UNIVERSITY
OF MINNESOTA

Status Report from Homestake

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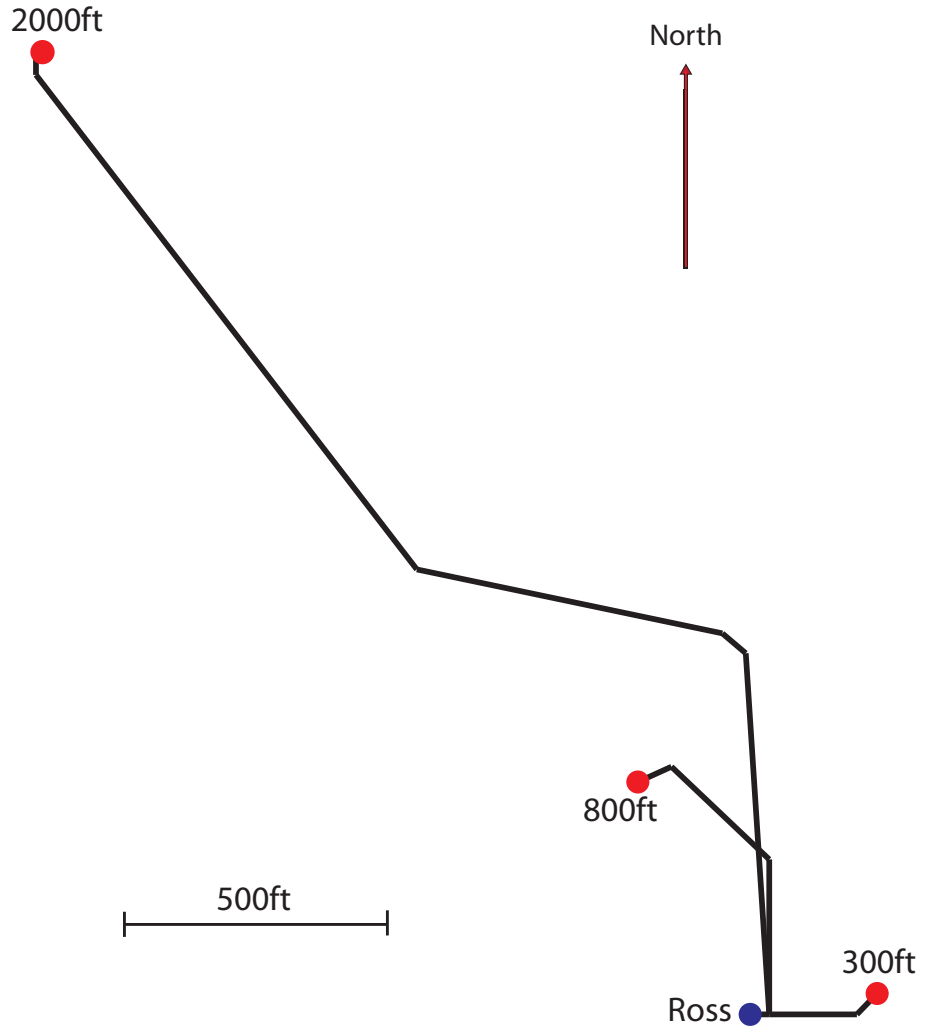
Status quo

1. 300 ft station:
   CMG-40T + remote access

2. 800 ft station:
   STS-2 + environmental sensors

3. 2000 ft station:
   T240 + environmental sensors + remote access + two prototypes of horizontal seismometers



Homestake

Pumps at 4100ft

Humidity (now 300ft station)

Communication (anno 2007)

Mud

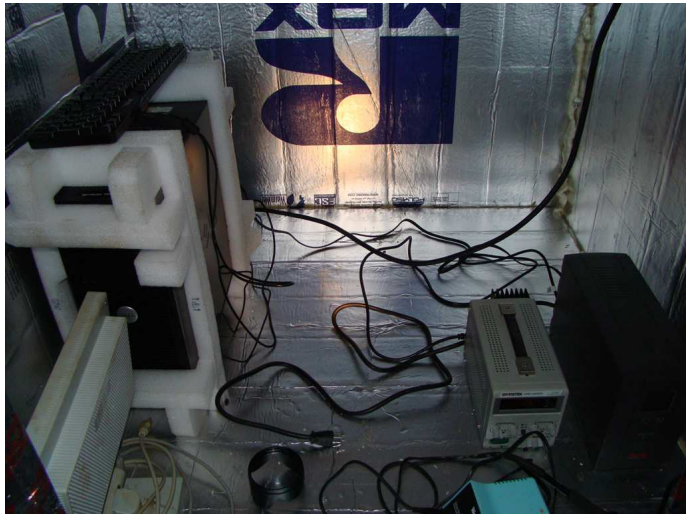
Hoist room

Changes

Fiber links

Isolation from air currents (2000ft)

Water shield (800ft)



