

Live Sessions Week 3:

Essential Skills 5 and 6: Compass Use and GPS



Importance of these skills

- Apply to every discipline
- Compass Use
 - The principles apply in surveying, cartography, navigation, locating features...
- GPS
 - A fundamental, modern, tool used everywhere for all geographic measurements.

Essential Skill #5: Compass Use





Sighting mirror

Sighting line and indicator(s)

North arrow on base plate

Clinometer
(optional)

Adjustable declination



Suunto



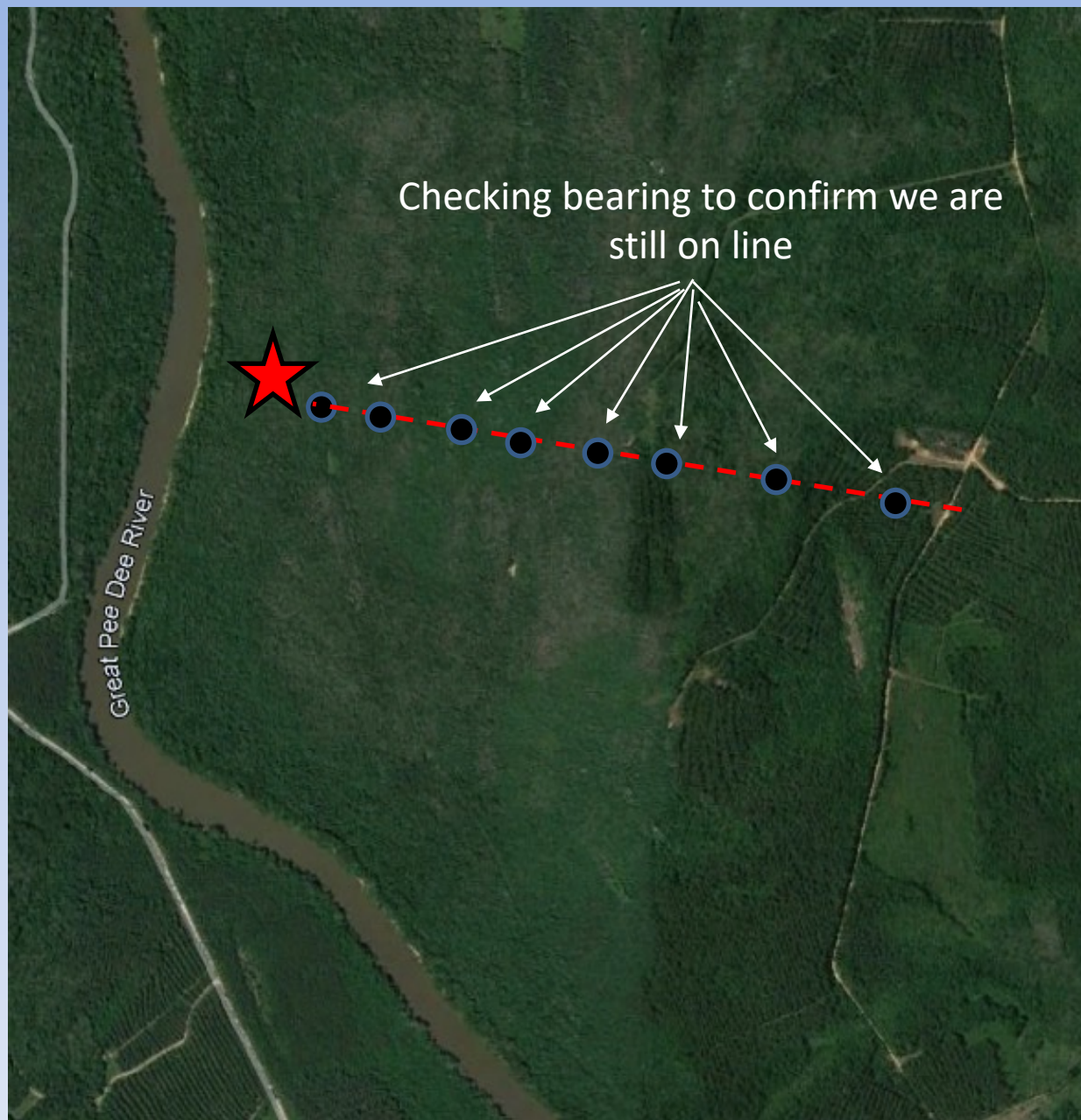
Silva

Compass for purpose of Amazon EFS

- Any app will serve you as a general direction guide.
- Some apps are automatically adjusted for declination based upon your location
- All apps lack the sighting mirror though which is the key to accurate movement through the woods.

