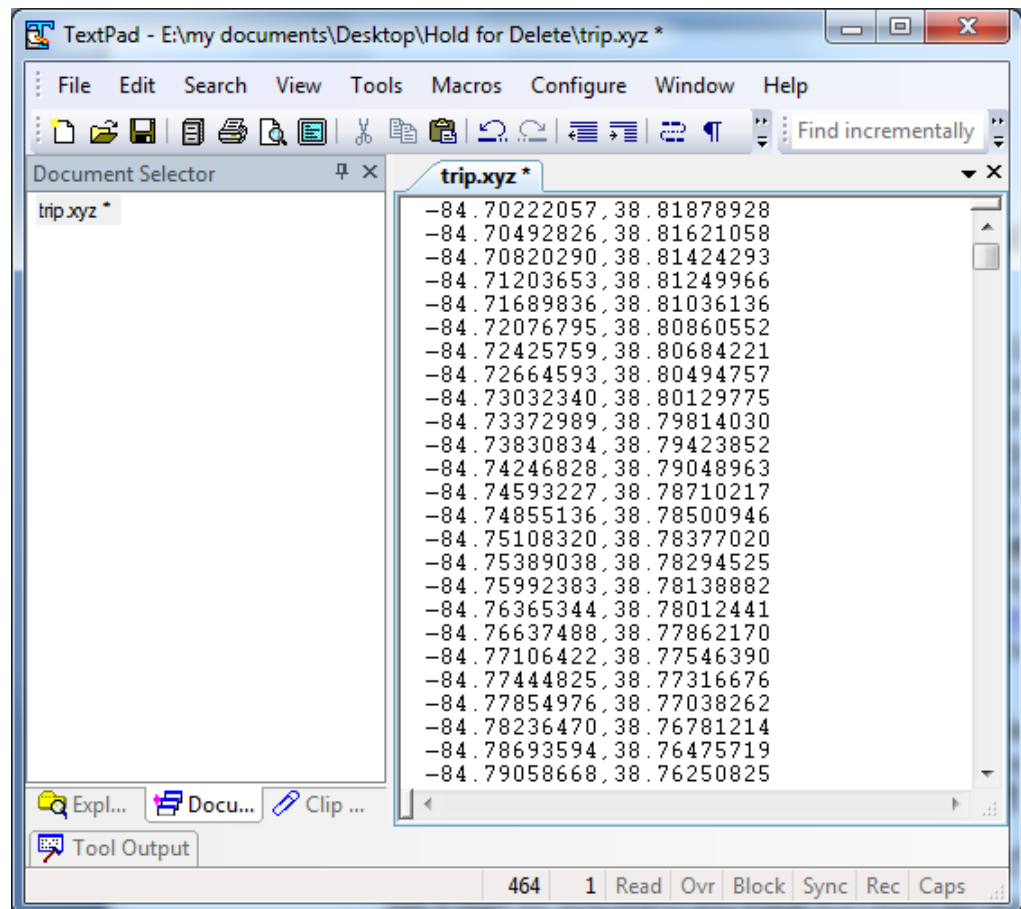
Mapper and

Figure 1. Sample ASCII data

pull down **File>Open Generic ASCII Text File(s)** and open the file. The resulting dialog box (Figure 2) is self explanatory and provides a great deal of flexibility (the down side of flexibility is many options). Note that the default is for longitude first and latitude second and that many GPS units output latitude first and longitude second. If you don't specify otherwise, it