Public transportation

Publicity

The Labs

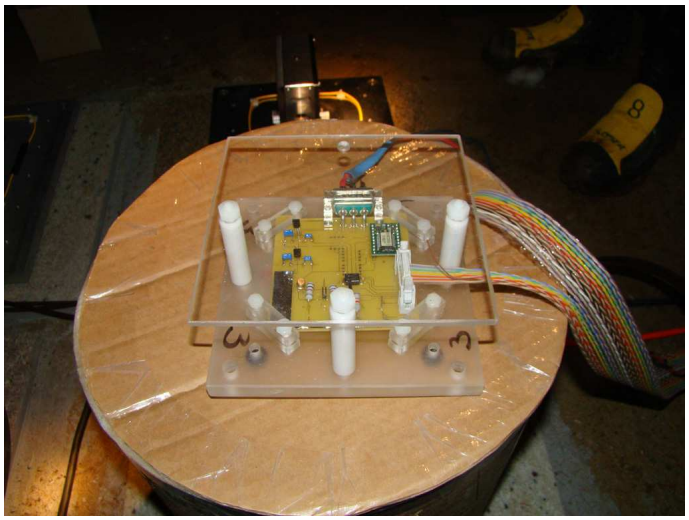
300 ft station

800 ft station

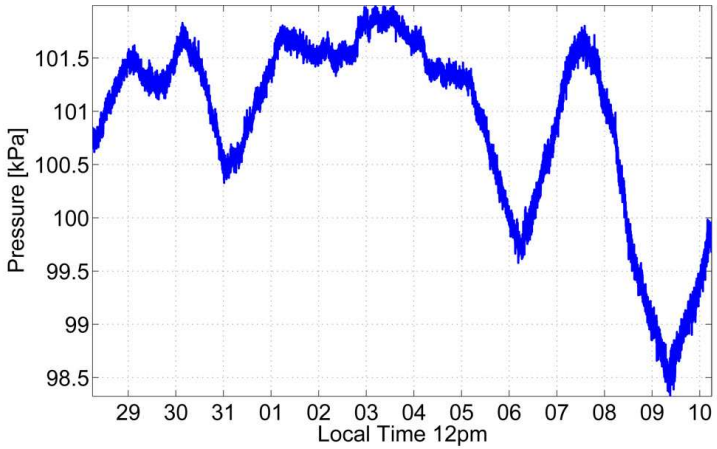
2000 ft station

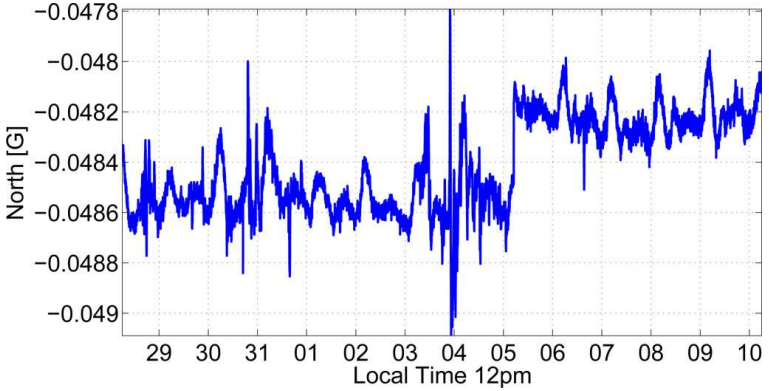
Prototypes at 2000ft

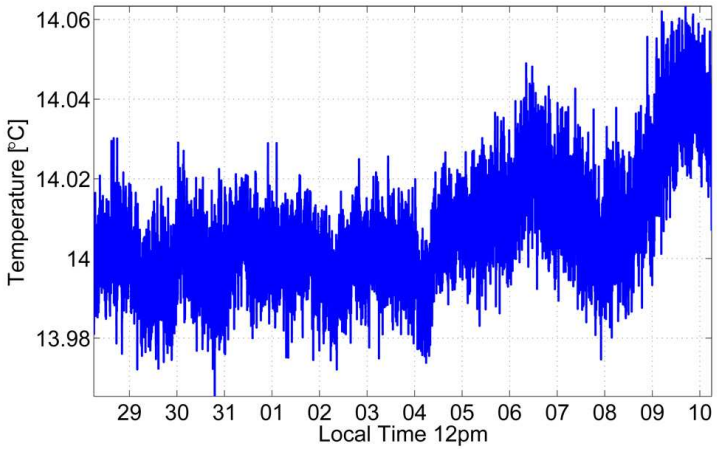
