Rayleigh wave amplitudes

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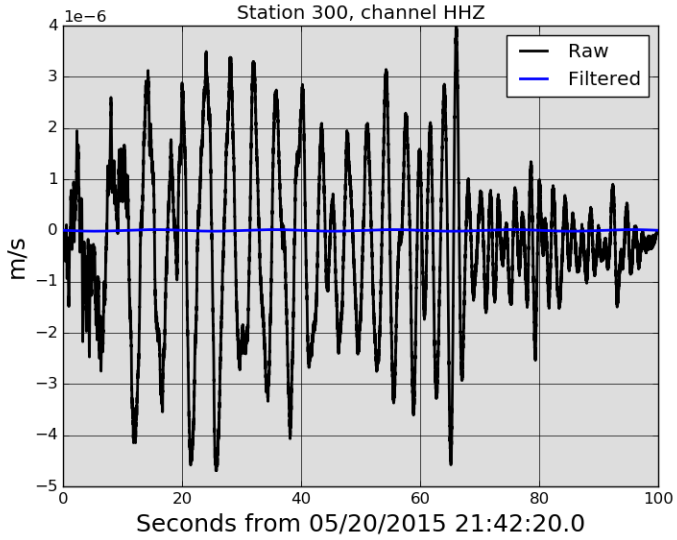
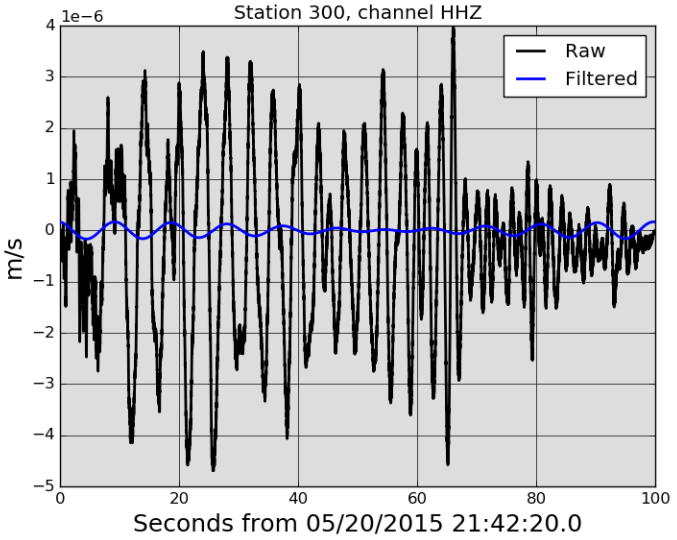
Filtering

- Fixed previous problems, have tried simple FFT with rectangular window, then IFFT and a Butterworth filter.
- May try Gaussian filter in the future.

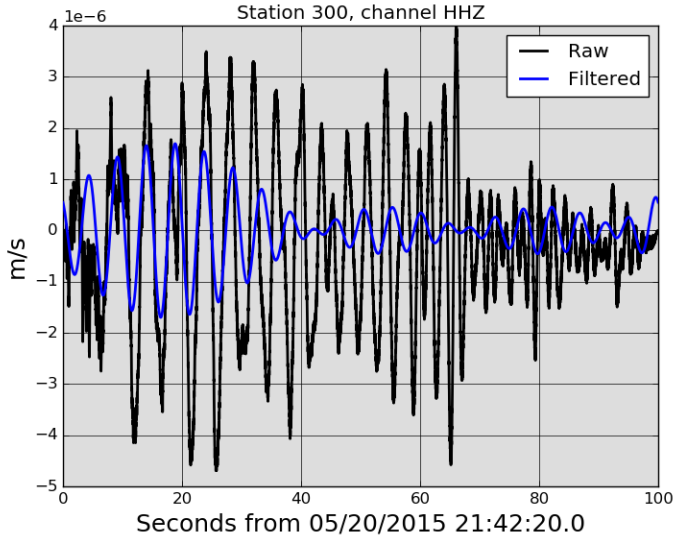
0.05 Hz



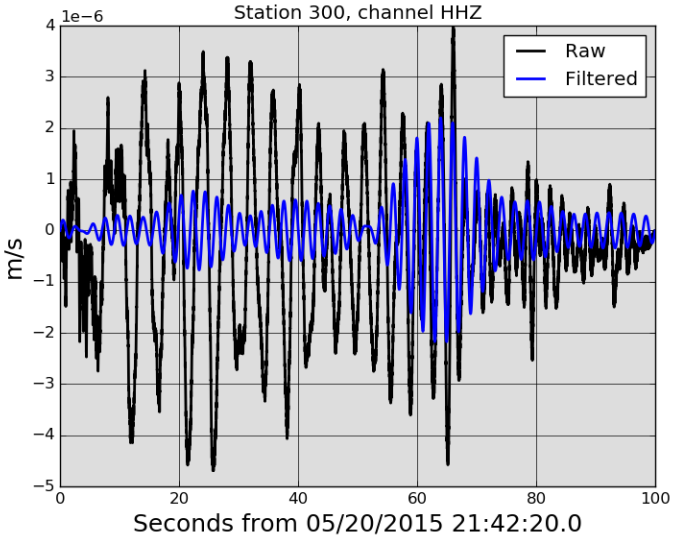
0.1 Hz



0.2 Hz



0.5 Hz



Principal component analysis

- Idea:
  - Find direction in horizontal plane with most “information.”
  - This should be the horizontal component of the Rayleigh wave and tell us the direction as well.
- Problem: not working well.
  - Direction varies significantly for different periods and differs from direction to event location from Gary’s catalog.
  - Example from single event (all directions E of N):
    - 0.2 Hz: 60.3 deg.
    - 0.3 Hz: 57.8 deg.
    - 0.4 Hz: 178 deg.
    - 0.5 Hz: 78.5 deg.
    - Gary’s direction: 24.2 deg.

Plan going forward

- Use direction of known events from Gary's catalog and IRIS catalog to identify radial and transverse components.
- If using IRIS data, may have to worry about subtleties due to attenuation of high frequencies for distant events.