

Lab 5: Basic GPS Operation (Off Campus version)

What You'll Learn: This lab will introduce you to Global Positioning System (GPS) data collection, data transfer. Use any GPS unit or App to collect, transfer and export data using DNR Garmin Software and then use ArcGIS Pro to create a final map.

Data L:\FNRM3131\Lab5 or L:\FNRM5131\Lab5 or Class Web site
Zone 15 NAD83, meters.

What You'll Produce: You will create a map of the area you collected data GPS data, displaying your collected data points. (Remember to add, title, name, north arrow, legend, etc.).

Background

Note: This optional Lab will be with worth 5 extra credit points.
(if you wish you can come in and checkout a Garmin 20x units; contact ajenks@umn.edu)

BASIC PROCESS (step by step details are shown later)

- Learn simple basics as to how to use a GPS instrument or App and collect a data point (also referred to as "Waypoints").
- Collect at least 5 points, ideally over 30 feet apart.
- Name the points if you wish, the GPS instrument or App will number them as you proceed.
- Export your Waypoints from your GPS unit or App (often you email them to yourself) as a .GPX or .KML or .KMZ file
- Use the DNR Garmin software (in the Lab 5 folder).
- Save the data file as a Shapefile to your drive (H:\home).
- Using ArcGIS Pro, map your data on top of a recent image
- Export your map as a .pdf file and submit it via the Canvas class site.

GPS units are different, but most have easy ways to collect Waypoints.

Ideally you should collect many observations at each location and “average” them but most GPS units or Apps don’t do this function. The Garmin eTrex 20 does allow for averaging of Waypoints.

Any way your want to collect the data is fine but here are some notes for a “common” GPS App that works on both Android or iOS. It has a Free version (which will work for this exercise) but the pay one is quite reasonable; you might want to consider it.

GaiaGPS Notes: (taken from our separate semester GPS class ESPM 3031/5031)

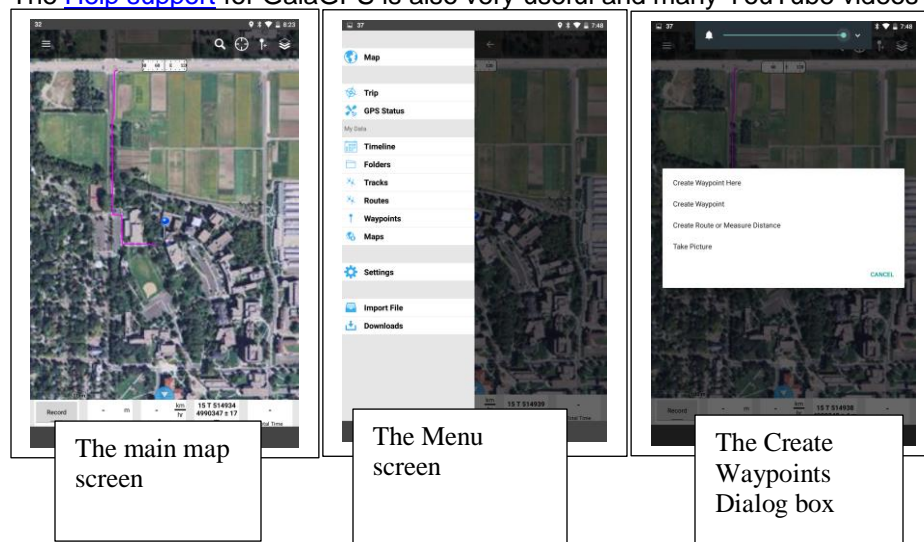
[GaiaGPS](#) is an iOS or Android application for basic map and satellite navigation. It is published by TrailBehind, Inc.

GaiaGPS has a has a “Pro” version with monthly fees, while the basic application is \$19.99, Android Operating Systems (OS); on iOS (Apple) it is a limited free version and full member price at \$9.99 annually. Access to hunting layers and other specialized maps is \$29.99, annually.

It’s features compare well with the top-rated map/navigation applications but it’s significant value for classroom use it “it is the same on both Operating Systems”. Many competitors focus on one or the other platforms, GaiaGPS support both; this is a real advantage when providing instructional support as one OS does not dominate the student market.

GaiaGPS also has cloud-based support application found at [GaiaGPS.com](#). The cloud support facilitates the transfer of data from the mobile devices.