Sensor board at 2000ft

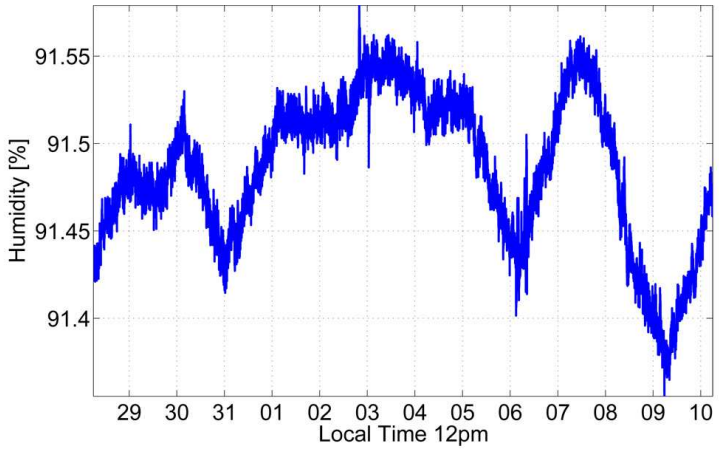


Weather at 2000ft Depth

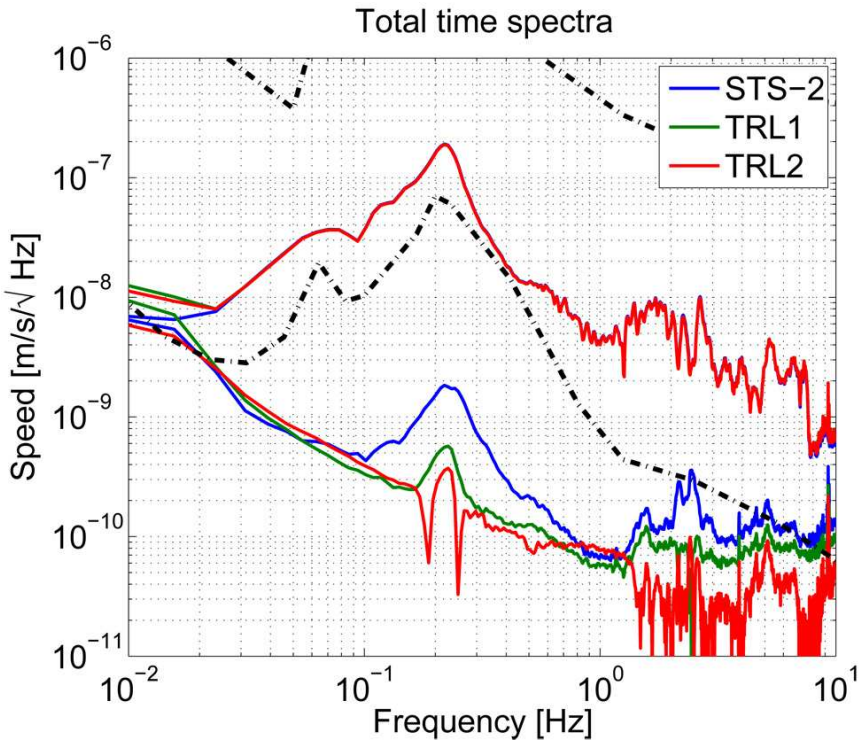




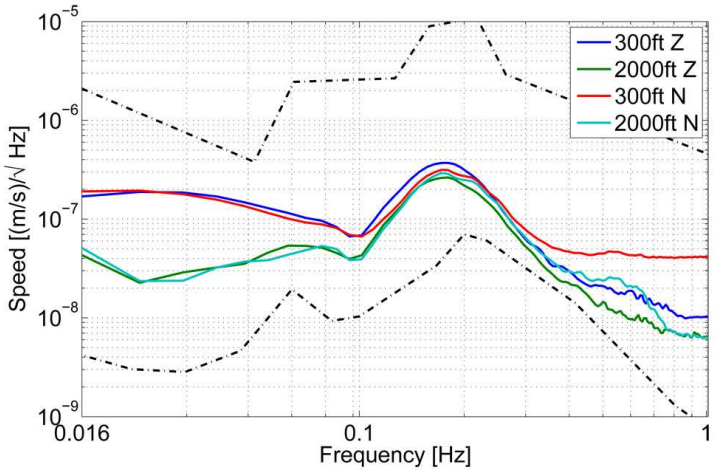




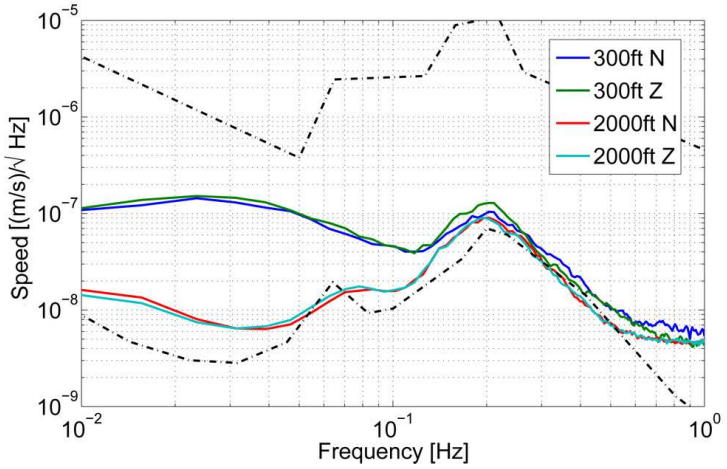
Spectral Densities



Average spectra

