

Sos Enattos infrasound data analysis

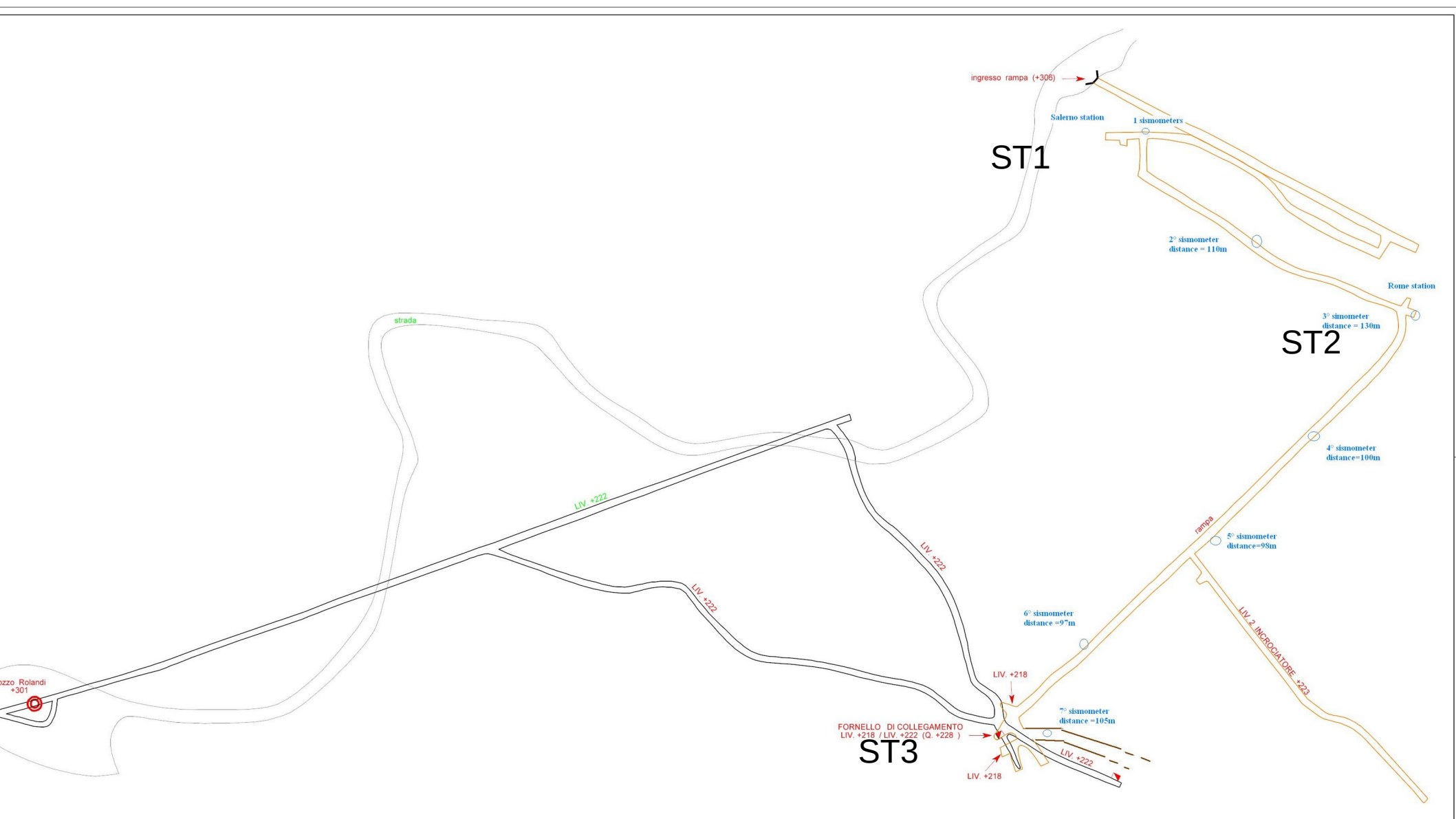
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with

Mariusz Suchenek, Mateusz Pietrzak, Marek Cieslar,
Josiah Ensing, Dorota Rosińska