Walking a bearing



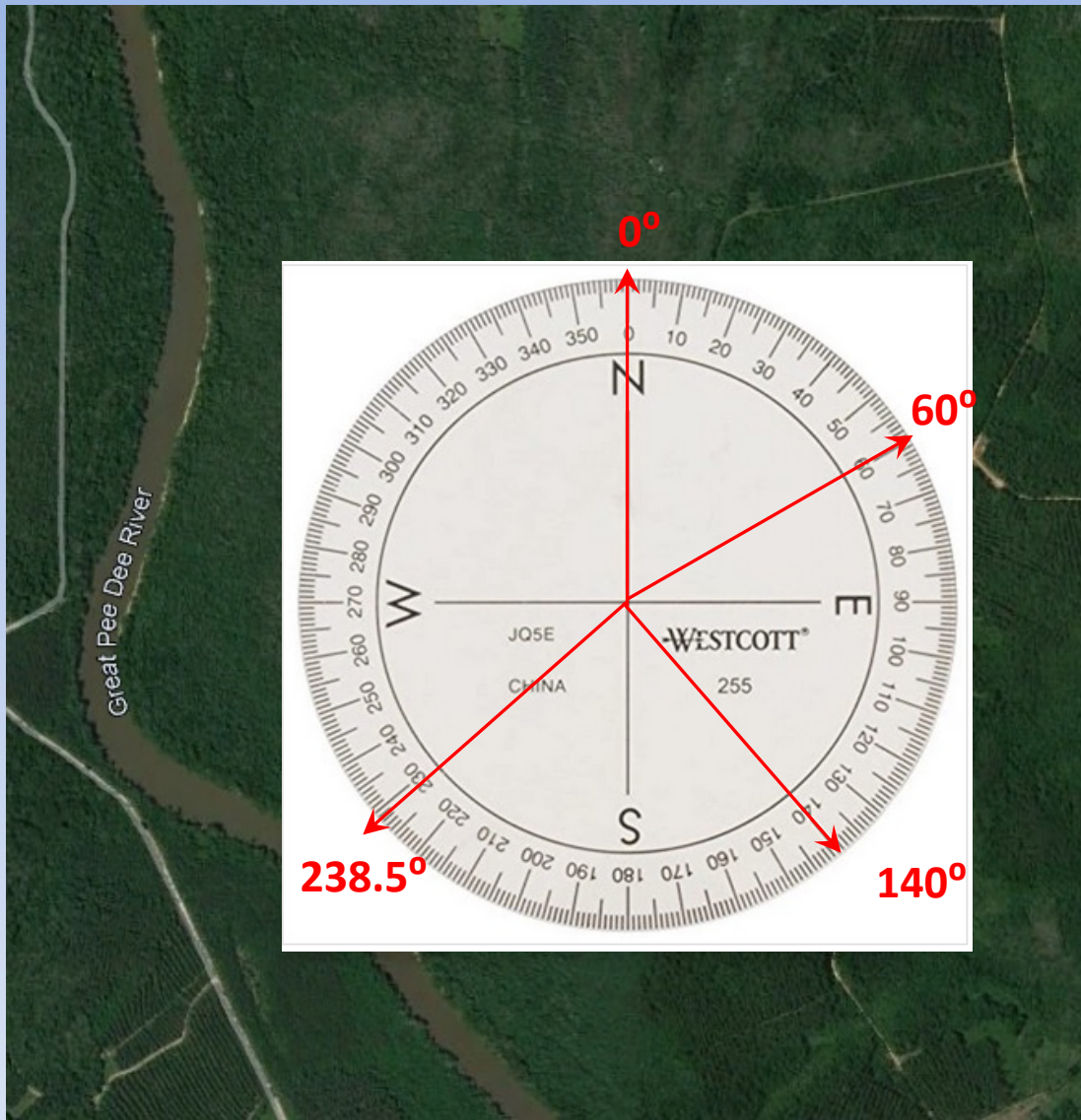


Checking bearing to confirm we are
still on line

Great Pee Dee River

To walk a bearing





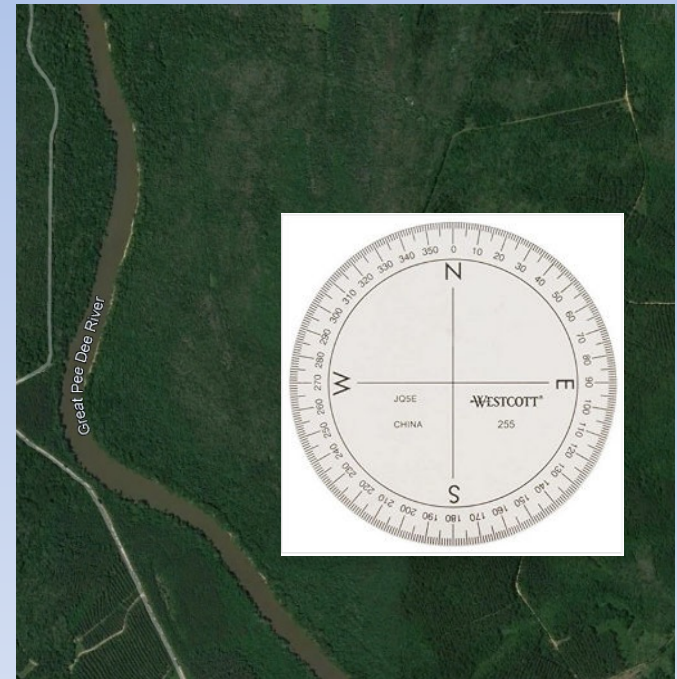
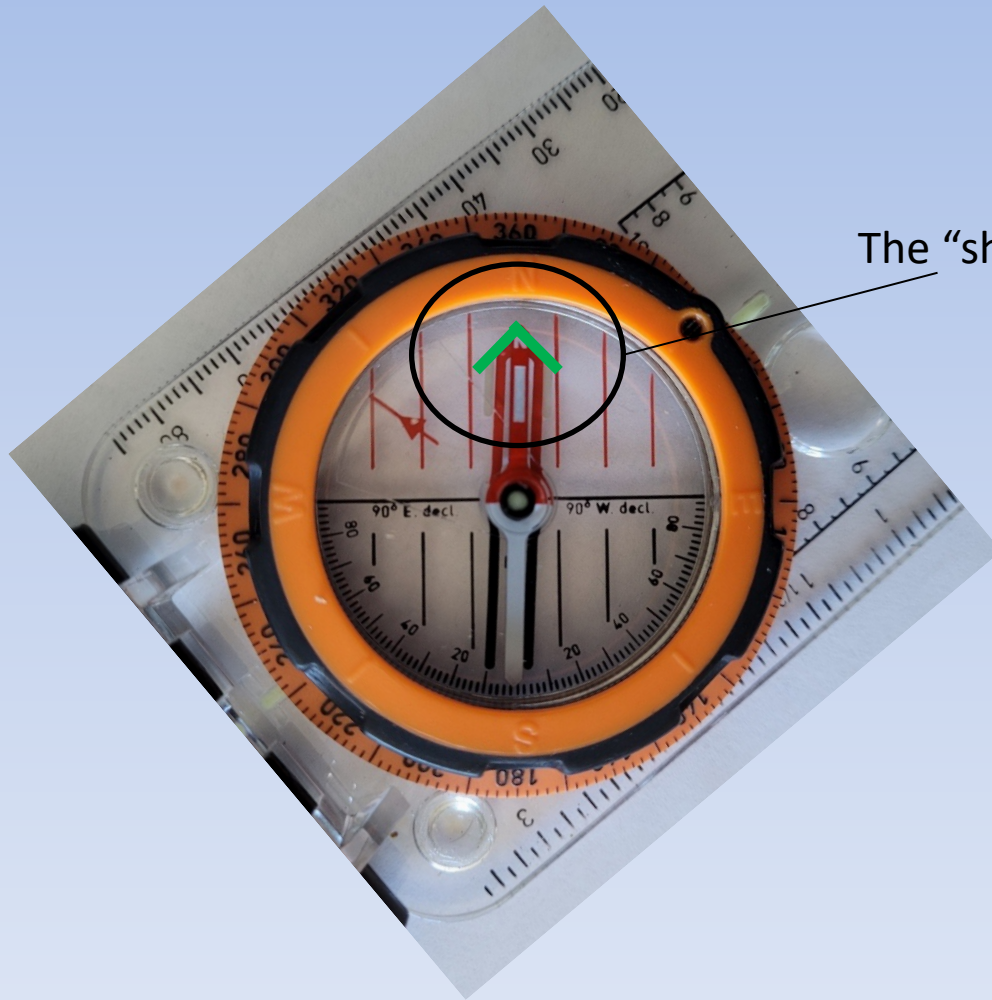
Selecting a bearing