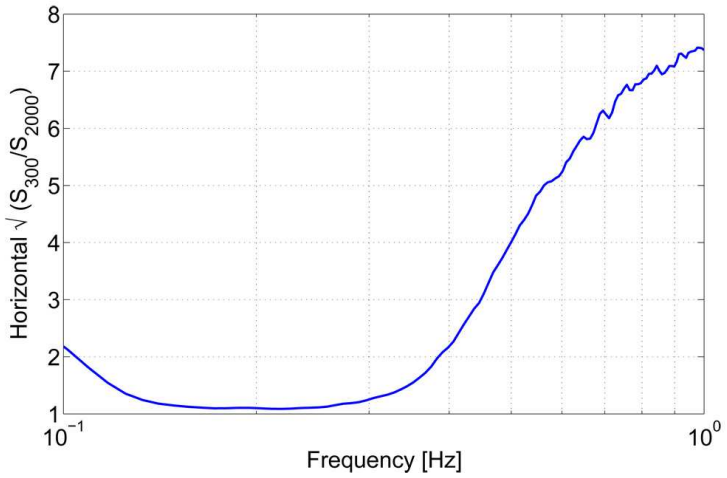


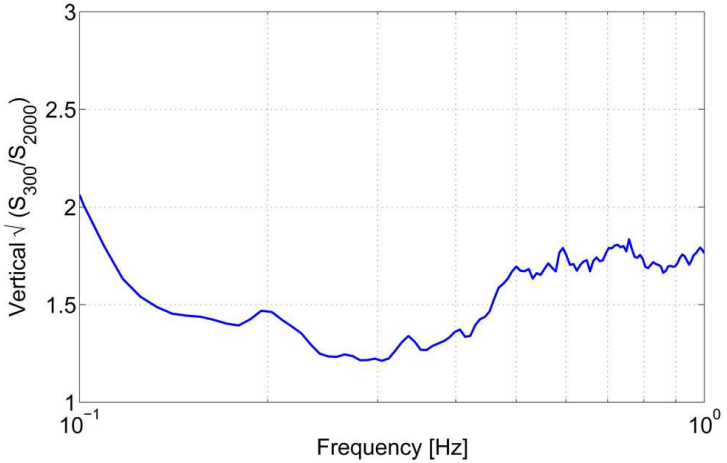
Quiet-time minimum

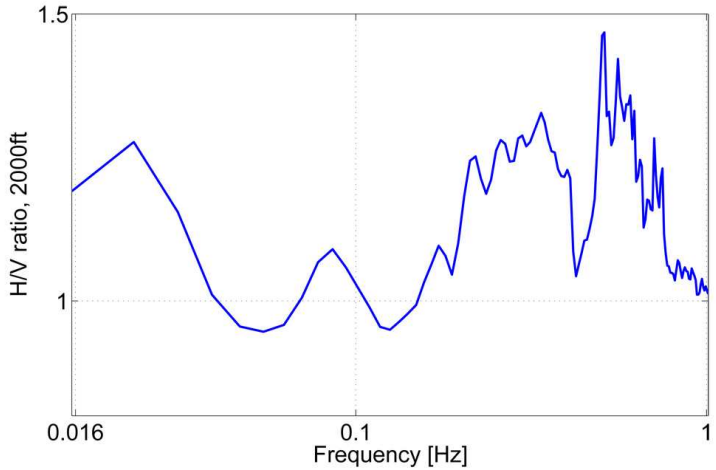


- Tilt noise at 300ft
- Güralp problem below microseisms
- Lead is quiet
- 2000ft level is world-class location