University of Warsaw

Introduction

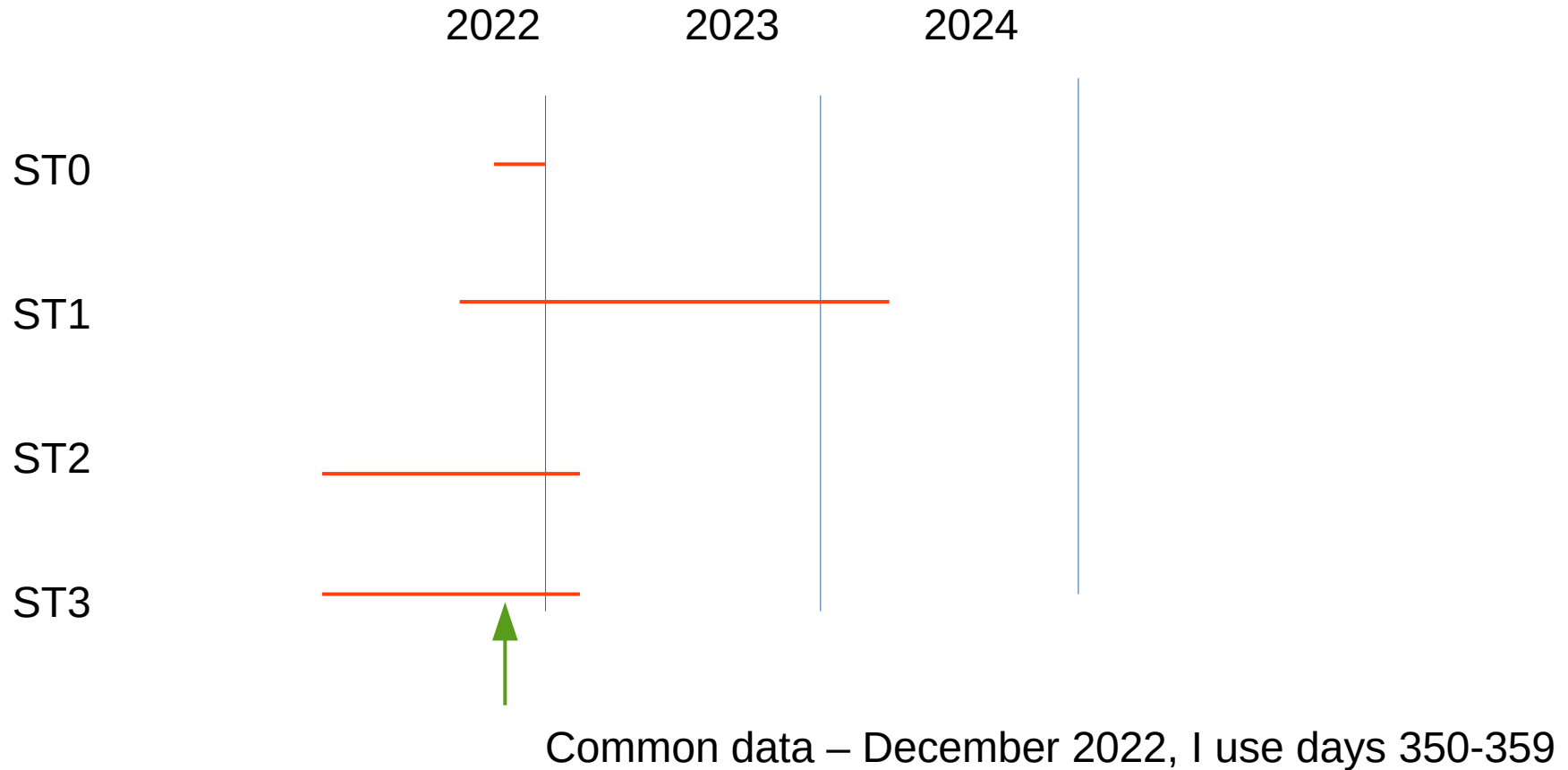
- Infrasound measurements
- Sound propagation in tunnels
- Local or global?
- What is the coherence length?
-



The installation

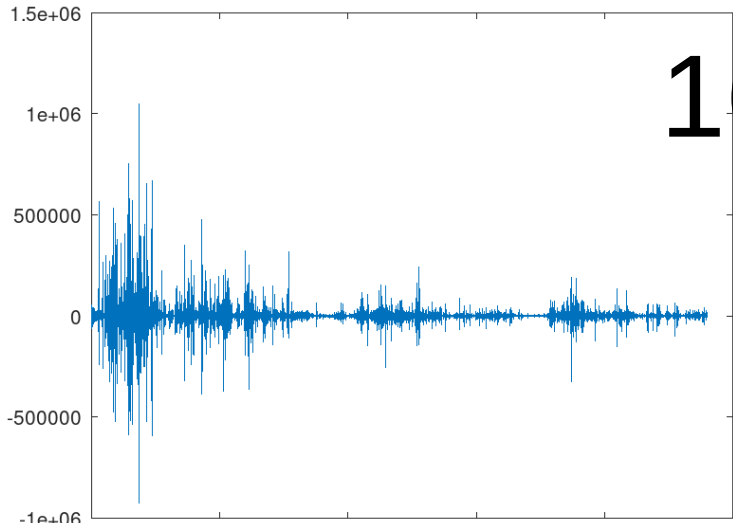
- Some microphones are inside enclosed cavities.
- I chose only the outside microphones.

