Mapping GPS Data

Overview

you have

the

and/or

device) or

(Figure 1).

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/DNRGarm in.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.

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Reading ASCII coordinate data into Global Mapper

Mapper and

Figure 1. Sample ASCII data

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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.

Generic ASCII Text File Import Options		×
Import Type Point Only (All Features are Points) Point, Line, and Area Features Elevation Grid from 3D Point Data Coordinate Column Order X / Easting / Longitude Coordinate First Y / Northing / Latitude Coordinate First Columns to Skip at Start of Line: Coordinate Line Prefix None. Coordinates appear immediately at the start of any lines in the text file that they appear in. All coordinate lines begin with the text string Specified below. For example, some ASCII formats may begin a coordinate line with XY.	Coordinate Delimeter Select the characters that are used to separate the coordinates in a coordinate line from the file. Select the Auto-Detect Oromma Space or tab Space or tab Feature Classification Assign Loaded Area Features the Classification: Unknown Area Type Assign Loaded Line Features the Classification: Unclassified Line Features the Classification:	OK Cancel Help
Select Coordinate Offset/Scale Include attributes from lines with coordinate data Column headers in first row of file (points only) Treat 3rd coordinate value as elevation	Elevation Grid "No Data" Distance Criteria This setting controls how far from a known data point that an elevation grid cell has to be before it is considered invalid. The default setting assumes all grid points are valid. Lower values make the valid grid stay tighter around known data points. Tight Loose	

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).





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).

Content Creation, Cropping, and GPS



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.

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Figure 6

Content Creation, Cropping, and GPS

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Figure 7

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