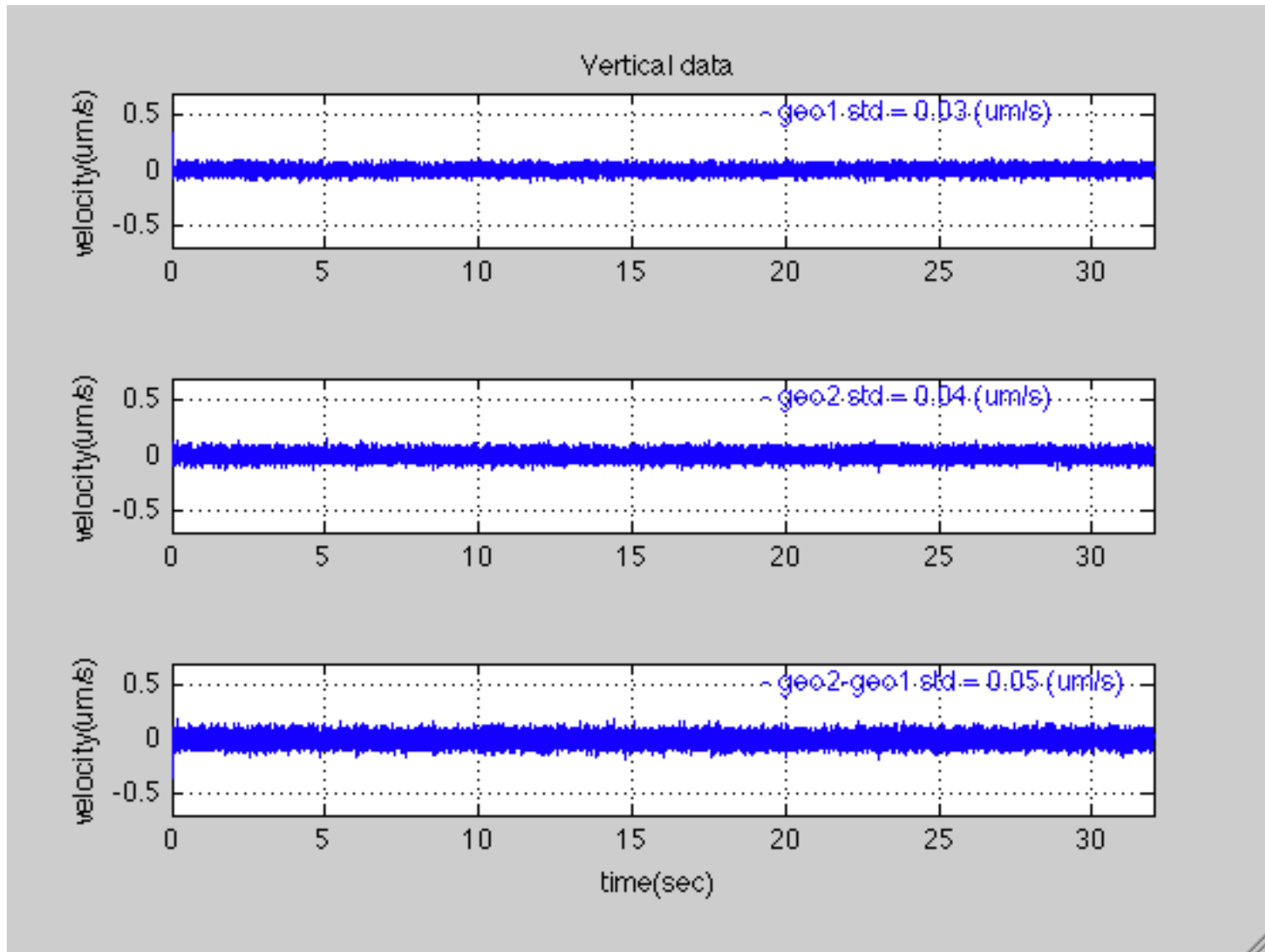


More Vibration Data on the SLD Detector

11 Nov 2010

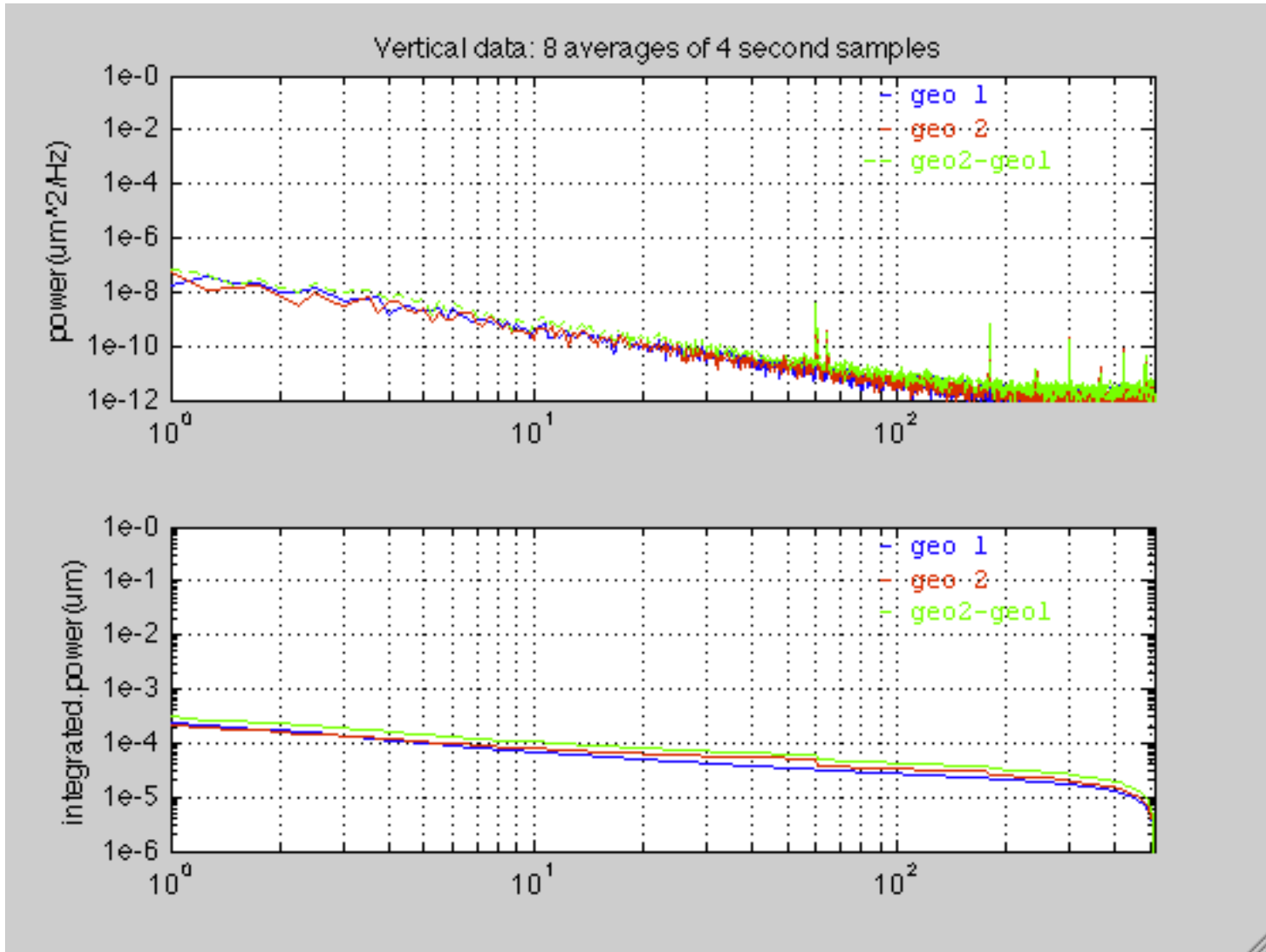
Kirk Bertsche, Achim Weidemann

System Background, Wall Pwr



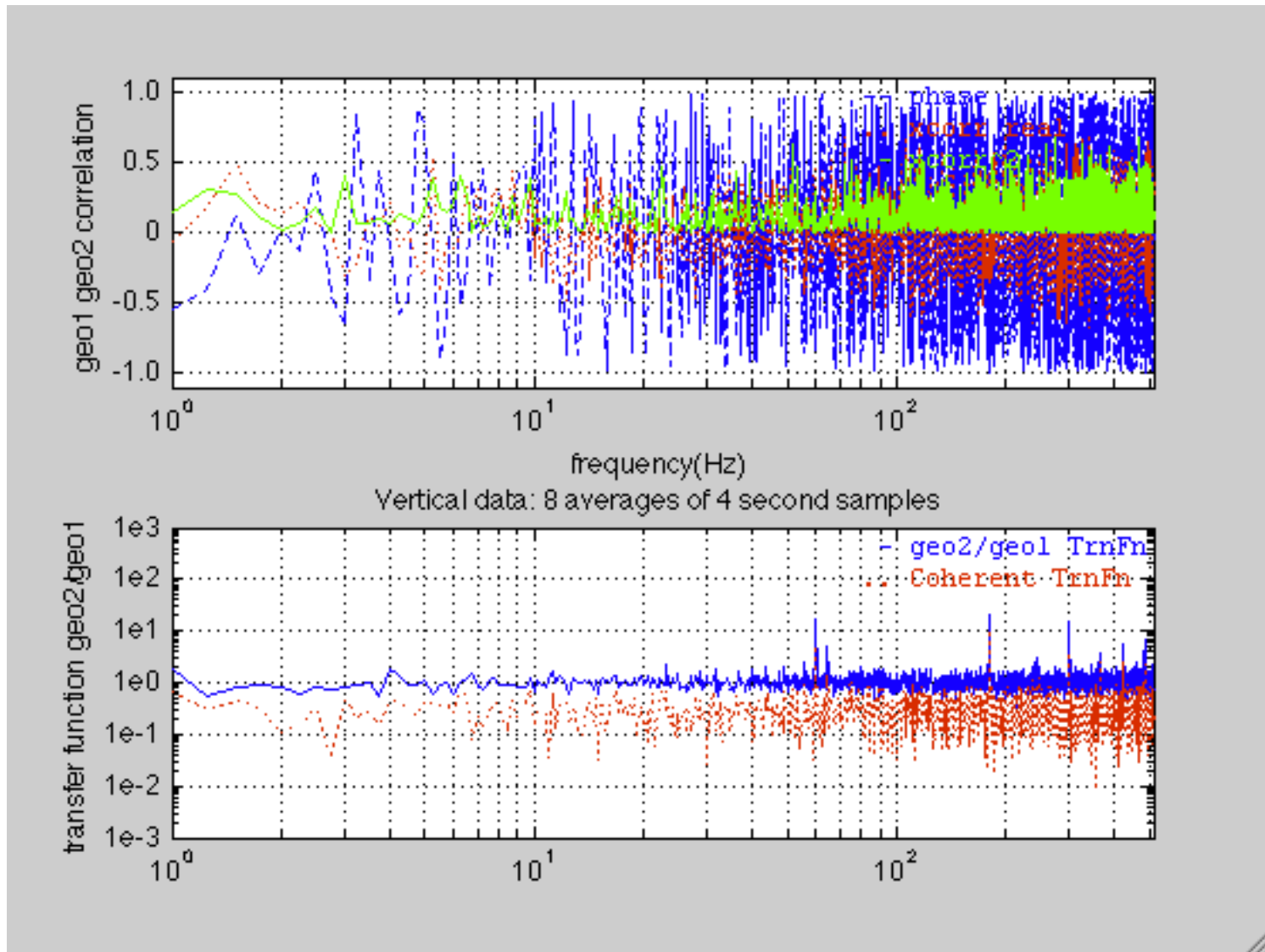
- Nov 9, 2010; 09155520.no0; "geo1": CH0 L4C 4724 N End SLD door rail on side; "geo2:" CH1 L4C 4723 6" away with long cable on side

