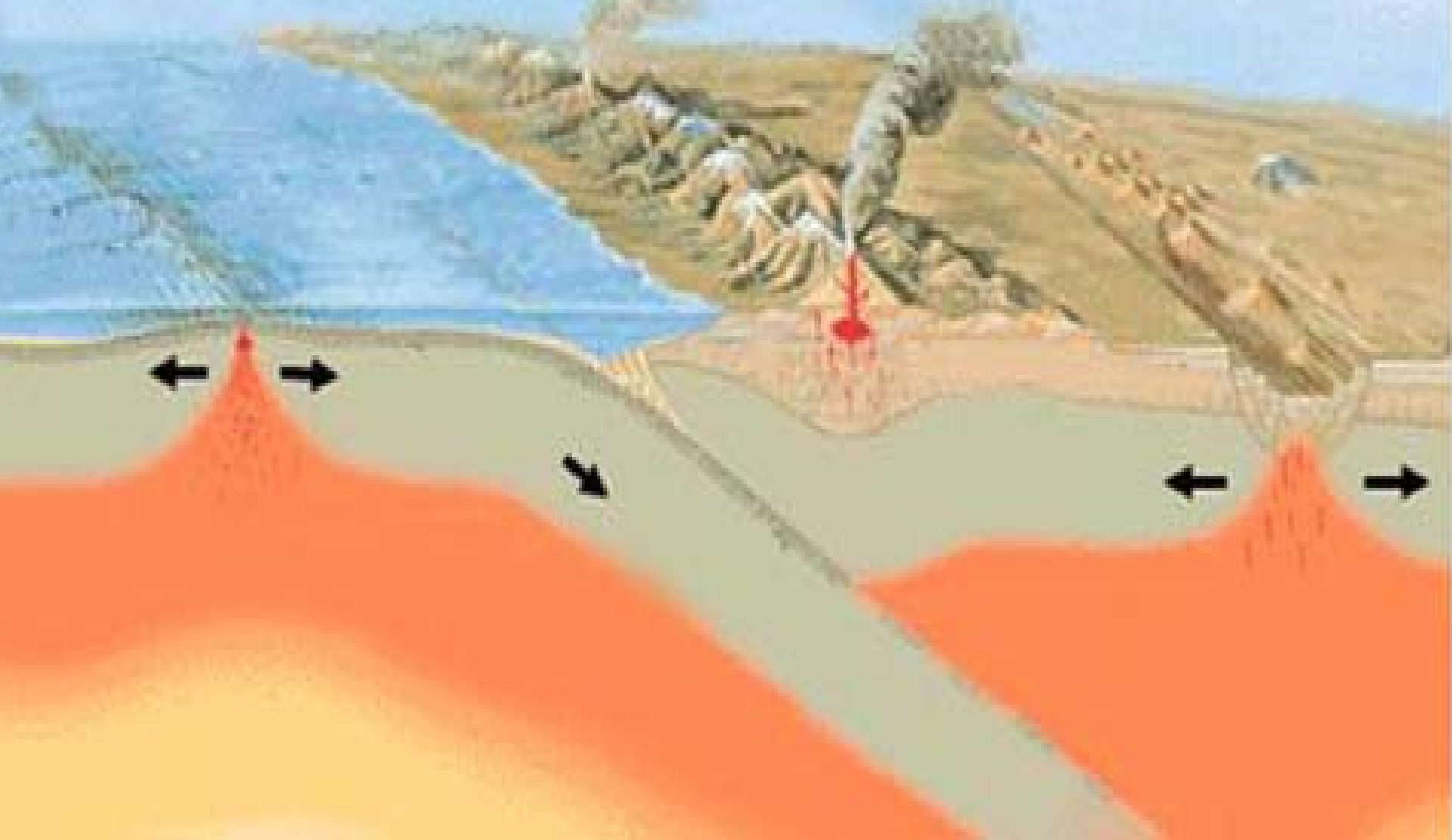


Episodic Tremor and Slip in the Cascadia Subduction Zone



Megathrust Earthquakes

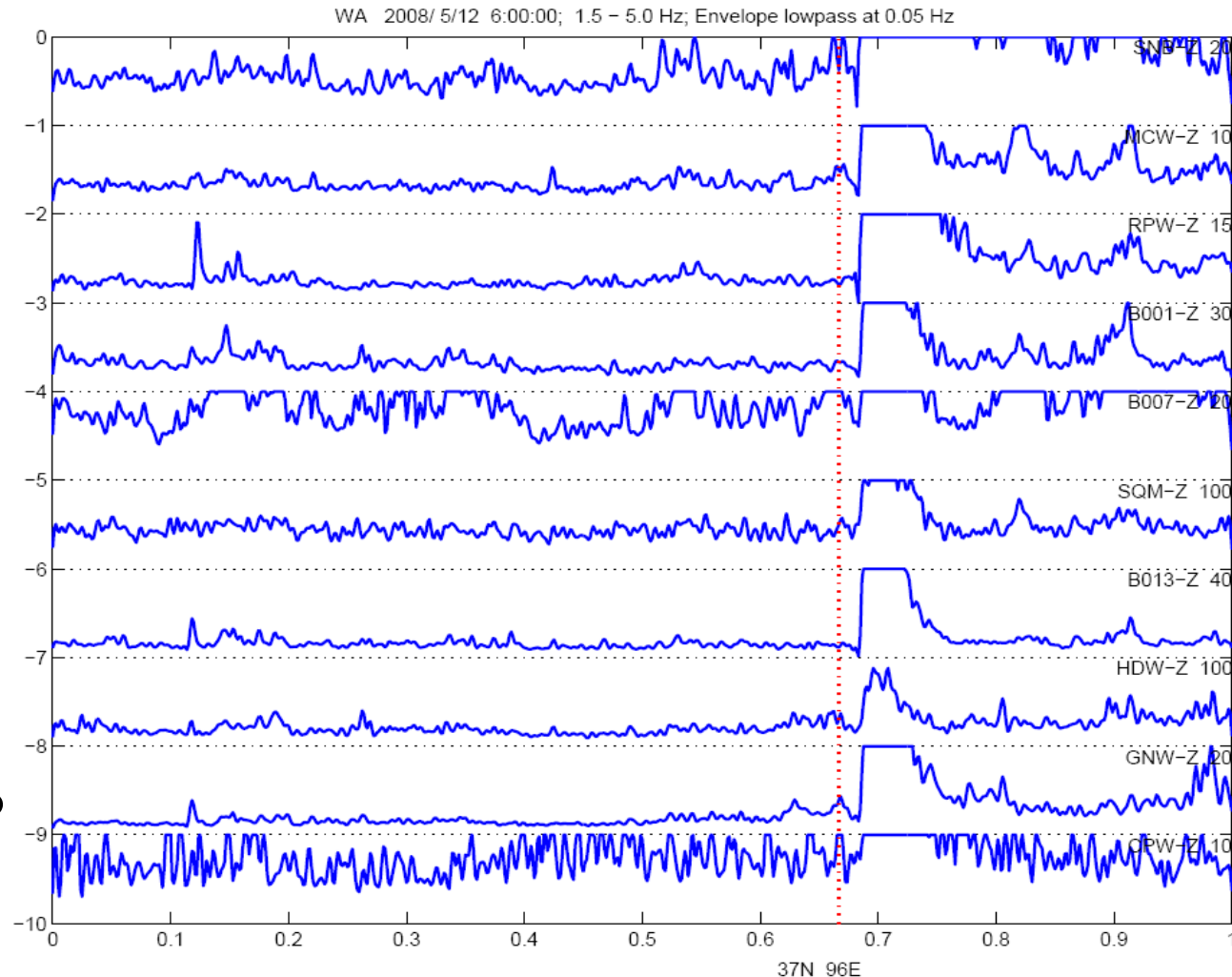


- Last in 1700
- Occur approximately every 400-600 years