The [Help support](#) for GaiaGPS is also very useful and many YouTube videos support this platform.



Introductory Videos:

[Introduction to GaiaGPS](#)
[Waypoints](#)
[Tracks](#)
[Miscellaneous](#)
[Export one at a time](#)
[Folders and Cloud transfer](#)

(Note: video refers to GaiaGPS id as frblue. You will not have this id. This id relates to our UMN Nexus 7 units with Gaia GPS installed.)

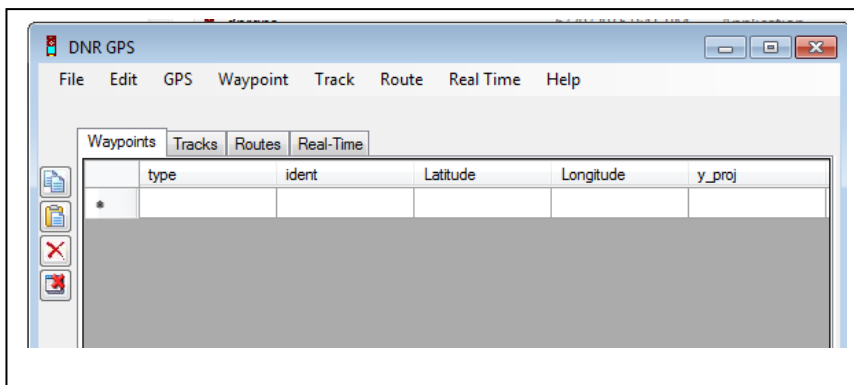
From you H:\home\{your id}\Lab5 folder, start the program.

Answer Yes to the RUN

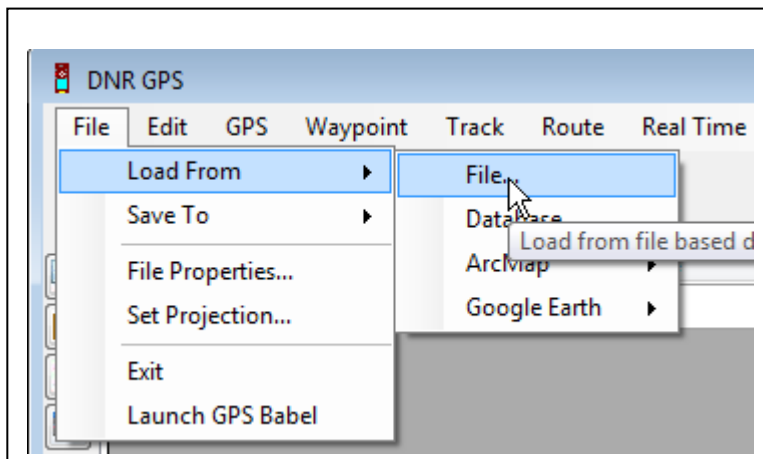


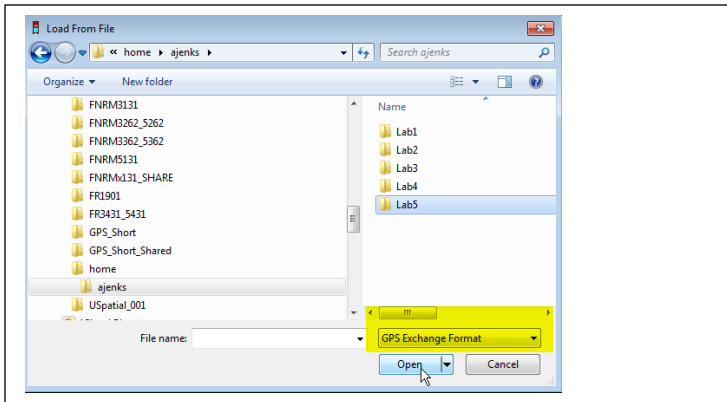
question prompt.