System Background, Wall Pwr



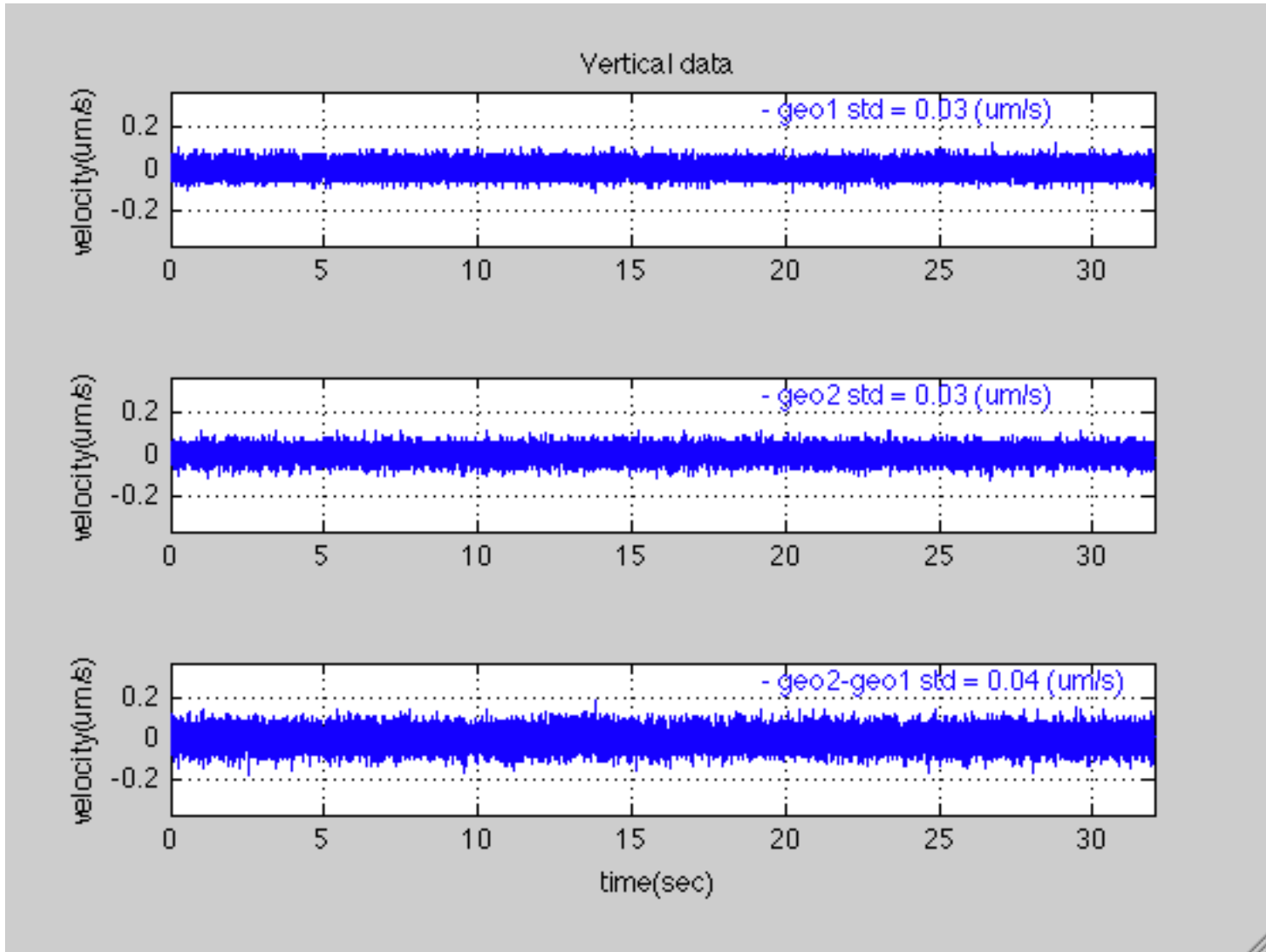
- Nov 9, 2010; 09155520.no0; "geo1": CH0 L4C 4724 N End SLD door rail on side; "geo2:" CH1 L4C 4723 6" away with long cable on side

System Background, Wall Pwr



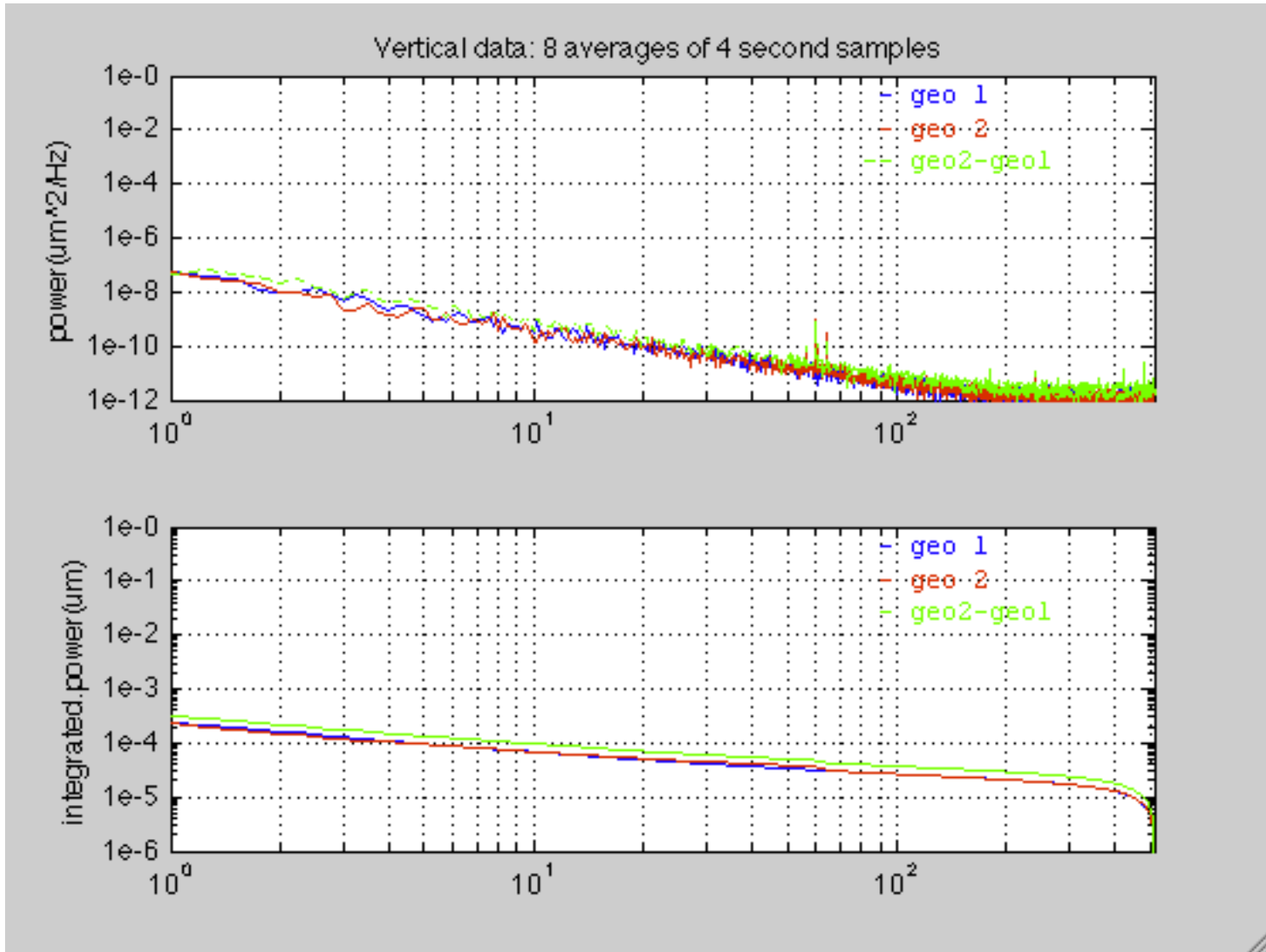
- Nov 9, 2010; 09155520.no0; "geo1": CH0 L4C 4724 N End SLD door rail on side; "geo2:" CH1 L4C 4723 6" away with long cable on side

System Background, Battery



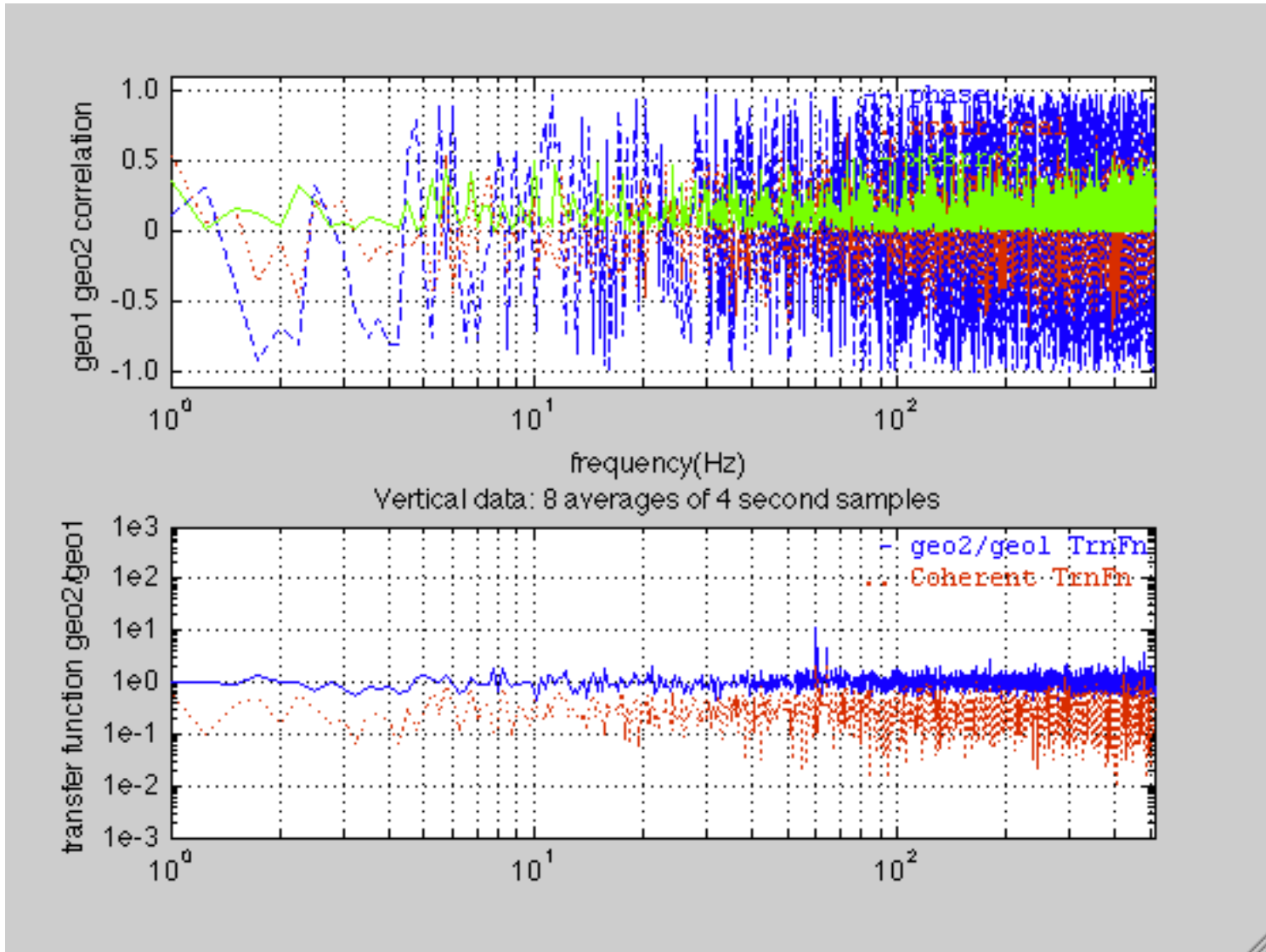
- Nov 9, 2010; 09155727.no0; "geo1": CH0 L4C 4724 N End SLD door rail on side; "geo2:" CH1 L4C 4723 6" away with long cable on side; battery op

System Background, Battery



- Nov 9, 2010; 09155727.no0; "geo1": CH0 L4C 4724 N End SLD door rail on side; "geo2:" CH1 L4C 4723 6" away with long cable on side; battery op