- Can exceed 9.0 magnitude
- Rupture could extend from Vancouver to Northern California
- Tremor may lead to more understanding

Automatic Detection

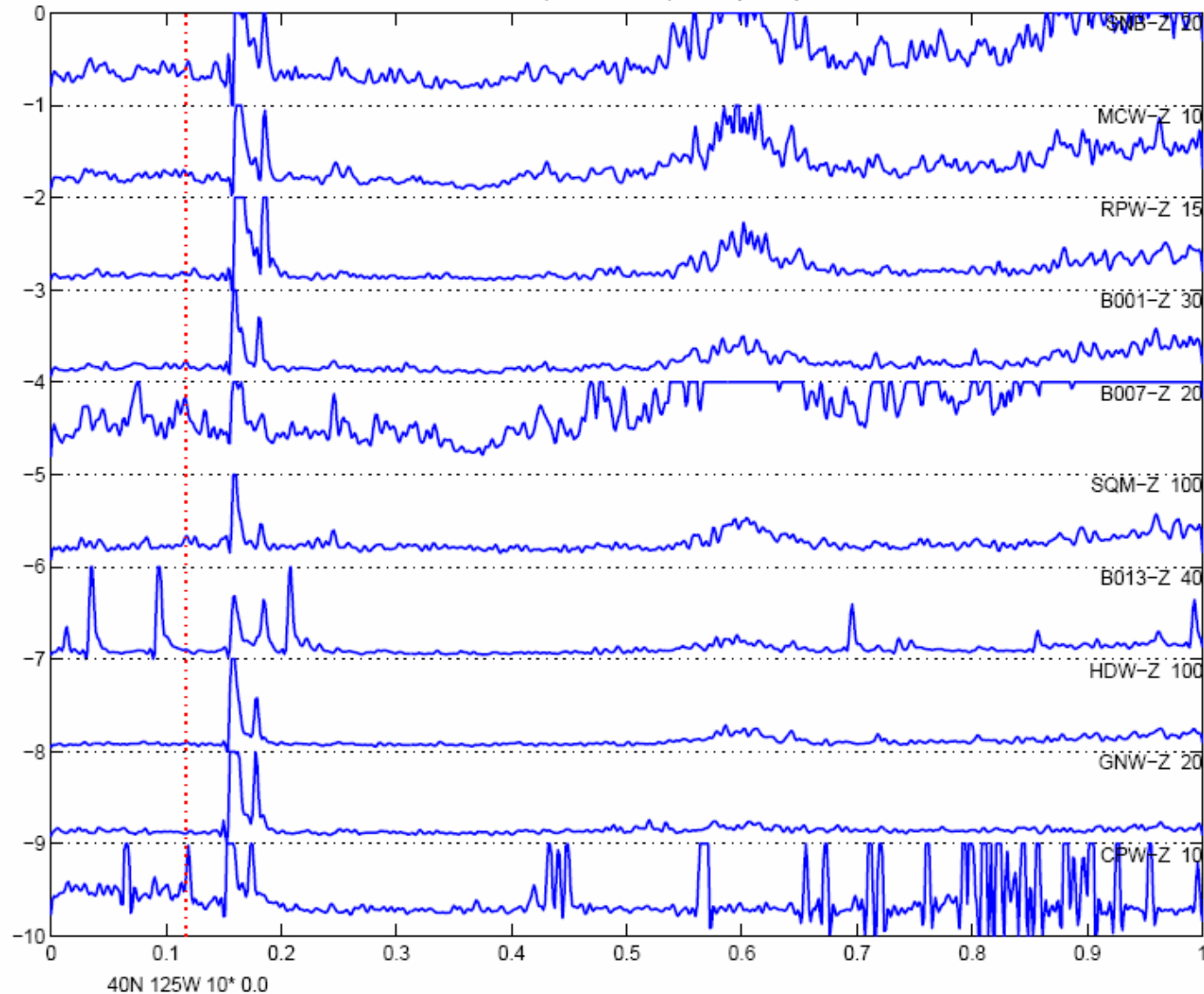
Hopefully...