will assume a string of coordinates (Figure 1) are a line. If you're entering a set of waypoints, make sure to so specify.
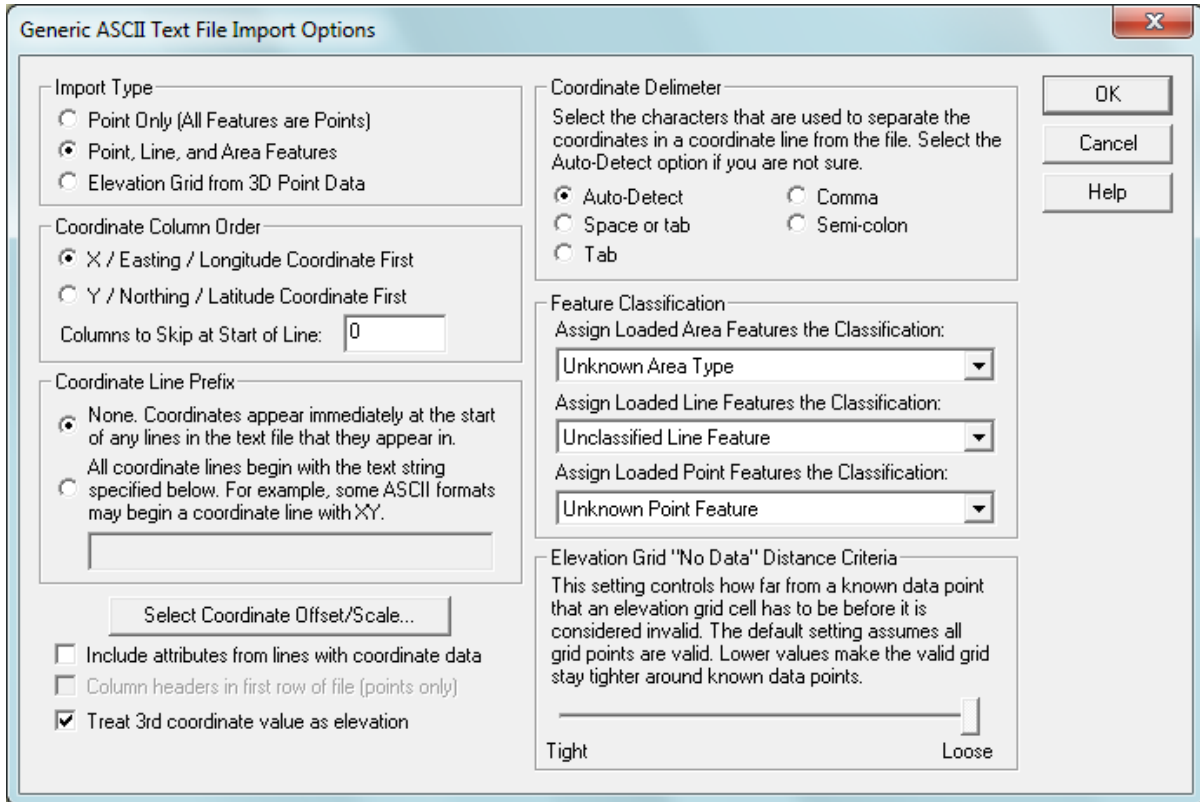

Figure 2.

The ASCII text file will contain no projection information so you will be queried (Figure 3) for the projection of the input data (see your GPS setting for this information… many units use geographic coordinates and the WGS84 datum).
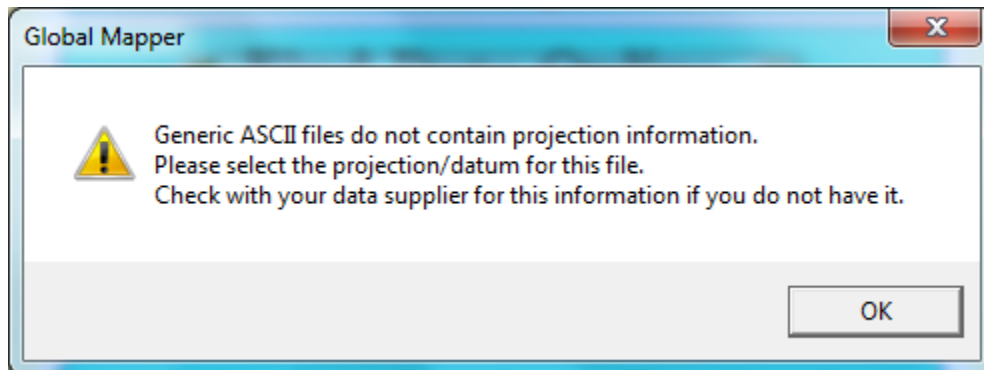

