

**Global Positioning System
for
GIS Specialists**

GPS for GISS: *Unit Objectives*

At the end of this Unit each student should be able to:

- Explain how GPS works.
- Explain how accurate a GPS is.
- Explain what a datum is and give an example.
- Explain how a GPS receiver/processor functions.
- Explain why there are different latitude and longitude formats.
- Explain how to download GPS data.

Unit Overview

- Commonly Asked Questions
- DNR Garmin Demonstration

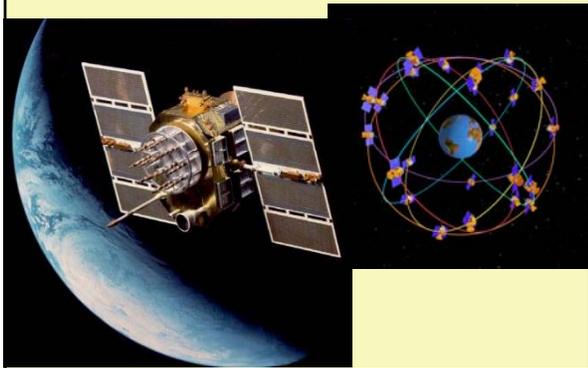
Typical questions encountered:

- How does GPS work?
- How accurate is my GPS?
- What is a datum?
- Does a datum make any difference?
- Will my data be right if I set the GPS to the wrong datum?

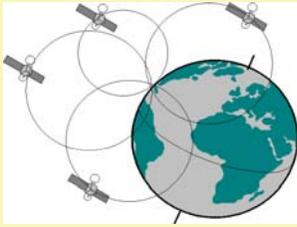
Typical questions encountered:

- Why are there different latitude and longitude formats?
- What is the difference between *saved tracks* and *active tracks*?
- How do I download GPS data?

How does GPS work?



Determining Position



GPS units can calculate a distance to each “seen” satellite. The intersection of the resulting lines-of-position represent the GPS unit’s location.

How accurate is my GPS?

GPS Unit	Horizontal Accuracy
Garmin V	9 ft (3 m)
GPS Map 76	12-18 ft (4-6 m)
Garmin III Plus	12-18 ft (4-6 m)



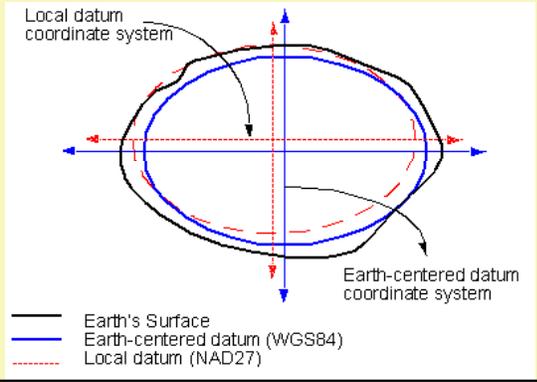
Under a forest canopy or canyon: GPS accuracy goes down, (>50 or 100’) and reception may be impossible.

What is a datum?

A datum is a mathematical representation of the earth's surface.

Each datum uses a different origin which results in different coordinate values when used in GIS.

What is a datum?



Different datum's, same coordinates:



Will my data be right if I set the GPS to the wrong datum?

The receiver's processor always works in datum WGS84. The user cannot change this.



Will my data be right if I set the GPS to the wrong datum?

The user can only change the way coordinates are displayed by selecting the datum and coordinate system.



Why are there different latitude and longitude formats?

Decimal degrees, *or* Degrees, decimal minutes
or Degrees, minutes and seconds

Crater Lake example:

Same location, three formats:

Latitude:	Longitude:
42° 56' 4"	-122° 9' 1"
42° 56.0583'	-122° 9.0187'
42.9343°	-122.1503°

What is the difference between *saved tracks* and *active tracks*??



How do I download GPS data?