Spectral Ratios

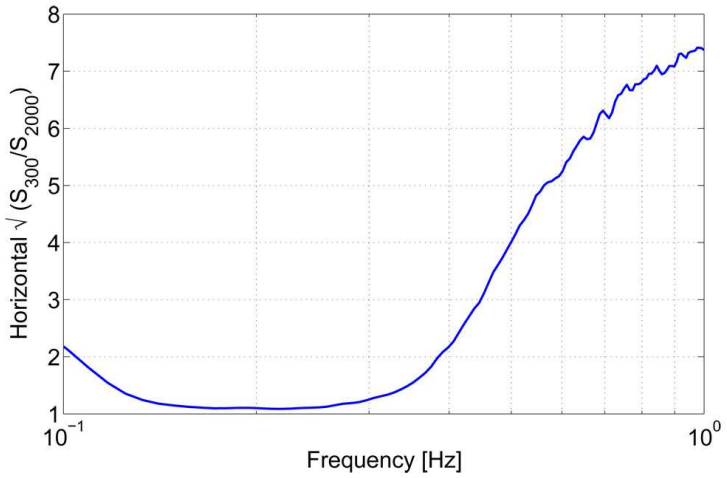


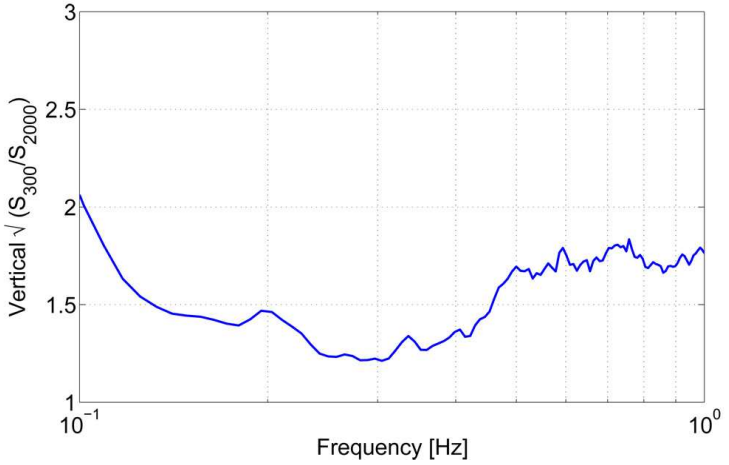


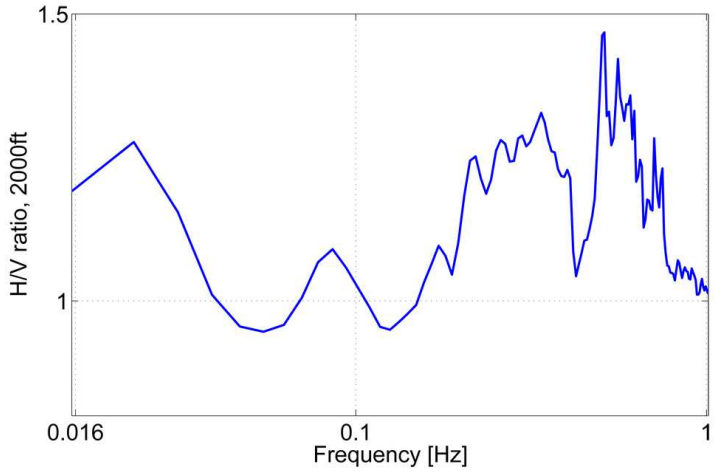


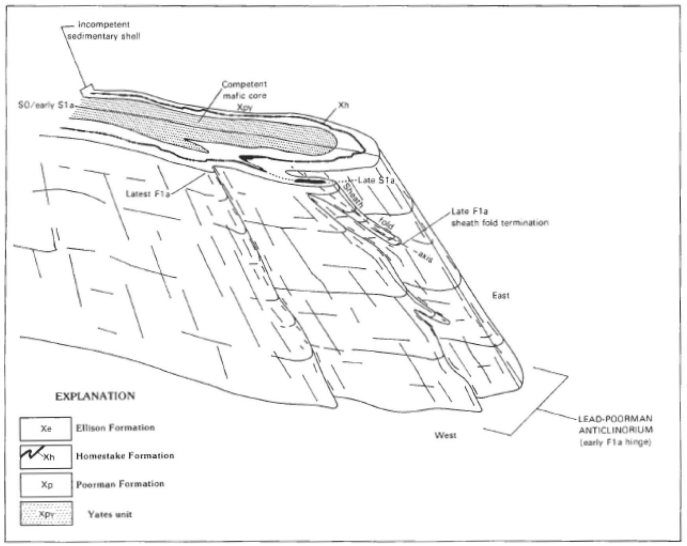
- No microseismic Love waves (probably no Love waves at all)
- Small contribution of Rayleigh waves to surface microseisms
- Resonant modes at 2000ft station?