- More consistent
- Easier
- Faster
- Applicable to other regions?



Earthquakes or Tremor?

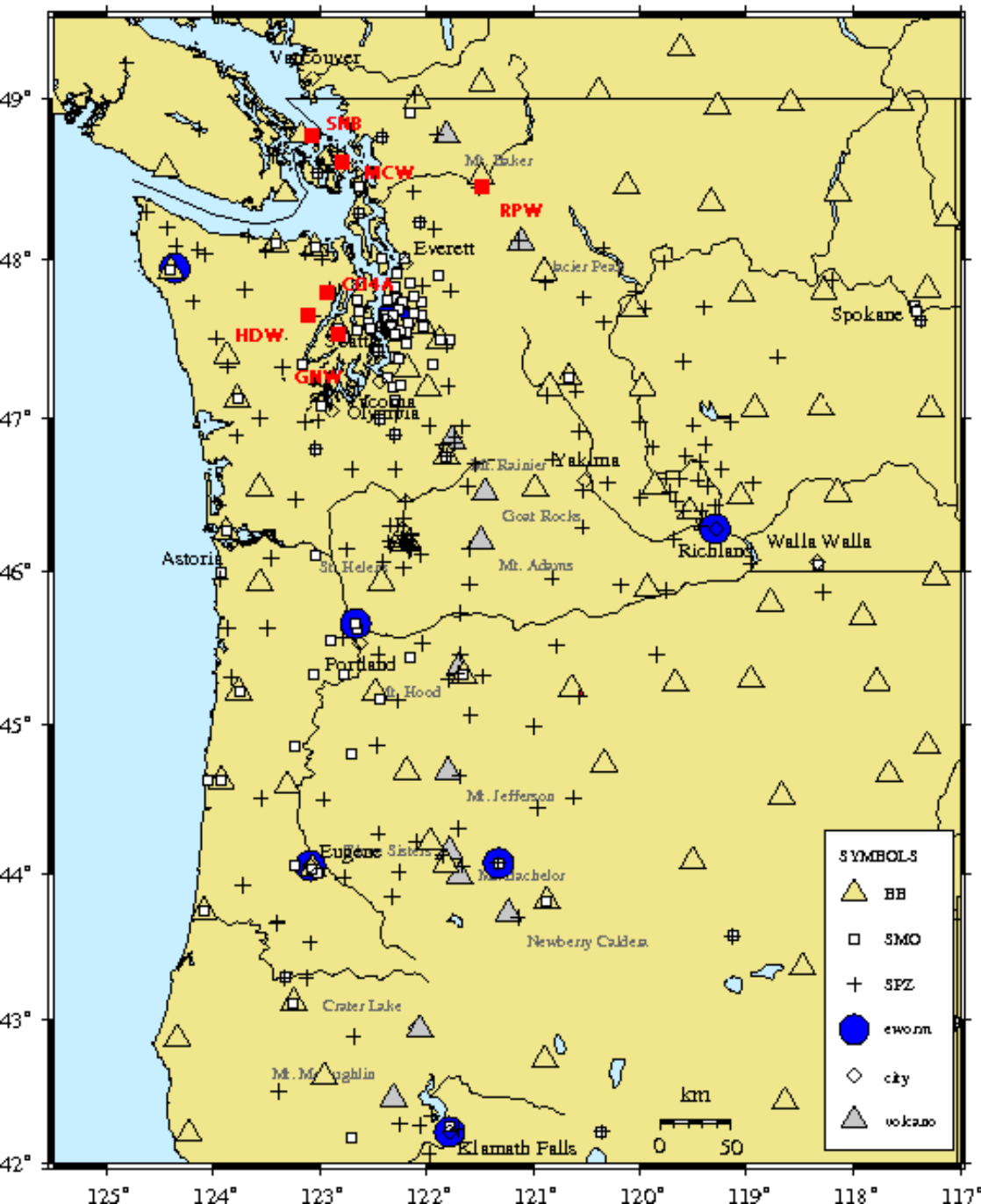
WA 2008/ 5/13 4:00:00; 1.5 - 5.0 Hz; Envelope lowpass at 0.05 Hz



