Vibration measurements at different accelerator laboratories (first compilation)

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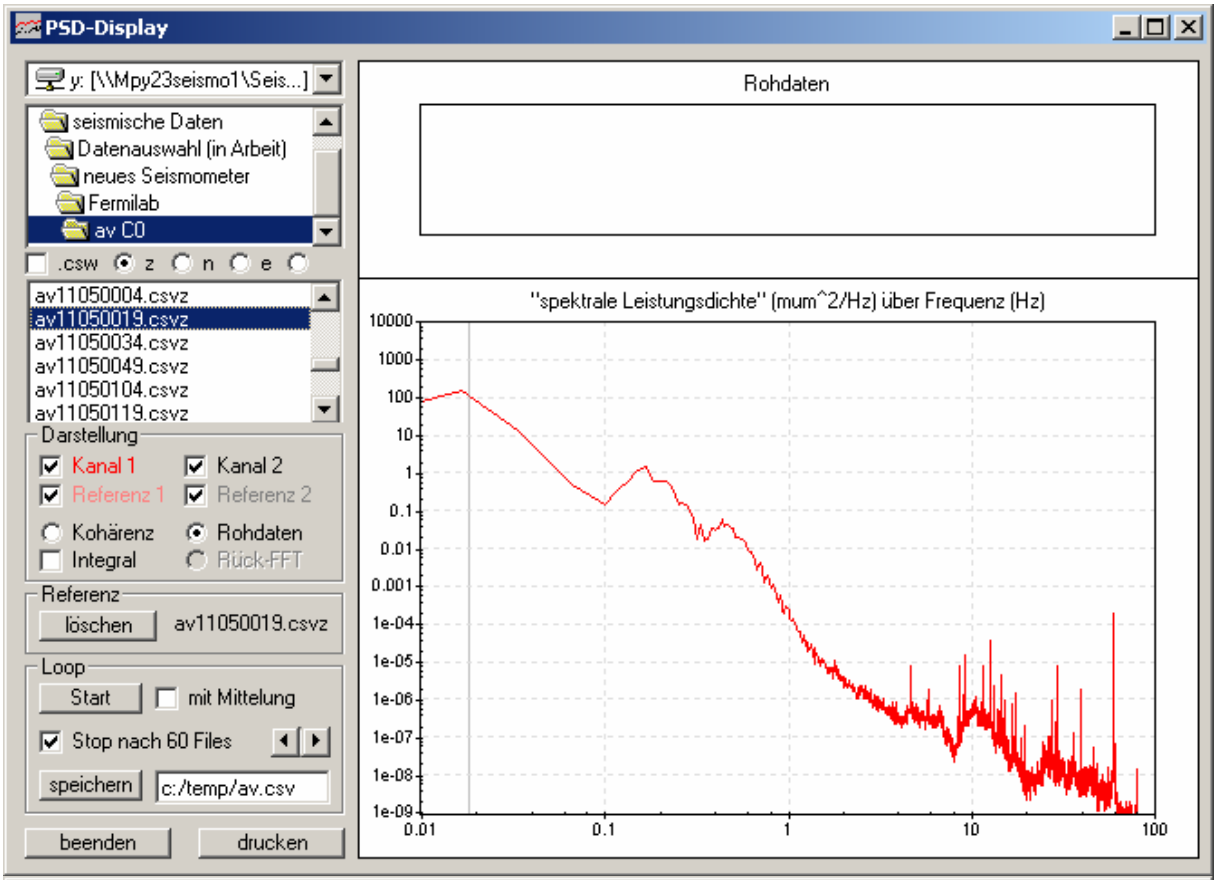
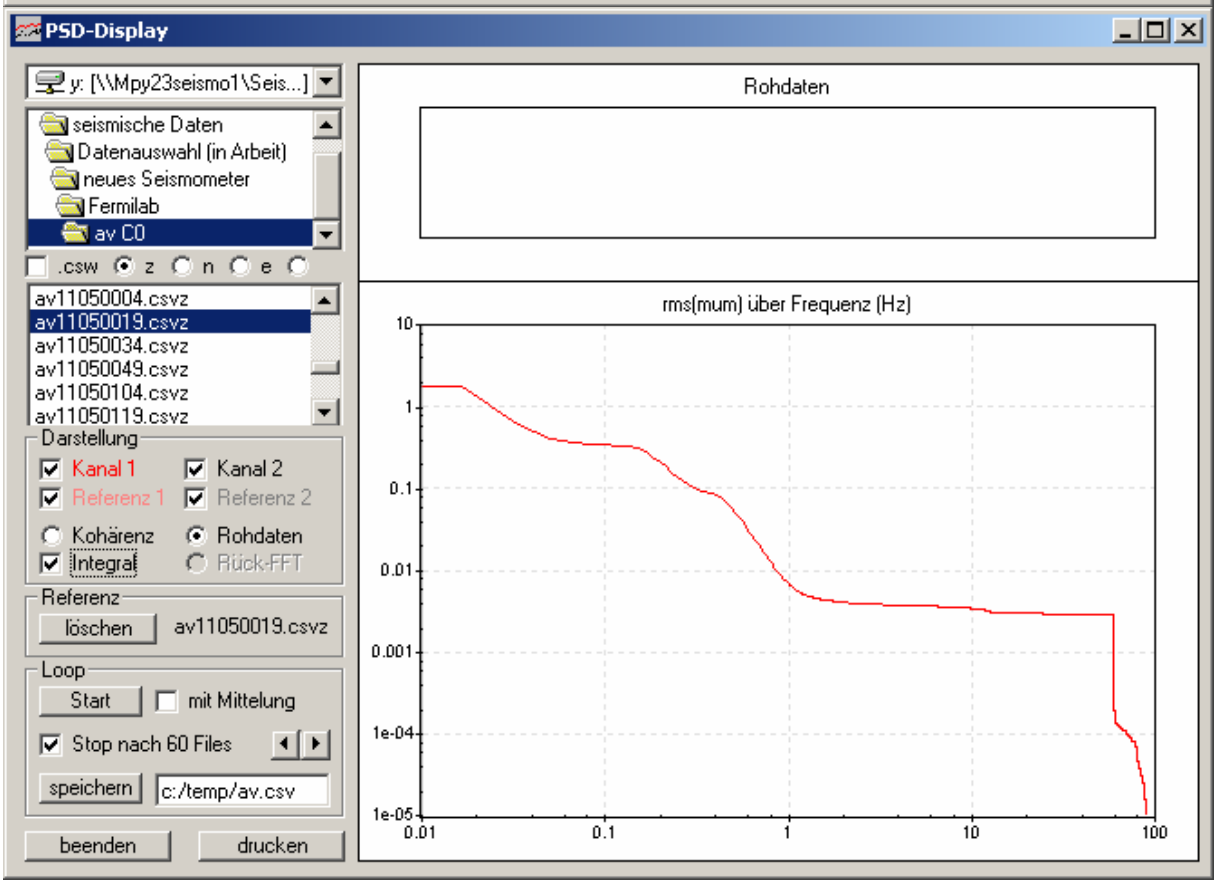
- All measurements were performed with Güralp CMG3T broadband seismometers.
- At each location the continuous data taking was running for 20h or more, at least over night.
- The data analysis (FFT) is based on 1min datasets, resulting in a lower frequency threshold of 1/60Hz.
- The higher frequency threshold is given by the sampling rate: 200Hz for a new sensor, 50Hz for two old sensors.
- All raw data are available via web: http://desyntwww.desy.de/~seismo/Seismometer/