You should see this screen:



Next select File and select Load From→File

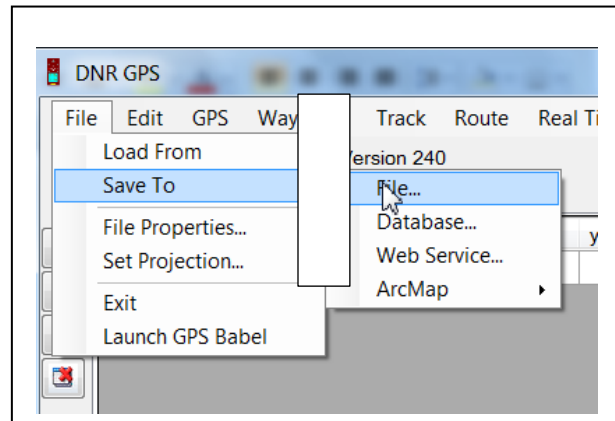




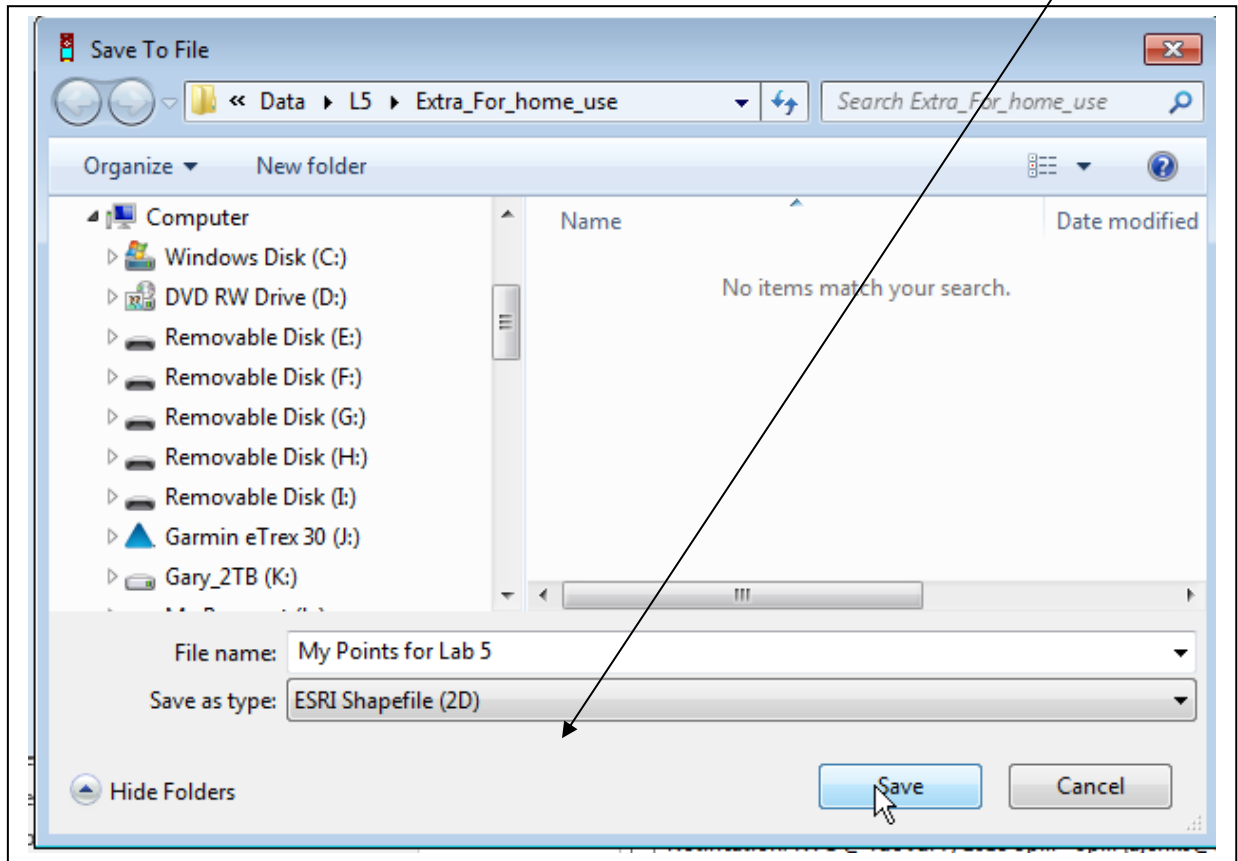
Select your GPX or KML or KMZ file and choose the correct format (see yellow box)

This transfers your points to the computer. You will get a message about the number of points. Select, OK.