Bearing: 230°

Direction
indicator



“Red in the shed”



Why the mirror is so important

Sighting notch

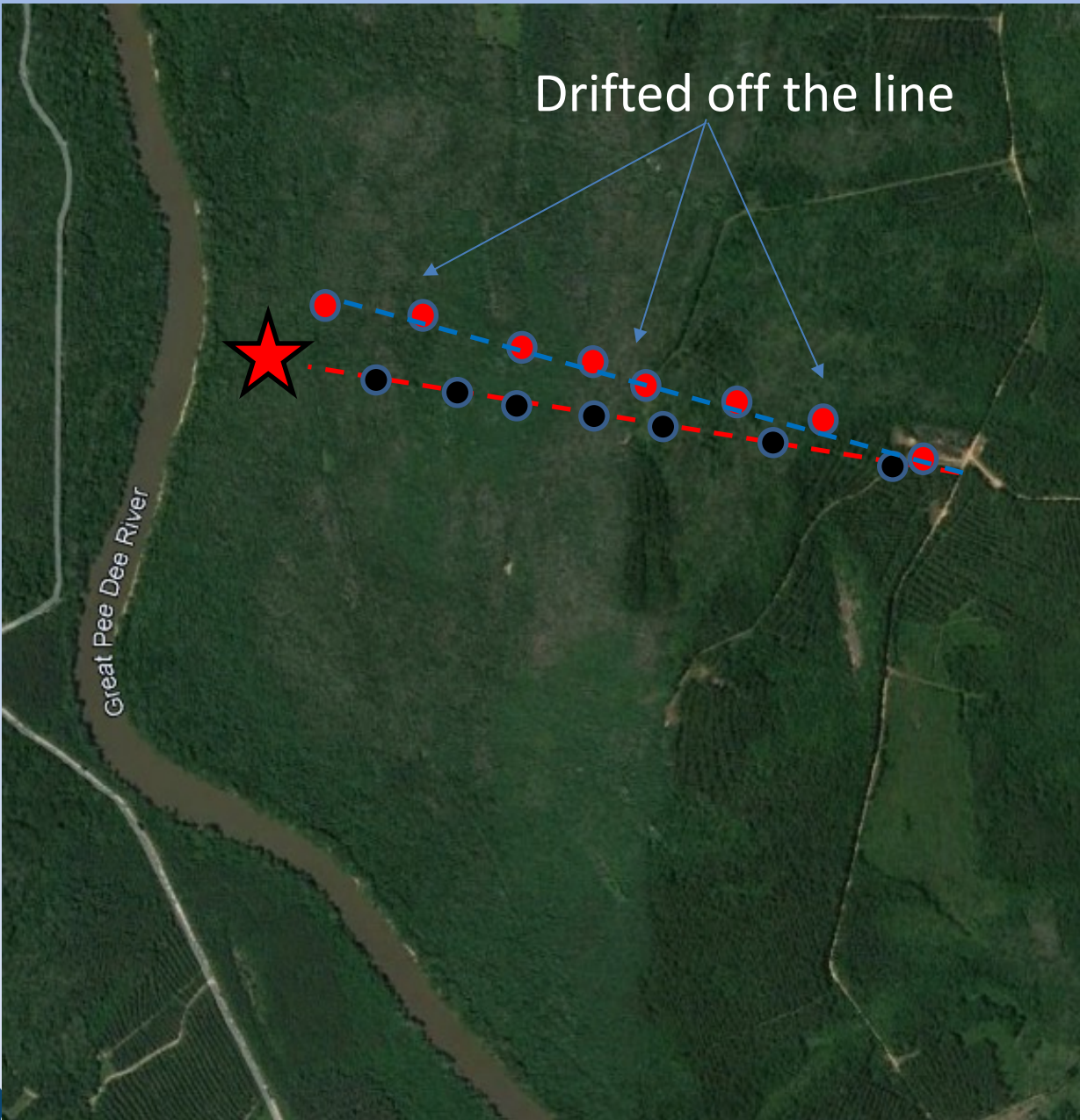
Top direction
indicator

Central sighting
line through
needle pivot

Red is in the shed

Bottom direction
indicator







Frontsight bearing: 230°



Backbearing: 50°

Green arrow is front sight bearing (275°)

Red arrow is backsight bearing (105°) when drifted off of line

Surveyors new position
having drifted off of line

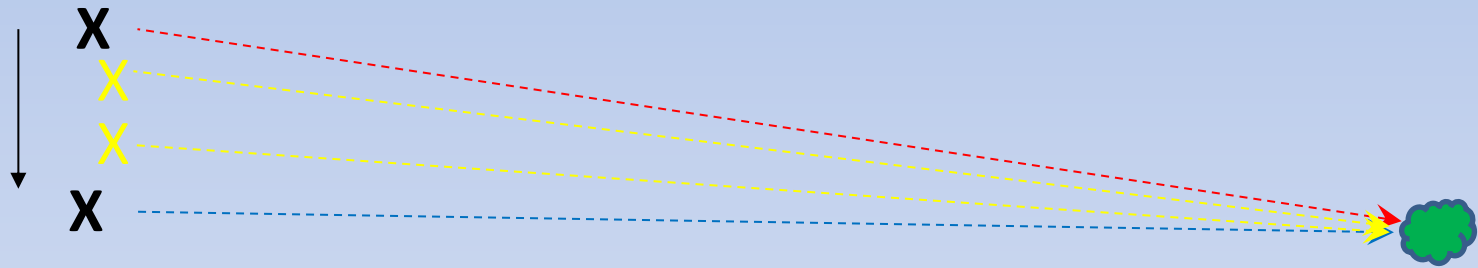


Surveyors new position still
on line

Blue arrow is backsight bearing (95°) if still on line

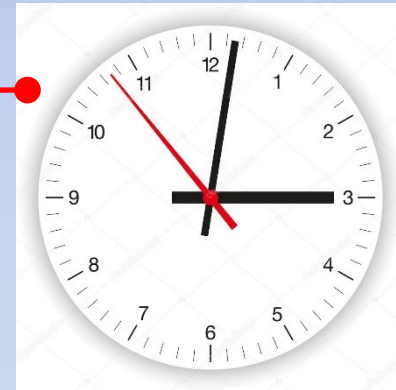
Feature
from which
frontsight
was taken

How to get back to the line



Three additional compass skills

- The compass as a clinometer
- Your watch as a compass
- Locating objects by triangulation