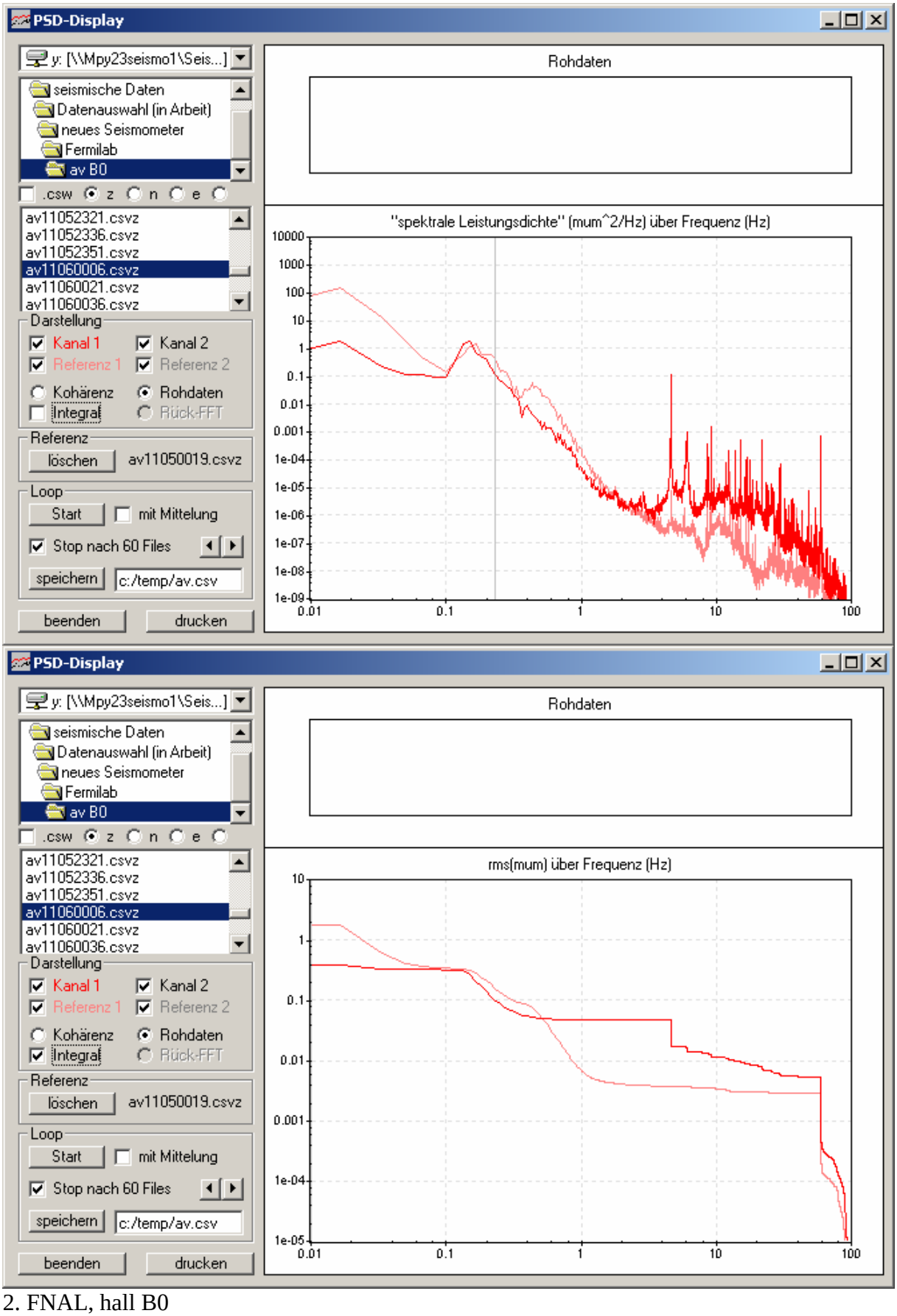
- The pictures given here are screen copies of the used interactive data display program (in German, sorry), showing:
  - rms value of motion (mum) above a cut frequency versus this frequency
  - 15min-averaged power spectrum densities taken during the night
  - first measurement as reference in all following pictures

1. FNAL, hall C0, 11/05/03, 00:19h ff
   no local activities
   clear seven second hum (also the second peak)
   60Hz signal, contributing 3nm
   clear traffic signal around 10Hz
2. FNAL, hall B0, 11/06/03, 00:06h ff
   local activities -> CDF….
   strong 4.6Hz signal -> cryo
3. near FNAL, Elburn, basement of a private house, 11/07/03, 00:30h ff
   no local activities
4. FNAL, decay tunnel of NUMI, 11/12/03, 01:31h ff
   no local activities
5. APS, superdoor E, 11/09/03, 00:03h ff
   no local activities
   cultural noise….
6. ESRF, sector 13, 09/30/03, 00:03h ff
   no local activities
   cultural noise….
7. DESY, HERA tunnel at WL745, 04/26/03, 01:00h ff
   cultural noise….
8. SLAC, sector 10, 03/21/03, 01:00h ff
   no local activities
9. CERN, LHC/LEP tunnel at P4, 02/19/03, 00:00h ff
   no local activities
10. Salt mine “Asse” near Wolfenbüttel, Germany, 900m depth, 02/04/03, 00:00h ff
    no local activities
11. Moxa, Germany, seismic station near Jena, 01/23/03, 00:00h ff
    no local activities
12. Ellerhoop, close to the foreseen IP of TESLA at DESY, 02/10/03, 00:00h ff
    no local activities