Spectral Ratios

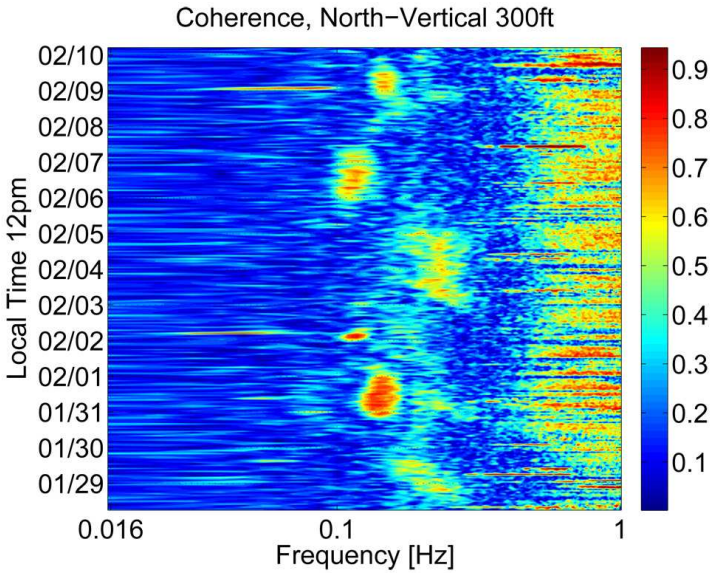


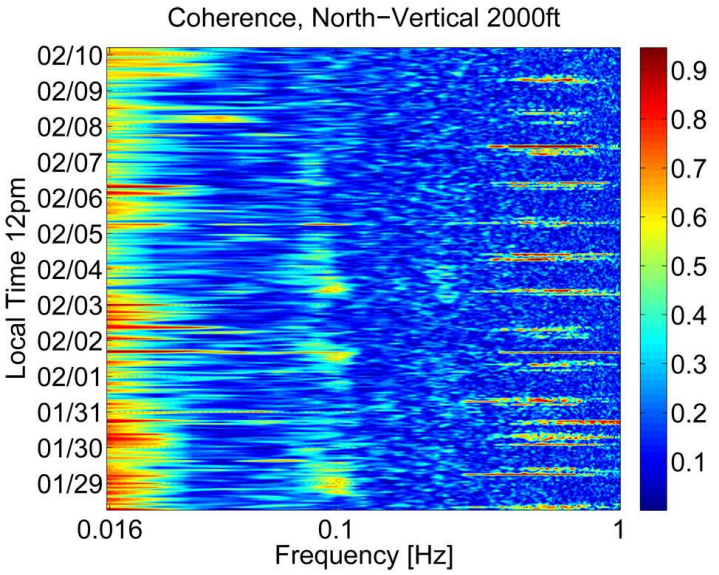


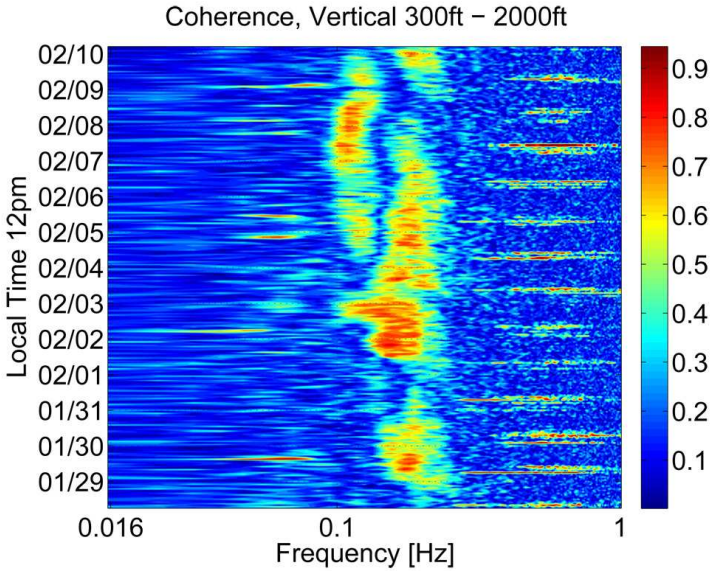


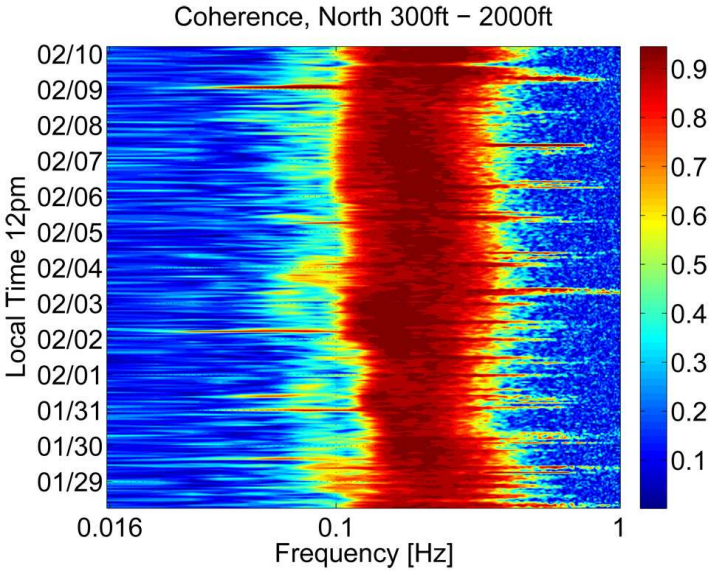


Spectral Degree of Coherence

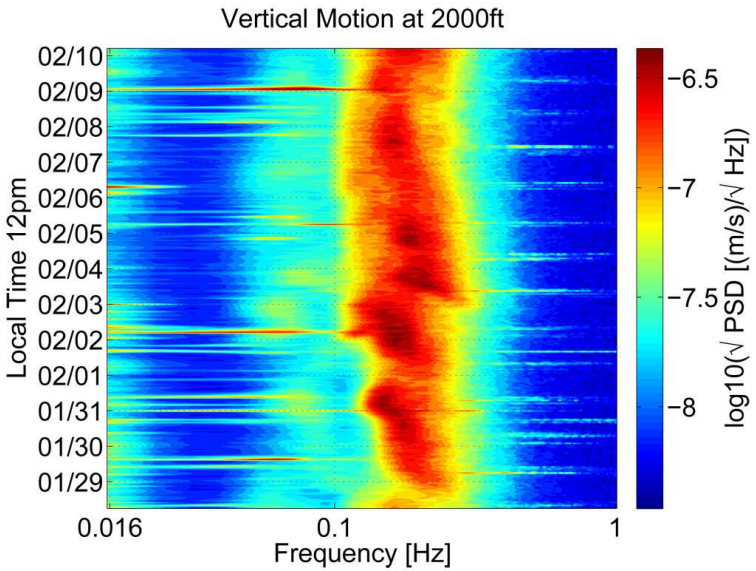