System Background, Battery

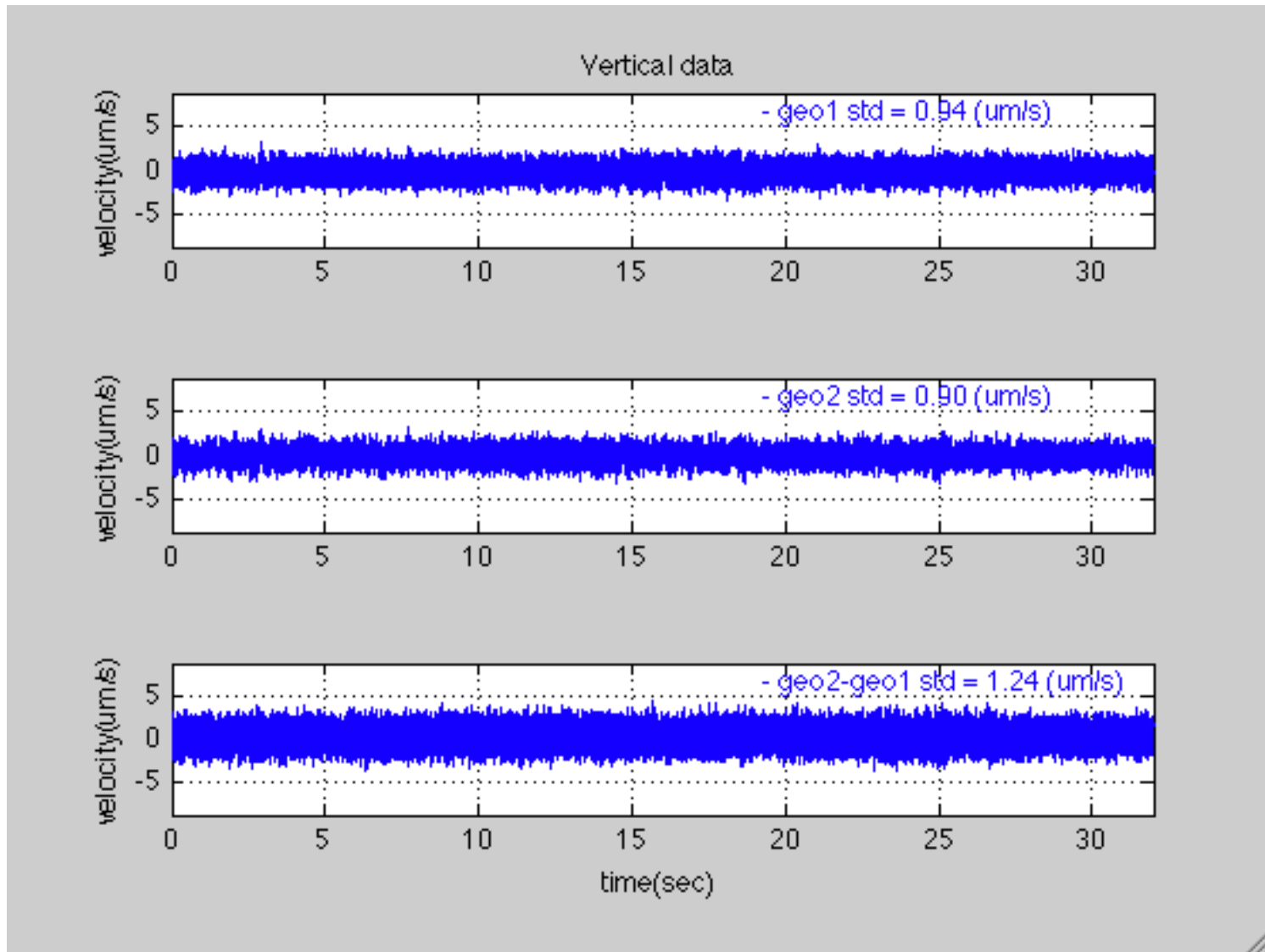


- Nov 9, 2010; 09155727.no0; "geo1": CH0 L4C 4724 N End SLD door rail on side; "geo2:" CH1 L4C 4723 6" away with long cable on side; battery op

Comments--Background

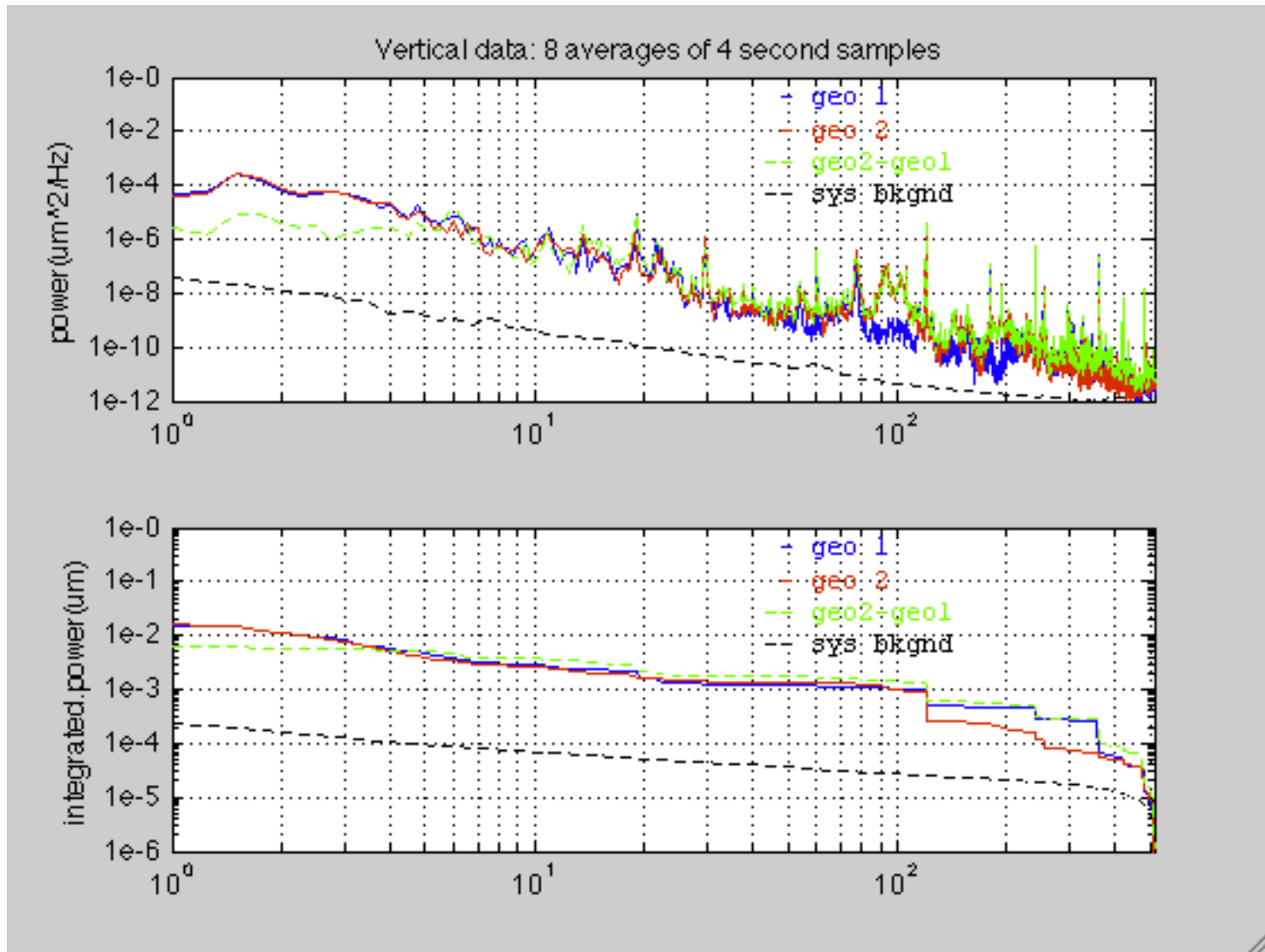
- Signals uncorrelated, as expected
- 60 Hz contribution
 - Integrated contribution drops ~ 2x with battery vs power cord
 - Some pickup in long cable, even with battery
 - Higher preamp gain may help
 - Insignificant integrated contribution in all cases
- Integrated RMS background:
 - ~ 0.03 nm above 100 Hz
 - ~ 0.05 nm above 30 Hz
 - ~ 0.08 nm above 10 Hz
 - ~ 0.15 nm above 3 Hz
 - ~ 0.25 nm above 1 Hz

Arch Covers



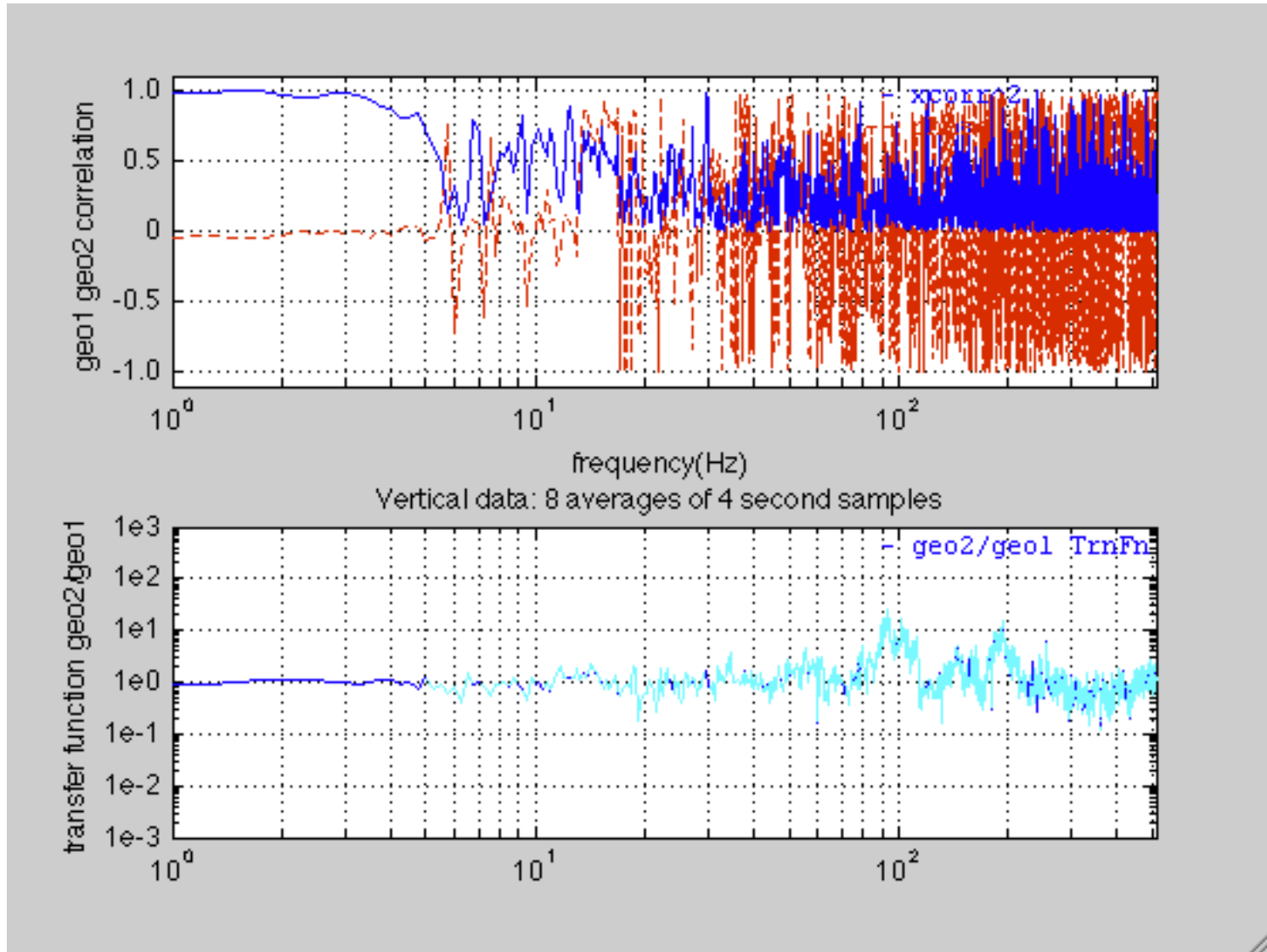
- Nov 5, 2010; 05092340.no0; "geo1": CH0 L4C #4724 SLD N arch cover; "geo2": CH1 L4C #4723 SLD S arch cover

Arch Covers



- Nov 5, 2010; 05092340.no0; "geo1": CH0 L4C #4724 SLD N arch cover; "geo2": CH1 L4C #4723 SLD S arch cover