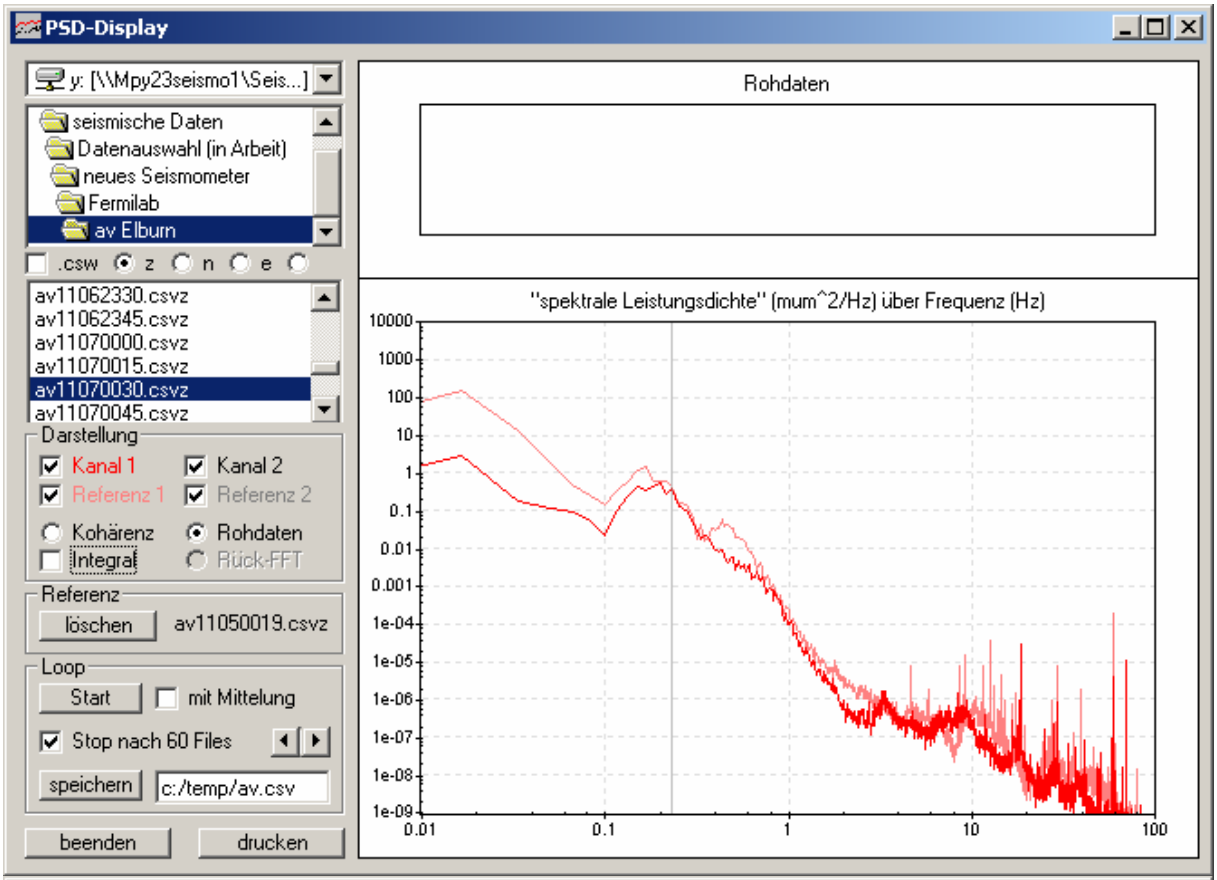


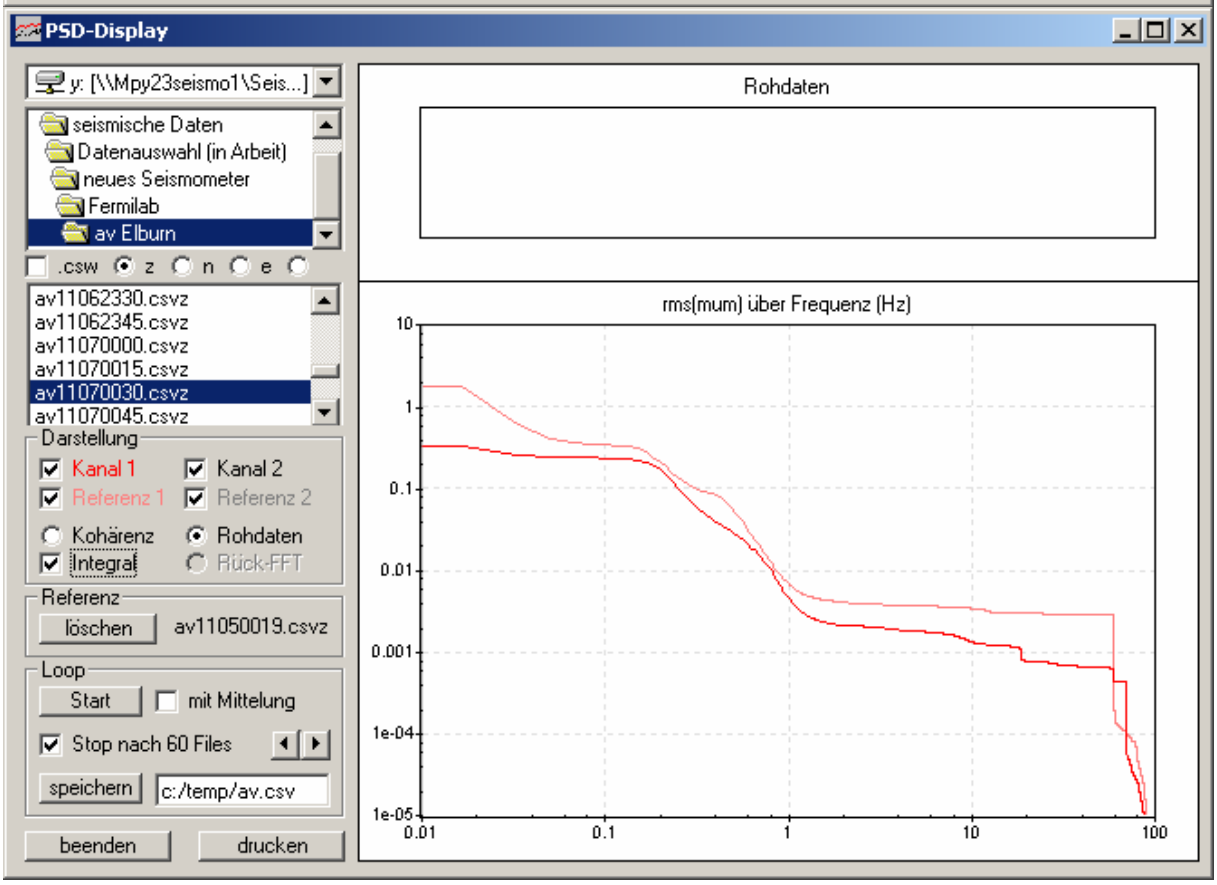


1. FNAL, hall C0

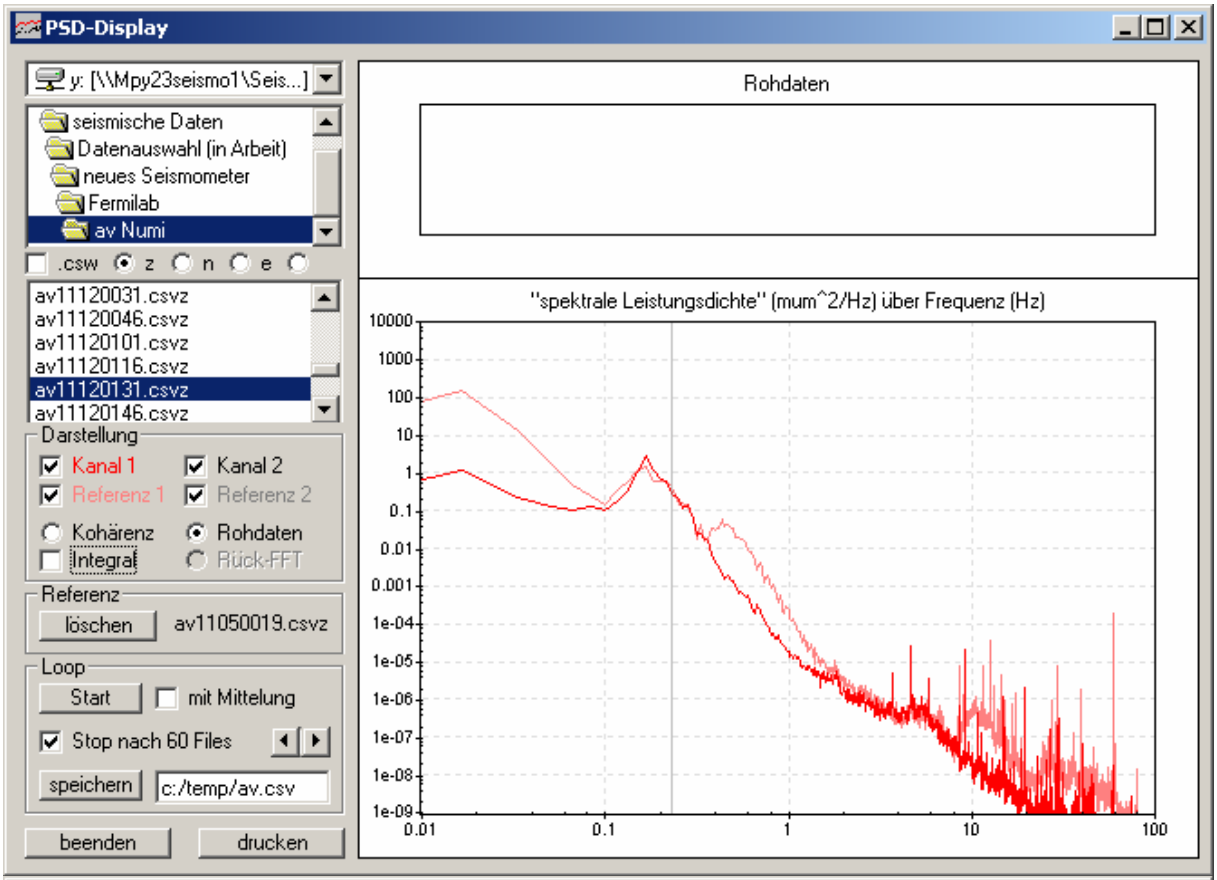


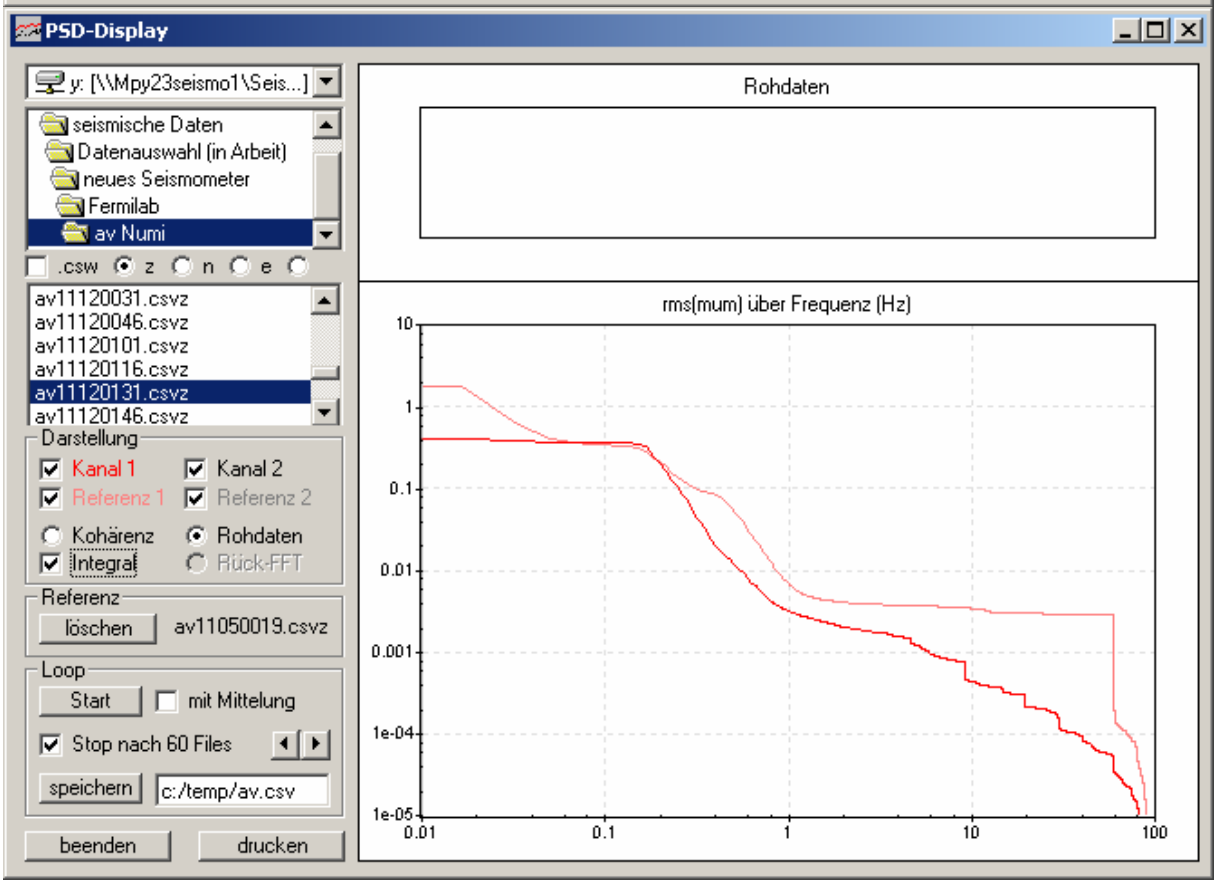