Differences:

- Frequency
- Duration
- Waveform

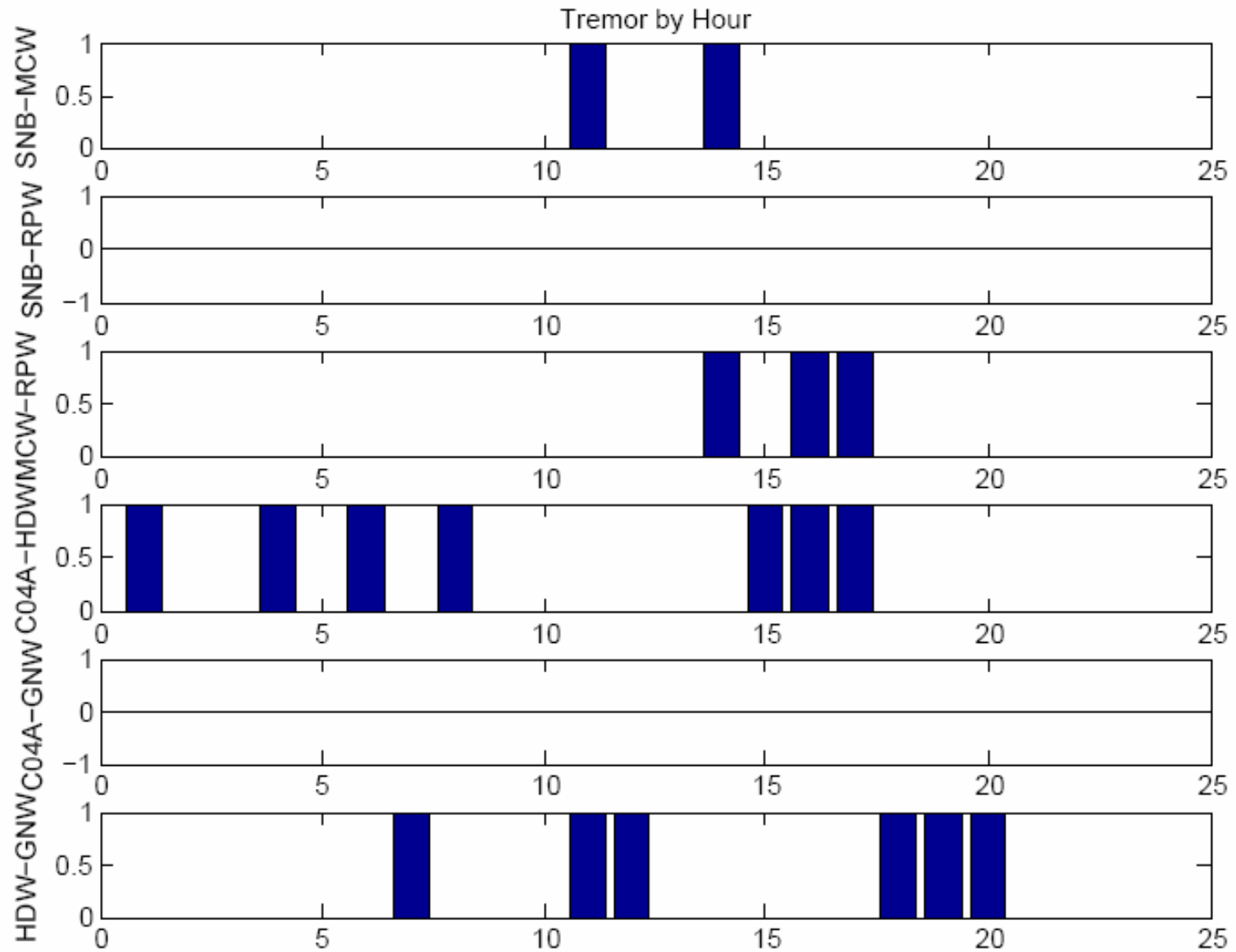
Stations currently recorded at PNSN 20080510