Figure 3

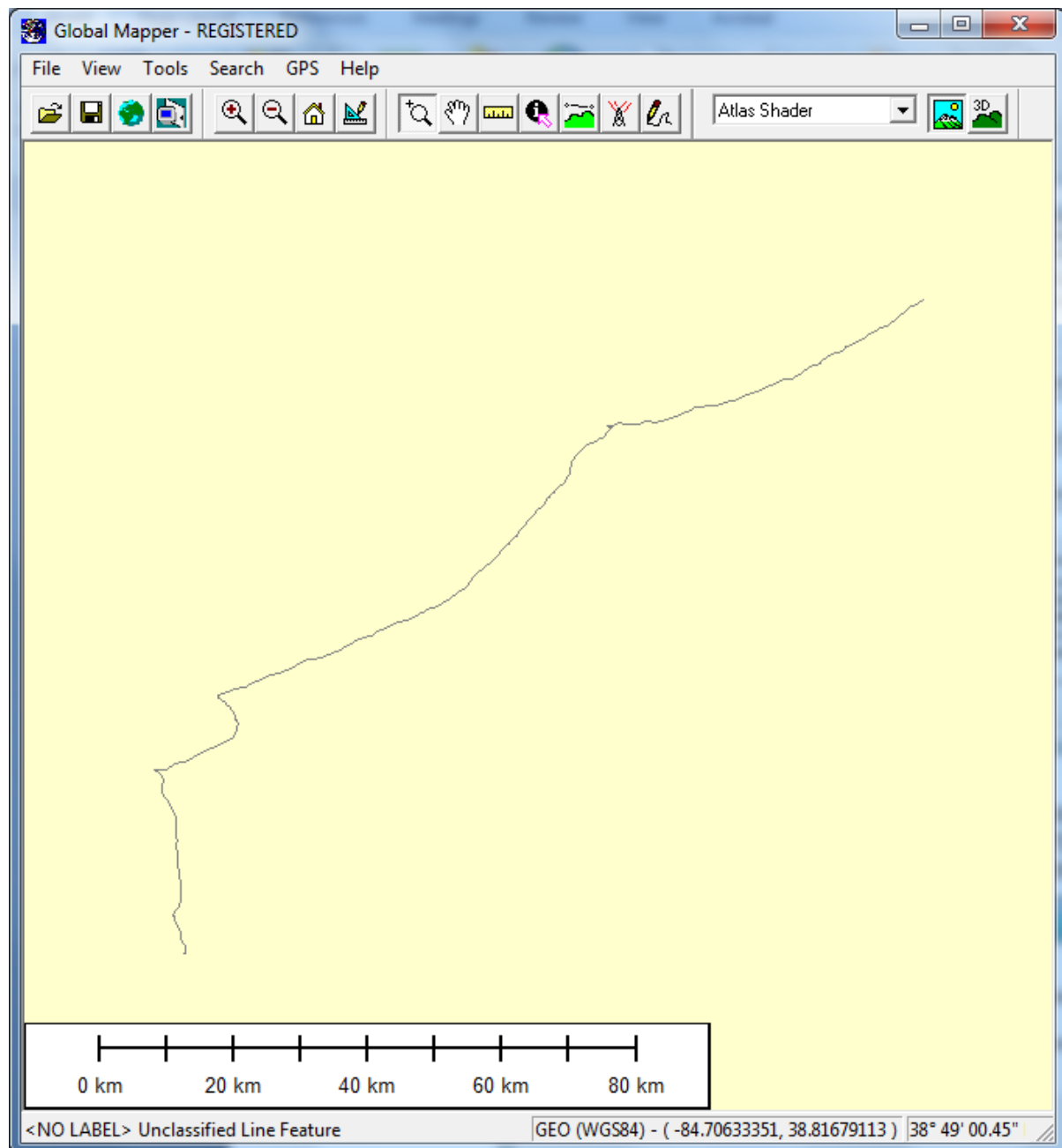Once this data is provided, the data will be displayed (Figure 4).