2. FNAL, hall B0



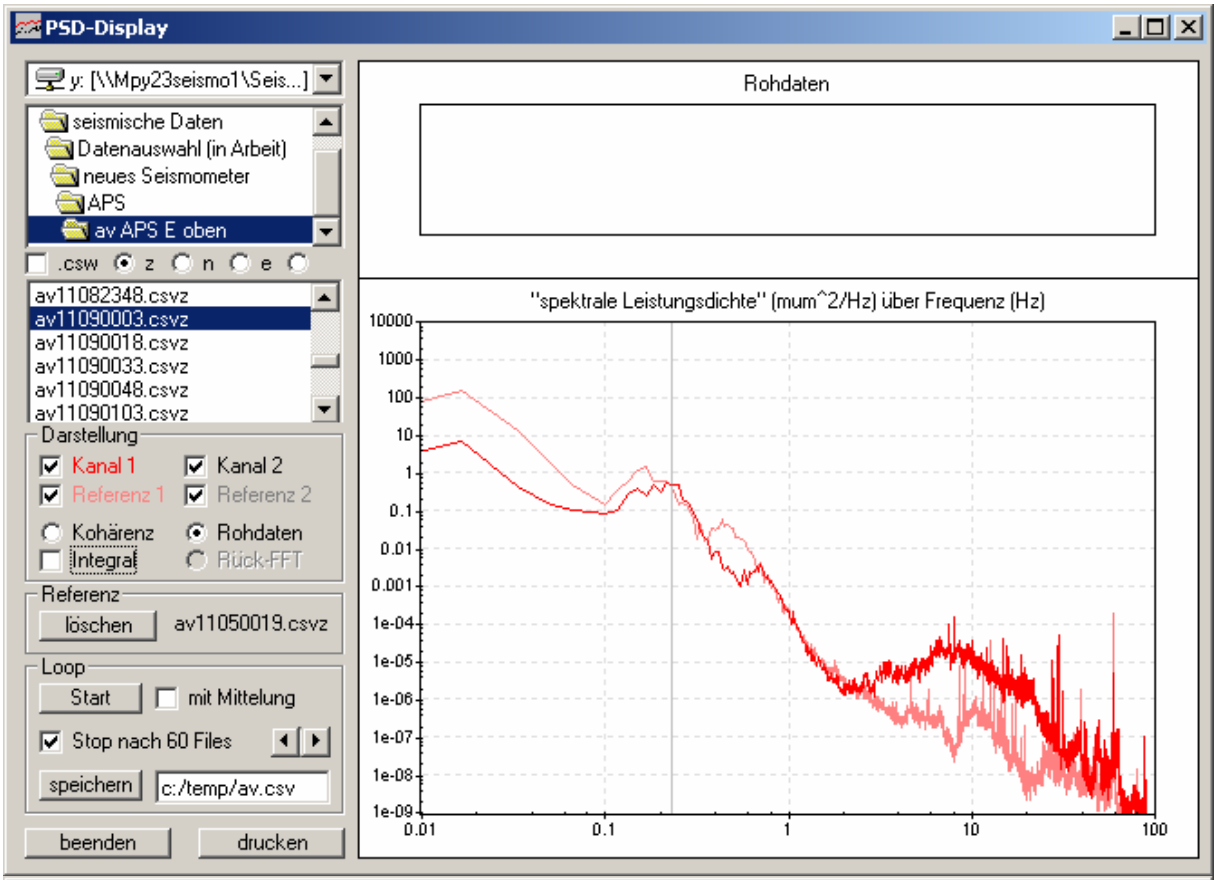


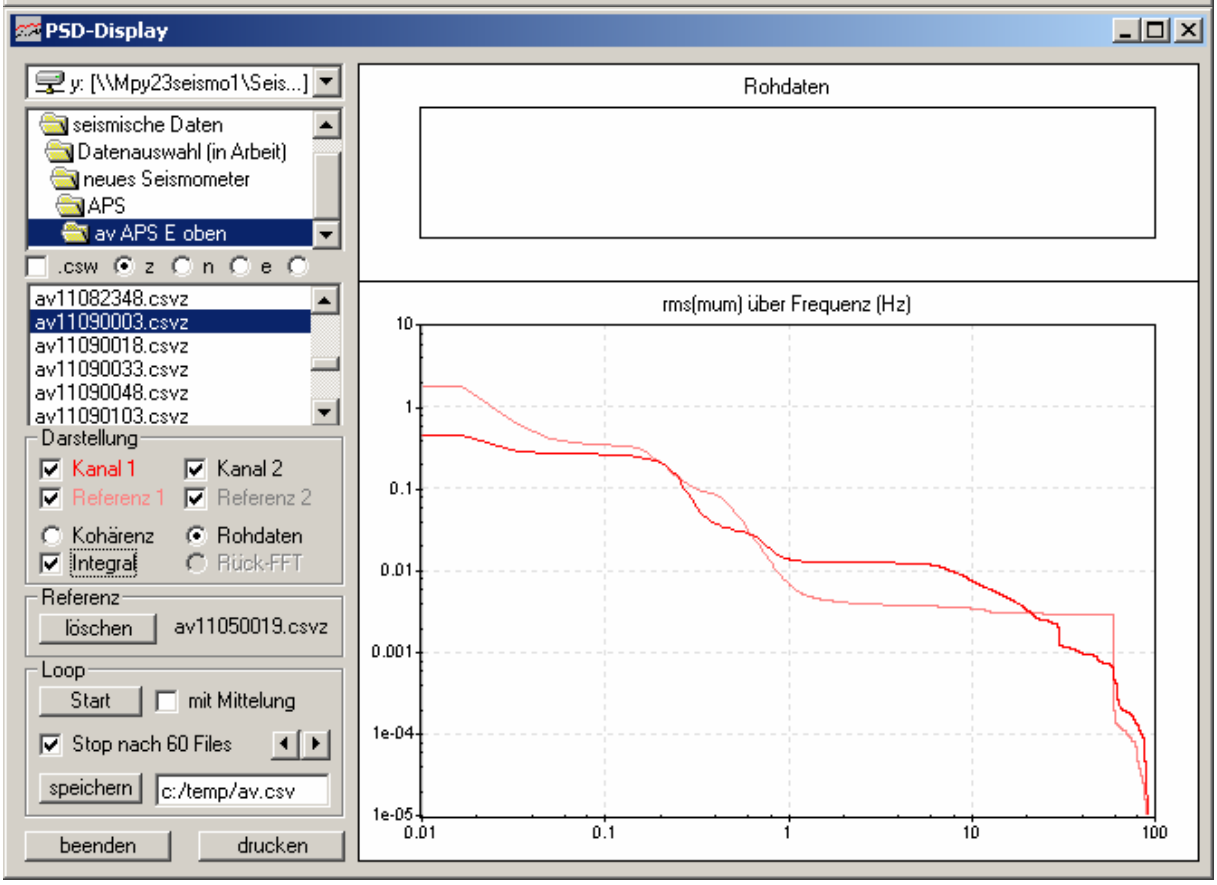
3. near FNAL, Elburn, basement of a private house



