

COLLECTING GOOD DATA

GPS & GIS | Fall 2017

Collecting Good Data. Plan

- Do a mission plan to find best data collection times
 - ▣ <http://www.gnssplanningonline.com/> (ahead of time)
- On Trimble Juno
 - ▣ Check plan for current day
 - ▣ Status/Plan

Collecting Good Data. Accuracy

Accuracy-based logging. Limits your collected positions to a max accuracy estimate

- Setup → Logging Settings
- Click the wrench next to “Accuracy Settings”
- Use Horizontal, Postprocessed, <50mi, and say Yes to Use Accuracy-based logging:, Apply to All Features, Required accuracy: will be whatever the limits of our receiver happen to be **OR**
- Use Horizontal, In the field, and say Yes to Use Accuracy-based logging:, Apply to All Features, Required Accuracy: 10m (if not doing differential correction)

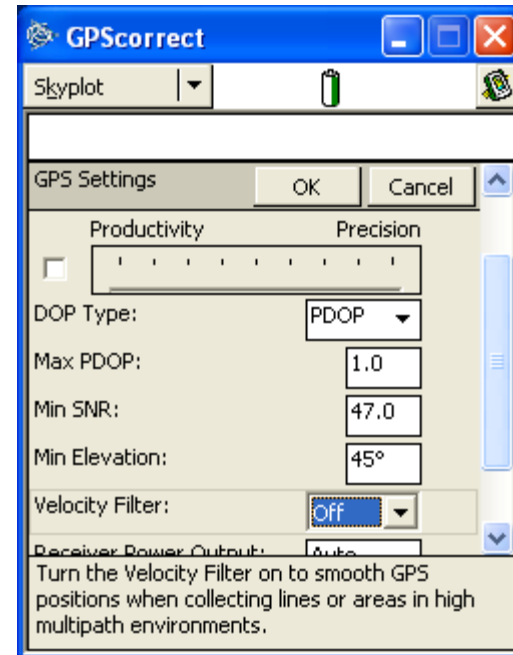
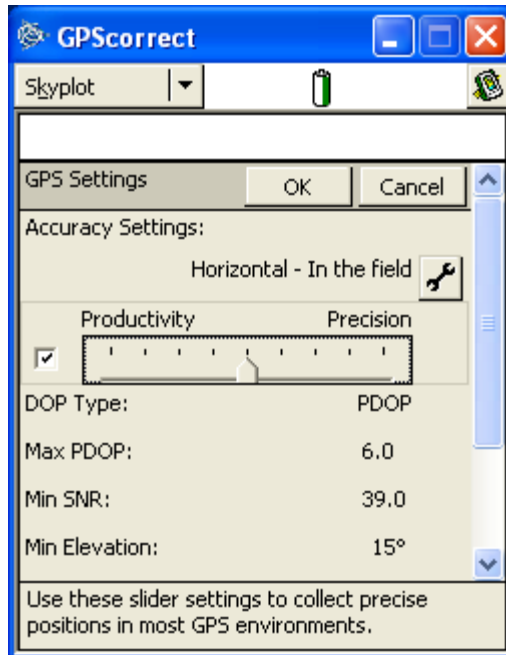
Collecting Good Data. GNSS settings

Restricting signal strength parameters:

These options are NOT available on the Juno

- ▣ Manually increase the minimum **S**ignal to **N**oise **R**atio (max of 47)
 - ▣ Satellites with low signal strength will be excluded
- ▣ Manually input a lower maximum PDOP / HDOP
- ▣ Change the Productivity/ Precision balance
- ▣ Manually input a higher minimum Elevation (15° is better than 5 °)

Collecting Good Data



Collecting Good Data. Points

- Set a minimum positions value in your data dictionary
- 10 is the minimum; 30 positions is better
- Increase number of positions when PDOP is bad
- Use antenna

Antenna Height

- Setup, Logging Settings
- Set height (i.e. offset)
- Choose antenna type from drop-down
 - ▣ External mini (least accurate)
 - ▣ Internal (default; middle accuracy)
 - ▣ Hurricane or tornado external (most accurate)

Antenna Height

The screenshot shows a software window titled "TerraSync" with a blue title bar. Below the title bar is a menu bar with a "Setup" option. The main content area is titled "Antenna Settings" and contains four fields: "Height:" with a text box showing "1.000 m", "Confirm:" with a dropdown menu showing "Per File", "Type:" with a dropdown menu showing "External Mini", and "Part Number:" with a dropdown menu showing "40767-05/06/07/08". There are "OK" and "Cancel" buttons to the right of the "Antenna Settings" title bar. A help icon (?) is located in the top right corner of the window.

