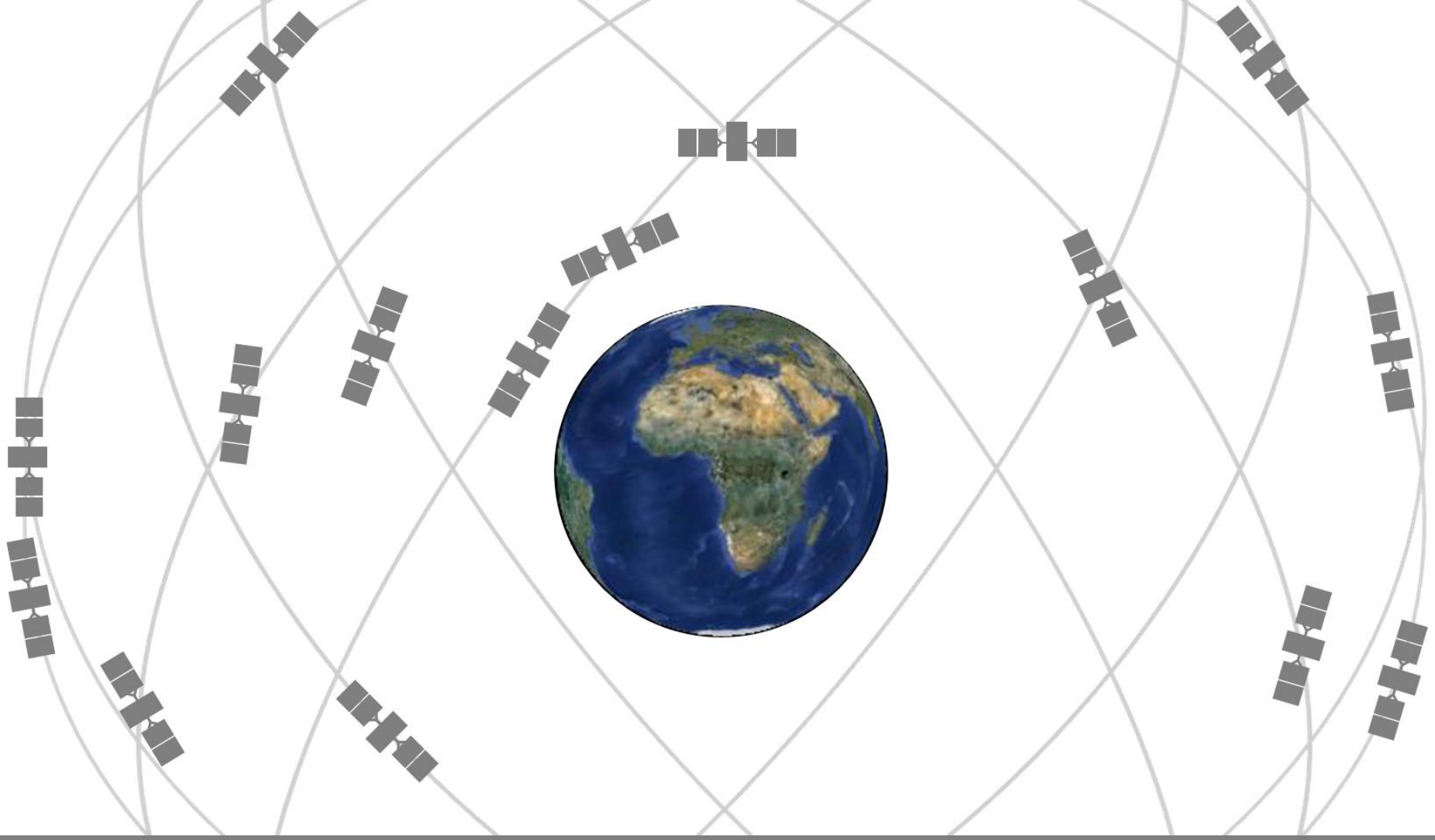


COLLECTING GOOD DATA

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)