Arch Covers

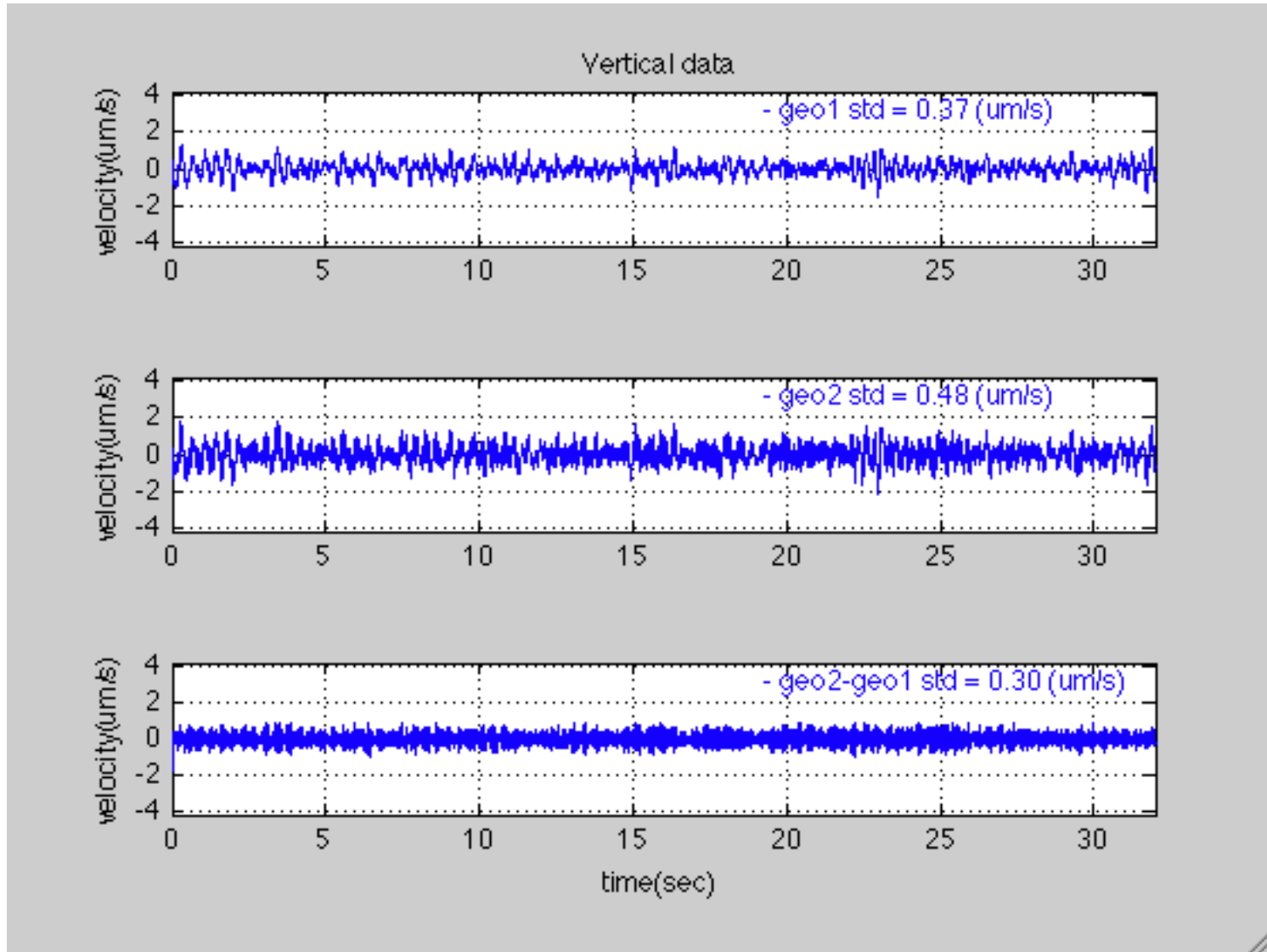


- Nov 5, 2010; 05092340.no0; "geo1": CH0 L4C #4724 SLD N arch cover; "geo2": CH1 L4C #4723 SLD S arch cover

Comments--Arch Covers

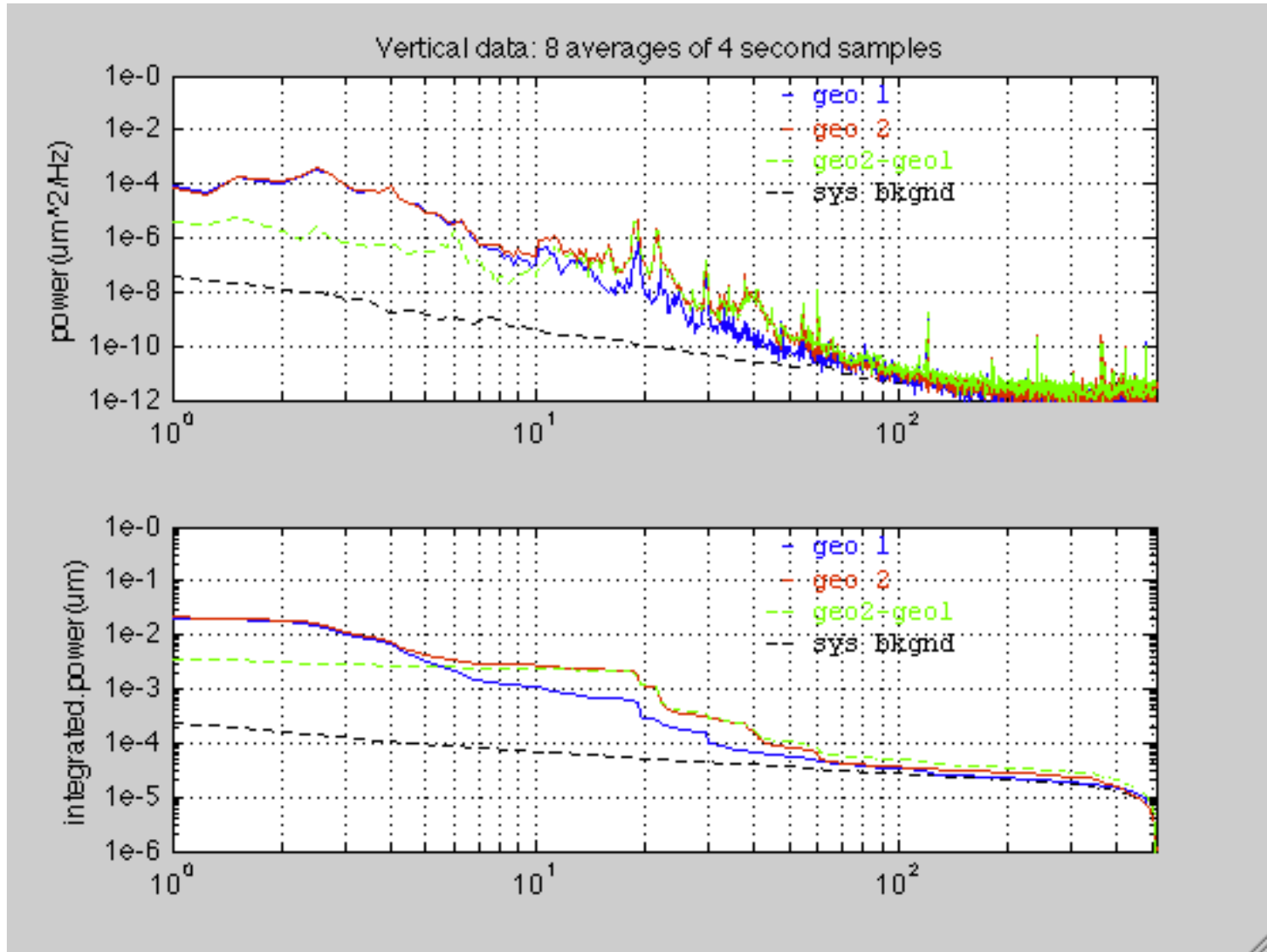
- N end has significant 360 Hz, not seen at S end; both ends see 120 Hz and a bit of 240 Hz (presumably from AC power)
- Both ends see some 18-19 Hz (motor?)
- Integrated RMS motion:
 - ~ 1 nm above 100 Hz
 - ~ 3 nm above 10 Hz
 - ~ 20 nm above 1 Hz

S End Pacman



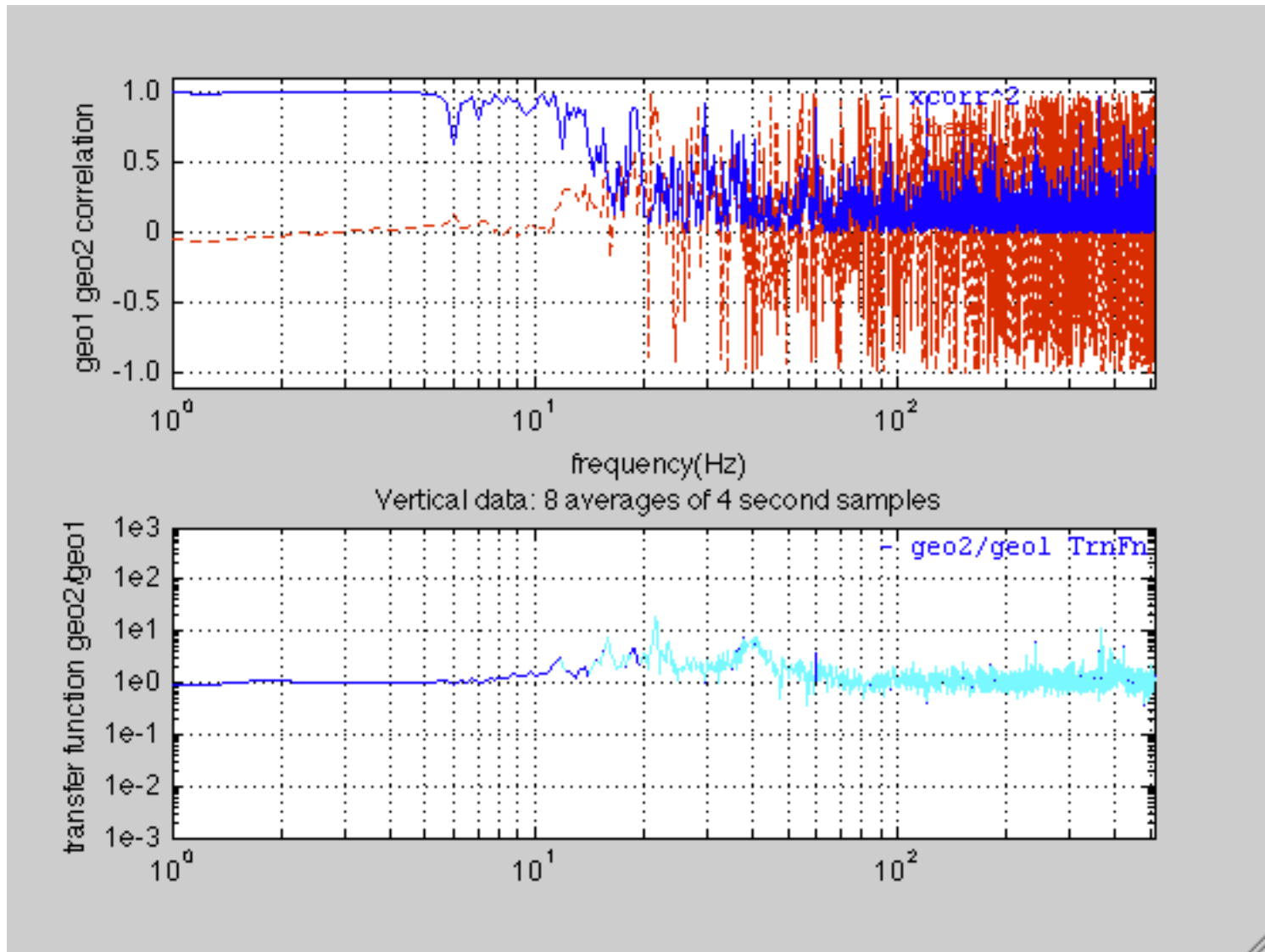
- Nov 5, 2010; 05095503.no0; "geo1": CH0 L4C 4724 Steel Floor South End SLD floor; "geo2": CH1 L4C 4723 SLD South Pacman Top

S End Pacman



- Nov 5, 2010; 05095503.no0; "geo1": CH0 L4C 4724 Steel Floor South End SLD floor; "geo2": CH1 L4C 4723 SLD South Pacman Top