The data

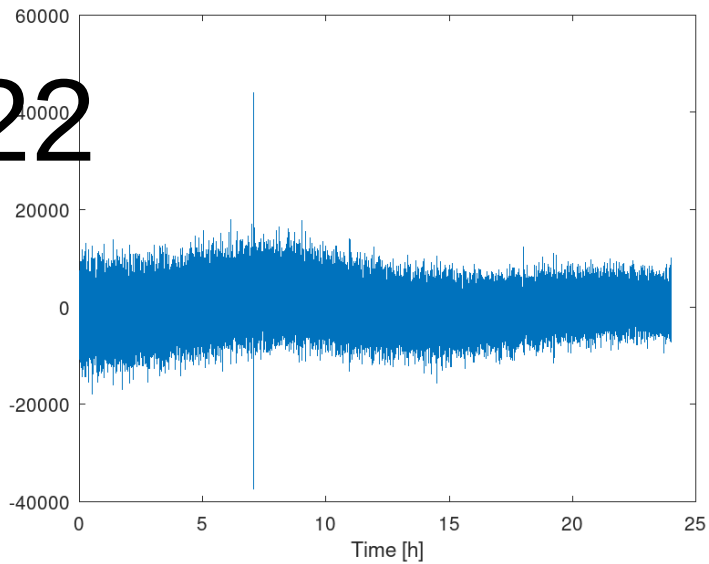


16th Dec 2022

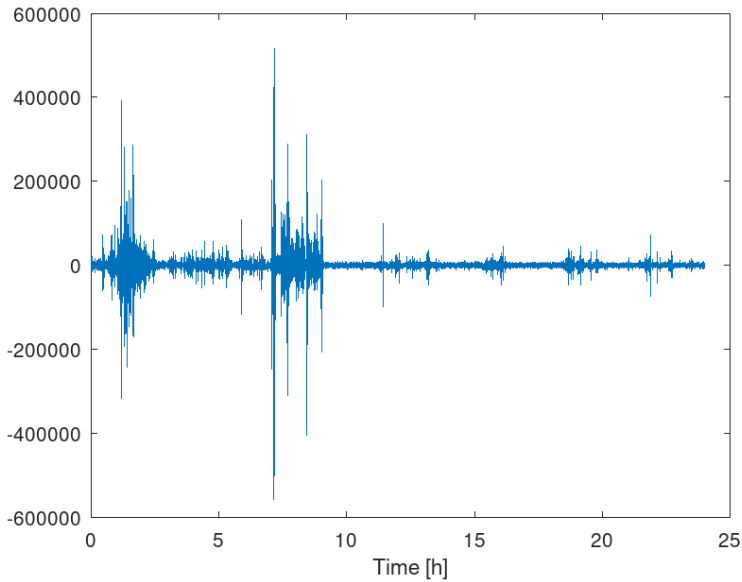
Time series ST0



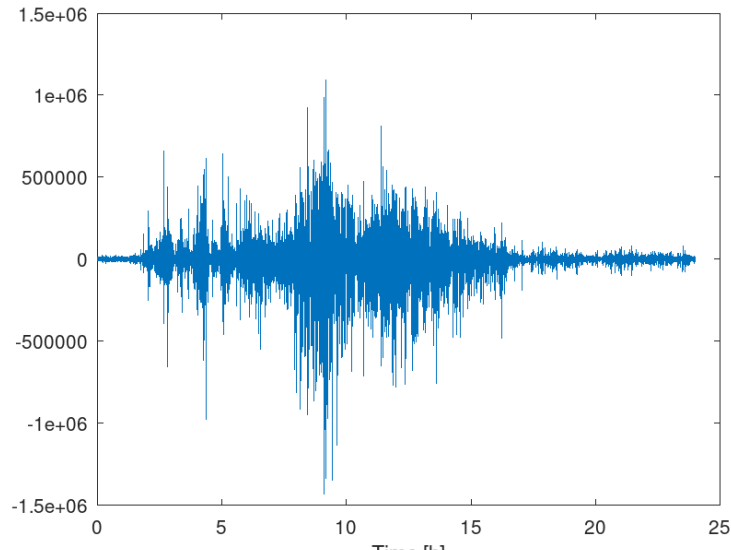