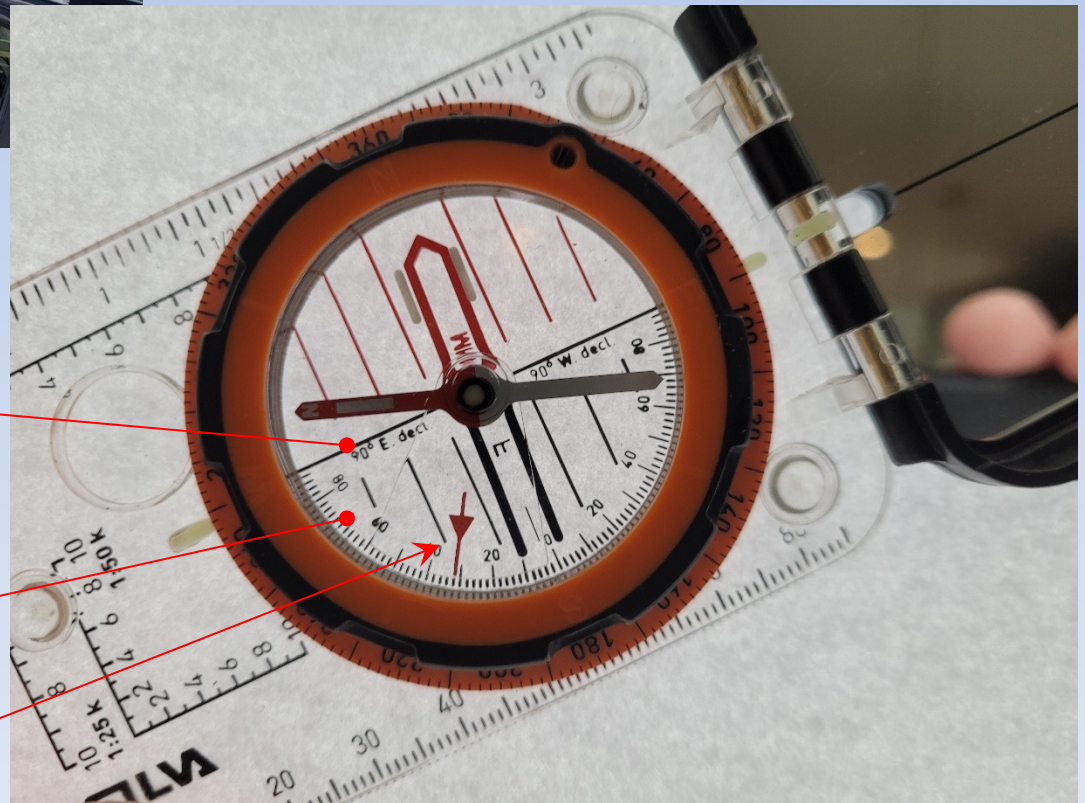




Line to be parallel
with compass edge

Declination scale

slope indicator

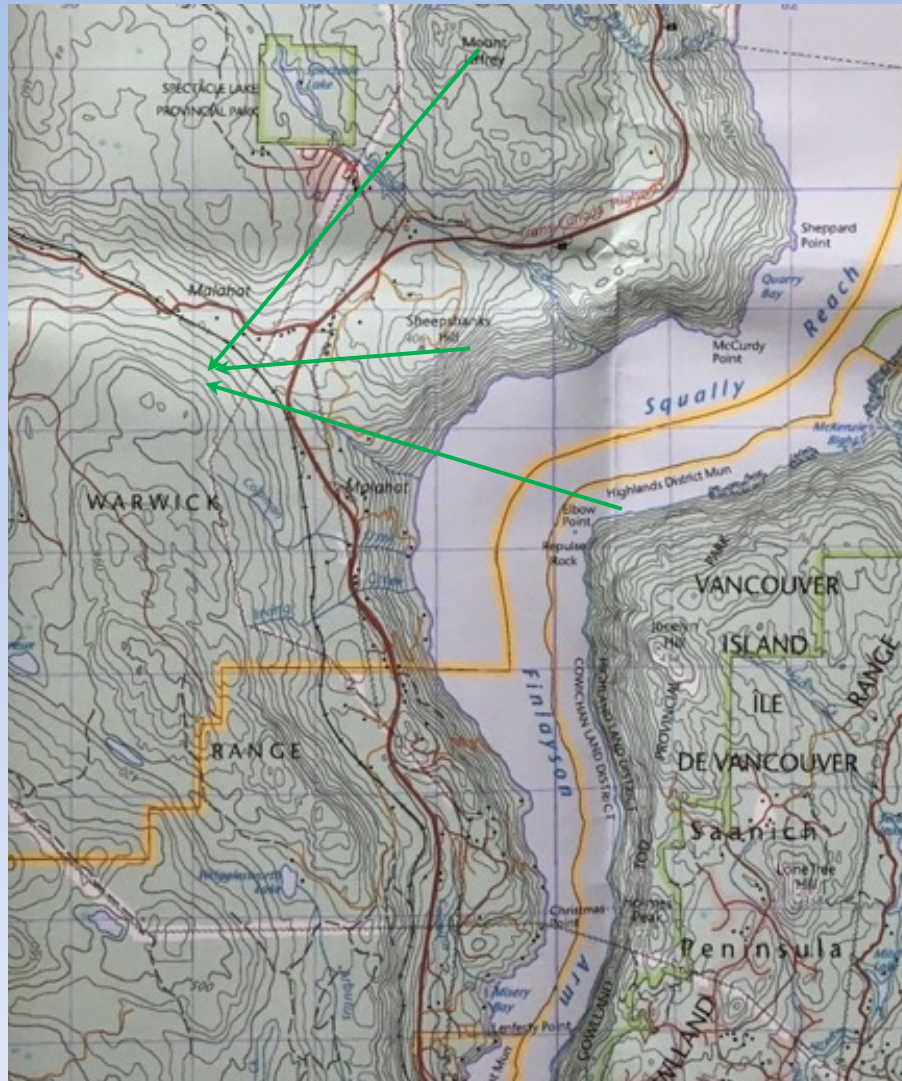




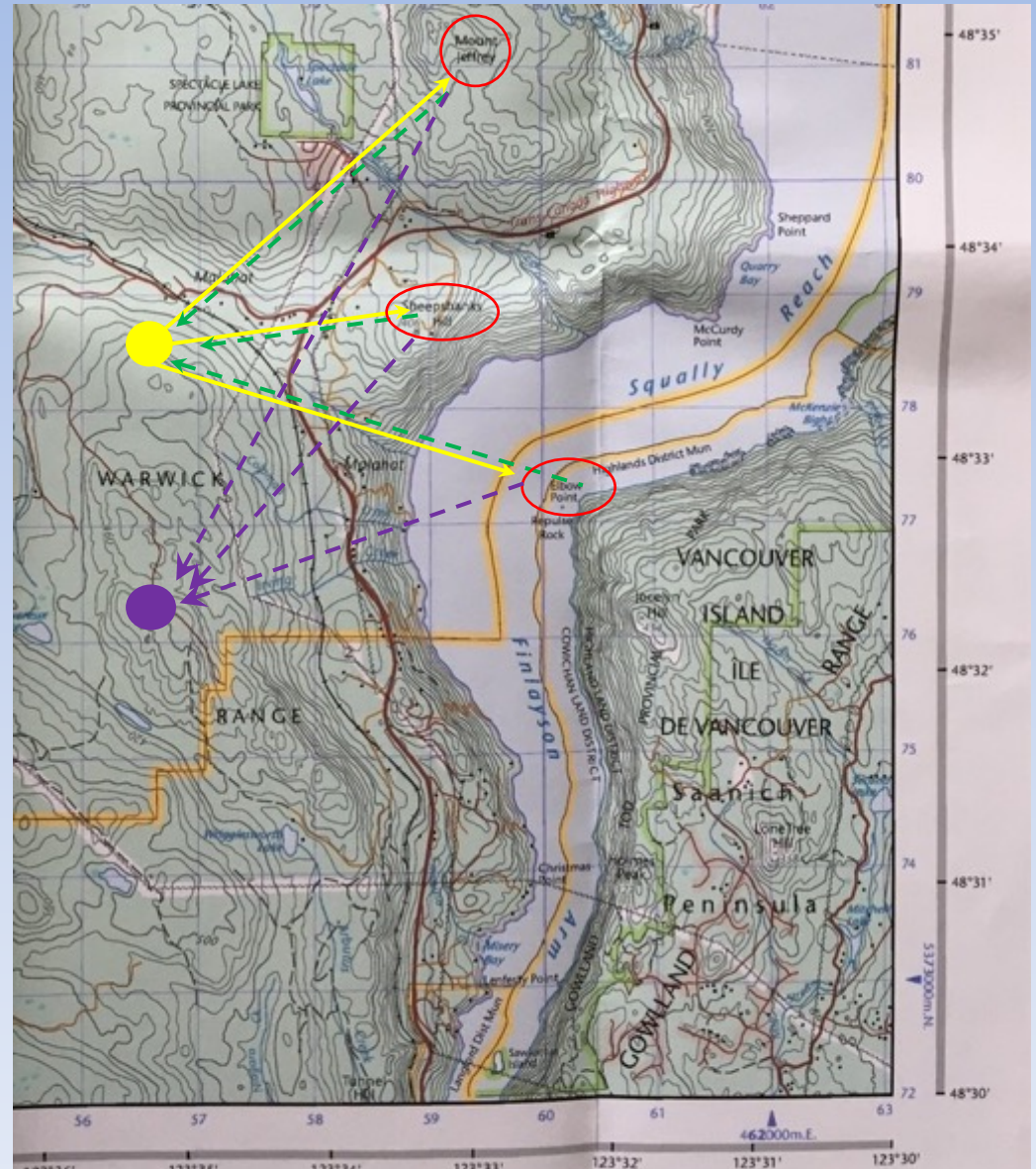
SOUTH



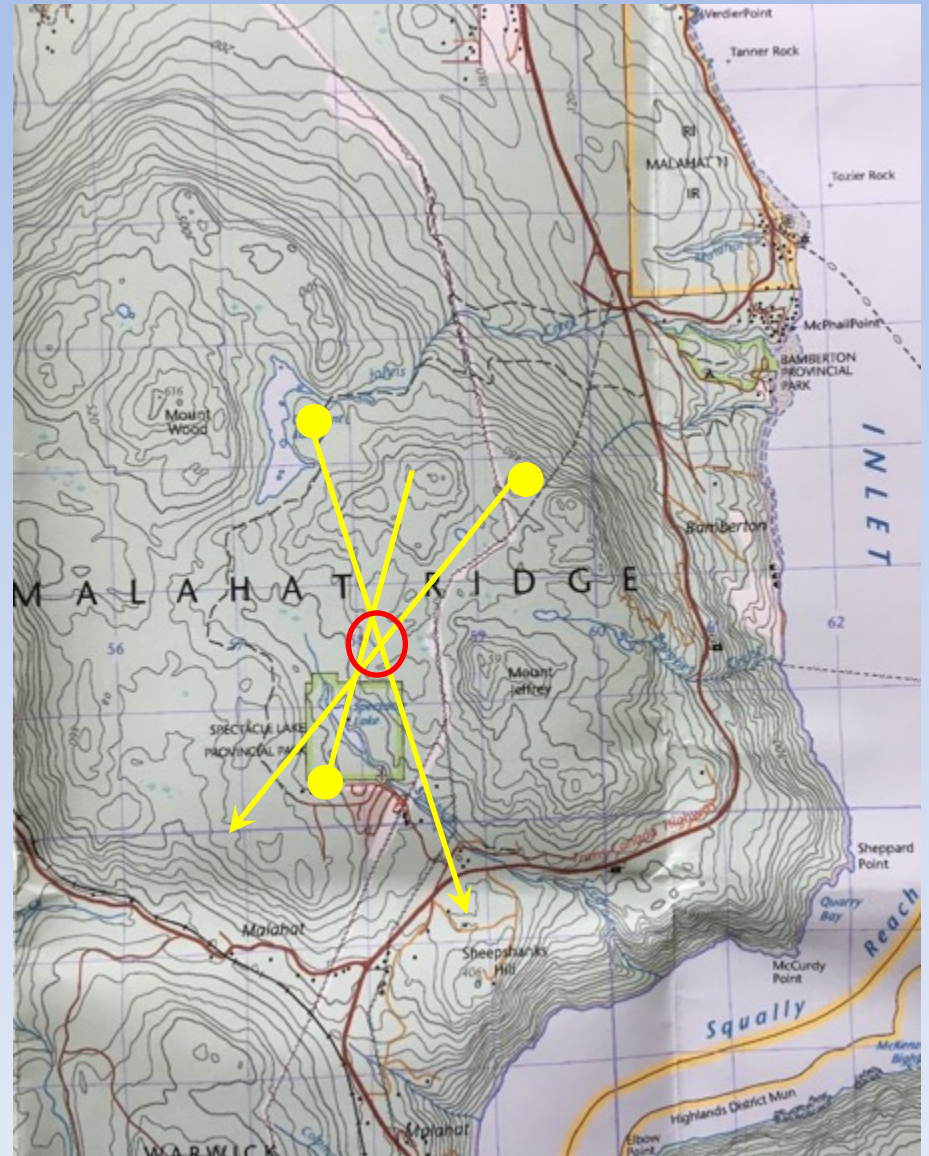