S End Pacman

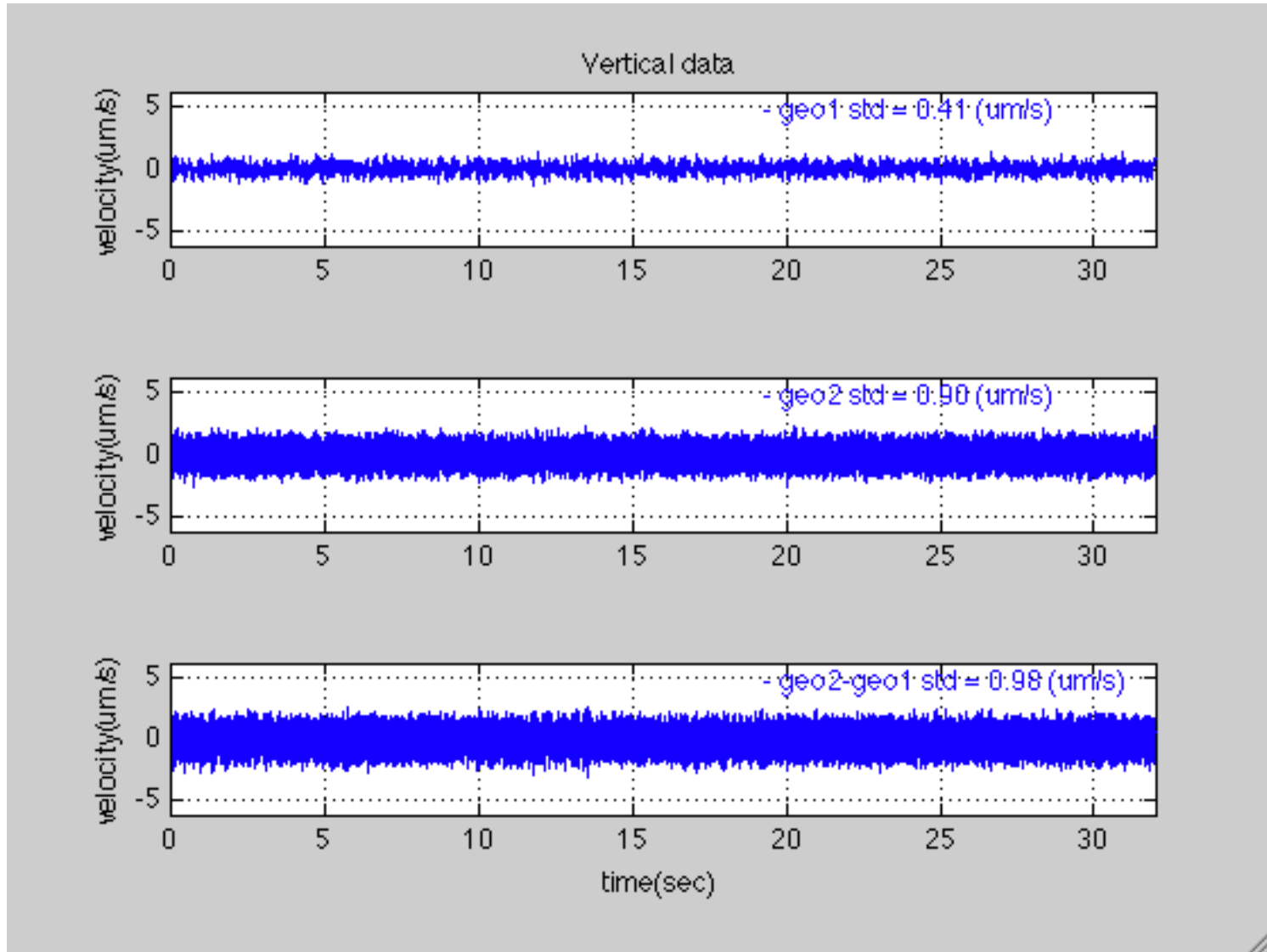


- Nov 5, 2010; 05095503.no0; "geo1": CH0 L4C 4724 Steel Floor South End SLD floor; "geo2": CH1 L4C 4723 SLD South Pacman Top

Comments--S PacMan

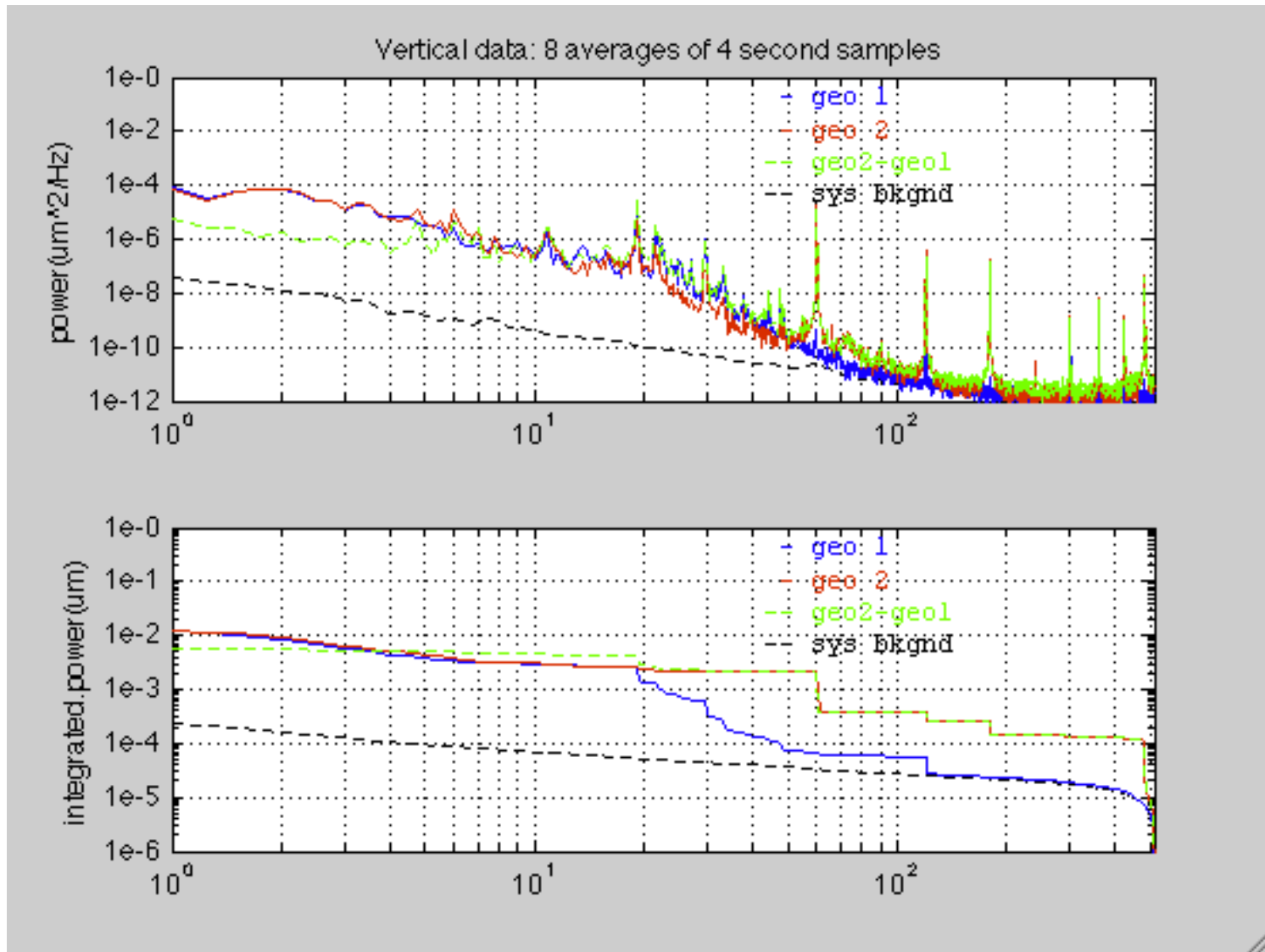
- S end of hall (even the floor) saw motion at 2-3 Hz (visible in the time series)
- Pacman (but not ground) sees some 60 Hz (electrical) and a broad resonance at ~ 40 Hz (probably mechanical)
- Both pacman and ground see $\sim 18, 22, 30$ Hz
- Pacman amplifies ground motion by a small factor (1x-4x) between 10 and 20 Hz, but elsewhere the correlation is poor
- Integrated RMS motion (Pacman vs ground):
 - ~ 0.3 vs 0.1 nm above 30 Hz
 - ~ 3 vs 1 nm above 10 Hz
 - ~ 10 vs 10 nm above 3 Hz

SLD N End



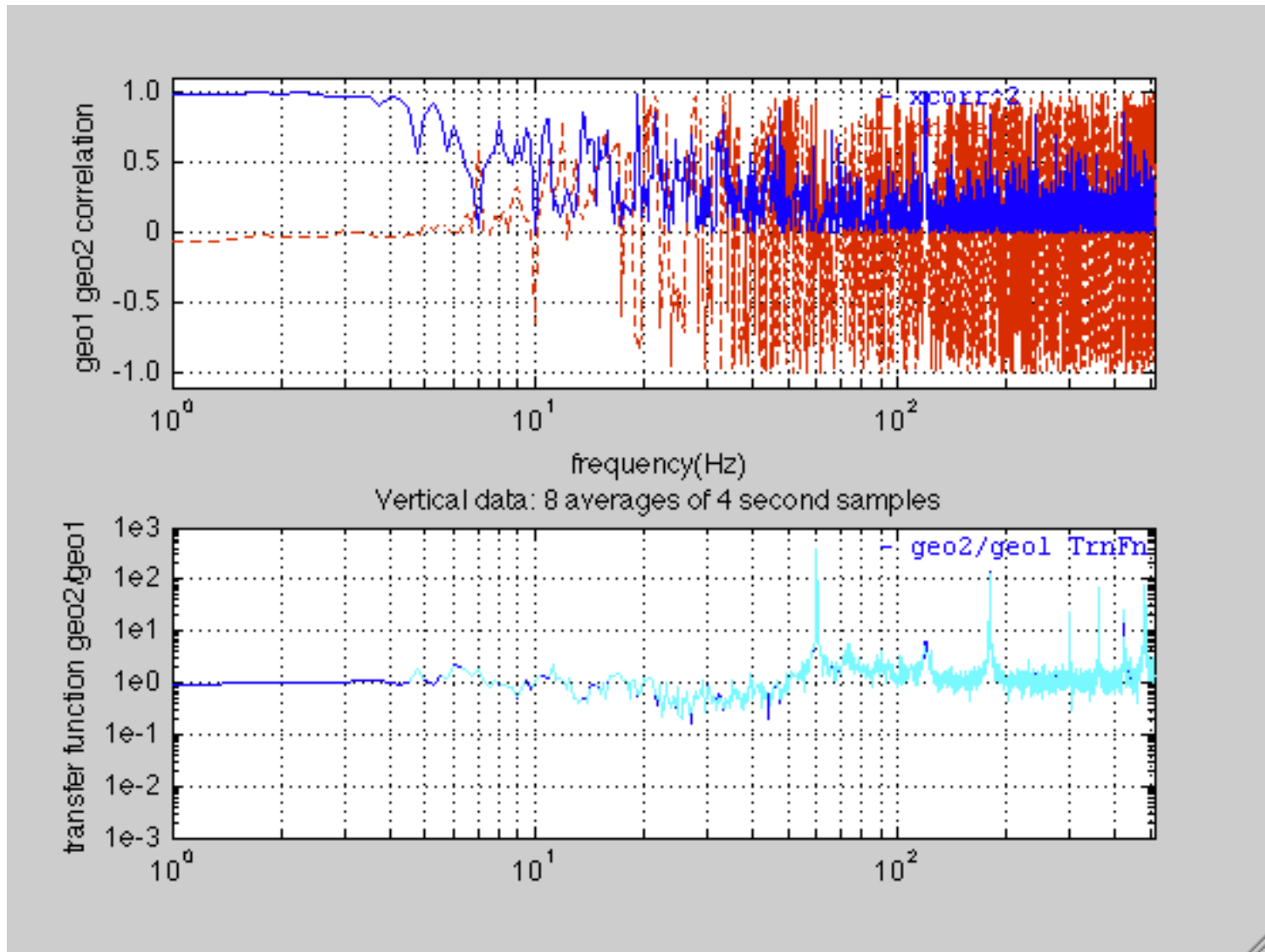
- Nov 9, 2010; 09162002.no0; "geo1": CH0 L4C 4724 N end SLD door rail; "geo2:" CH1 L4C 4723 N end SLD det steel boss

SLD N End



- Nov 9, 2010; 09162002.no0; "geo1": CH0 L4C 4724 N end SLD door rail; "geo2:" CH1 L4C 4723 N end SLD det steel boss

