GEOP 555 Geodetic Methods – Homework 1

The following homework is to be turned in by **5 pm on Wednesday, October 18**. Late submissions will not be accepted. Please submit via canvas (zip-archive with all necessary files.)

Problem 1

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.

Problem 2

From 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 station 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 data. The run-script should address all the issues you identify in Problem 1. You may have to consult the `gd2p.pl` help.

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; these are discrete data! Label your plots properly! You can get the east, north and up position with respect to the station's nominal position using:

```
$> tdp2llh tdp_final STA_ID
```

and grabbing the lines that are marked 'est':

```
$> tdp2llh tdp_final STA_ID | 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; document where the data came from. Turn in your run_script, write-up.