

## Changes to noiseestimate.py to make noiseestimateB.py:

1. Added 2 additional progress reports at

```
4     print('Importing modules')
```

```
605    print "Results plotted:"
```

This reduces the long intervals when there is no apparent action.

2. Changed NLNM.txt and NHNM.txt files to only include inflection points:

The ones being used contained many unnecessary interpolated points.

pyplot will interpolate fine, using just the inflection points.

NLNM.txt goes from 332 entries, 5.86kB to 22 entries, 374 Bytes

NHNM.txt goes from 1001 entries, 18.8kB to 13 entries, 212 Bytes

Changed **def load\_nlnm()** and **def load\_nhnm()** to reflect non comma delimited, single-column data pairs, as in the revised files.

3. Added an option to plot the MLNM:

Added the MLNM.txt file which defines the McNamara 'Mode Low earth Noise Model'

Added **def load\_mlnm()** to load the MLNM data.

Added new boolean variable **PLOT\_MLNM** to control its plotting.

4. Allowed setting control parameter values from 'setup.ini' If file setup.ini is

present any parameter values it contains will replace the default values from 'setup.py'

Added 80-line routine to parse 'setup.ini' and assign the variable values. There must be

a much better way to do that than what I have here.

5. Changed

```
161 return cohere(data1, data2, Fs = sample_rate, **PARAMS)
```

```
to return cohere(data1, data2, Fs = sample_rate, **PARAMS)
```

Probably doesn't matter.

6. Changed many of the plotting parameters:

Legend entries in the Coherence plot

from 'Coherence between inputs 1 and 2'

to 'Coherence 1-2', etc.

Changed X-axis labels from

"log Frequency (Hz)" or "log Period (seconds)"

to "Frequency (Hz)" or "Period (seconds)"

Changed PSD Noise Plot Y-axis label

from "Amplitude (dB)"

to "Noise density - dB vs  $1m^2/sec^4$  per Hz"

I have been wanting to find a way to do the superscripts properly.

Changed Holcomb self-noise plotting symbol from "." to "-", as in Sleeman.

Changed Local EQ plot symbol from "-" to "--"

Teleseismic EQ plot label

from 'Teleseismic Earthquakes (~300km)

to 'Teleseismic Earthquakes (~3000km)

Sleeman vs Holcomb:

Sleeman analysis requires three data sets and provides the best noise estimates for each of the three instruments. If you have three data sets, use Sleeman.

If only two data sets are available, Holcomb analysis will provide good noise estimates for two instruments, though not as good as Sleeman, particularly at frequencies where one of both of the instruments' internal noise levels are below the background earth noise. If you only have data from two instruments, use Holcomb.

Parameters like PLOT\_SLEEMAN and PLOT\_HOLCOMB might be redundant and could be eliminated by simply counting the (equal) numbers of Data and Response Files provided. If there are 3, use Sleeman analysis, if only 2 use Holcomb. They still might want to be retained purely to control what gets plotted.

It is likely that the Holcomb analysis process is a simply subset of the Sleeman computations, just analyzing one data pair rather than three.

More thinking about what we want to plot. Do we want to be able to do the three Holcomb plots which are available when we have three data sets? I'll think about what I might like to see, myself.