SLD N End

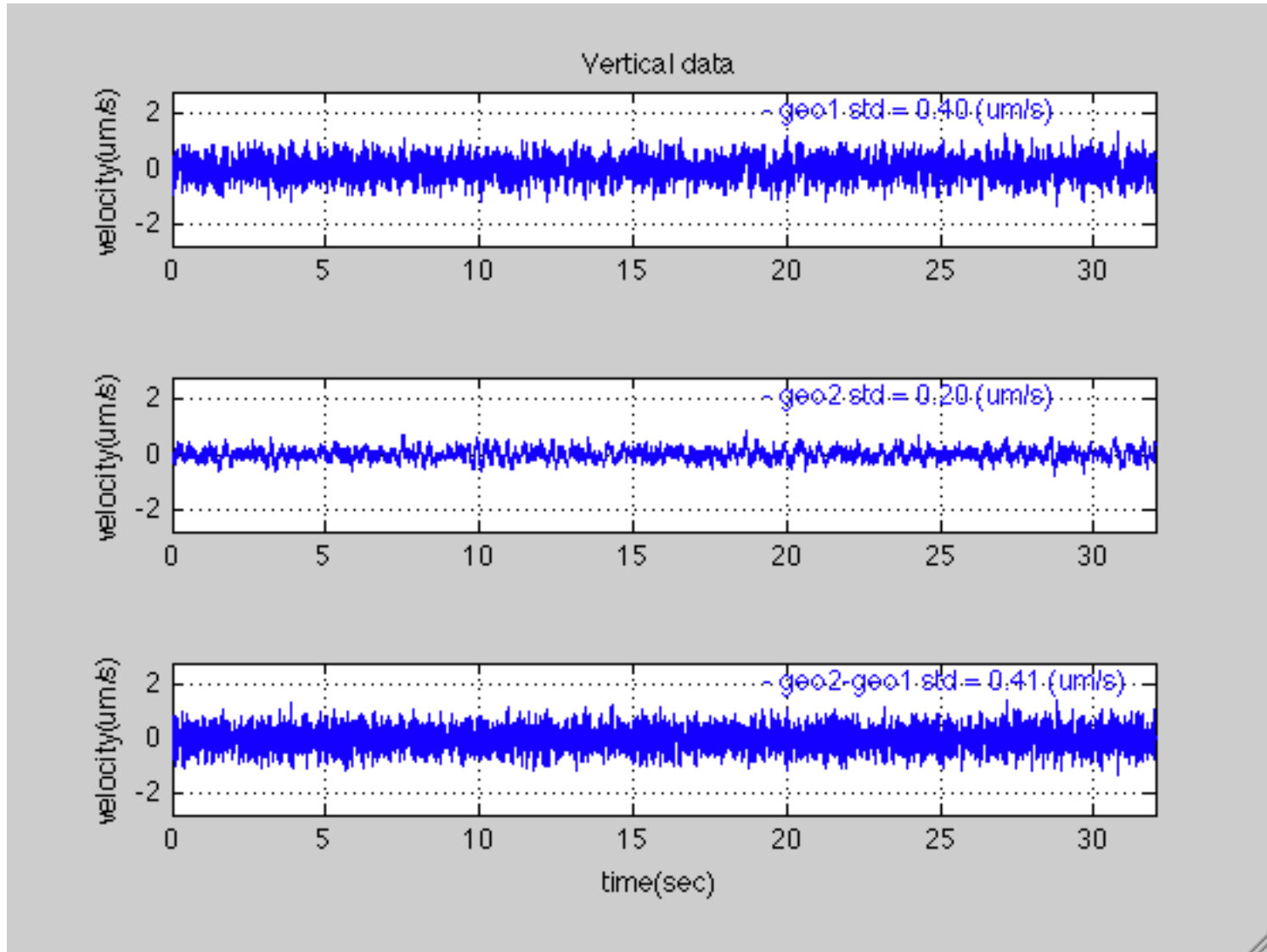


- Nov 9, 2010; 09162002.no0; "geo1": CH0 L4C 4724 N end SLD door rail; "geo2:" CH1 L4C 4723 N end SLD det steel boss

Comments--N End Detector

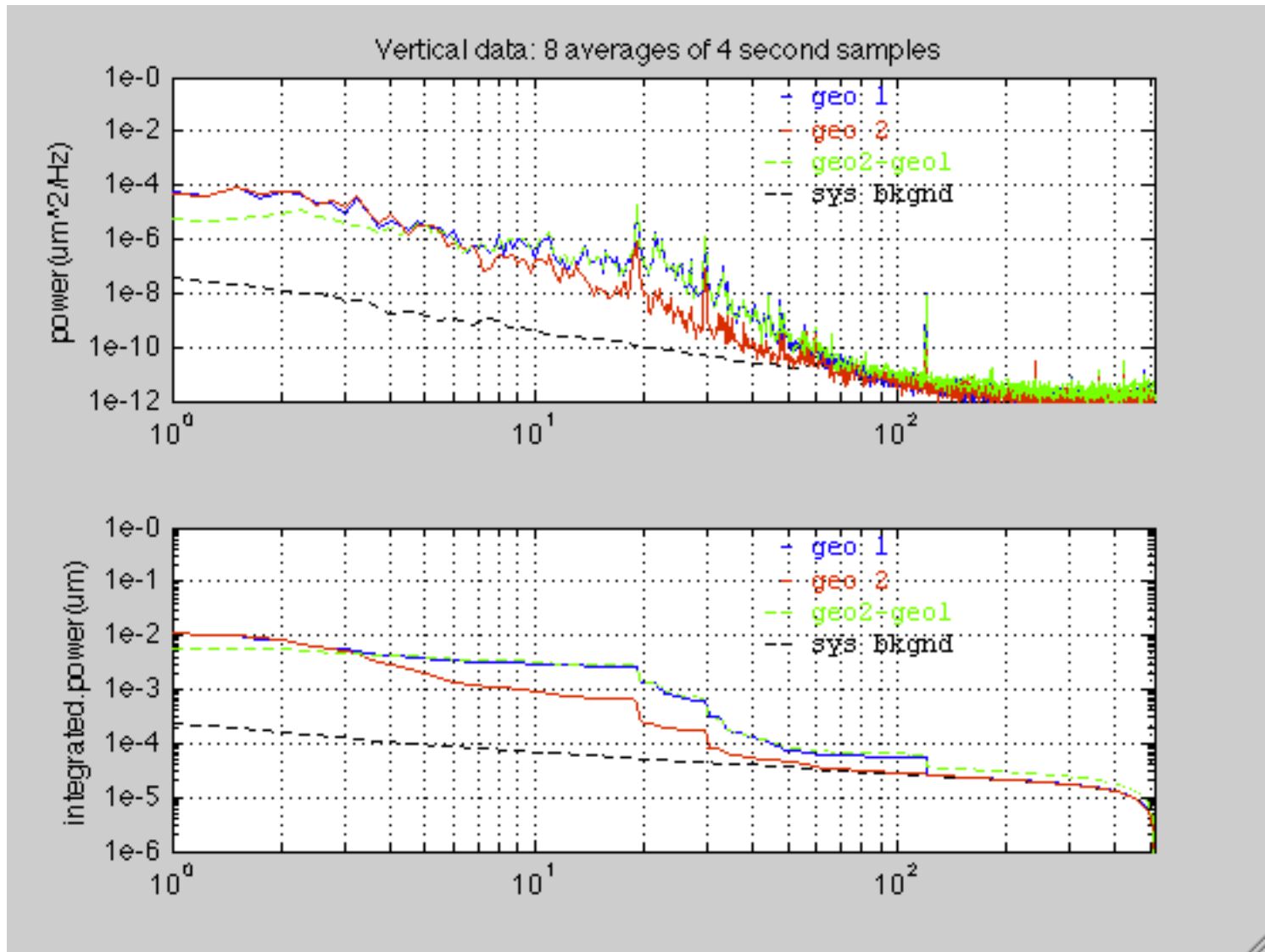
- Detector steel location has significant 60 Hz and harmonics (inductive coupling to geophone coil)
- Floor has 18 and 30 Hz contributions; fairly quiet above ~40 Hz
- Signals highly correlated below 4 Hz, at 18 and 120 Hz
- Integrated RMS motion (ground):
 - ~ 0.3 nm above 30 Hz
 - ~ 4 nm above 10 Hz
 - ~ 6 nm above 3 Hz

SLD Floor



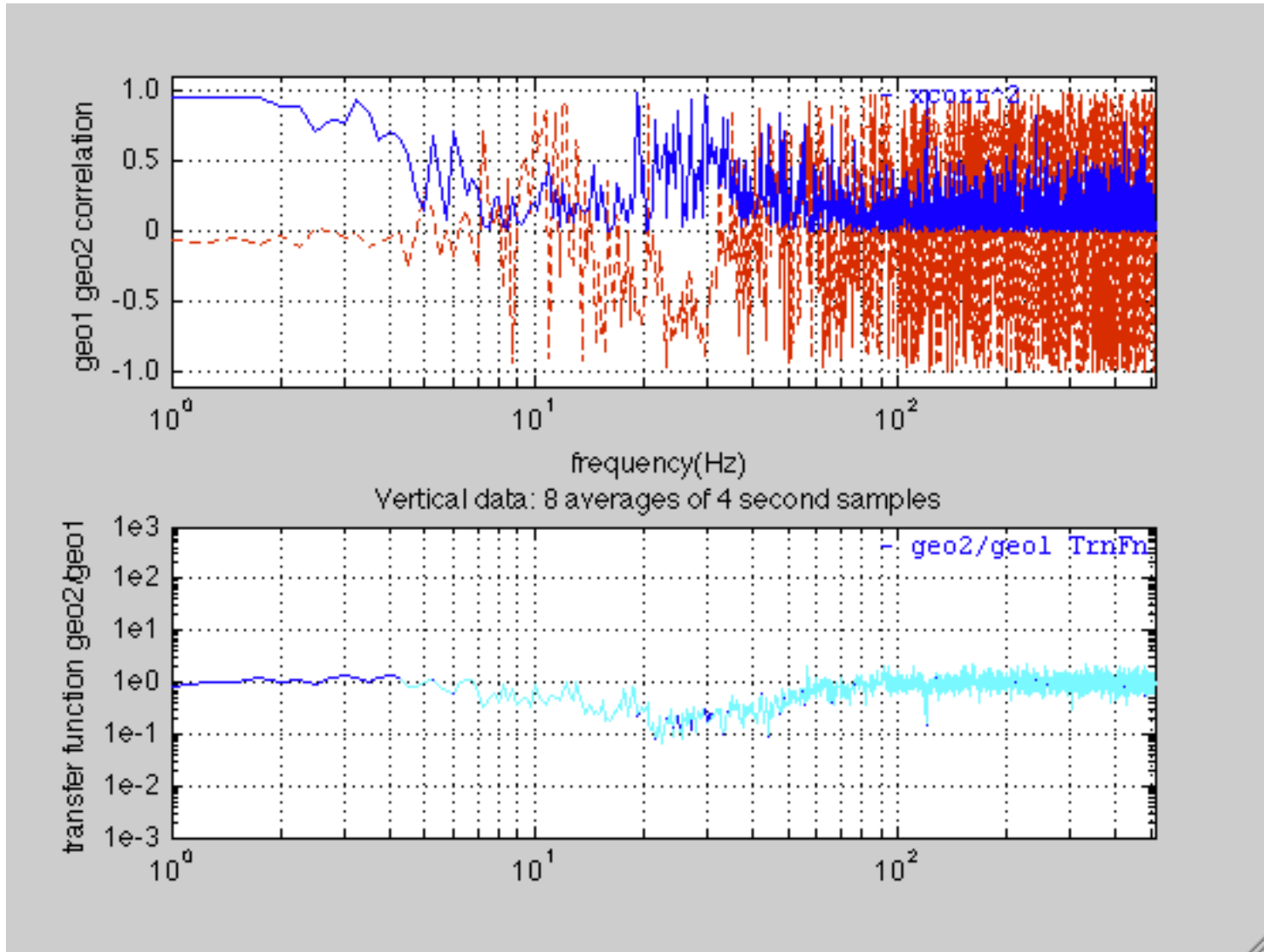
- Nov 9, 2010; 09160246.no0; "geo1": CH0 L4C 4724 N End SLD door rail; "geo2:" CH1 L4C 4723 S End SLD floor steel plate; batt

SLD Floor



- Nov 9, 2010; 09160246.no0; "geo1": CH0 L4C 4724 N End SLD door rail; "geo2:" CH1 L4C 4723 S End SLD floor steel plate; batt