Time series ST1

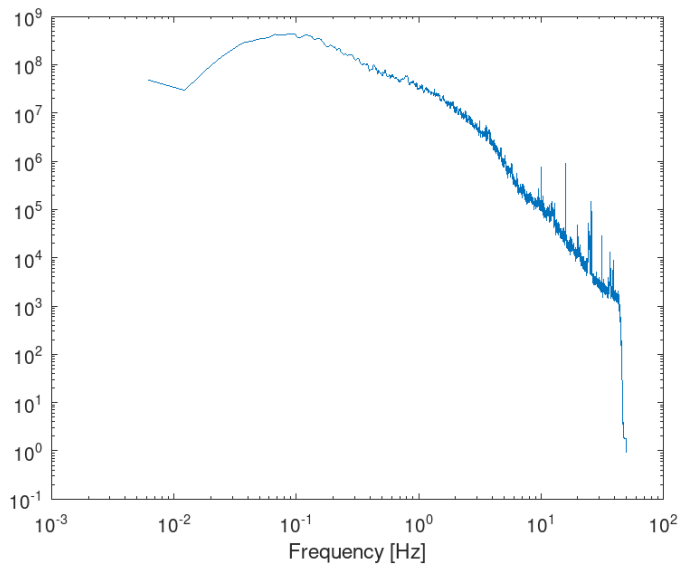
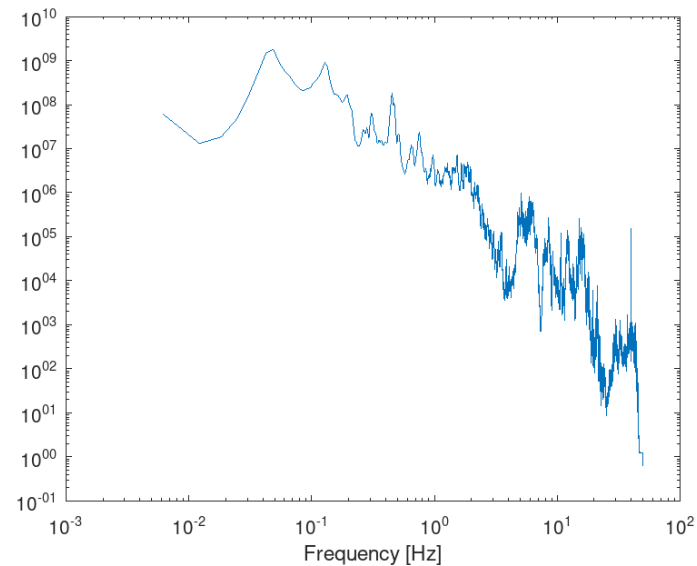
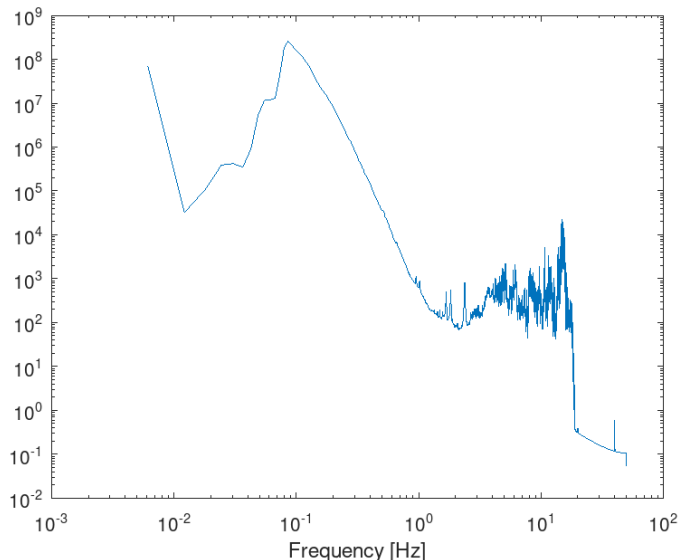
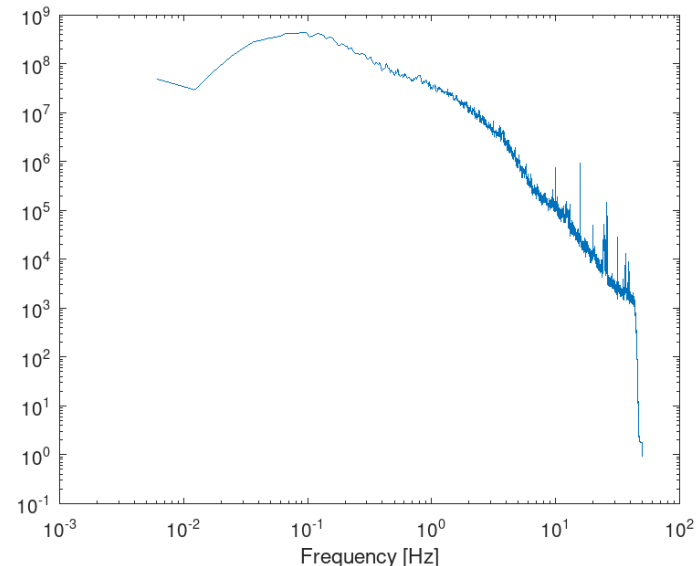