Figure 4

Export the data to a shapefile by invoking **File>Export Vector Data>Export Shapefile…** and save as a point, line, or area (producing areas are described below). You may now read the shapefile into ArcMap or other ESRI product (remember that you'll probably need generate a projection file).
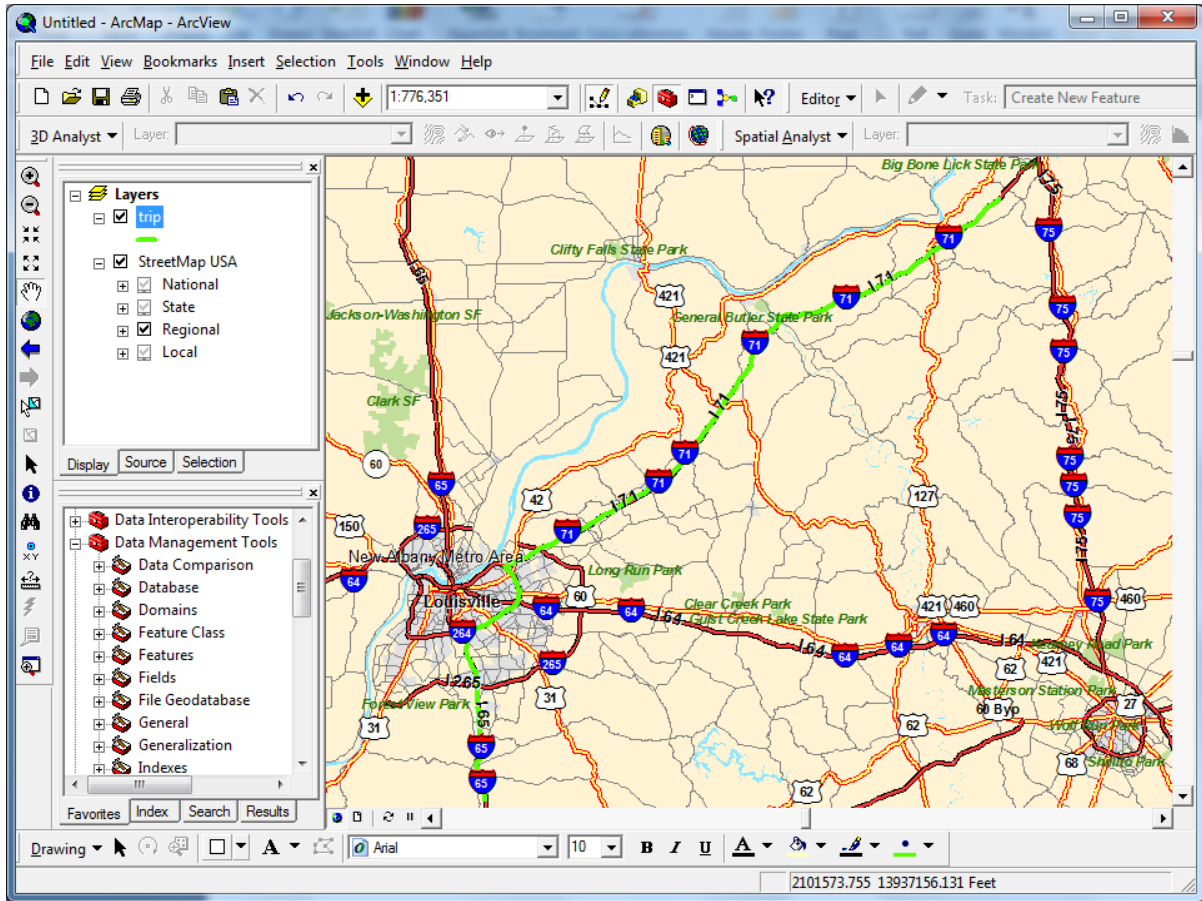
Figure 5.   Shapefile generated from ASCII data (green line) is displayed on the ESRI StreetMap dataset.

