

GPS Data Collection Guide

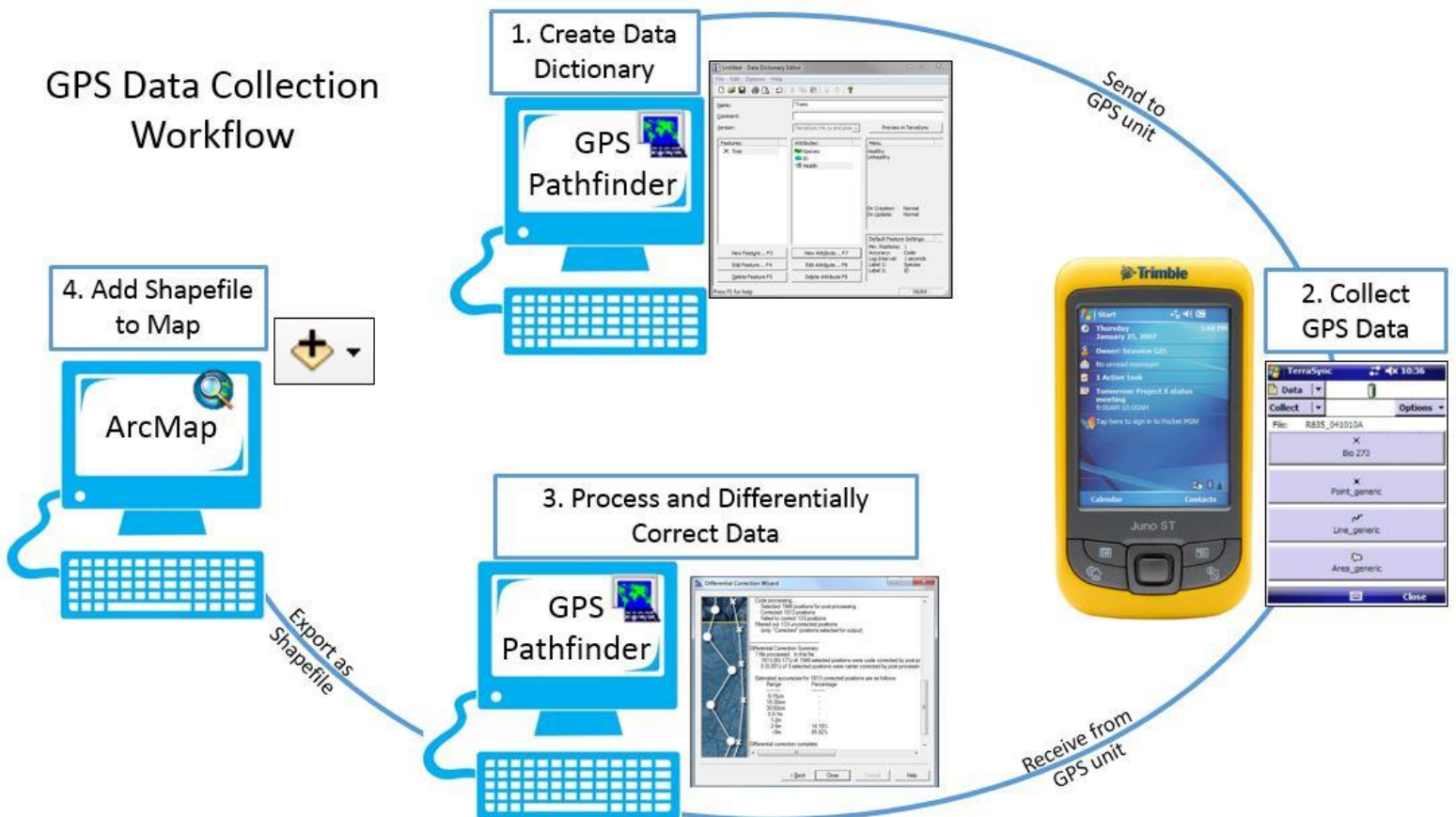
Data Collection:

1. Data dictionary: provides structure to your data collection. You can create one of these and upload to a GPS unit before entering the field. It will allow you to ask specific questions in certain formats for the features you collect – ex: *tree species* from a drop-down list, *healthy* yes or no, *year planted* with a numeric space
 - a. Create a data dictionary in GPS Pathfinder in the lab before going out in the field
 - b. **These instructions are not part of the introductory workshops, but are easy to learn, so please contact a lab employee to do this if necessary for your data collection
2. Avoid high multipath error:
 - a. When collecting data try to reduce multipath error (created from the deflection of satellite signal on objects), if you have the option avoid collecting data:
 - i. Under thick tree canopy
 - ii. Near tall buildings
 - iii. From satellites low on the horizon
 - b. If these environments cannot be avoided, then recognize the potential increase in error when collecting data and processing results
 - c. Avoiding blocking the signal between the satellite and receiver with your own body; face the screen toward the open sky and hold the unit with the antenna (top of the unit) over the point being recorded
3. Use a PDOP (positional dilution of precision) under 6:
 - a. You can find this number on your GPS unit -- if it is above six wait to acquire more satellites/better signal before collecting data
4. Collect at least 30 signal fixes per point collected:
 - a. When you create a new feature the unit will begin collecting fixes (if conditions are met for signal to be received, and unless paused), let it collect at least 30 for a point feature (one fix per second), alternatively for lines and areas collect your fixes by walking the line/area at a reasonable pace, there is no need to wait
5. Be careful to not delete points/data files:
 - a. The unit will ask “are you sure you want to abandon this point” as a warning when you click cancel to help reduce the likelihood of accidental data deletion
6. If you accidentally close your data file:
 - a. It can be accessed again in Data, Existing File, select the file and click Open

7. Coordinate system:
 - a. If collecting local data use NAD 1983 US State Plane Mass mainland 2001 – this is set as our default coordinate system on the GPS units and collects data in meters
 - b. If collecting data elsewhere in the States or abroad you can talk with us in the SAL about the best coordinate system to use

Data Processing:

1. Differentially correct data to improve accuracy:
 - a. This process corrects the data collected by comparing it to the data collected at the same time by the nearest Base Station (on the roof of Sabin-Reed if local)
 - b. Note that the Base Station data is processed and made available hourly, so plan to allocate time between data collection and data processing
 - c. Look for a high Integrity Index when selecting the Base Provider
2. Open the exported shapefile in ArcMap with a basemap to test initial accuracy of the data collected



Resources:

Trimble: http://www.trimble.com/gps_tutorial/
 National Geodetic Survey: <http://www.ngs.noaa.gov/>
 SAL website: <http://www.smith.edu/gis>