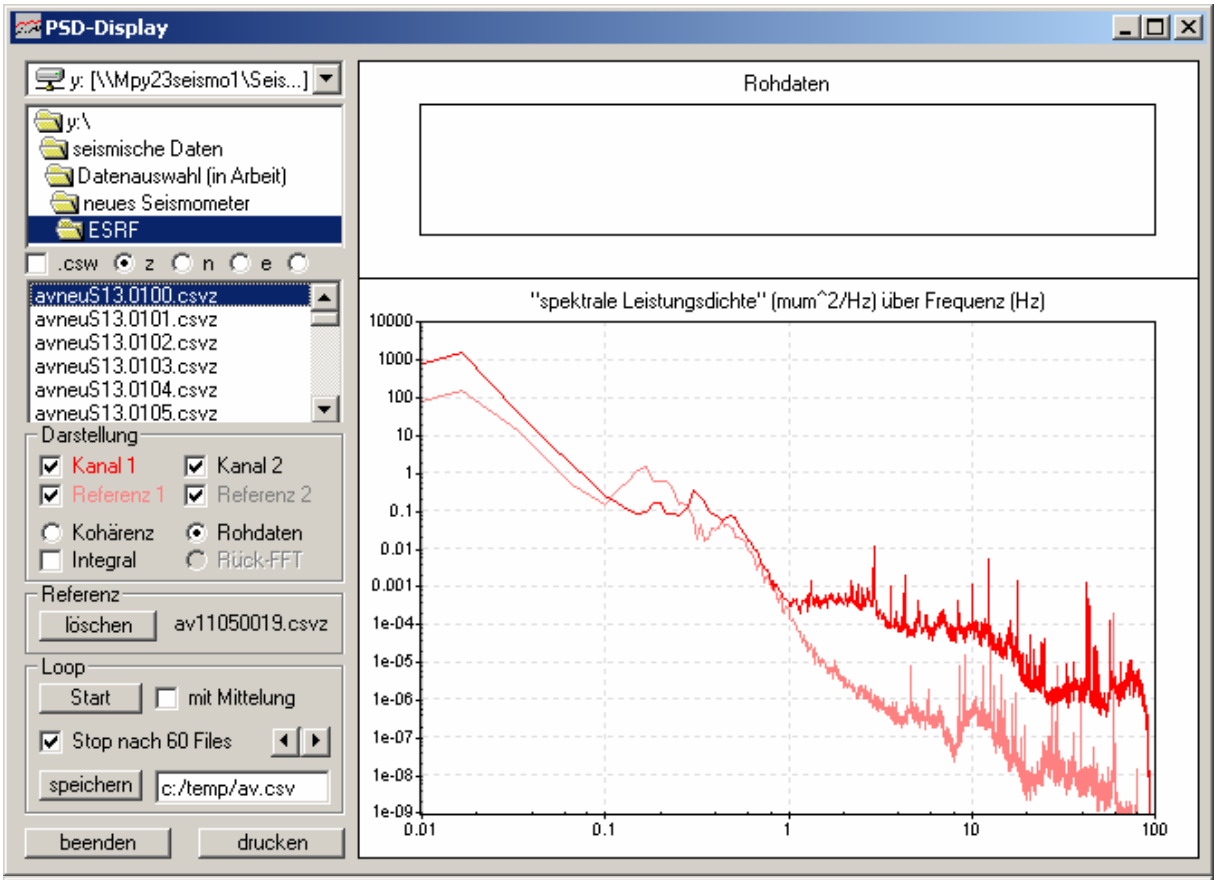


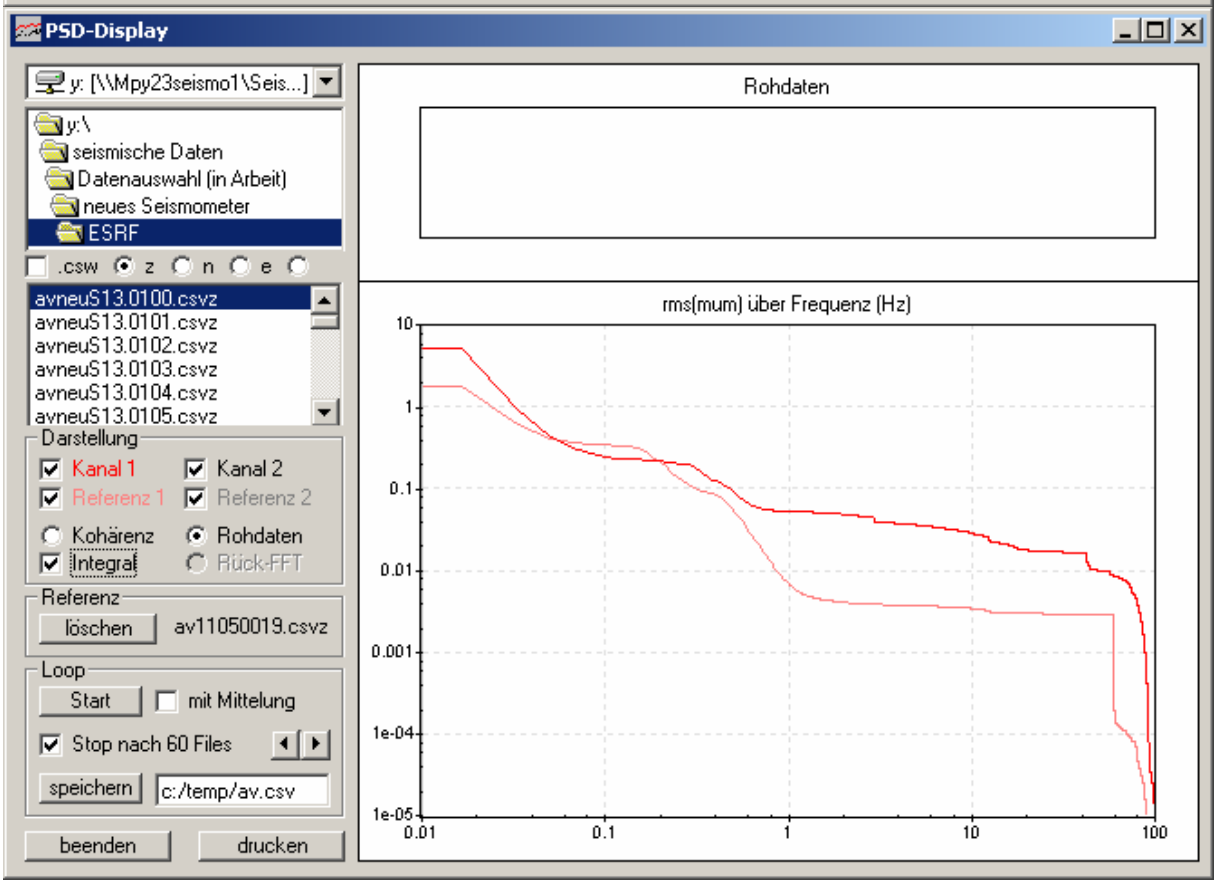
4. FNAL, NUMI delaytunnel



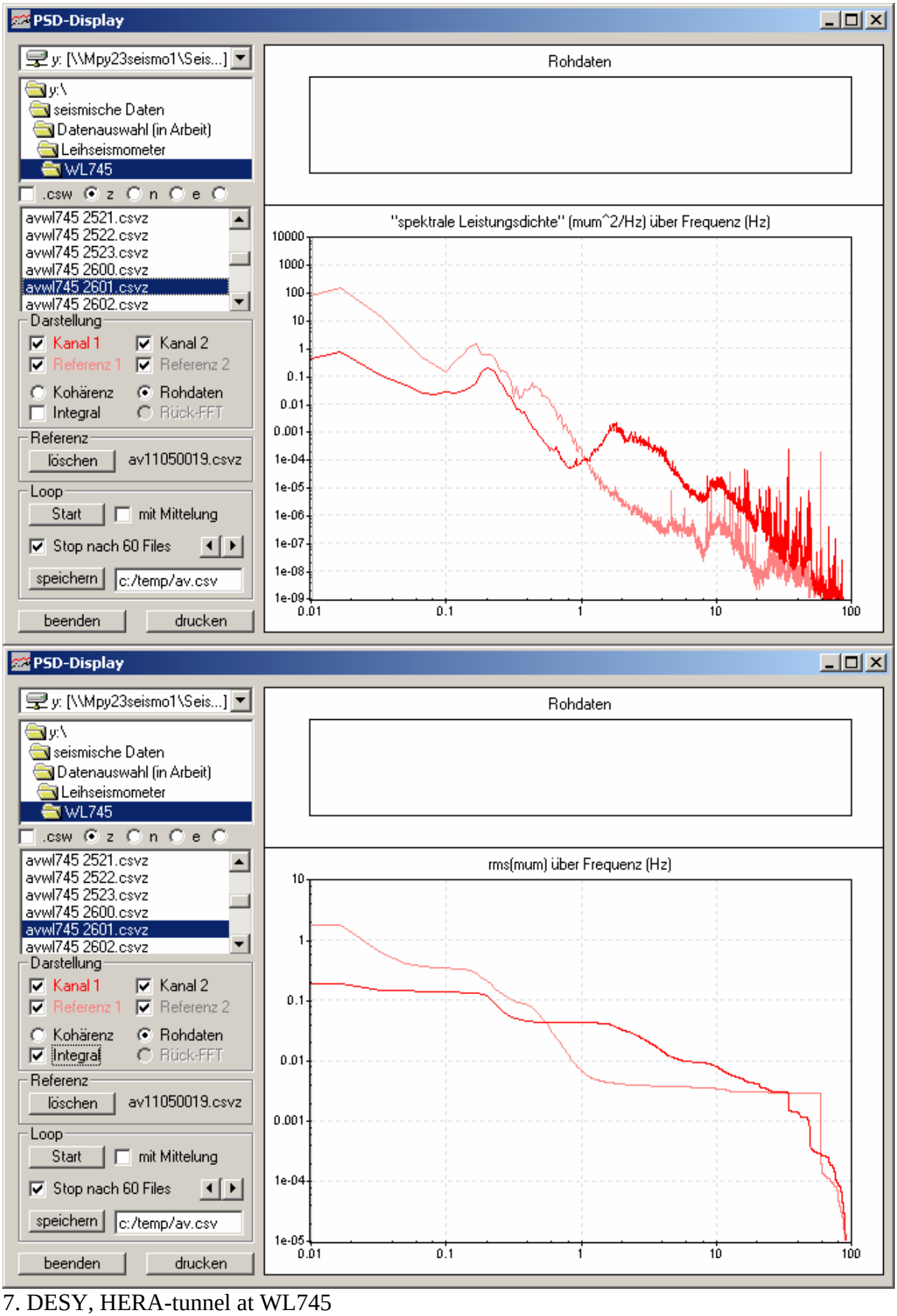


5. APS, at superdoor E

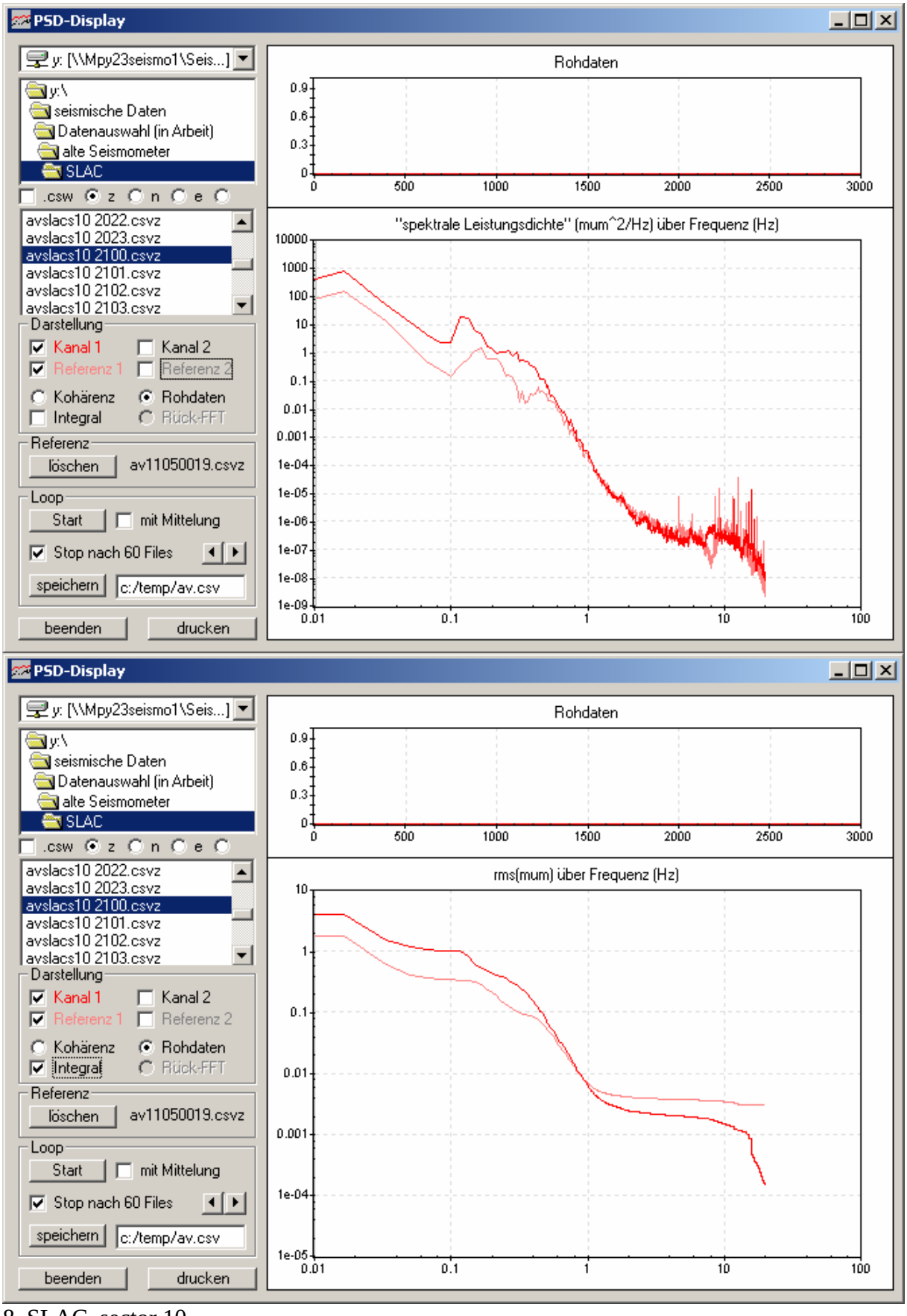




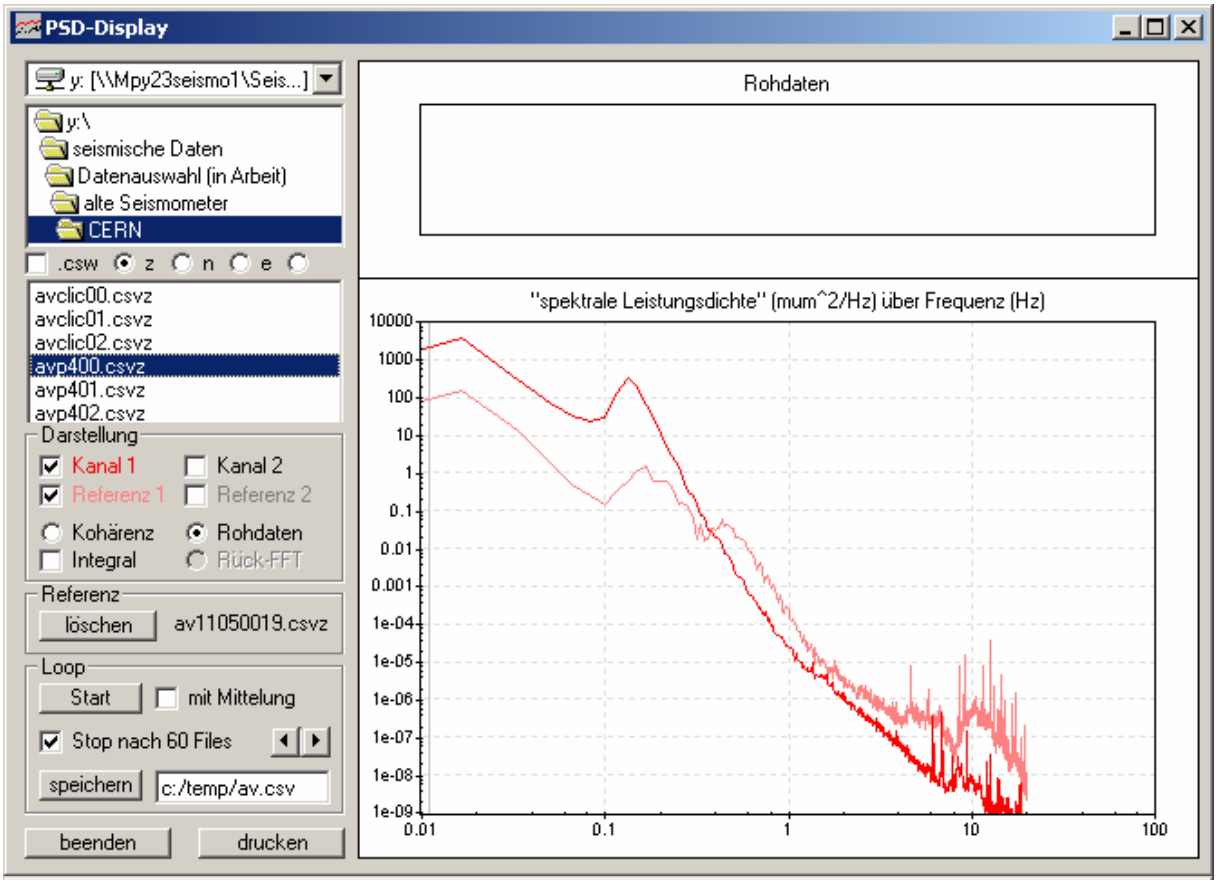
6. ESRF, sector 13