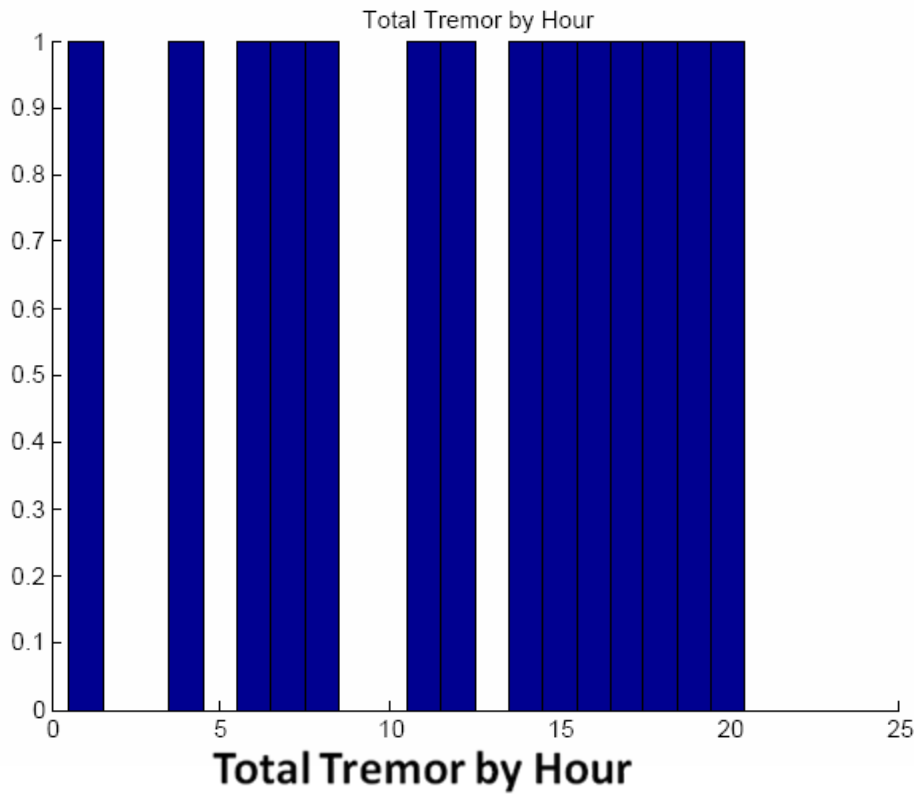


Active stations in PNW- current as of Saturday

- I have only considered 10 stations for automatic detection...
- 6 marked in red are compared to each other for January 2007

Output (January 24, 2007)



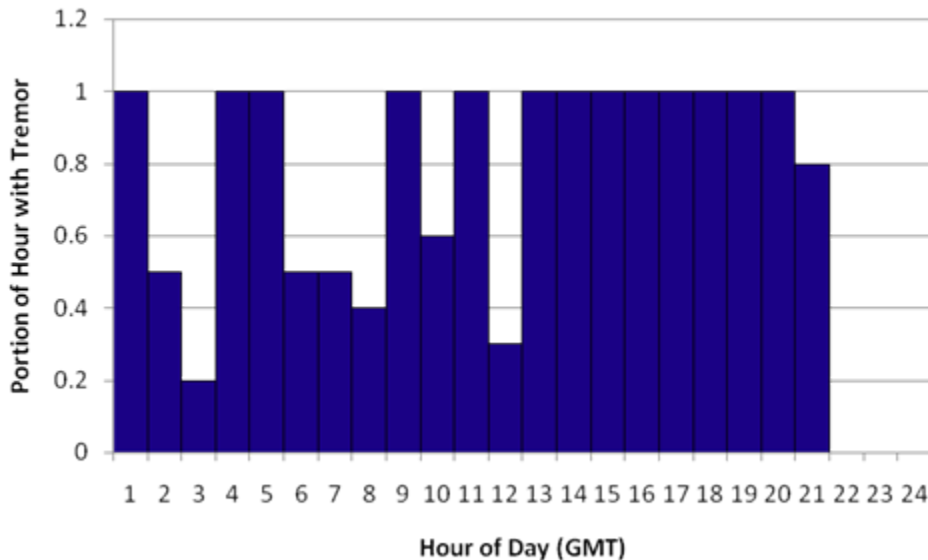


One of the worst agreements in the month of January.