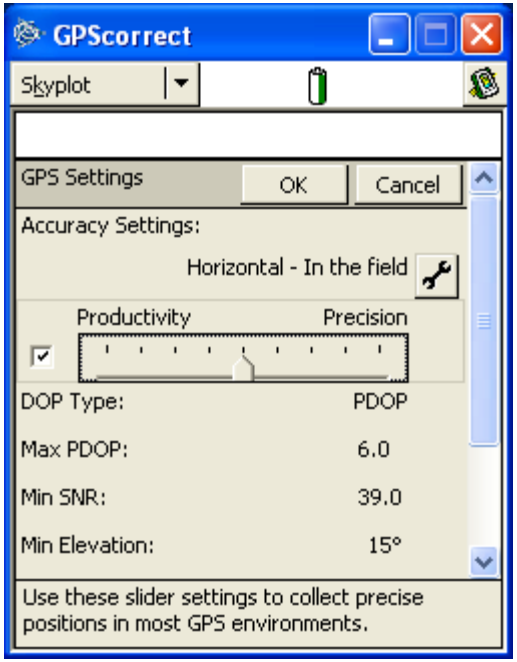
Collecting Good Data. GNSS settings

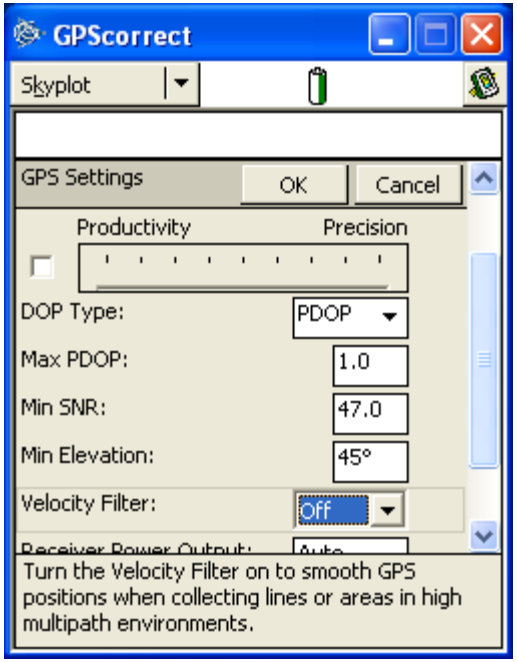
Restricting signal strength parameters:

