GEOP 4/693 Geodetic Methods – Homework 2

The following homework is to be turned in by **5 pm on Friday, October 11**. Late submissions will not be accepted. Please submit via blackboard (zip-archive with all necessary files.)

Problem 1

In your own words, write a max. 1-page (1-inch margins, 11-pt font) summary for the lectures and labs on GPS. In your write-up, convey the points of importance to make the system work. Your focus should be on the conversion of receiver observables into position estimates; possible application of the system. Please do not just copy and paste the notes from the slides into this document.

Problem 2

From a public GPS data archive (ftp-server, UNAVCO archive) find a station that is "interesting." This means there is a potential of it recording some rapid geologic event (volcanic eruption, earthquake, etc.) or some slower moving processes (interseismic strain accumulation, slow landslide, etc.). Depending on what you are trying to resolve, download enough rinex files (data) for this station so you will resolve this process in the data (make sure the event is at least 2 weeks old though, so you can work with final orbits!) Integrate the station into the data processing you've set up in the lab. Generate static positions for each day you have data. In your processing you will have to address all the issues you identify in Problem 1. You may have to consult the `gd2e.py` help.

Create 1 plot that contains, in separate panels, the east, north, and vertical solutions for your station plotted over time. Do not connect the dots; these are discrete data! Label your plots properly!

Explain what makes that station interesting to you (a regional map might be a good idea to make your point). Provide me with a positioning time series plot and an interpretation of what signal(s) you can identify. Elaborate on whether your plot supports your initial interest in the station; document where the data came from. Turn in your run script, write-up that includes plots etc.