# Which GPS is Right for me?

Since GPS was introduced to surveyors and mappers, this is the age-old question. The answer is a function of your needs and budget.

**ProMark 500 GPS (centimeter accuracy)**

**Generally, cost and accuracy are directly related.**
You should generally think of there being four different categories of GPS. Consumer (3+ meters), Mapping (1-5 meter), Sub-meter mapping (< 1 meter) and Surveying (1 centimeter). The approximate cost range of the receivers in each of those categories looks something like this:

Consumer (3+ meters) <$100 to $1,000
Mapping (1—5 meters) $650 to $1,800
Sub meter Mapping (<1 meter) $2,500 to $6,000
Surveying (1 centimeter) $6,000 to $40,000

Given the above, budget and accuracy go hand-in-hand. However, budget is not measured just by the cost of the equipment. The more accurate the equipment, generally speaking, the more complicated it is to operate, so personnel training costs are higher.


**SXBlue GPS Unit**
**(sub meter accuracy)**

Consumer receivers are generally the easiest to operate. The 3+ meter accuracy figure is somewhat deceptive. Since consumer receivers are not designed with accuracy in mind, some positions are off by 20, 30, 40 meters when in non-ideal conditions such as under tree canopy or near buildings. You have to be very careful when attempting to use consumer-grade GPS receivers in professional applications such as mapping because the product specification sheet will mislead you. Keep in mind that accuracy specifications are published with the assumption that you are working in ideal conditions for GPS, which none of you are.


**Mobile Mapper 6 ( 2-5 meter accuracy)**
**(1-2 meters with post processing)**

Mapping and Sub-meter mapping receivers are a step more complicated and even more so if post-processing is involved. Although the GPS products we sell are able to accommodate post-processing, we generally don't recommend post-processing for Mapping and Sub-meter mapping receivers. There are usually real-time solutions available.

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With Mapping and Sub-meter mapping receivers, whether operating real-time or post-processing mode, at no time is there a need to set-up or operate your own base station receiver. There are plenty of base stations in the Pacific Northwest that are accessible free of charge.

Not all Mapping and Sub-meter mapping receivers are created equal. For example, two "Sub-meter mapping receivers" from different manufacturers will behave similarly in ideal conditions (eg. wide open view of the sky, no trees or buildings nearby), but put them in a challenging environment such as mapping a timber sale or a stream running through the woods and you may see a large difference. Unless the Mapping or Sub-meter mapping receiver is specifically optimized for operation under tree canopy, it will not perform well. Choose carefully and "try before you buy".

Surveying receivers are the most complicated to operate. There are many varieties of survey receivers with different levels of functionality and complexity. Unless you are using the NGS OPUS program or are subscribed to the Oregon Real-Time GPS Network or the Washington State Reference Network, you will need to set-up and operate your own base station receiver. It's not overly complicated, but enough so to warrant training when you first delve into survey-grade GPS. Also, starter training in geodesy is a good thing although survey-grade GPS units can work in "ground coordinates" just like a total station, just as well as a geodetic system like Lat/Lon or a grid system like State Plane.

**ProMark 500 GPS Unit Set up as a Rover**

**Horizontal and Vertical Accuracy**

One last note about accuracy. The references above relate to horizontal accuracy. Vertical accuracy is a different animal, generally 1.5 times worse than horizontal and more difficult/impossible to achieve in tough GPS conditions (eg. under tree canopy). If you need accurate vertical measurements, you'll most likely need to use survey-grade GPS equipment and possibly augment it with optical instrumentation.

For more information regarding which GPS unit is best for you, please feel free to contact Jon Aschenbach at 503-707-6236 or email: jon@resourcesupplyllc.com. Additional detailed information for several GPS units is available at: www.resourcesupplyllc.com.

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