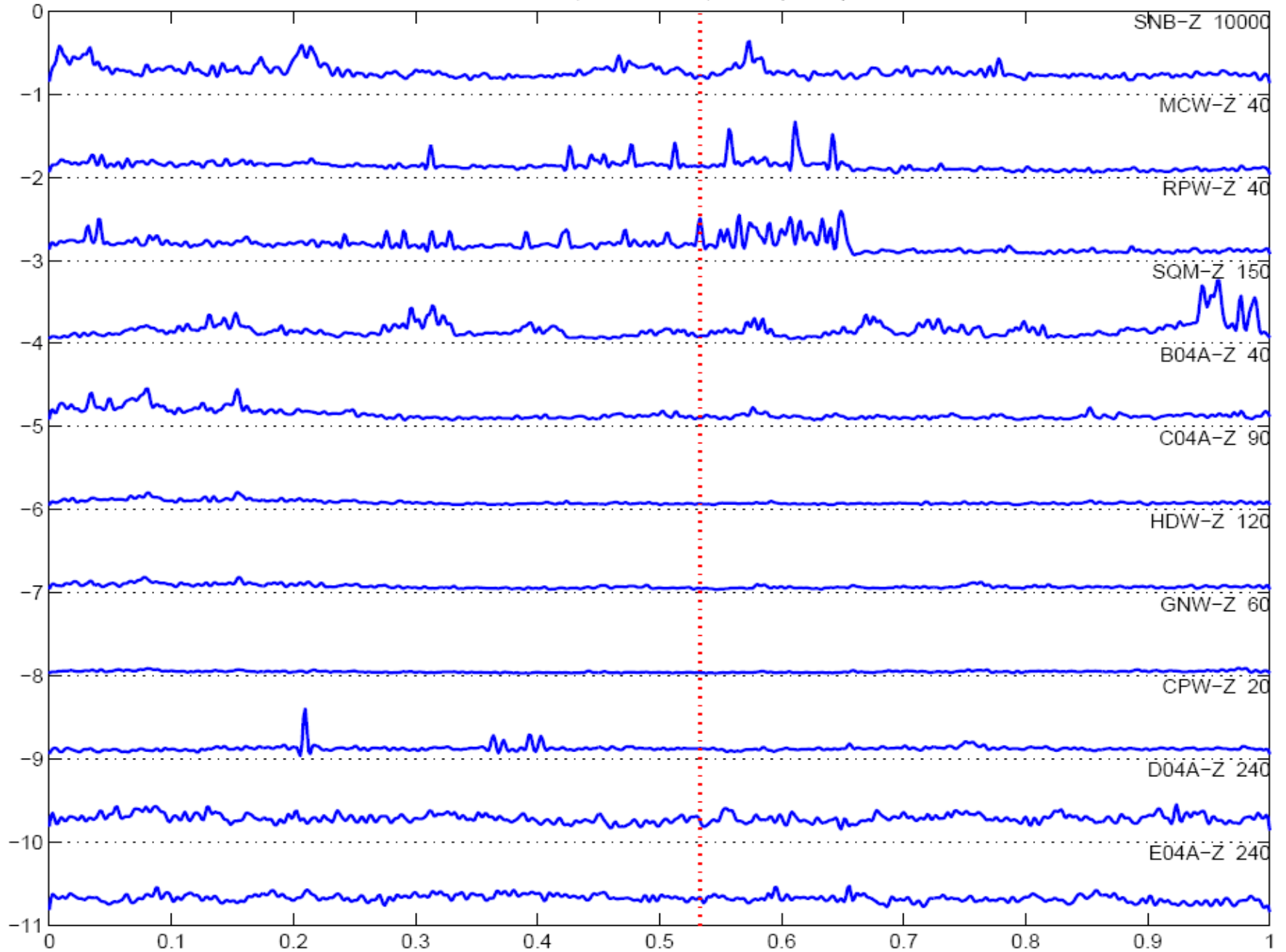
Algorithm detects tremor that I do not

Also does not detect tremor that I do see

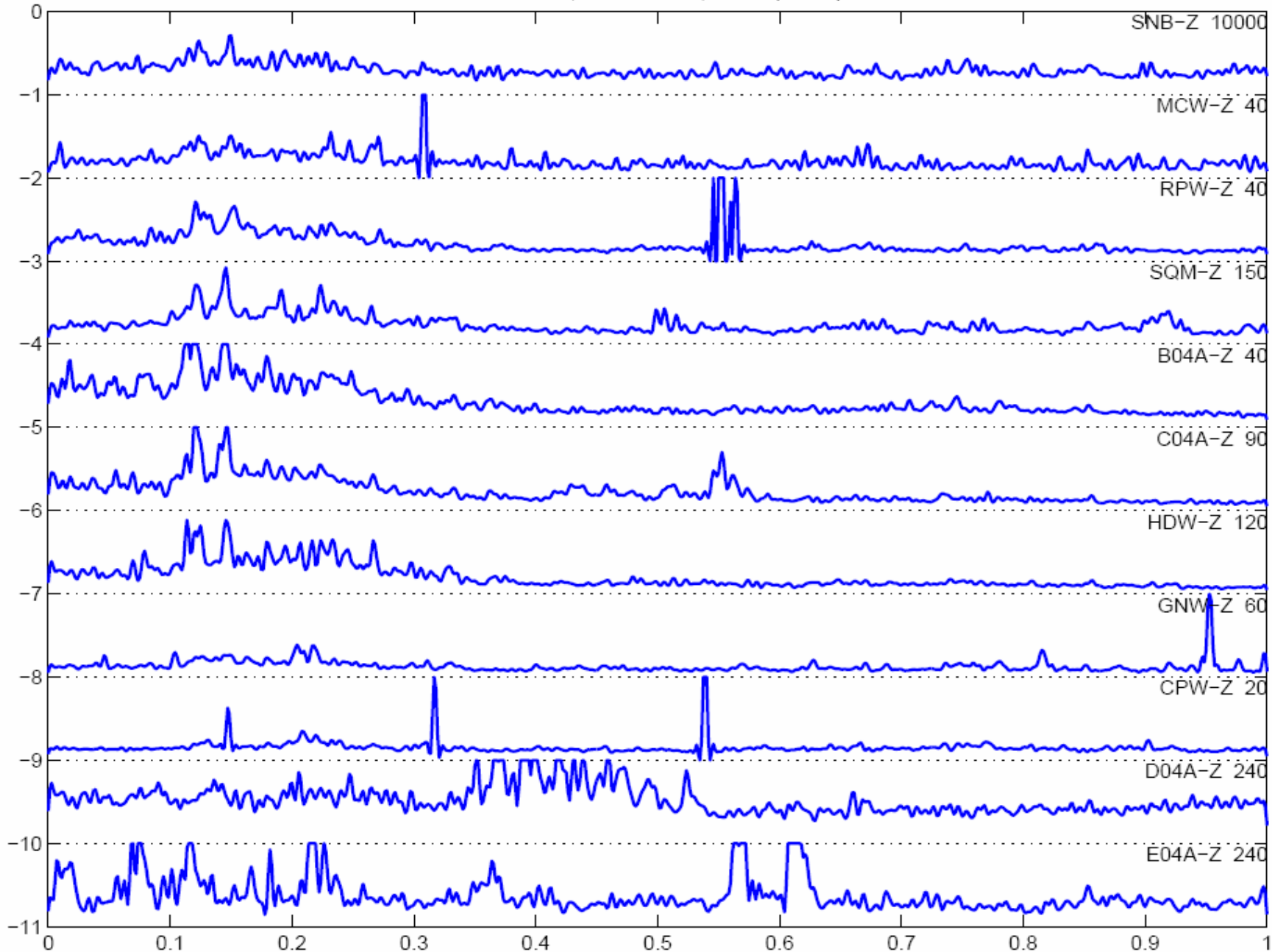
This happens mostly when the amplitude is very low...