Time series ST2



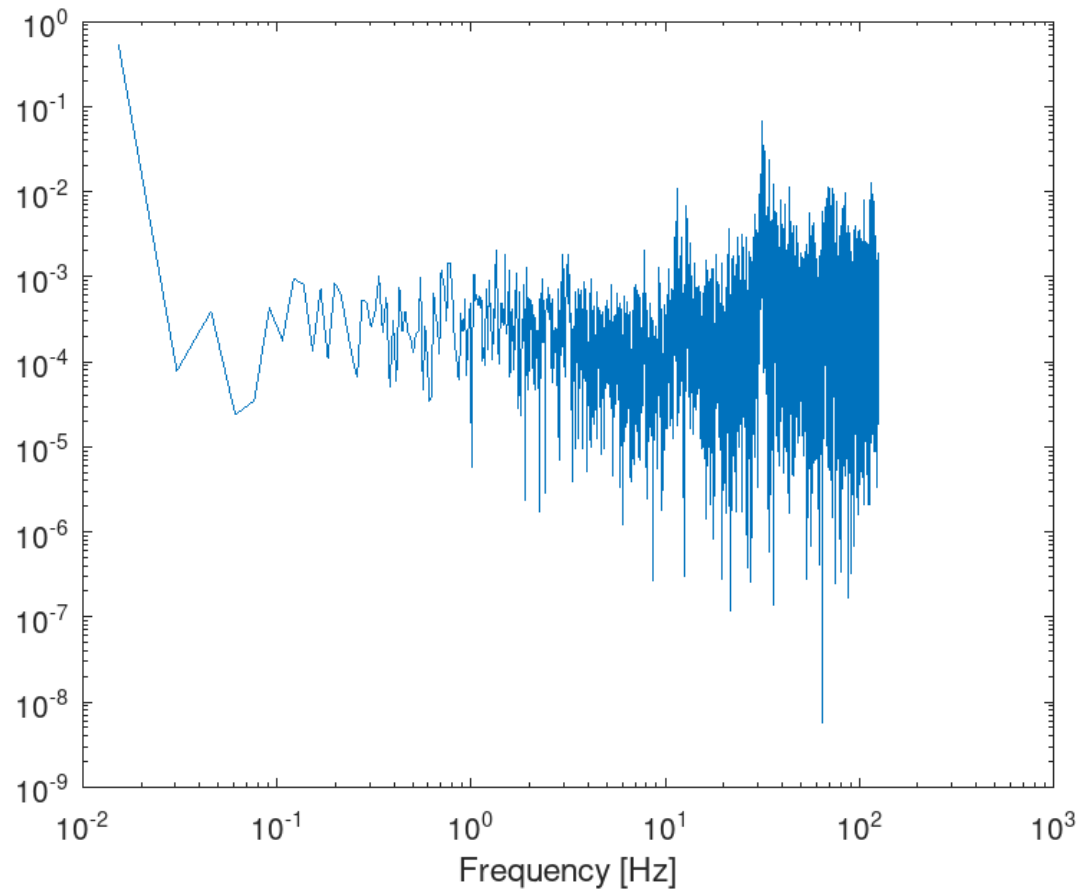
Time series ST3



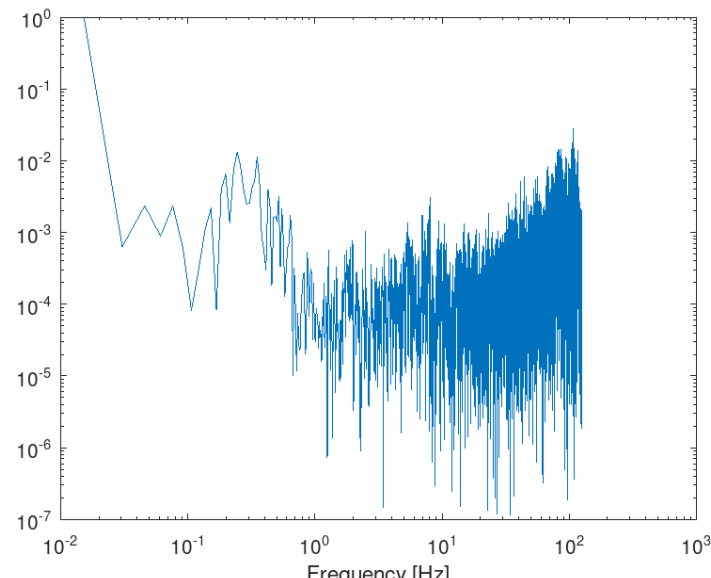
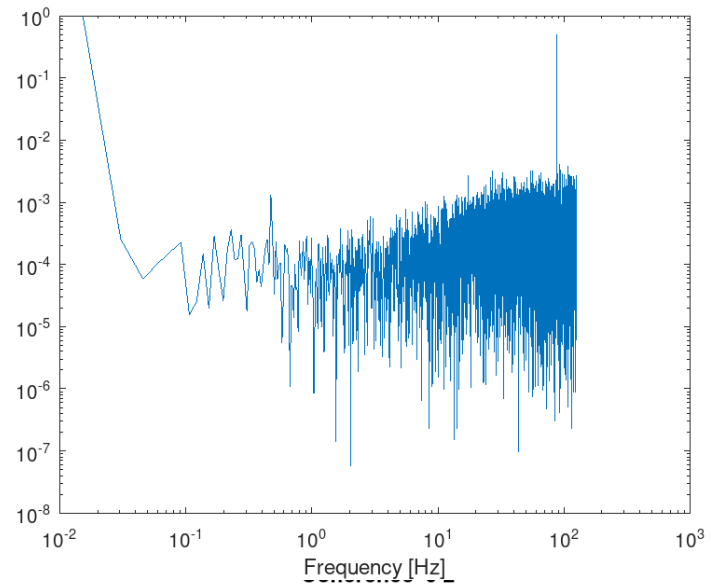
PSD ST0**PSD ST2****PSD ST1****PSD ST0**