SLD Floor



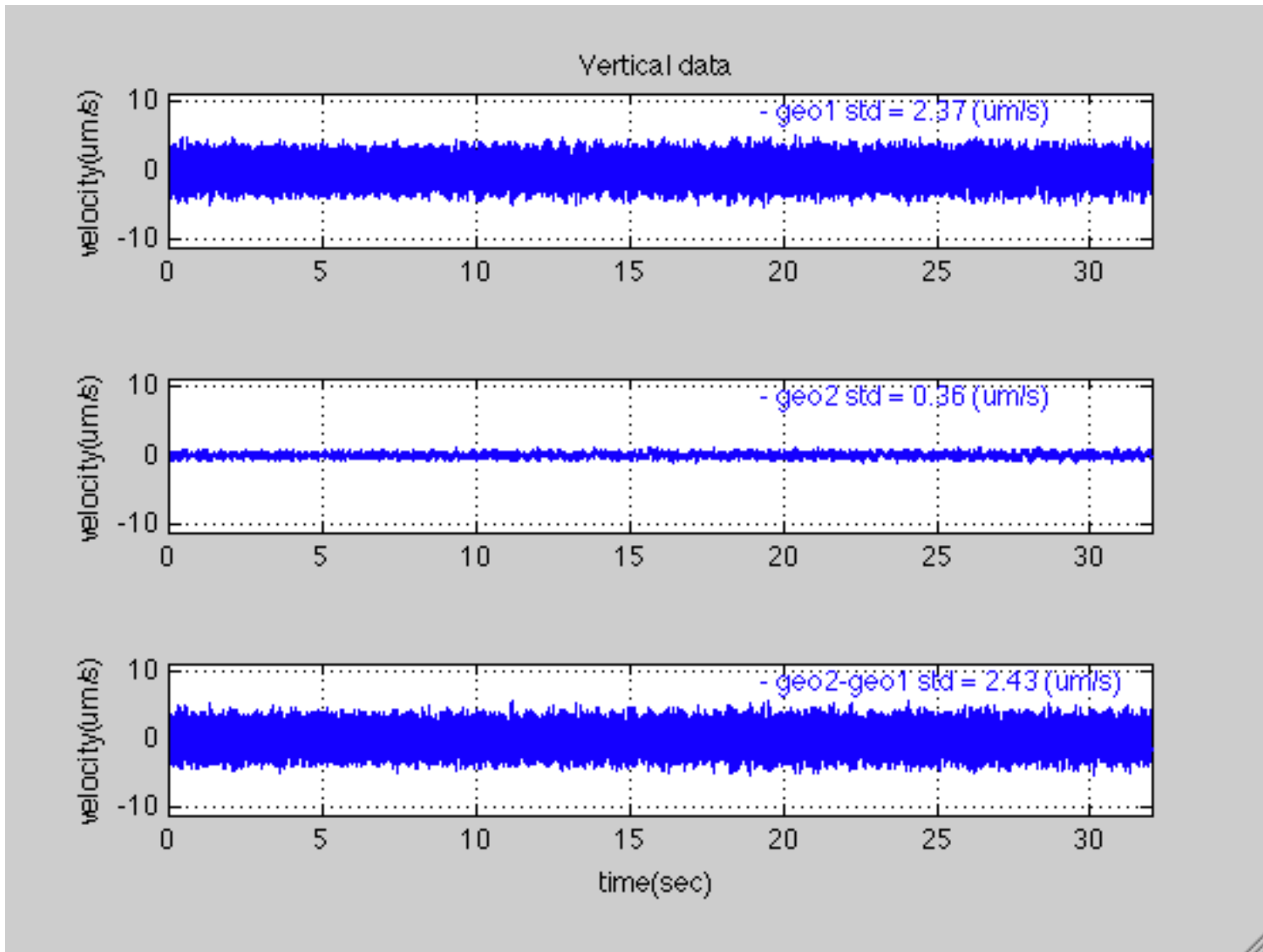
- Nov 9, 2010; 09160246.no0; "geo1": CH0 L4C 4724 N End SLD door rail; "geo2:" CH1 L4C 4723 S End SLD floor steel plate; batt

Comments--Floor

- N end noisier than S end between 10-60 Hz
- N end sees more 120 Hz (power?) than S
- Signals highly correlated below 4 Hz, at 18, 30 and 120 Hz
- Floor has less 2-3 Hz motion (Tue PM) than before (Fri AM)
- Integrated RMS motion (N vs S):
 - ~ 0.3 vs 0.1 nm above 30 Hz
 - ~ 3 vs 1 nm above 10 Hz
 - ~ 6 vs 6 nm above 3 Hz

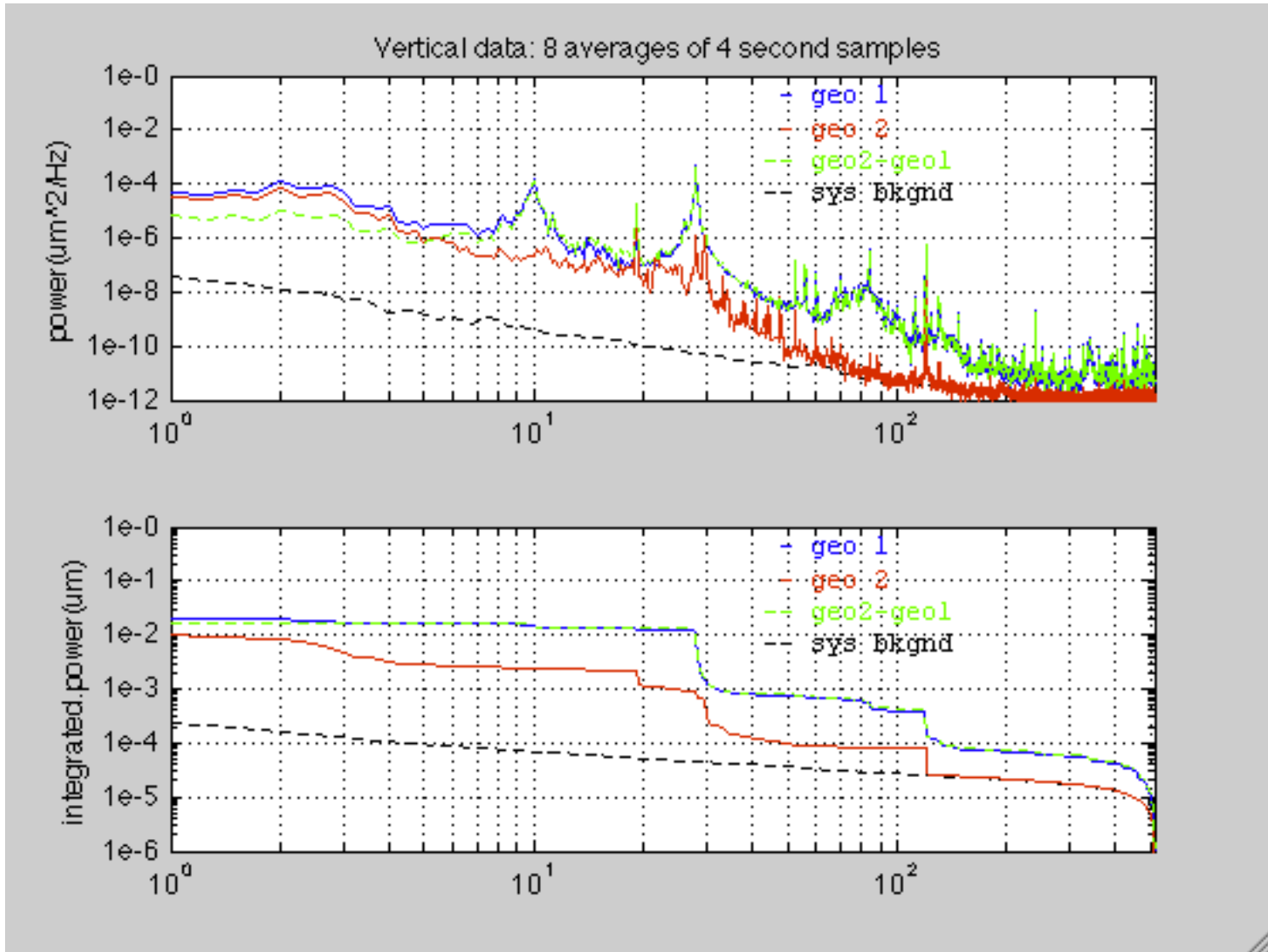
Re-Plotting of Last Week's Data

N SLD Door



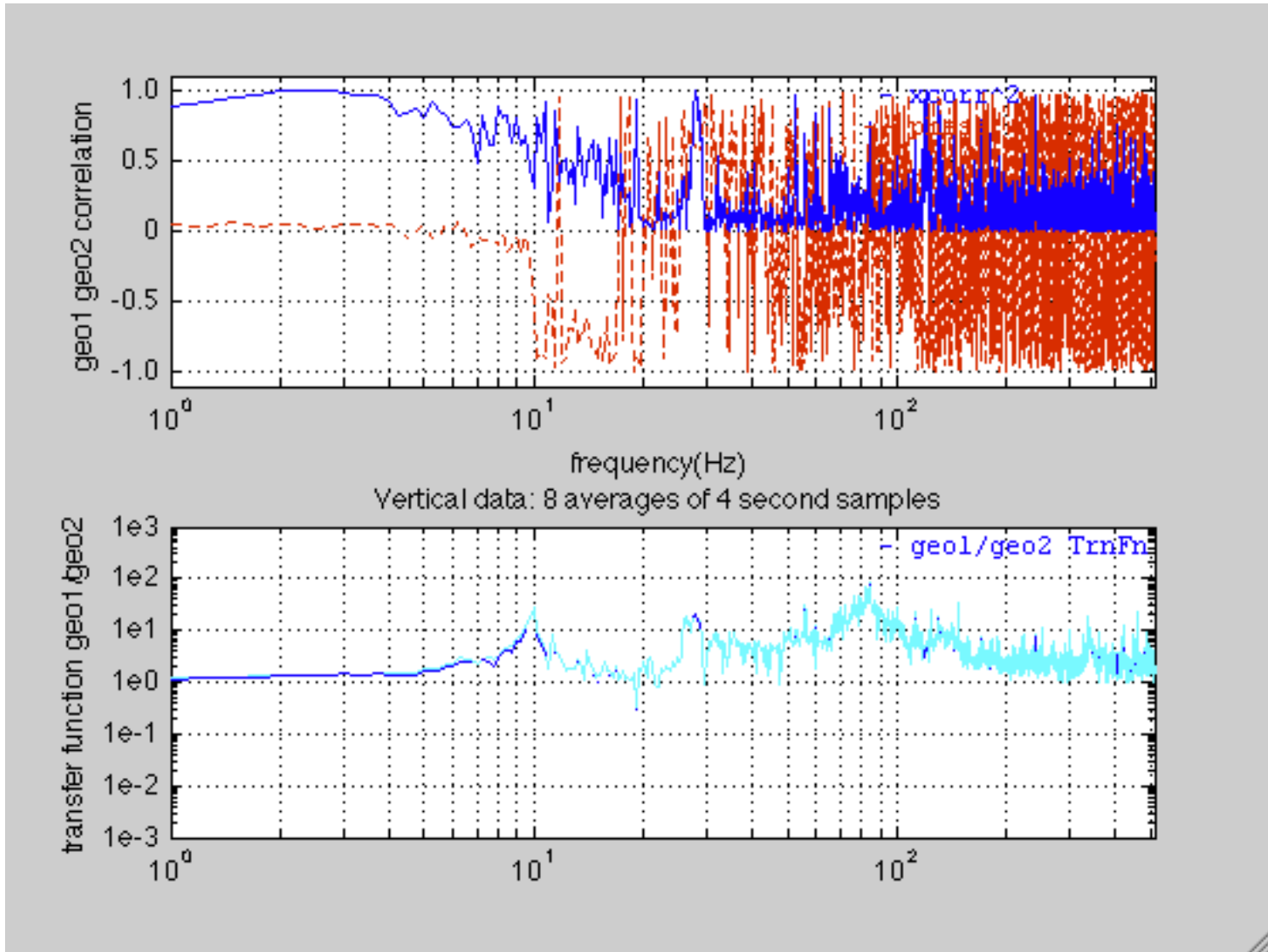
- Nov 3, 2010; 03155349.no3; "geo1": CH0 L4C#4723 N end SLD door; "geo2": CH1 L4C#4724 floor rail N end SLD