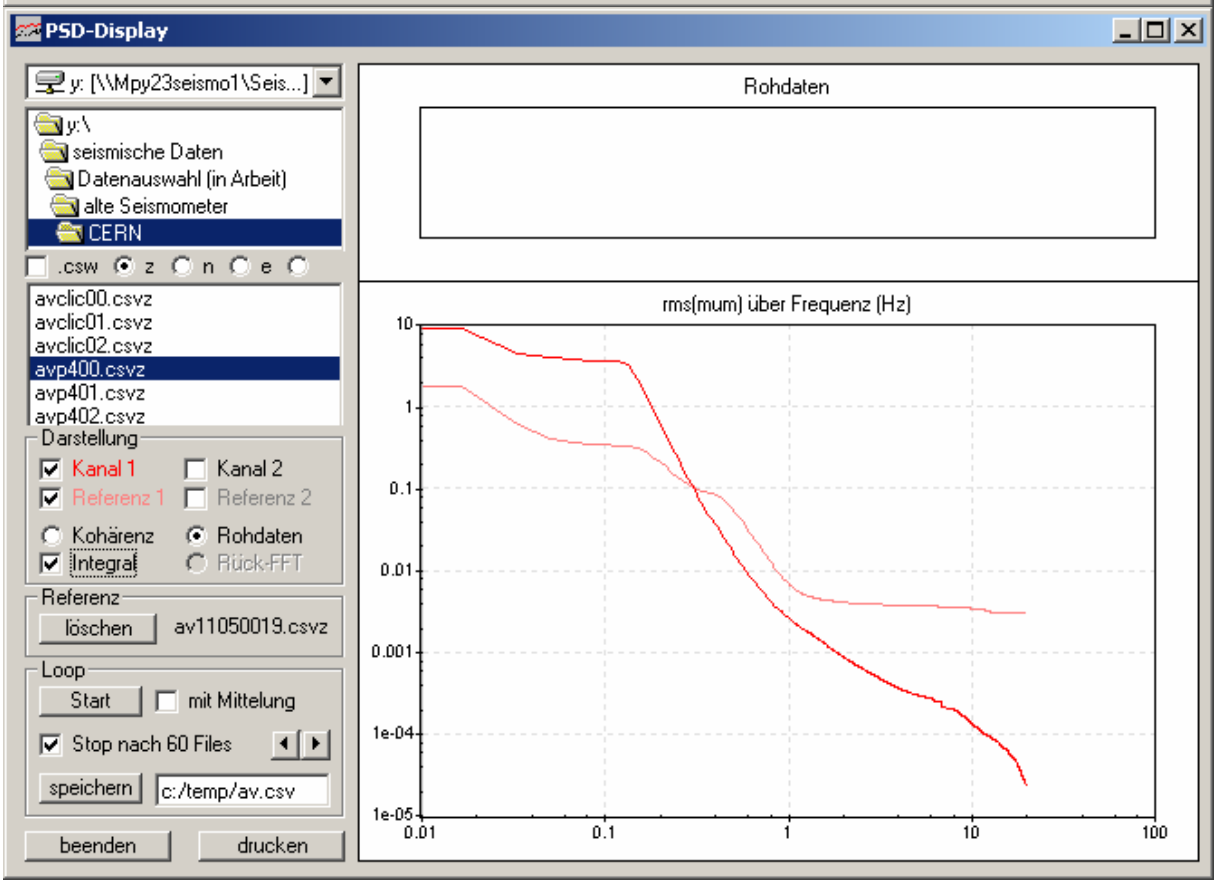


7. DESY, HERA-tunnel at WL745

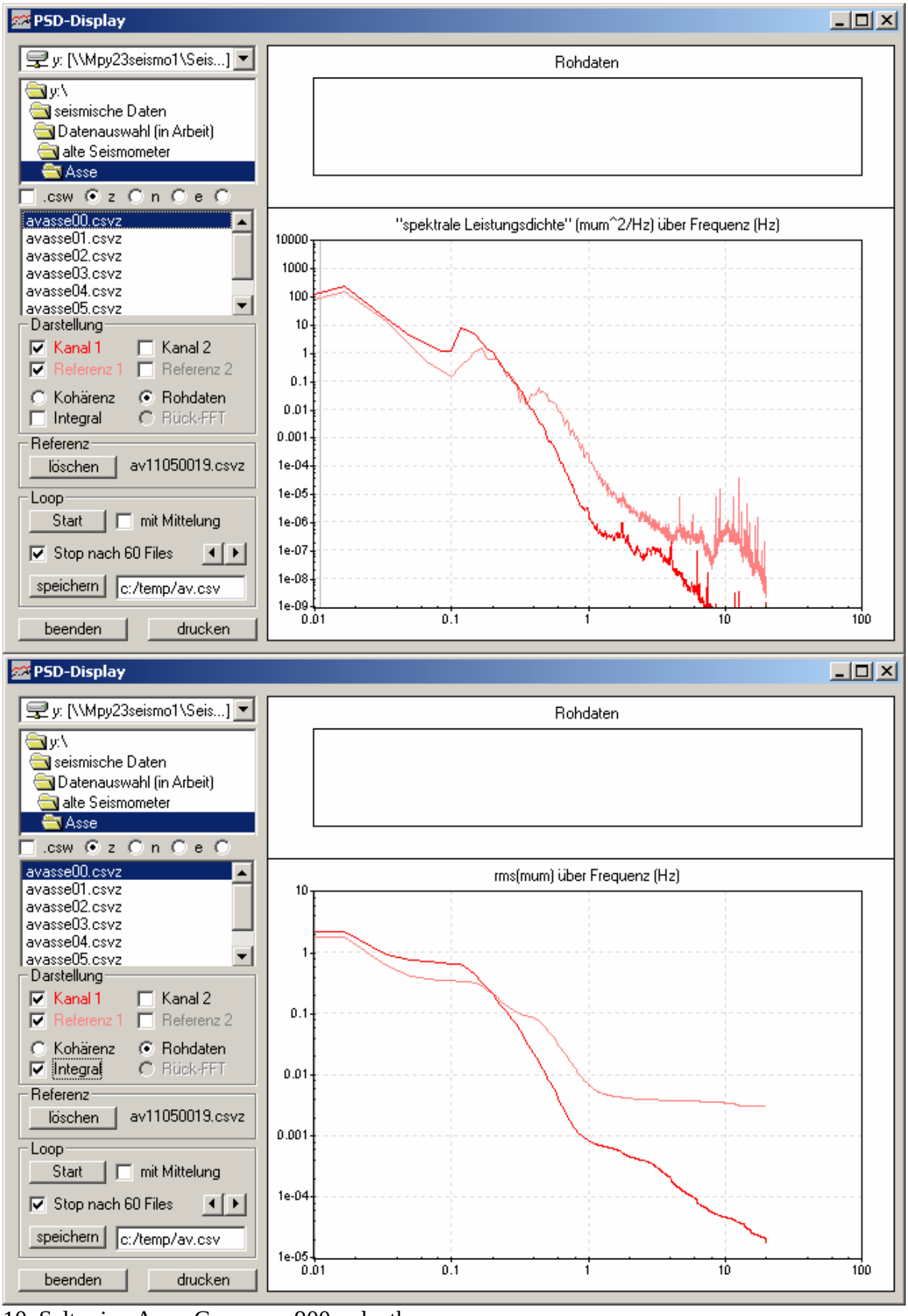


8. SLAC, sector 10

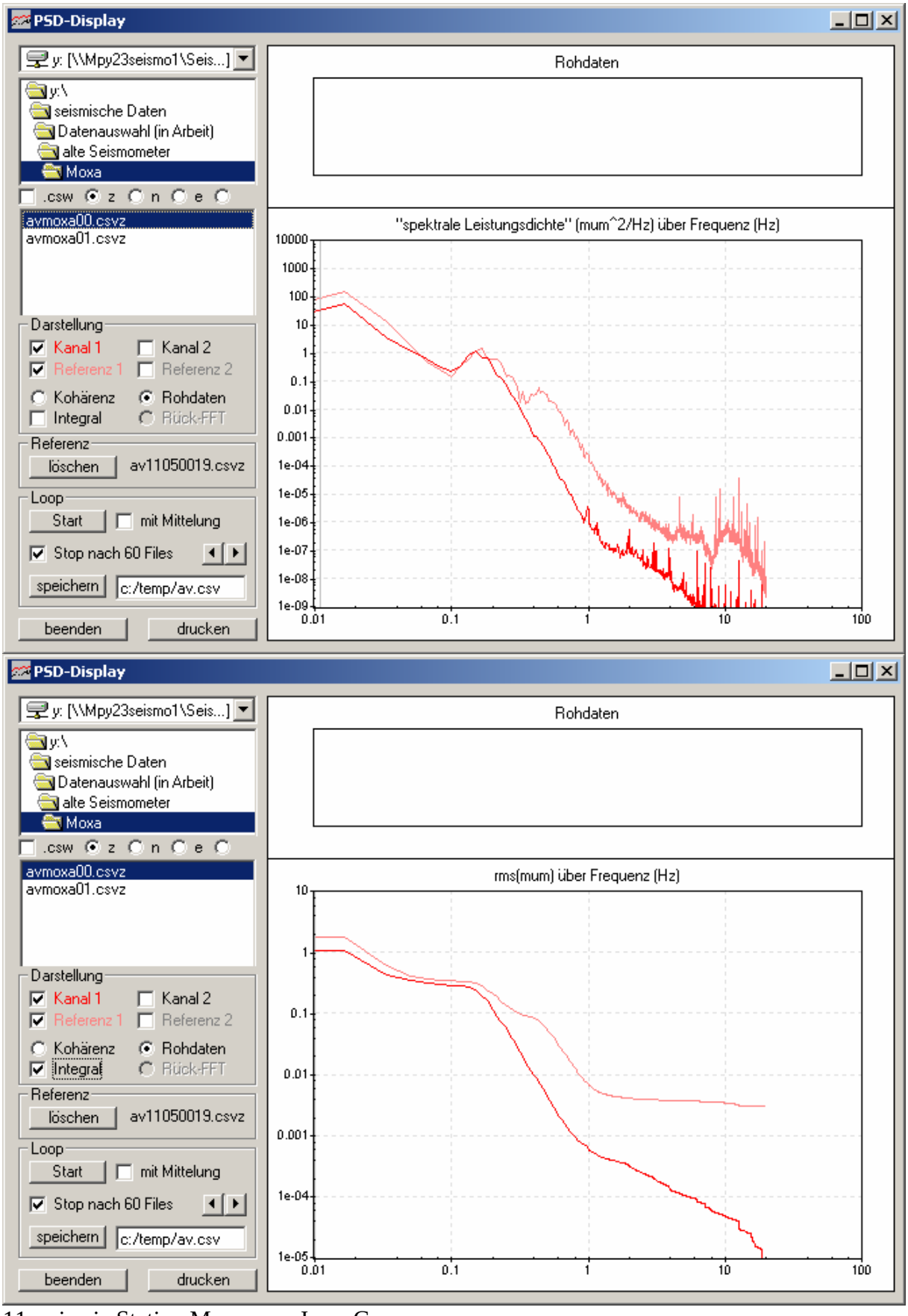




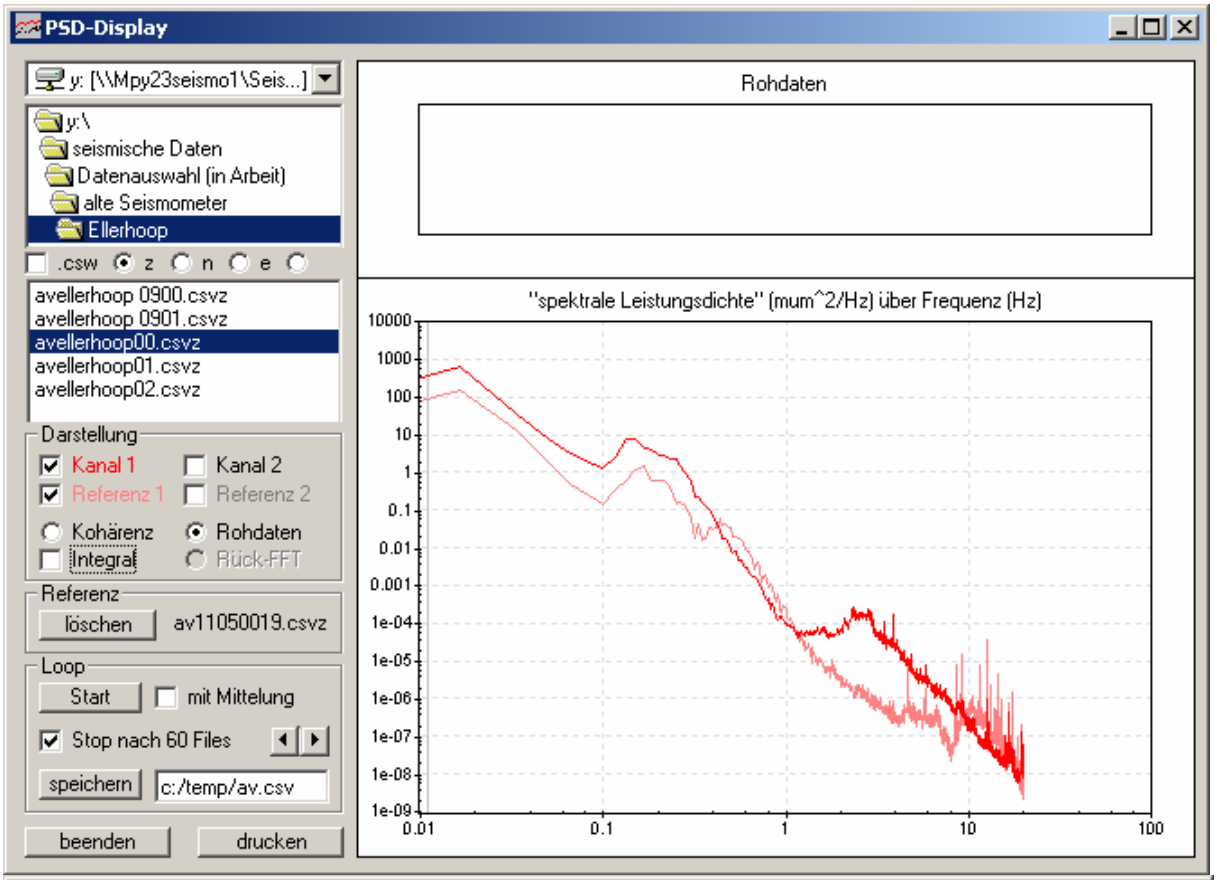
9. CERN, LHC/LEP-tunnel at P4 (ALEPH)

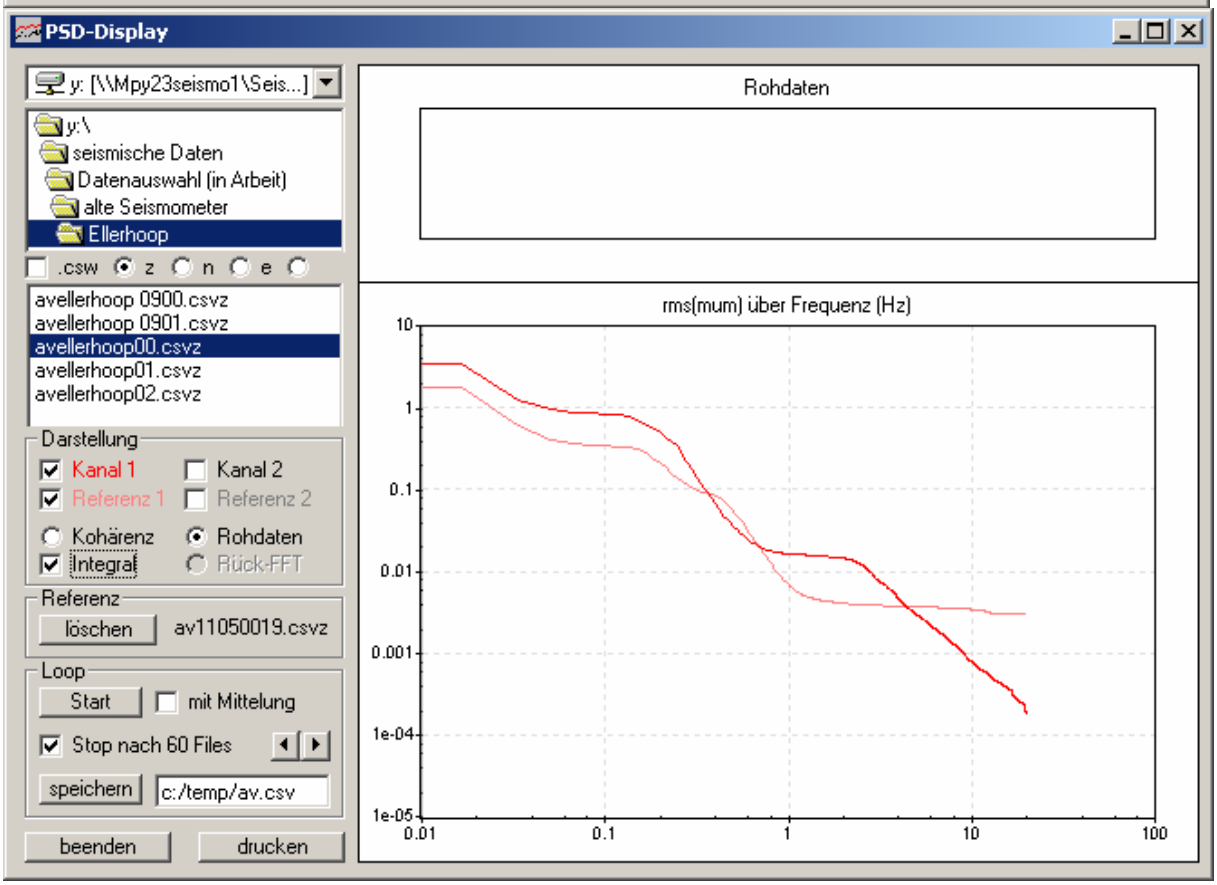


10. Salt mine Asse, Germany, 900m depth



11. seismic Station Moxa near Jena, Germany





12. Ellerhoop, close to the foreseen IP of TESLA at DESY

“Summary”:

location	minimum rms (nm)	additional rms (nm) on weekdays
Moxa (at surface)	0.6	+ 0.5
Asse	0.8	+ 0.5
DESY (at surface)	40	+ 100 and more
DESY HERA	40	+ 80 and more
Ellerhoop (at surface)	15	+ 35
CERN (at surface)	5	+ 10
CERN LHC/LEP	2	+ 2
ESRF (at surface)	40	+120 and more
SLAC (at surface)	5	+ 5
Copper Mountain (at surface)	< 2	
FNAL (at surface)	7	+ 3
FNAL Numi	3	+ 3
APS (at surface)	15	+ 2

Done with the help of

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