Coherence outside-inside

Coherence 0 1



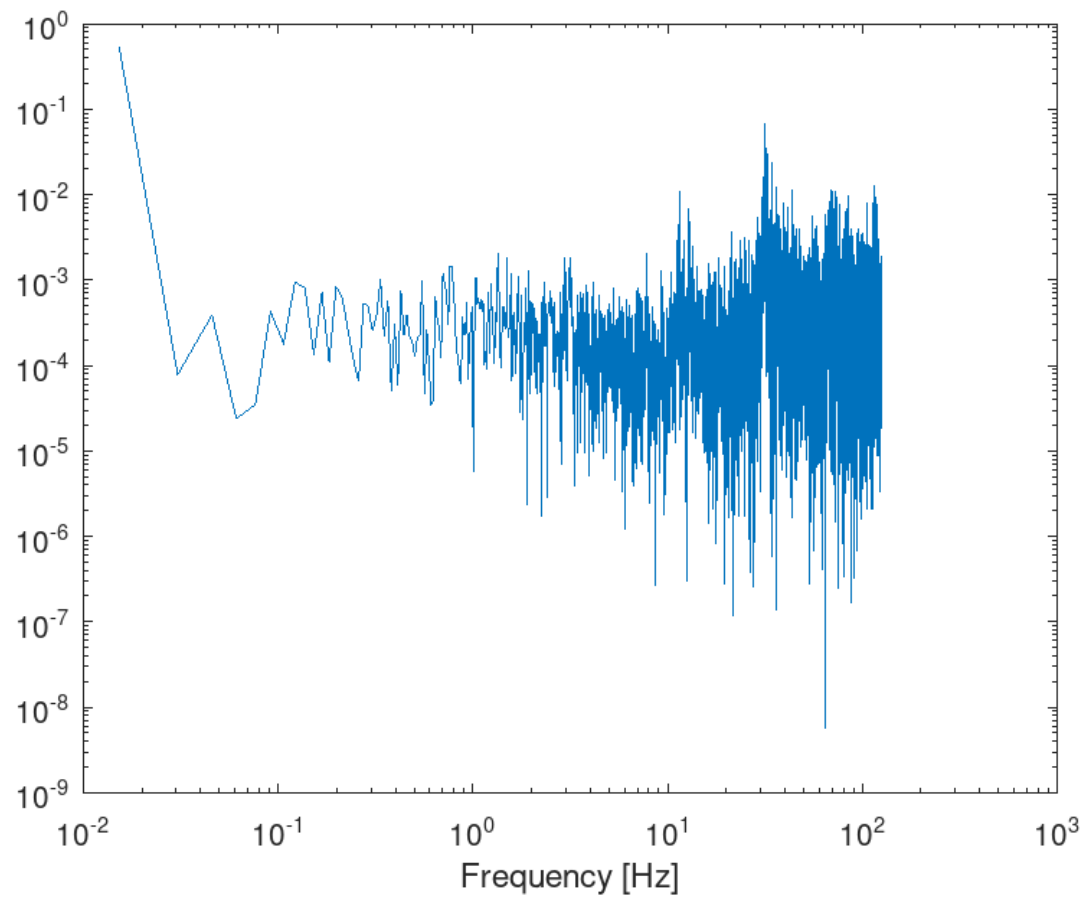
Coherence 0 3



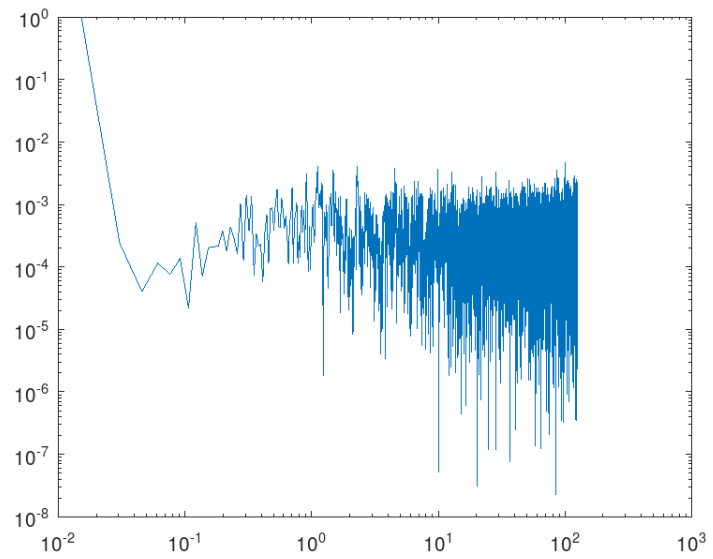
Noise level:

coherence of signal from different
dates

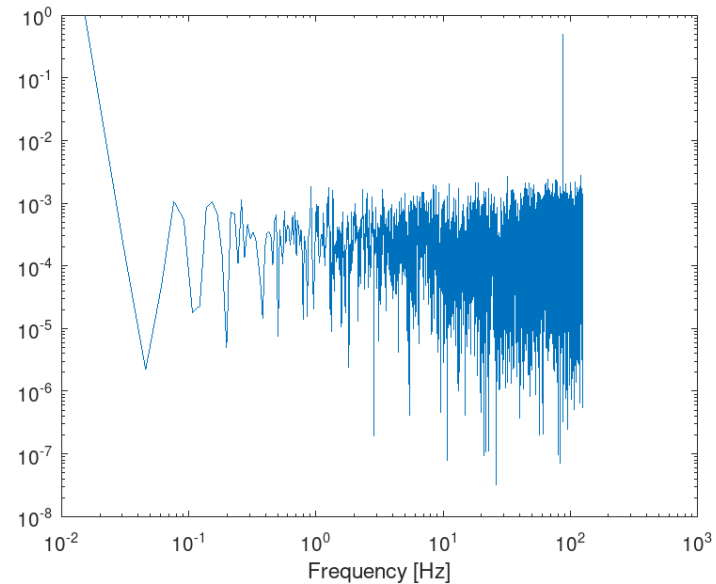
Coherence 0 1



Coherence 0 2

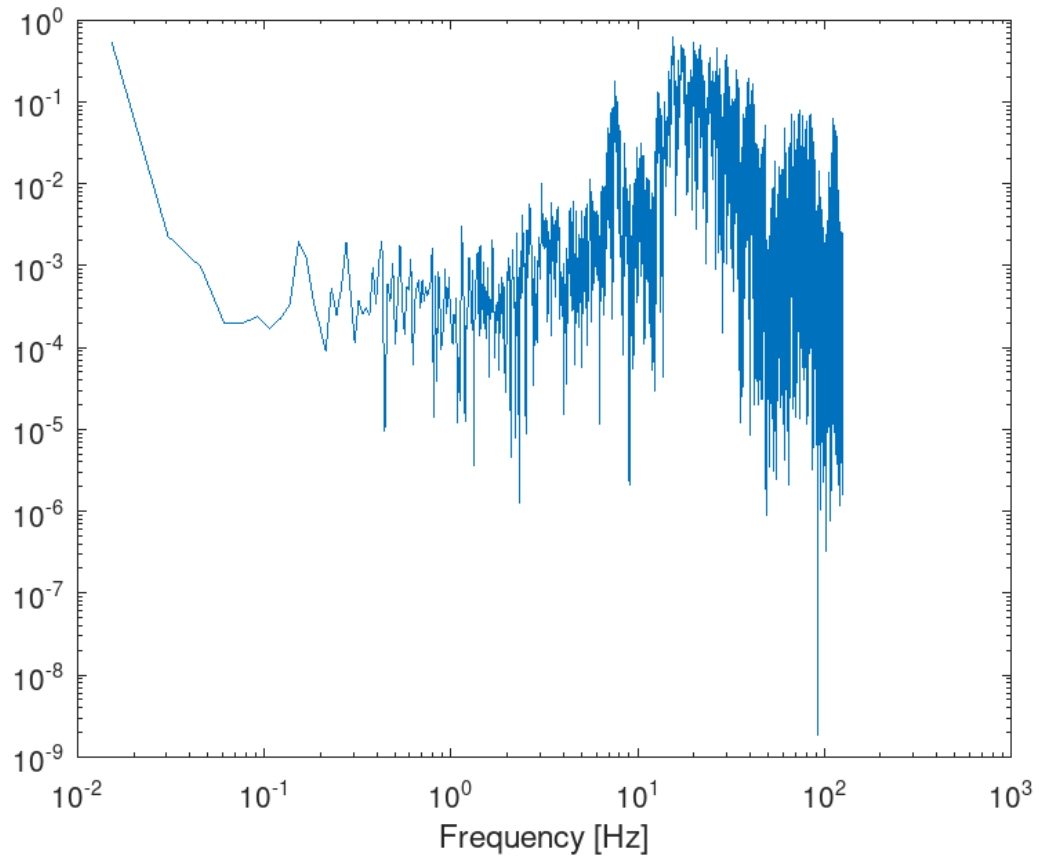


Coherence 0 3

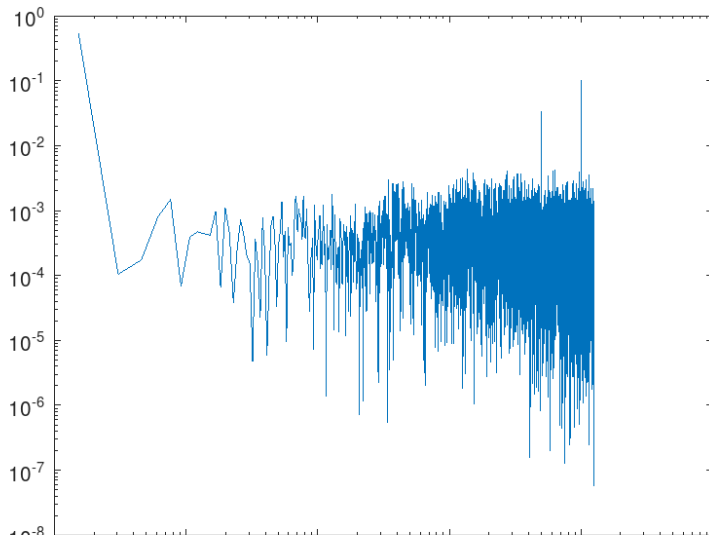


Coherence inside

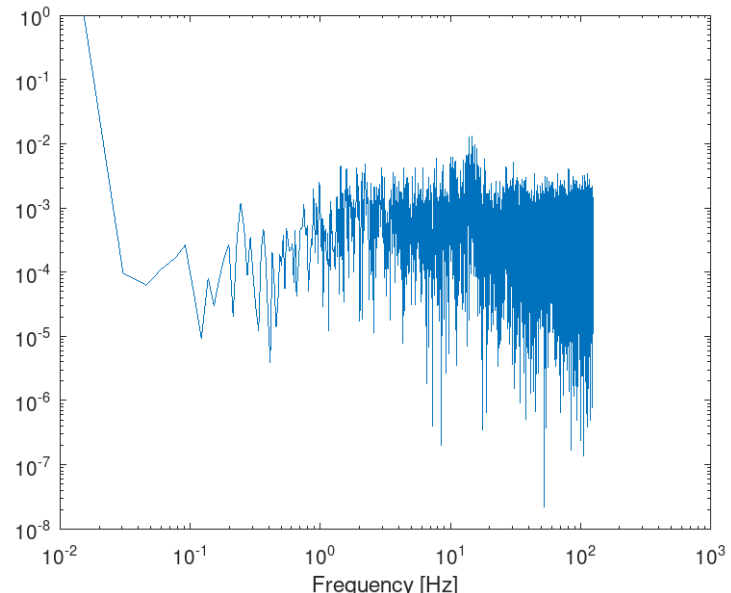