Triangulation



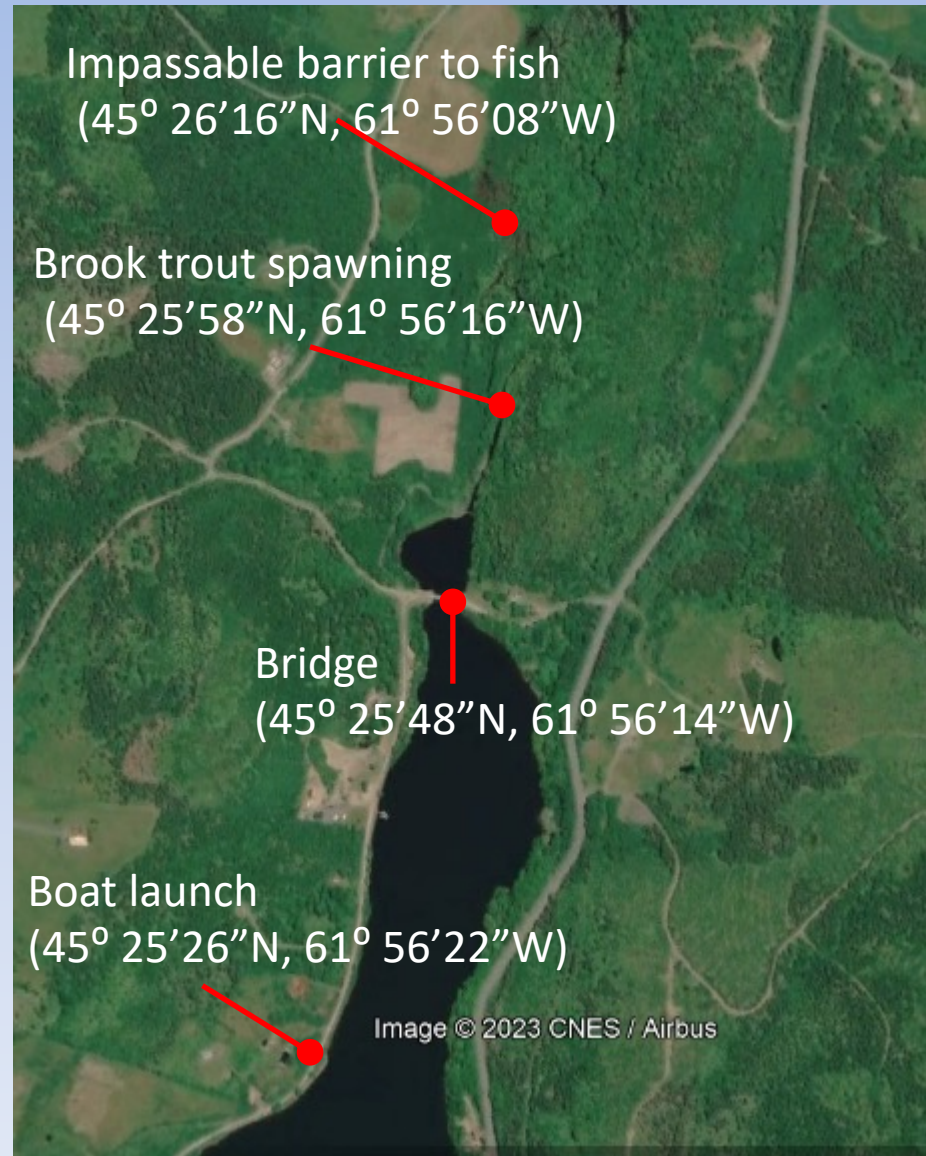
Triangulation (I): Locating ourselves



Triangulation (II): Locating something away from us



Essential Skill #6: GPS



Value of GPS

GPS transformed how we locate objects in the environment. Prior to this technology it was done by map and compass and triangulation. We now determine or mark a location with the press of a button. This is a power that your grandfathers who mapped the country would have considered magic (or sorcery).