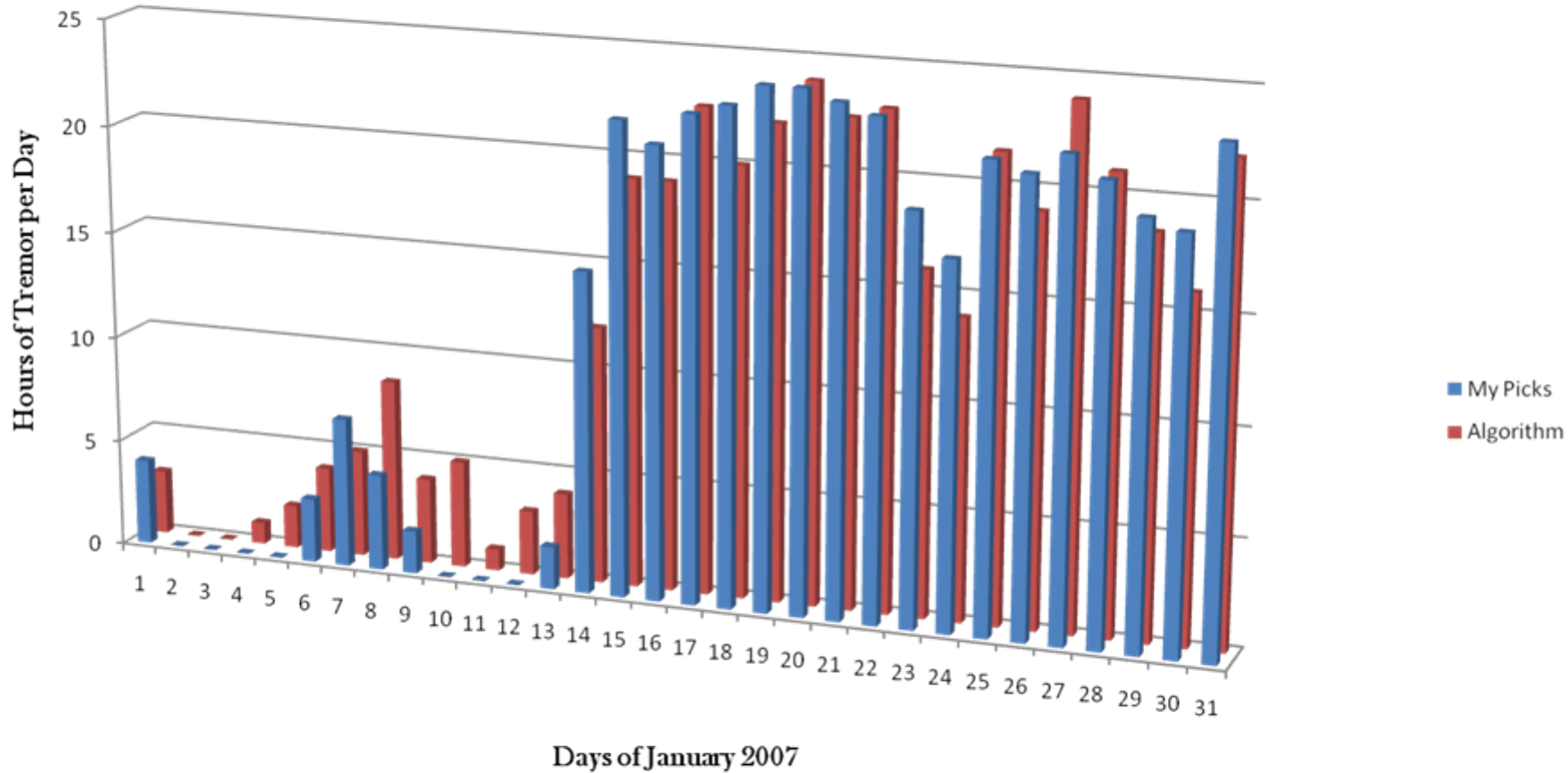
WA 2007/ 1/24 11:00:00; 1.5 - 5.0 Hz; Envelope lowpass at 0.05 Hz