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





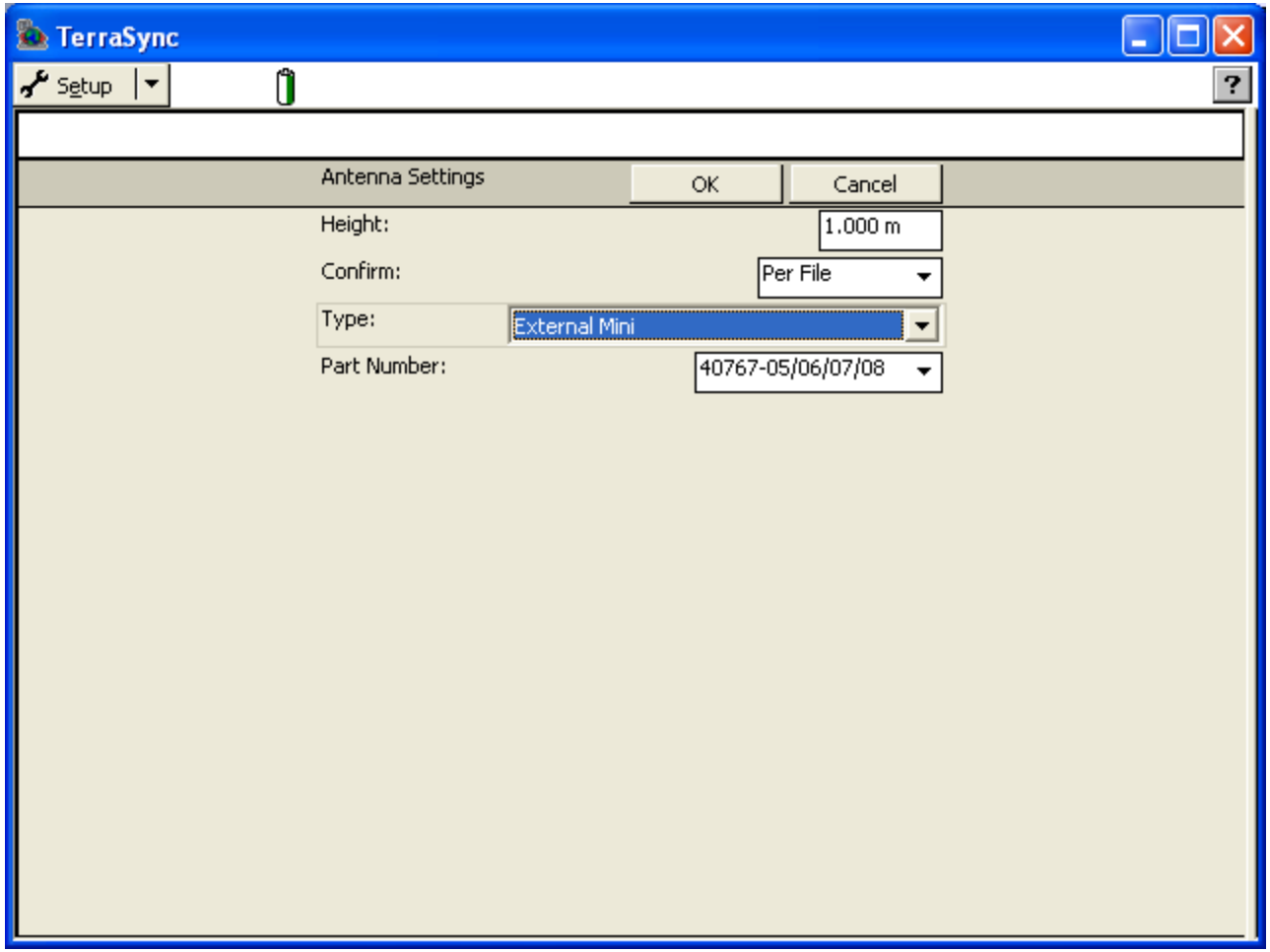
Collecting Good Data. Points

- 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

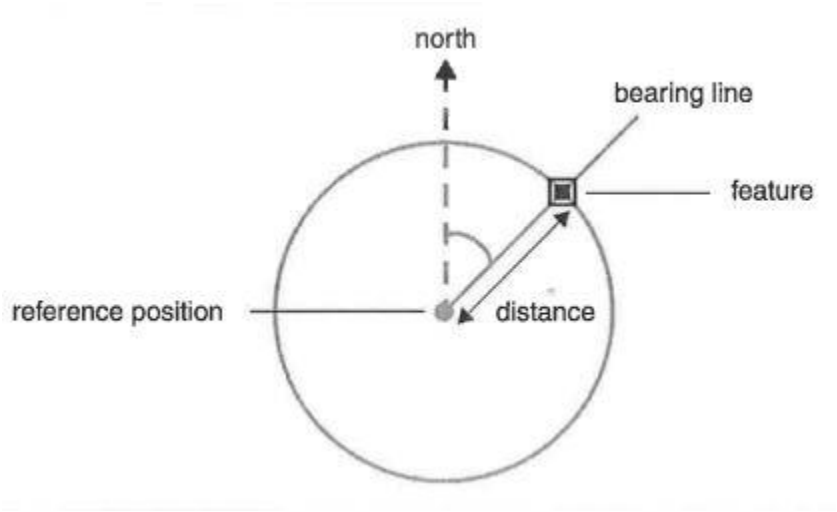


Collecting Good Data. Multipath

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

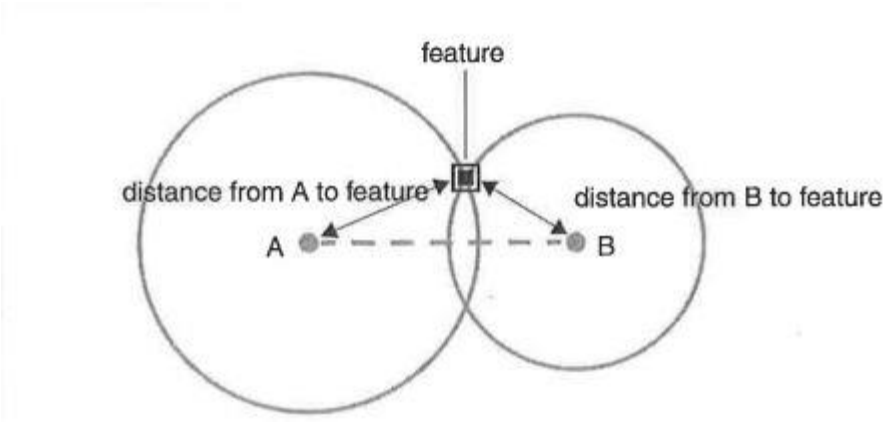
Collection Good Data. Offsets

- 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.