N SLD Door



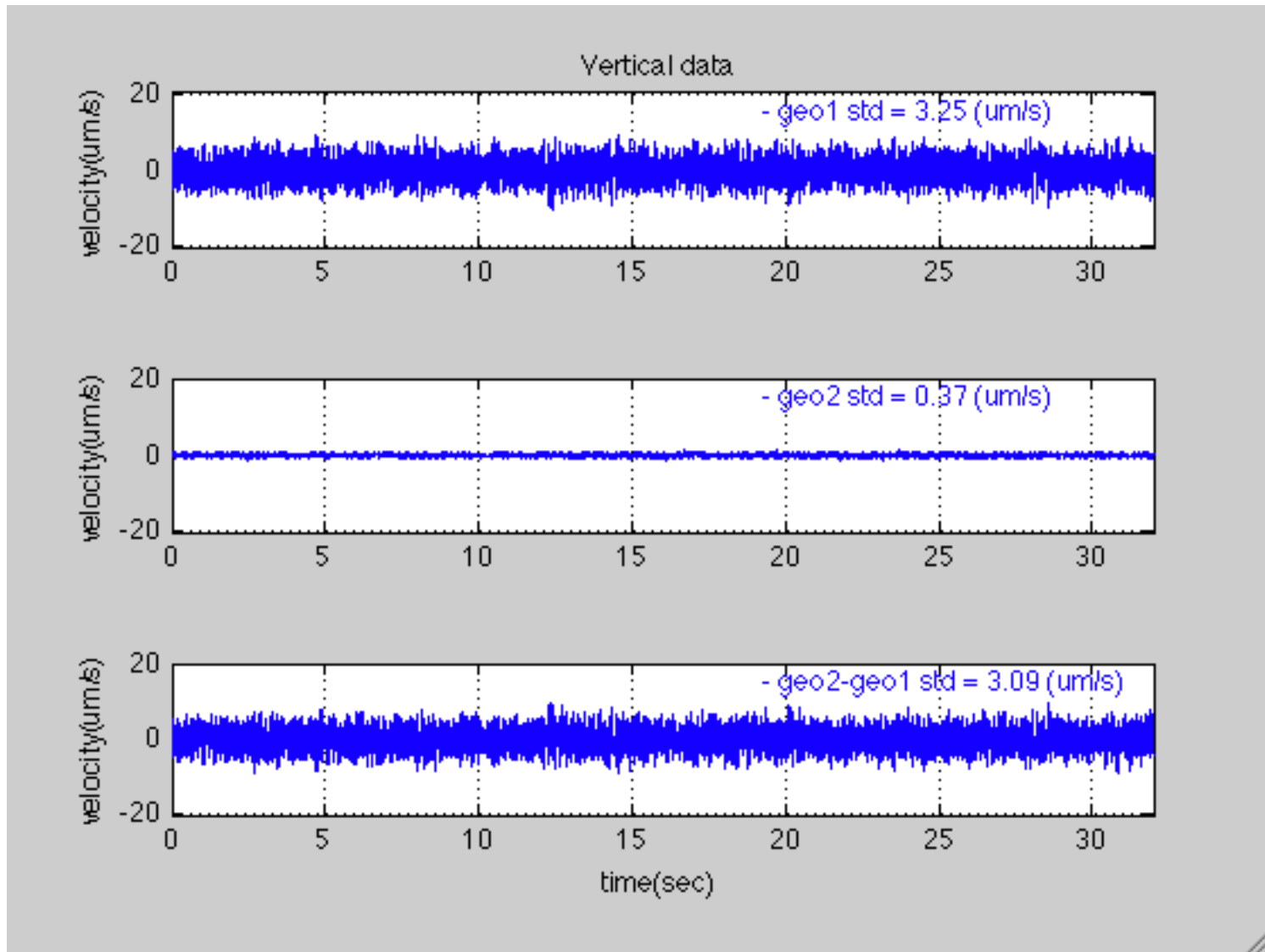
- Nov 3, 2010; 03155349.no3; "geo1": CH0 L4C#4723 N end SLD door; "geo2": CH1 L4C#4724 floor rail N end SLD

N SLD Door



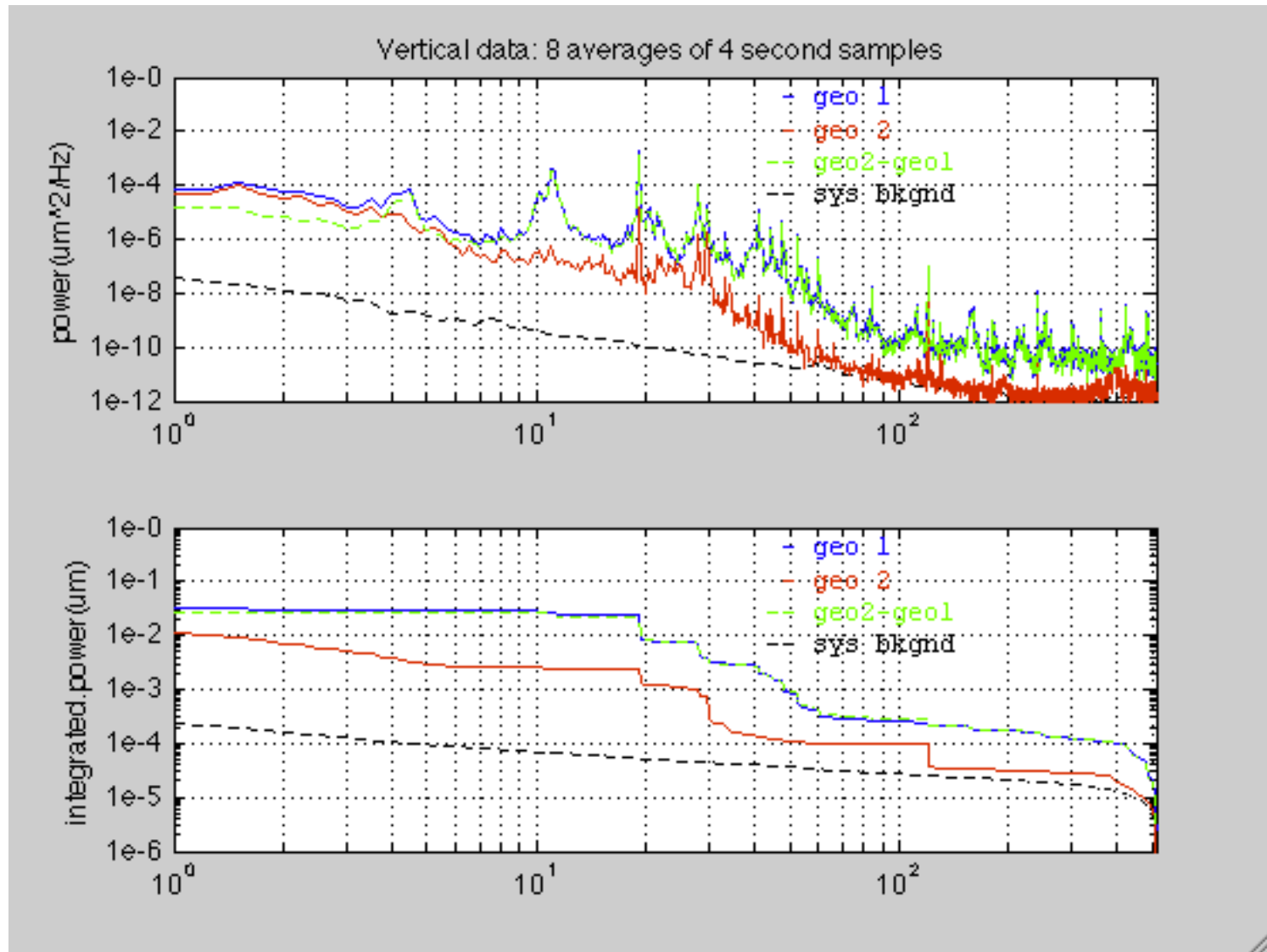
- Nov 3, 2010; 03155349.no3; "geo1": CH0 L4C#4723 N end SLD door; "geo2": CH1 L4C#4724 floor rail N end SLD

N End Magnet Support



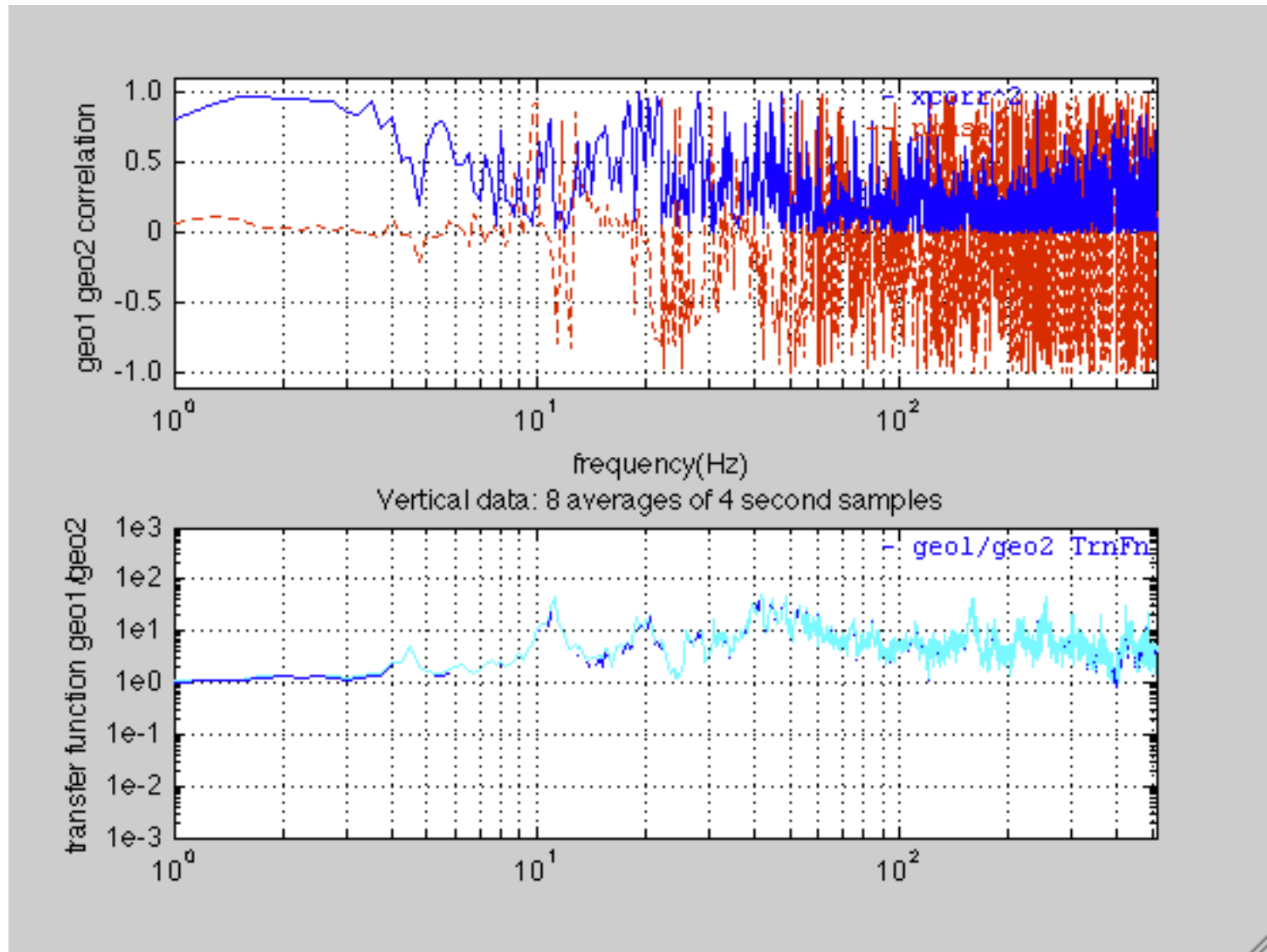
- Nov 3, 2010; 03154859.no3; "geo1": CH0 L4C#4723 N end SLD magnet support; "geo2": CH1 L4C#4724 floor rail N end SLD

N End Magnet Support



- Nov 3, 2010; 03154859.no3; "geo1": CH0 L4C#4723 N end SLD magnet support; "geo2": CH1 L4C#4724 floor rail N end SLD

N End Magnet Support



- Nov 3, 2010; 03154859.no3; "geo1": CH0 L4C#4723 N end SLD magnet support; "geo2": CH1 L4C#4724 floor rail N end SLD