TerraSync

Setup

Antenna Settings

OK Cancel

Height: 1.000 m

Confirm: Per File

Type: External Mini

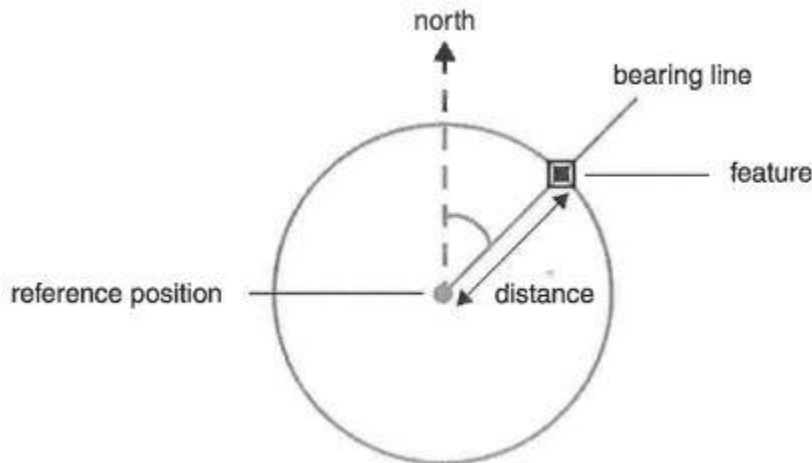
Part Number: 40767-05/06/07/08

Collecting Good Data. Multipath

- Observe the environment to determine if *multipath*, signal strength, or access to the horizon is an issue
- If there is multipath – use offsets

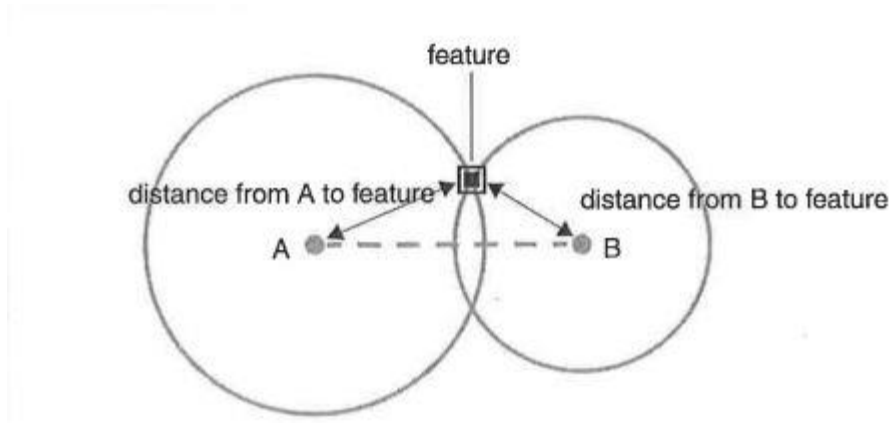
Collection Good Data. Offsets

- Distance-bearing: you specify a distance and a bearing from north. The features lies at the point where the bearing line intersects the circle with the specified distance as its radius.



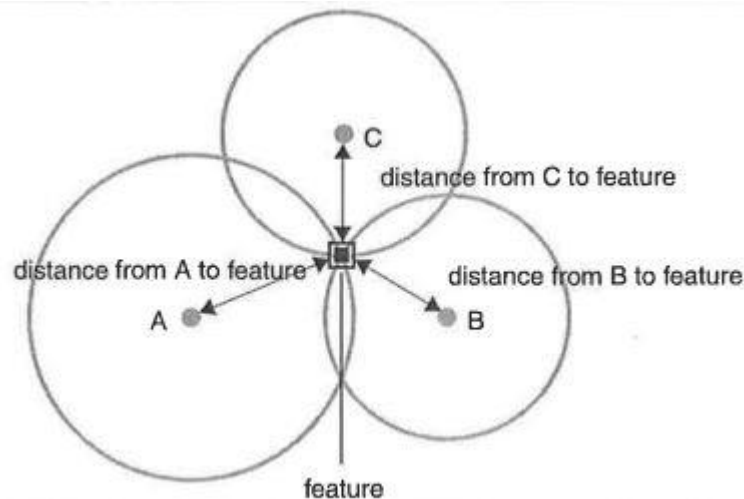
Collection Good Data. Offsets

- Distance-distance: you record two reference positions, and the distance from each of these positions to the feature.