Area (Polygon) Shapefiles

      Polygon shapefiles (*e.g.*, an outline of an outcrop) may be produced from GPS collected data but require one additional step. The ASCII data must be proceeded by the line "CLOSED=TRUE" (Figure 6). Read the ASCII data file the same way as before but this time Global Mapper will treat these data as a polygon (Figure 7). If you save these data as a shapefile, remember to specify it as an area in the export dialog.
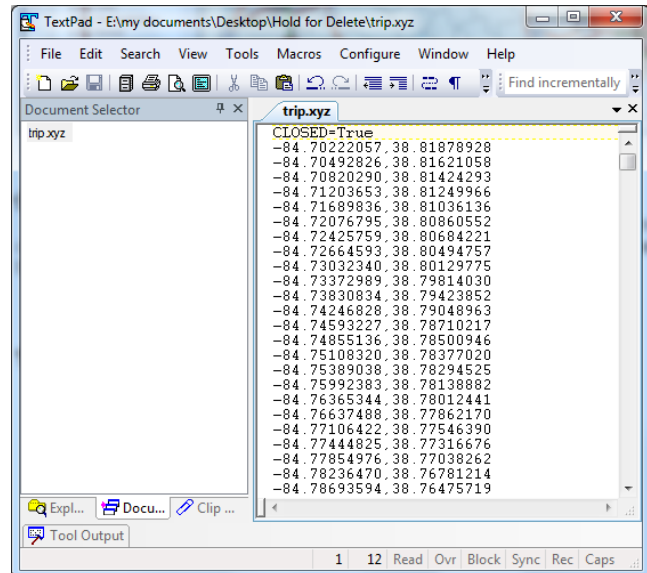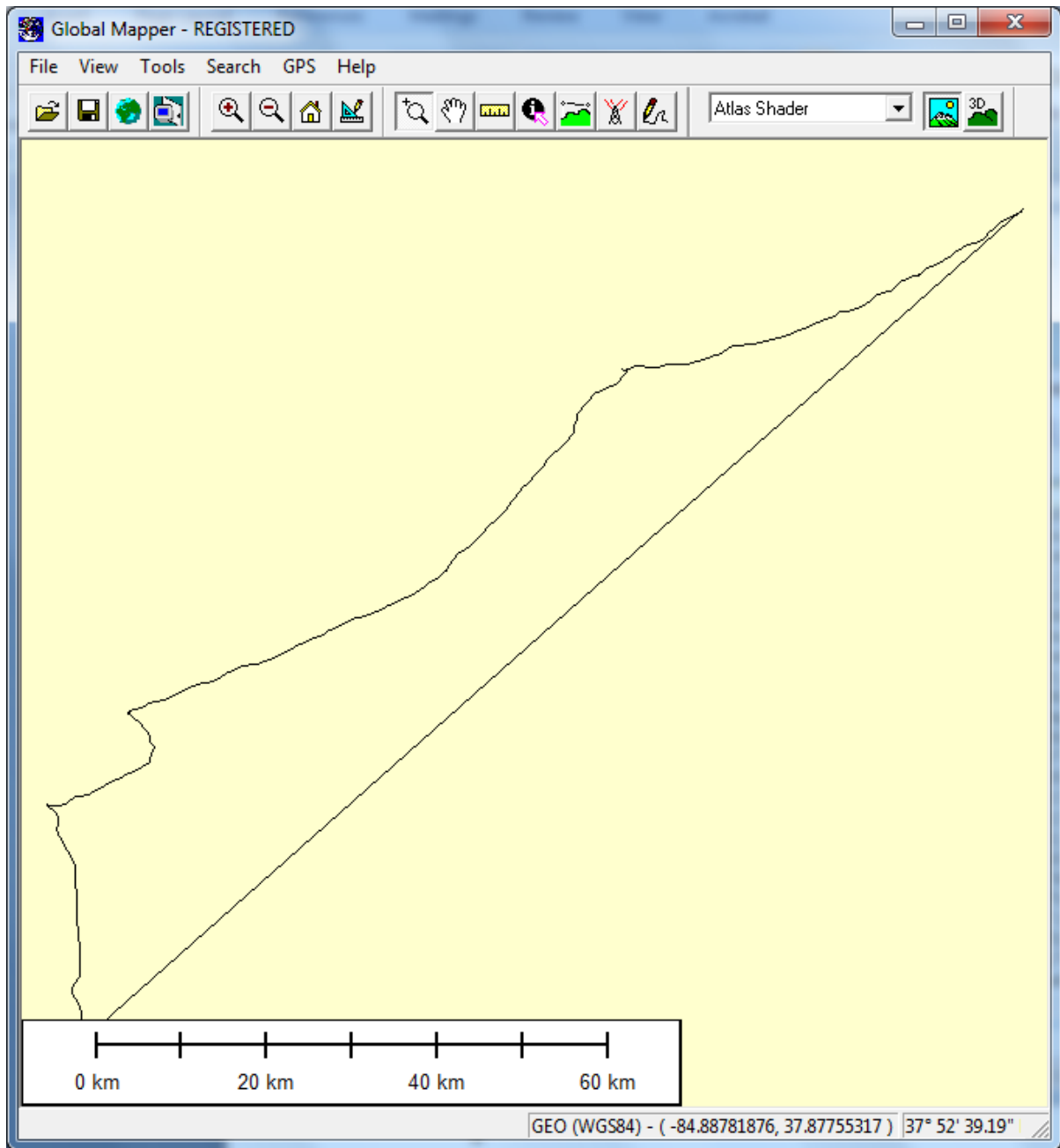

Figure 6

Figure 7