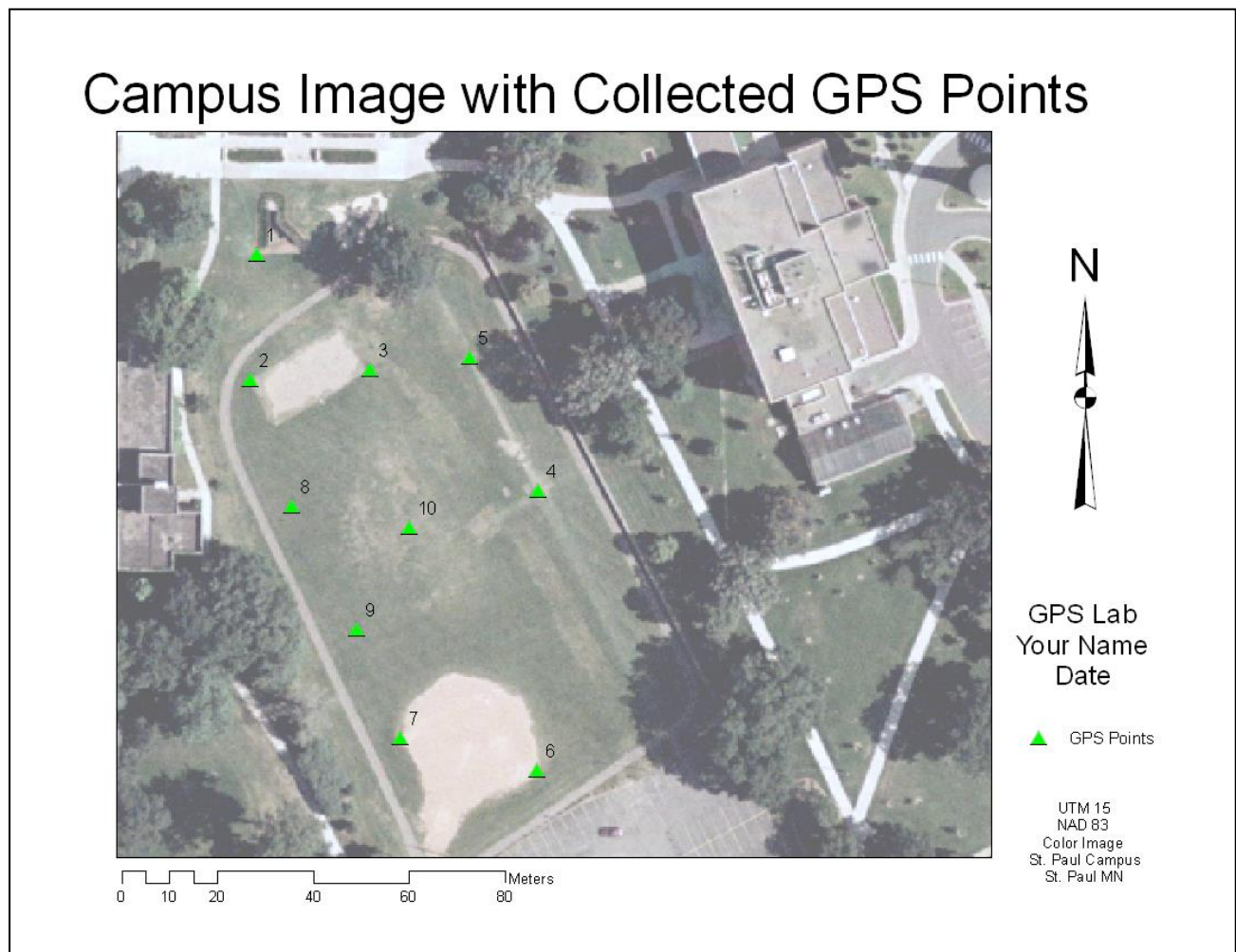
Next, select File → Save to → File



Select your (H:\home) drive and change the Save as Type “ESRI Shapefile (2D)”



- Close DRN GPS, open ArcGIS Pro and delete the background maps from your blank map.
 - Add your data to a Map and then add a background map for context. (use the Basemap menu option).
 - Label your points if possible. To add labels to your map use Properties of your GPS layer. Use the Labels Properties and Label tab to add your labels to the map.
 - In Layout, add your Title, North Arrow, Scale bar, and Legend.
 - Share the Layout as a .pdf and submit via the Canvas class site.
- Example below:



Export as a .pdf. Remember to have an overall title, your name, and legend, and one scale bar.