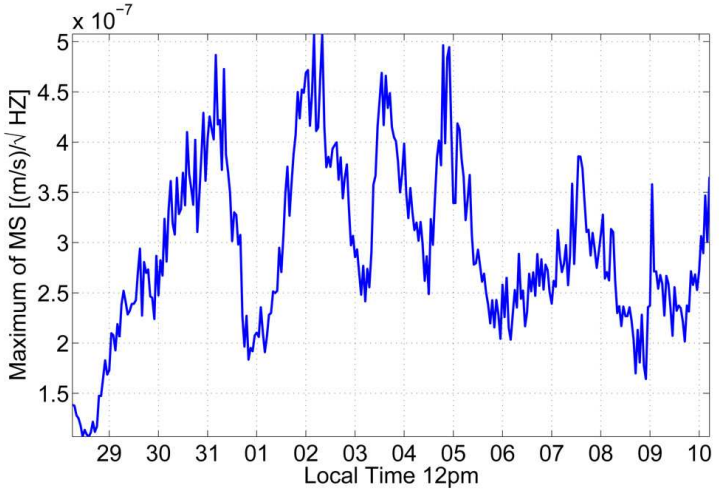




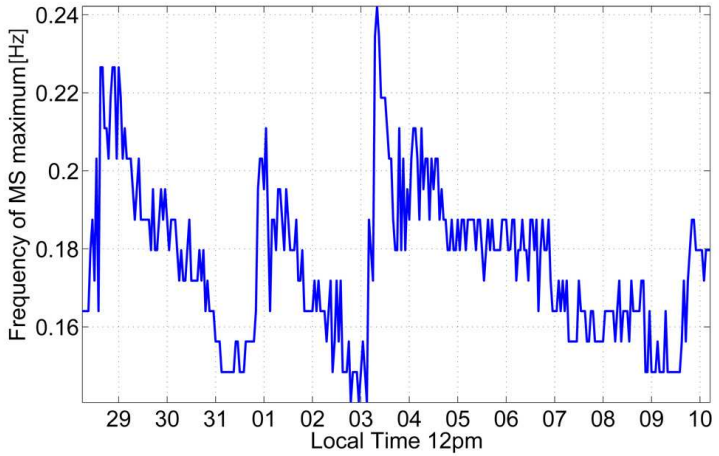


Time Evolution of sMS



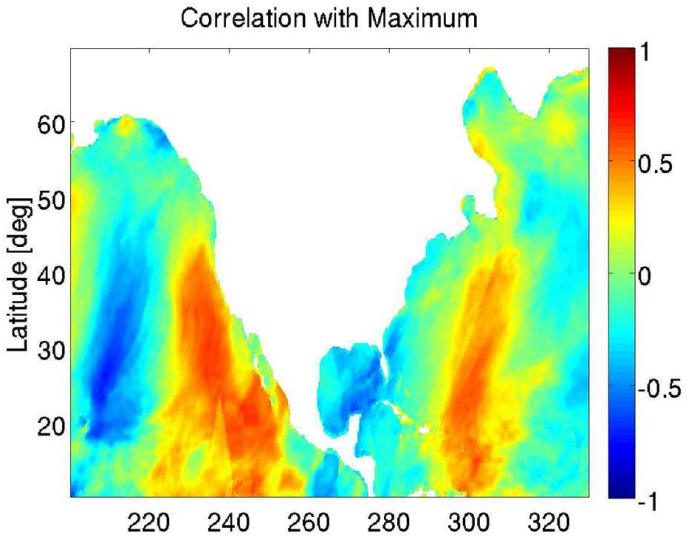


- Microseisms change in magnitude and frequency
- Magnitude and frequency evolution uncorrelated
- Correlation with ocean-wind speeds?