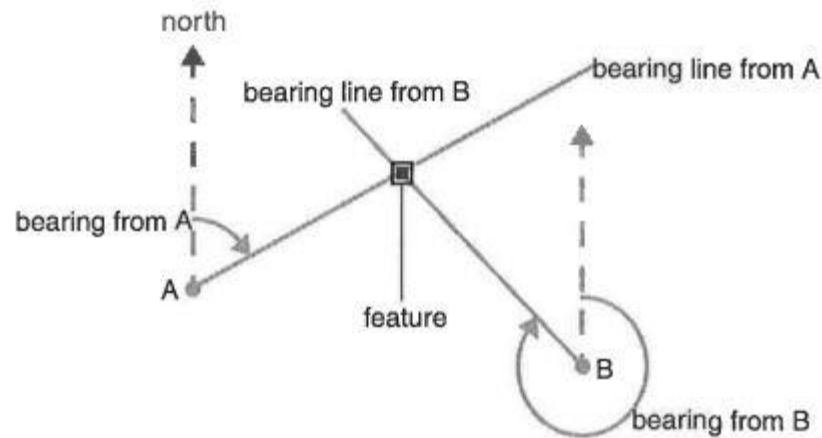
Collection Good Data. Offsets

- Triple distance: you record three reference positions, and the distance from each of these positions to the feature.



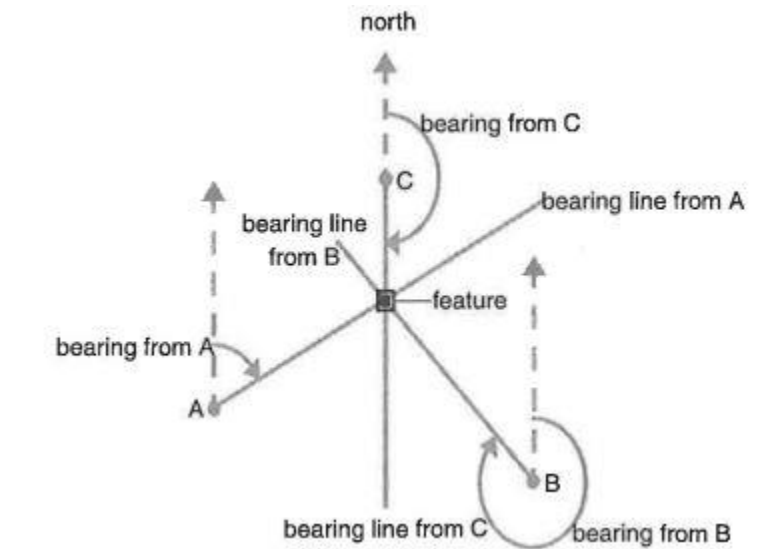
Collection Good Data. Offsets

- Bearing-bearing: you record two reference positions, and the bearing from north from each of these positions to the feature.



Collection Good Data. Offsets

- Triple bearing: you record three reference positions, and the bearing from north from each of these positions to the feature.



Working with Offsets

- Production technique: Distance-bearing
 - ▣ Go to the point where you wish to collect data; flag it
 - ▣ Determine a reference point, some distance from your data point, where you will get a clear view of the sky
 - ▣ Go to your reference point
 - ▣ Measure the distance and bearing from your reference point *back* to the point where you actually wish to record data
 - ▣ From your reference point, go through the process of starting data collection for a point
 - ▣ After clicking Create, go to Options and select Log Later

Working with Offsets

- Production technique, cont.
 - ▣ Select your point type attribute
 - ▣ Under Options, select Offset
 - ▣ Choose “Distance – Bearing”
 - ▣ Enter the azimuth from your reference point (where you are standing) back to the point to be mapped; enter the horizontal distance to the point; enter the vertical offset (if doing z coordinates)
 - ▣ Click Done, and then click Log to begin logging data points
 - ▣ True position is determined by software using COGO

Offset Point

The screenshot shows a software window titled "TerraSync" with a blue title bar. Below the title bar is a menu bar with "Data" and a dropdown arrow. To the right of the menu bar is a battery status icon and a help icon (?). Below the menu bar is a "Collect" dropdown menu and a "Log" button with a right-pointing arrow. The main area of the window is titled "Offset for 1 Point_generic" and contains three input fields: "Bearing (T)" with the value "45.00°", "Horizontal distance:" with the value "10.00 m", and "Vertical distance:" with the value "0.00 m". There are "OK" and "Cancel" buttons to the right of the input fields.

