GEOP 572 Geodetic Methods – Homework 1

The following homework is to be turned in by 5pm on Wednesday, October 21. Late submissions will not be accepted.

Please drop off **well-ordered printouts** (solutions, code, figures in order of assignment) in class, my EES department mailbox or slip it under my office door. In addition, email digital copies of your solution to rg@nmt.edu. Do all of this before the deadline!

Problem 1

Write a 1-page (1-inch margins, 10-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.

Problem 2

In a public GPS data archive (ftp-server, UNAVCO archive) find a station that is "interesting." Download 3 days of recent data (make sure it's at least 2 weeks old though, so you can work with final orbits!) and 3 days of data from about a year before. If the station you find interesting doesn't fit into these constraints, move on and find a site that does! Integrate the station into the data processing you've set up in the labs. Create a "run-script" that generates static positions for each day you have date. The run-script should address all the issues you identify in Problem 1. You may have to consult the `gd2p.pl` help. If run-scripts from previous labs provide solutions to problems you haven't identified in Problem 1, you should update your text for Problem 1!

Create 1 plot that contains, in separate panels, the east, north, and vertical solutions for your 6 days of data plotted over time (yes, there should be a gap of about 1 year in the time series). Do not connect the dots! Label your plots properly! These are discrete data! You can get the east, north and up position with respect to the station's nominal position using:

```
$> tdp2llh tdp_final STAID
```

and grabbing the lines that are marked 'est':

```
$> tdp2llh tdp_final STAID | grep est
```

Note that you have to give the uppercase 4-char station ID if tdp_final contains parameters other than STA X, STA Y, and STA Z for one station.

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. Turn in your run_script.