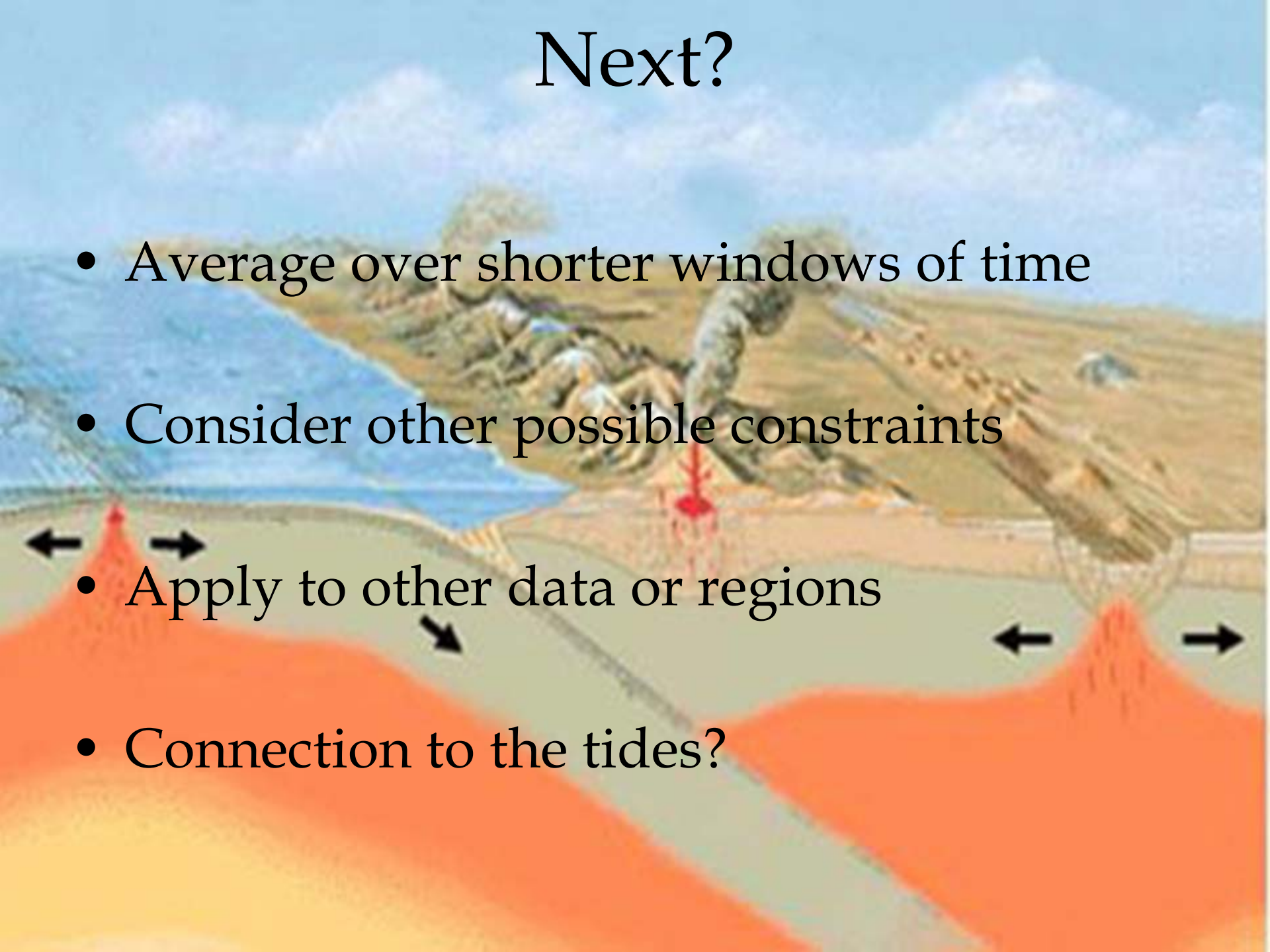
WA 2007/ 1/24 1:00:00; 1.5 - 5.0 Hz; Envelope lowpass at 0.05 Hz



Comparison of Detection Methods



Next?

- Average over shorter windows of time
 - Consider other possible constraints
 - Apply to other data or regions
 - Connection to the tides?
- 

Credits

- Professor Ken Creager
- Aaron Wech
- PNSN
- IRIS
- Mary Gates Endowment