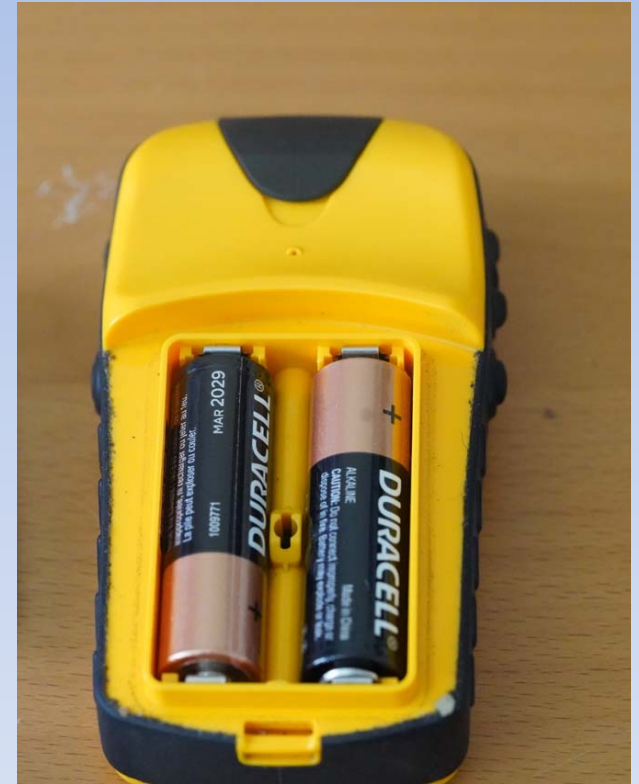
Advantages

- Accurately shows current position on a map.
- Apps available to run on hand held devices.
- Free base maps can be accessed instantly for most areas.
- Data, notes, pictures can be geo-referenced.



Disadvantages

- Require electricity – device must be charged with extra batteries on hand
- Mountains, aspect and vegetation cover can block the satellite signal
- Devices can be more difficult to use in very cold or wet weather

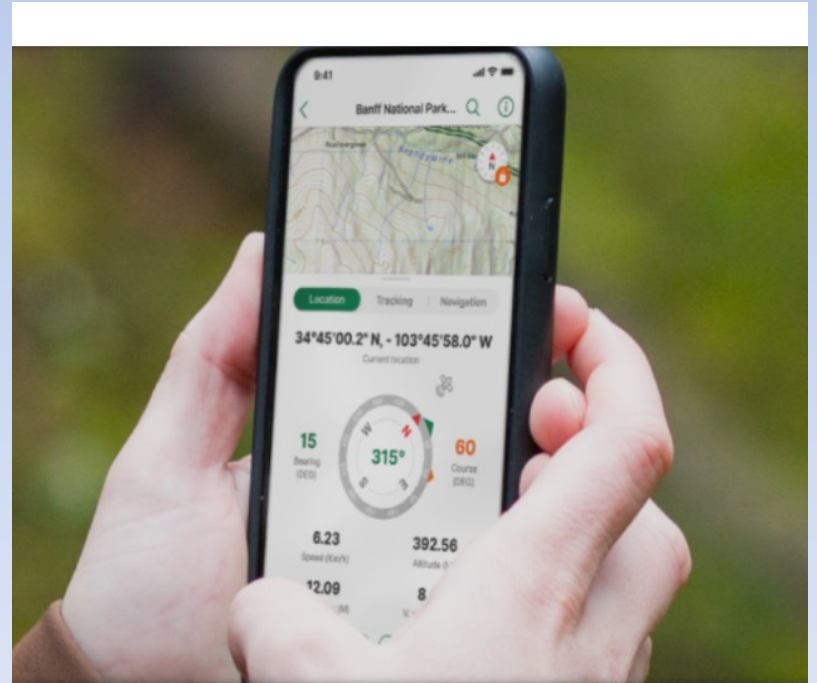


Different Types

Time →

1978

Current



Sub Metre Accuracy - Trimble, Geode, Satlab



Handheld devices – Garmin, Magellan



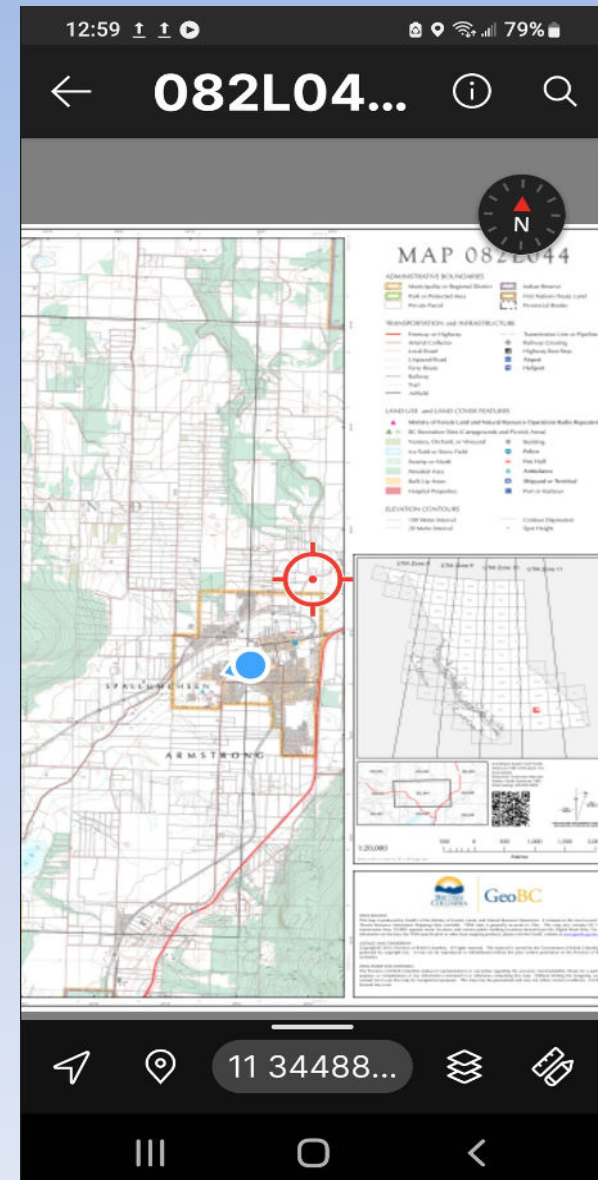
GPS on your phone

- Can have poor accuracy ($\pm 3\text{m}$)
- Can have poor reception (poor receiver)
- Suitable for recreational use but not professional environmental work