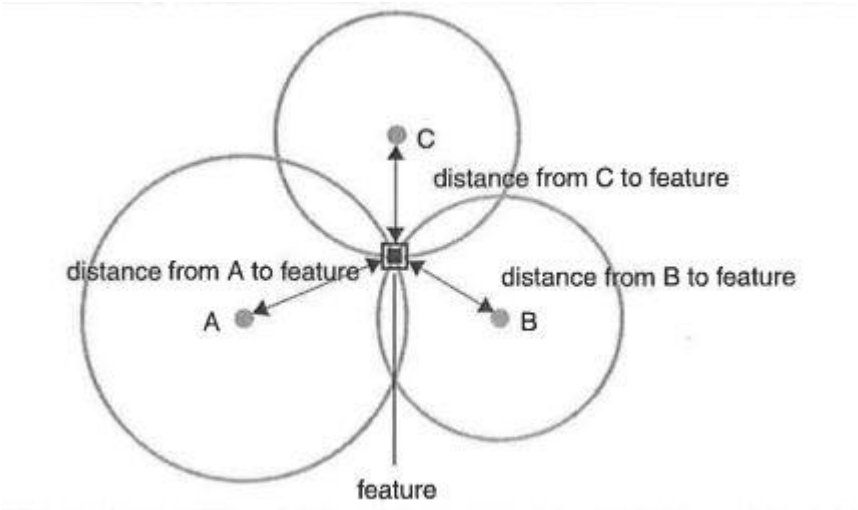
Collection Good Data. Offsets

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



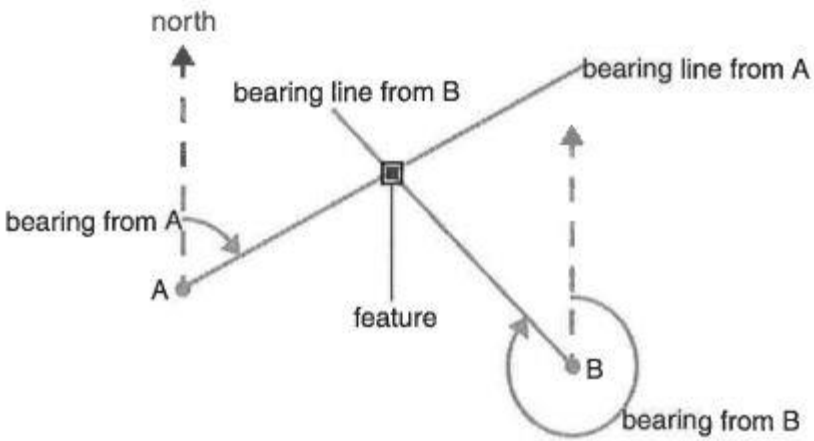
Collection Good Data. Offsets

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



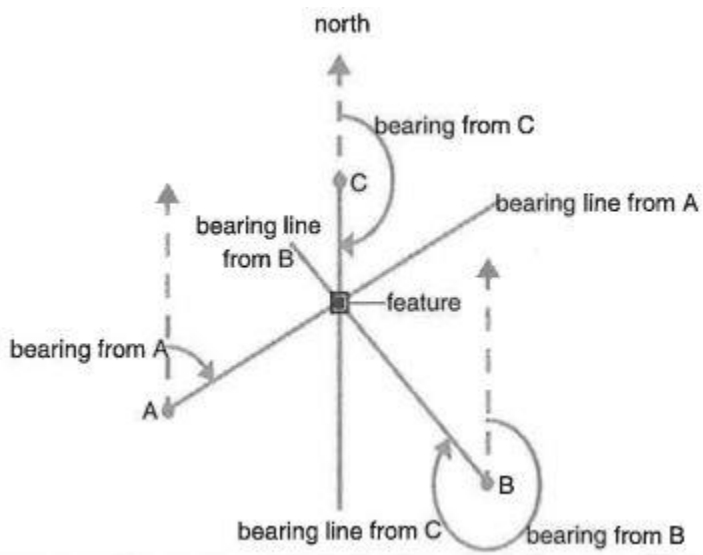
Collection Good Data. Offsets

- 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.



