Geos 425 – GPS Basics – Project 1 2006Sep05

Due 2006Sep12
Day/Time_____ Name_____

Introduction

During this lab you will obtain GPS positions from several benchmarks outside the building using a Garmin Map 76 receiver in three different configurations:

Type 1 – Handheld static GPS positions
Type 2 – Handheld differential code positions using WAAS
Type 3 – Handheld static GPS positions with an external antenna.

All positions should be in UTM meters in the WGS84 datum, your instructors will show you how to set up the units so they read properly and will work through the basic controls in the lab before we go outside. It is important that you make your measurements and record all your data in a consistent manner.

Procedure

- For the hand held units, hold the receiver on a Jacob Staff so that the antenna has a clear view of the sky and is at a consistent 1.5 m above the bench mark.
- We can't easily change the trees and buildings in the area, but you can avoid standing so that your body blocks the sky. At the latitude of Fairbanks, very few NAVSTAR satellites appear in the sky due North of our position – if one stands north of the antenna and don't loom over the antenna, then receiver will stand a good chance of receiving a high-quality signal from the most satellites possible.
- Be careful not to hold two receivers closer than ~1m to each other while you are taking a position – spurious signals from the receiver of one can interfere with the signal received at another unit.
- All of the units give an estimate of the position error (in the Garmins this is EPS) – watch this error estimate (for about 1 minute) and when it stops decreasing, you should take a position.
- To get a good estimate of the position press and hold the ENTER key (All the other Garmin's) then press enter again to confirm the waypoint. The position will be stored as a waypoint in the Garmin receivers. Keep your

Assignment

What's due: You will produce a MSExcel table consisting of 20 GPS positions which you independently acquired during the Tuesday Lab and through the week. The table should look like the table at the end of this lab (same columns) – no fancy formatting necessary, fill your data into the table and email the MS Excel spreadsheet to the instructor. We'll go over downloading the data into MSExcel during class today, but if you want you can type the data into MSExcel.

When's it due: Email the Excel spreadsheet to fnwkw@uaf.edu by noon on Sept 11. We will be using this data during class and lab so it's really important you email this in on time.

Error Estimates

Each person in the class should obtain 10 positions at each benchmark (NORTH and SOUTH). In order to assure that the positions are indeed independent measurements one should wait at least an hour or so between each measurement so that we are using a significantly different constellation of satellites. That won't be possible if you collect all your data during the lab period, thus we'll recorded the time and date of the measurement.

				WGS84 - UTM				
BM Name	Unit SN	OBS Date	OBS Time	Easting	Northing	Elev.	Error	Comments, WAAS?, Antenna?