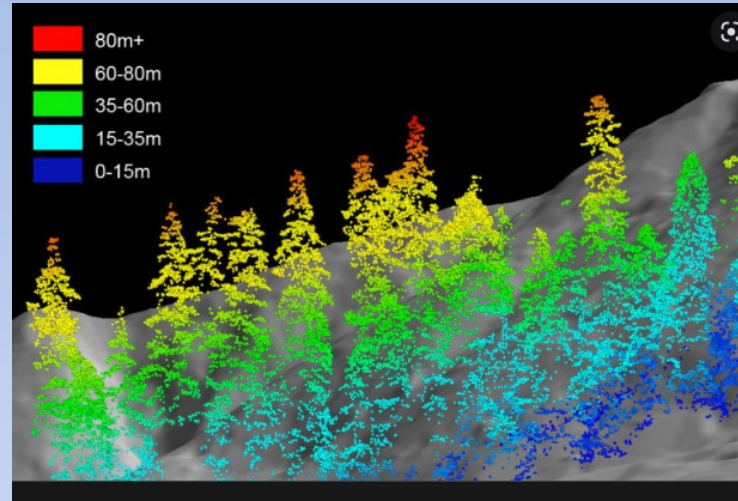
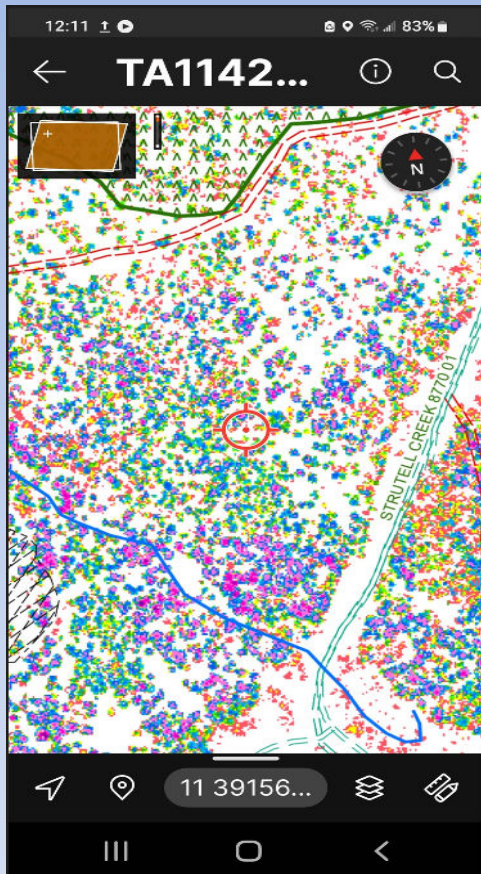


Avenza

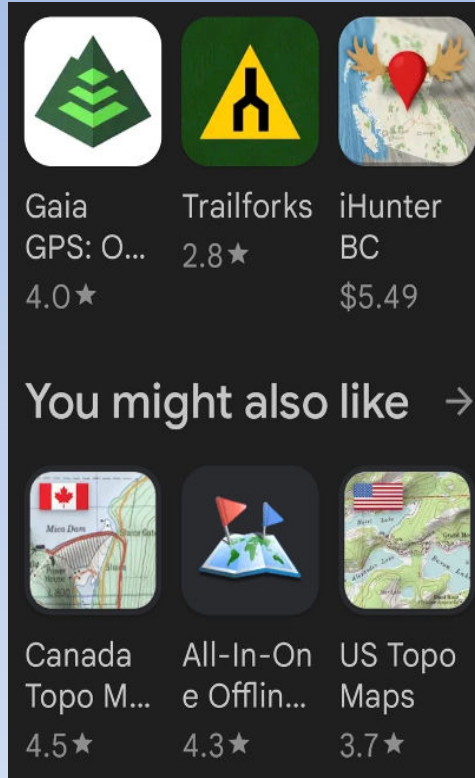
- Downloaded software to your phone or tablet
- Accurate and respected by professionals
- Becoming the industry standard



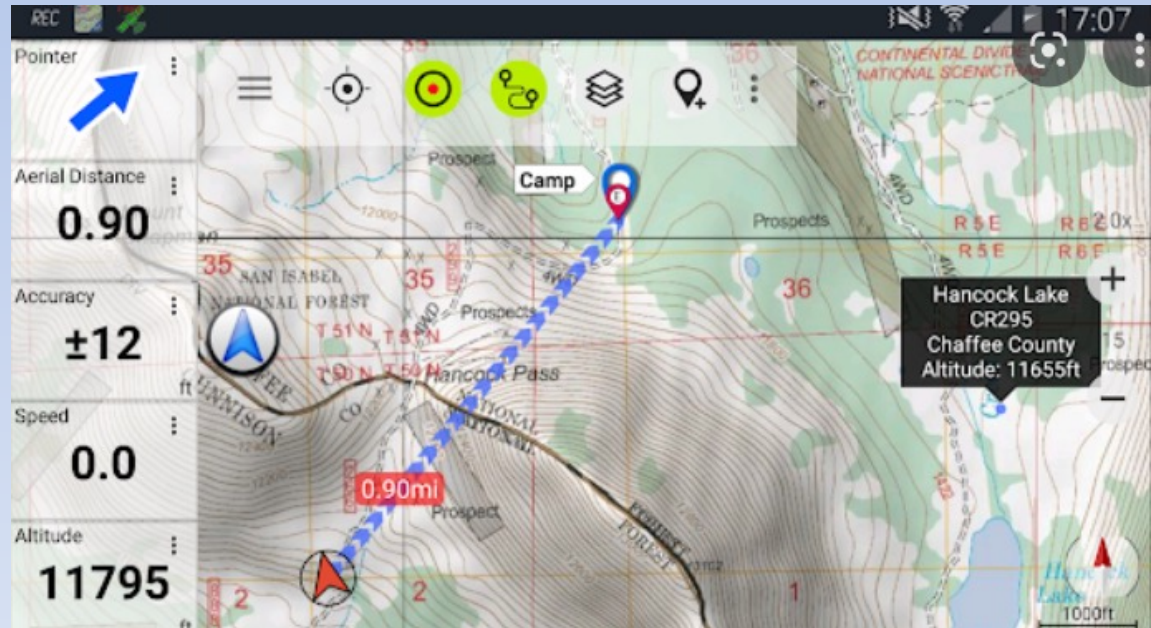
Other examples of base maps that can be used in Avenza



Alternative Applications to Avenza



There are many alternatives, most are recreational based with limited data collection functions.



Link to the pros and cons of other applications like Avenza:

<https://www.slant.co/options/26606/alternatives/~avenza-maps-alternatives>

Essential Skills 5 and 6: summary

This week we focused on:

- Why the mirror is so important in a good navigating compass
- Role of backsight as quality control when walking a bearing
- An application of compass bearings for triangulation
- An overview of ranges of models of GPS

Discriminating roles of compass and GPS

	Direction	Location
Compass	Excellent	Poor
GPS	Poor	Excellent