ASSIGNMENT 7 – PREFIT RESIDUALS

Due Date: Friday, November 1st

This is an individual assignment worth 50 points. Please submit your answers and code to the D2L dropbox.

New
Update your code so that it computes a prefit residual. Use the station coordinates in the header as the *a priori* coordinates. Define prefit for single frequency data as follows:

$$prefit = \rho_1 - R + c\delta^s - T - rel$$

T will be defined as the total troposphere zenith delay divided by sine(elevation angle).

You have been given two files. Both have been edited so that they are only one hour long. Additional information about these sites can be found at the IGS central bureau (http://igscb.jpl.nasa.gov) in the tracking network link.

Turn in:

1. Plot of single frequency prefit residuals for joze (time on the x-axis). Normalized histogram of prefits.

2. Plot of single frequency prefit residuals for onsa (time on the x-axis). Normalized histogram of prefits.

3. Plot of prefit residuals for onsa using the ionosphere free combination (time on the x-axis). Normalized histogram of prefits.

Questions (to be answered and turned in):
1. What is the main difference seen in single frequency pseudorange prefit residuals plotted for joze vs. what you plotted for onsa? Why are they different?

2. Why are the single frequency onsa prefit residuals different than the ionosphere free residuals? (you cannot say because the ionosphere has been removed).

3. For the ionosphere free onsa normalized prefit residuals, there are a few 4-5 sigma outliers. What do these observations have in common?

Details:
If P1 is available, use it. If not, use C1.

Normalized histogram is defined as the (data – mean(data))/std(data), using Matlab speak.

The total troposphere delay (in meters) for joze is `2.4086`; for onsa, it is `2.3858;`

It is not necessary for you to use different colors for the different satellites in your prefit plots. If you know how to do it, fine. But don't go crazy.

Only use data above an elevation angle of 10 degrees.

Prefit residuals must be plotted as a symbol (not a line).