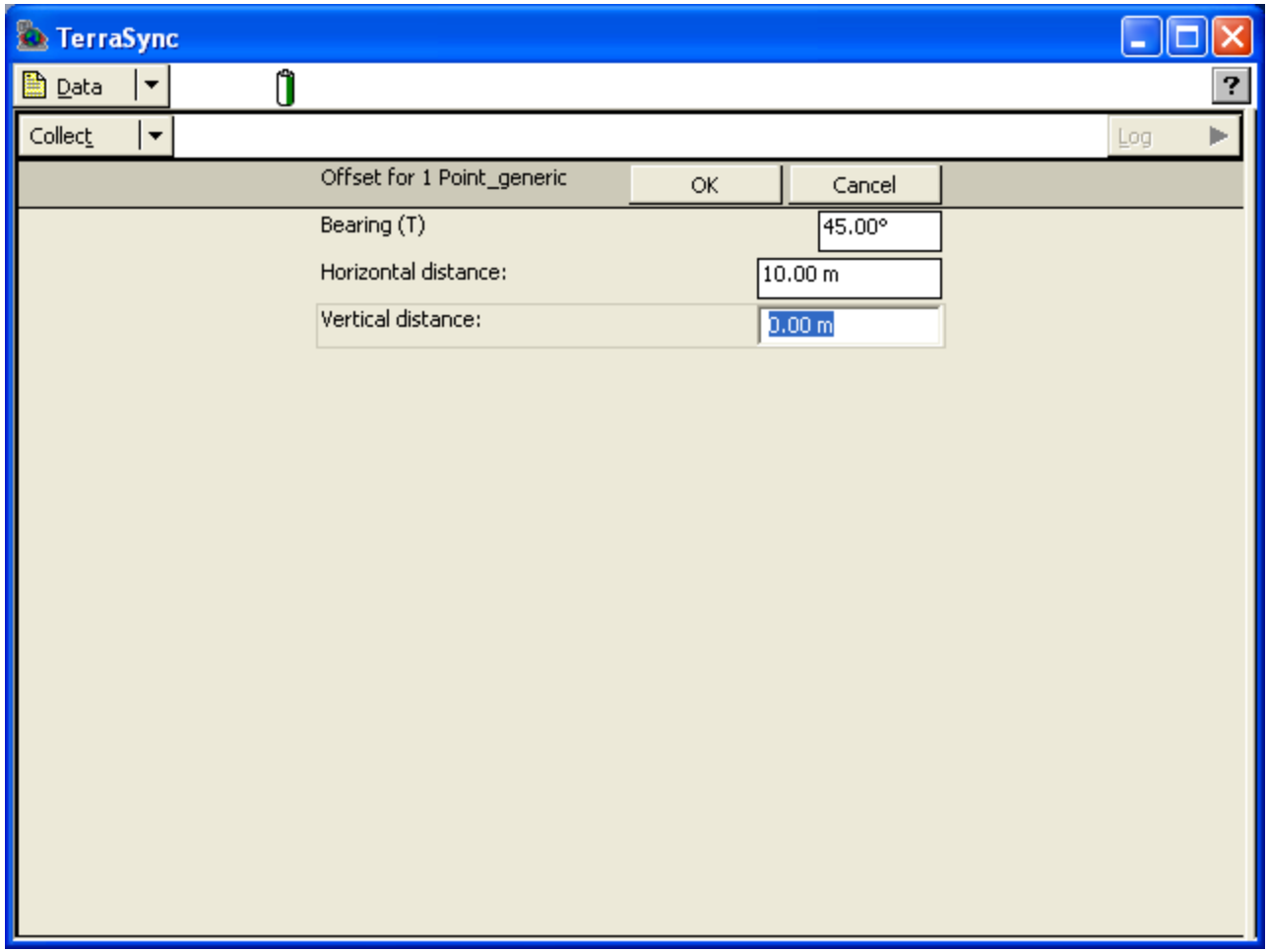
Working with Offsets

- 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 your 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