TerraSync

Data

Collect

Log

Offset for 1 Point_generic

OK Cancel

Bearing (T) 45.00°

Horizontal distance: 10.00 m

Vertical distance: 0.00 m

Working with Offsets

- Precision technique: Triple-distance
 - ▣ Move to a reference position
 - ▣ Under Offset Options, choose “Triple-distance”
 - ▣ Follow directions logging at least 30 points and click Next
 - ▣ Enter the distance from the reference position to the actual point
 - ▣ Move to a second and then a third reference position, and repeat

Offset Point

The screenshot shows the TerraSync software interface. The title bar is blue and contains the text "TerraSync" and standard window control buttons (minimize, maximize, close). Below the title bar is a menu bar with "Data" and a dropdown arrow. To the right of the menu bar is a battery status icon and a help icon (question mark). Below the menu bar is a toolbar with "Collect" and a dropdown arrow, followed by "Options" and a dropdown arrow, and "Log" with a right-pointing arrow. The main area of the window has a light beige background. At the top of this area, the text "Triple Distance offset for 1 Point_generic" is displayed. Below this, a horizontal line separates the title from the instructions: "Move to a suitable location and press Log to begin logging reference position 1." Below the instructions are two buttons: "Next" and "Clear". At the bottom of the main area, the text "Reference position 1" is displayed on the left, and "Not started." is displayed on the right.

TerraSync

Data ▾

Collect ▾ Options ▾ Log ►

Triple Distance offset for 1 Point_generic

Move to a suitable location and press Log to begin logging reference position 1.

Next Clear

Reference position 1 Not started.

Working with Offsets

- Production techniques: Triple-bearing
 - ▣ Move to a reference position
 - ▣ Under Options, choose “Triple-Bearing”
 - ▣ Log at least 30 points and click Next
 - ▣ Enter the bearing back to the actual position
 - ▣ Move to a second and then a third reference position, and repeat

Working with Offsets

- If collecting line or polygon data, use *offset* feature to avoid getting your feet wet
 - ▣ Make sure you are in log later mode
 - ▣ Select your line or area type attribute
 - ▣ Under Options, select Offset
 - ▣ Choose Left or Right for Direction, depending on if the **feature** is to the left or right of your direction of travel
 - ▣ Enter the offset distance from the feature, click OK and LOG
 - ▣ *You must maintain the same offset distance throughout your data logging for this feature*

Collecting Good Data. Lines & Area

- For straight lines, collect “node to node” (aka Recording Average Vertices)
 - ▣ Make sure you are in Log later mode
 - ▣ After opening the line or poly feature, select Options, New Vertex
 - ▣ Get 10-30 positions, and click OK
 - ▣ Move to the next vertex
 - ▣ Repeat above step to establish another vertex
 - ▣ Receiver will “snap” a straight line
 - ▣ When done collecting vertices, click OK and OK again to close the feature

Collecting Good Data. Lines & Area

- While collecting a line or polygon you encounter a feature you wish to collect
 - ▣ Click Done store the feature
 - ▣ Collect the new feature, click Done to store that feature
 - ▣ DO NOT CLOSE THE ROVER FILE
 - ▣ Go to where you stopped collecting the previous line or poly
 - ▣ Under Options, click Continue
 - ▣ Select the feature (the previous line or polygon you were working with) and click Continue
 - ▣ This can be done numerous times until you close the rover file
 - ▣ Use this technique when you want to map features using your data dictionary

Collecting Good Data. Points

Points can also be “nested”

- While collecting a line or poly you encounter a *point* feature you wish to collect that isn't part of your data dictionary
 - ▣ Click Options, Nest, Point
 - ▣ Collect the point data and click OK
 - ▣ Click Resume to continue the line or poly