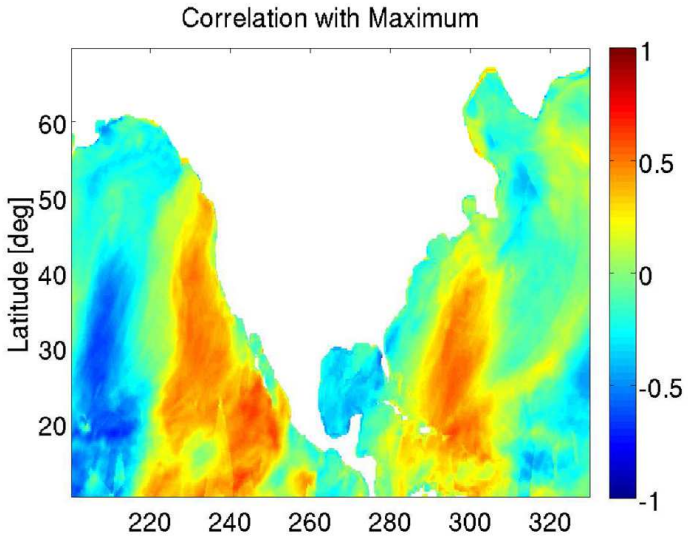


Correlation with sMS Peak Maximum

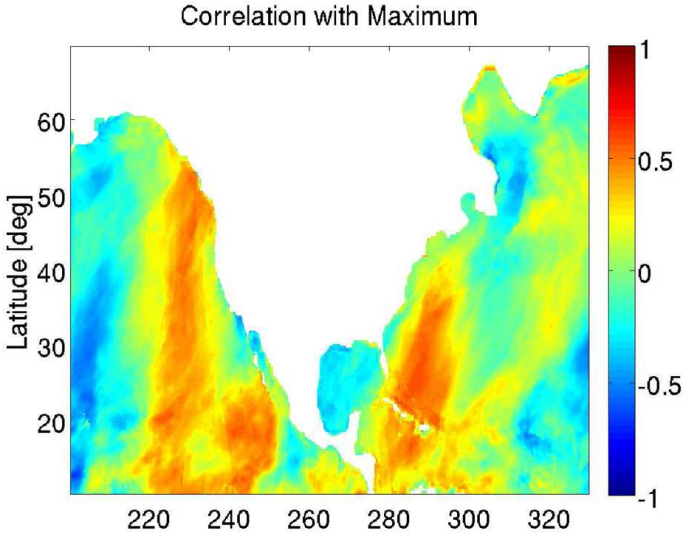
$\Delta\tau = 0\,\mathrm{h}$



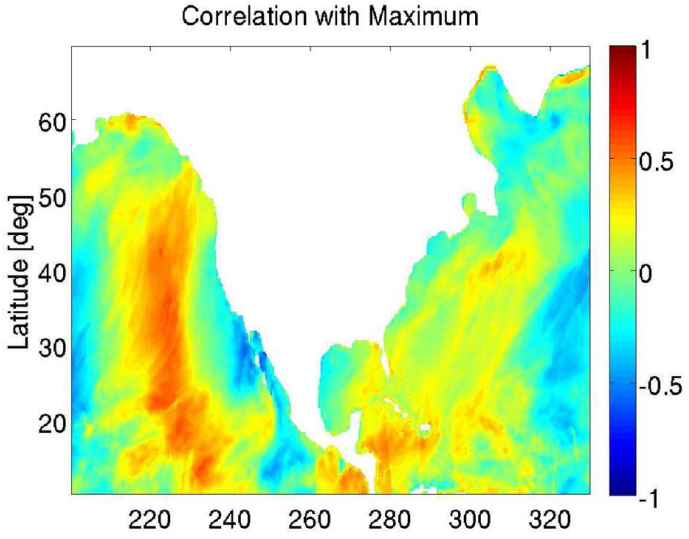
$\Delta\tau = 12\,\mathrm{h}$



$\Delta\tau = 24\,\mathrm{h}$

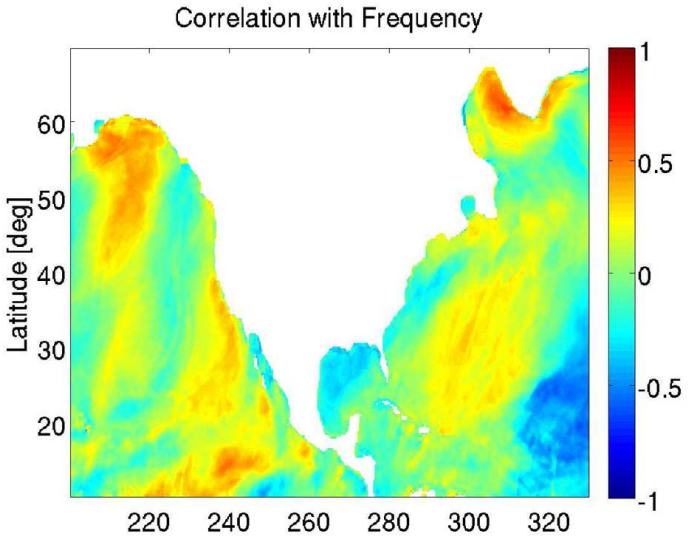


$\Delta\tau = 48\,\mathrm{h}$

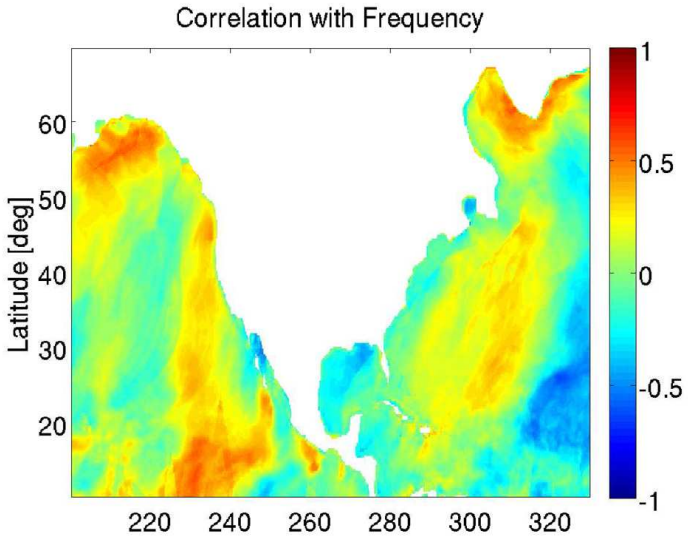


Correlation with sMS Frequency of Peak Maximum

$\Delta\tau = 0\,\mathrm{h}$



$\Delta\tau = 12\,\mathrm{h}$



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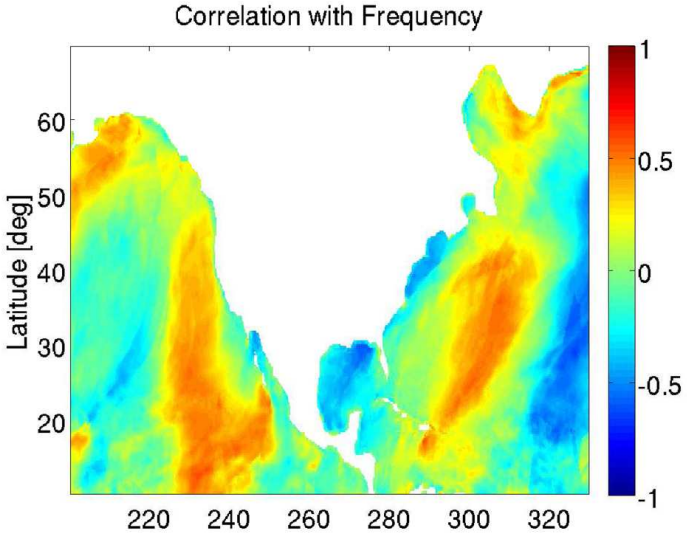

$\Delta\tau = 48\,\mathrm{h}$