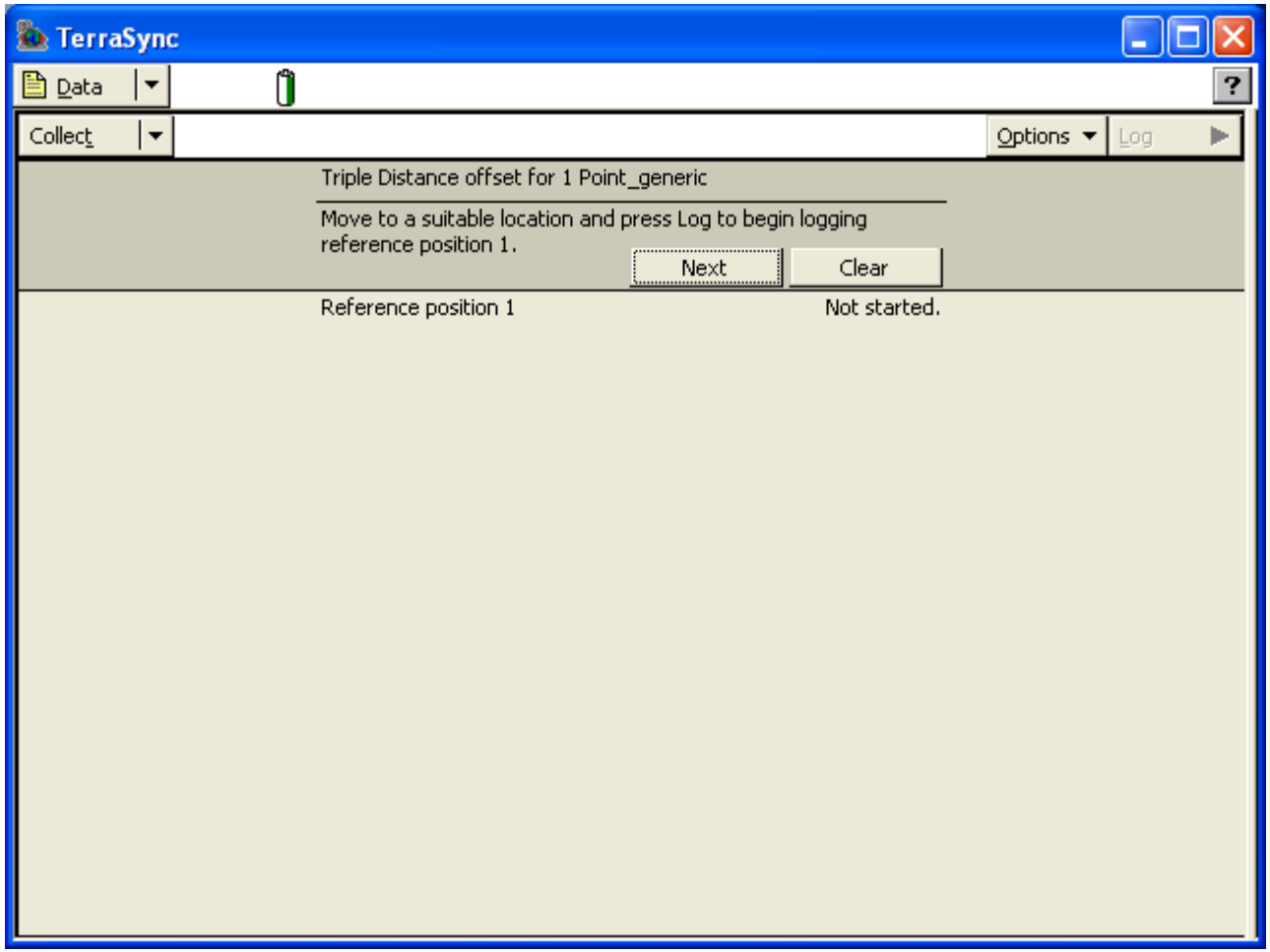
Offset Point



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



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