Coherence 1 2



Coherence 1 3

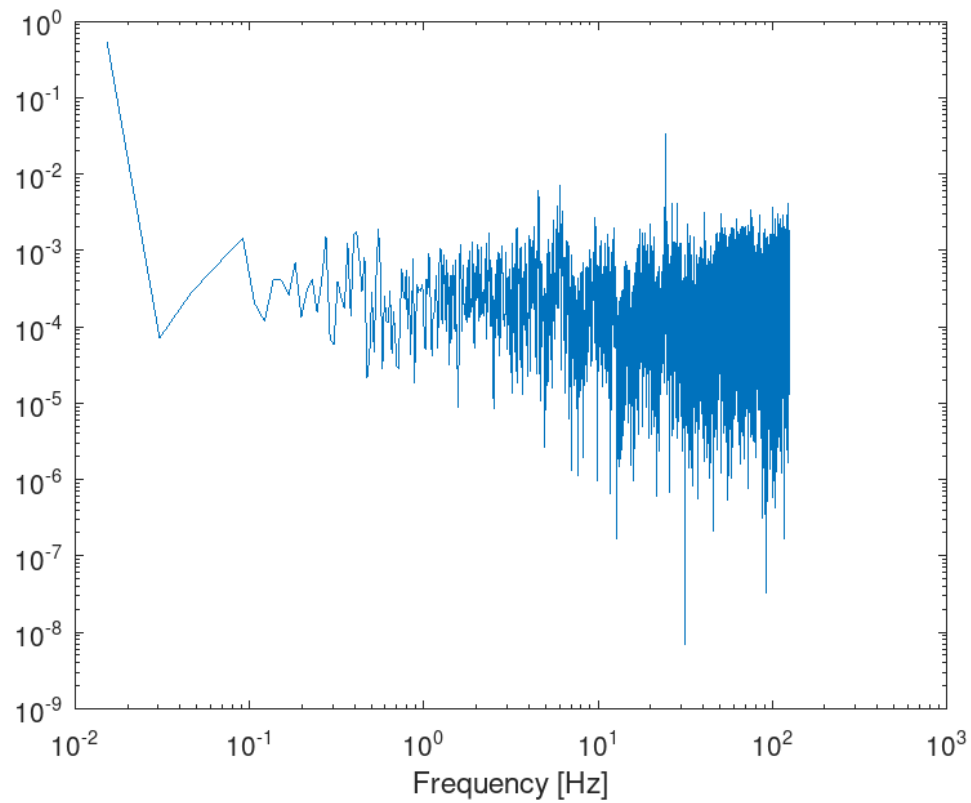


Coherence 2 3

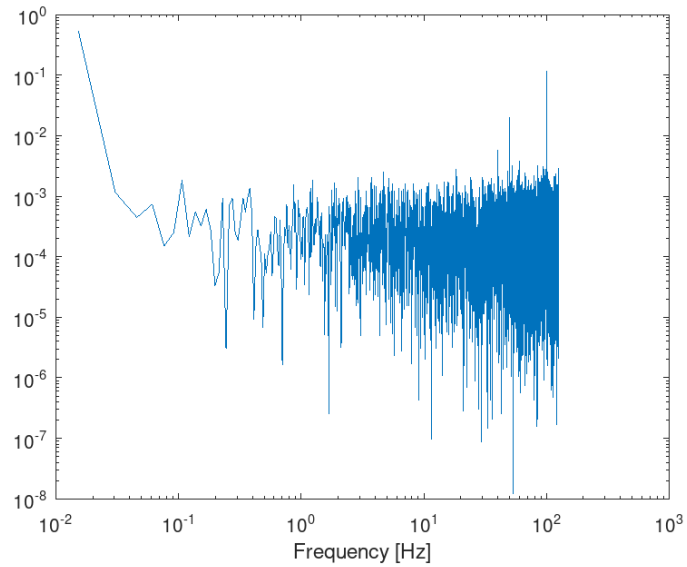


Noise level

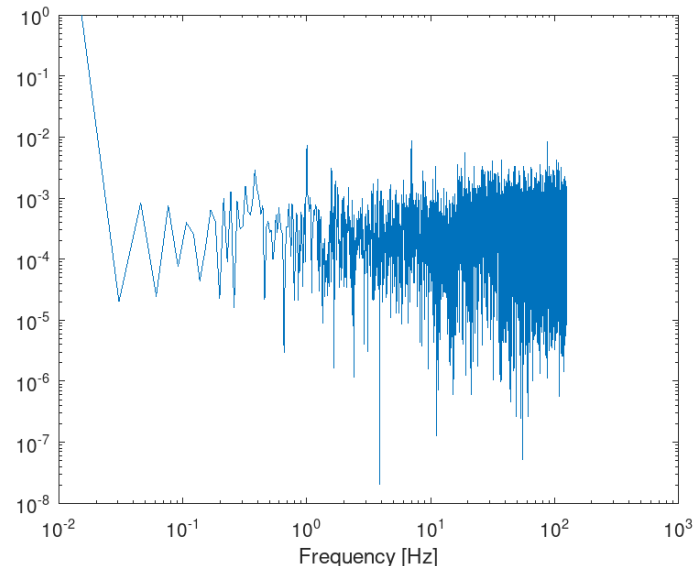
Coherence 1 2



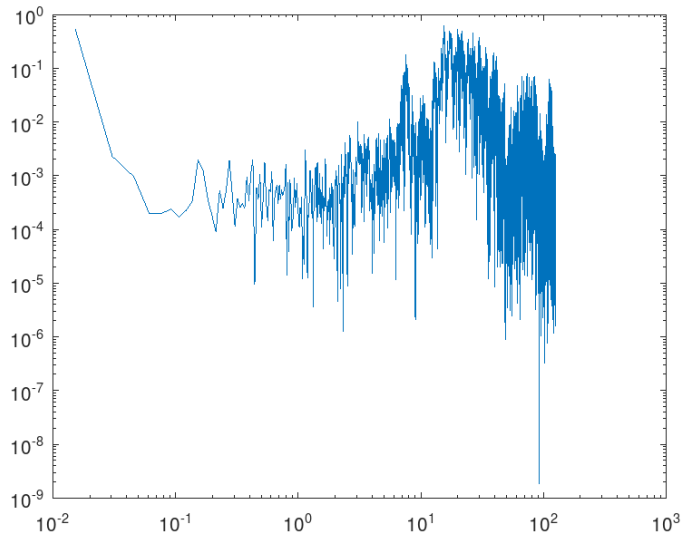
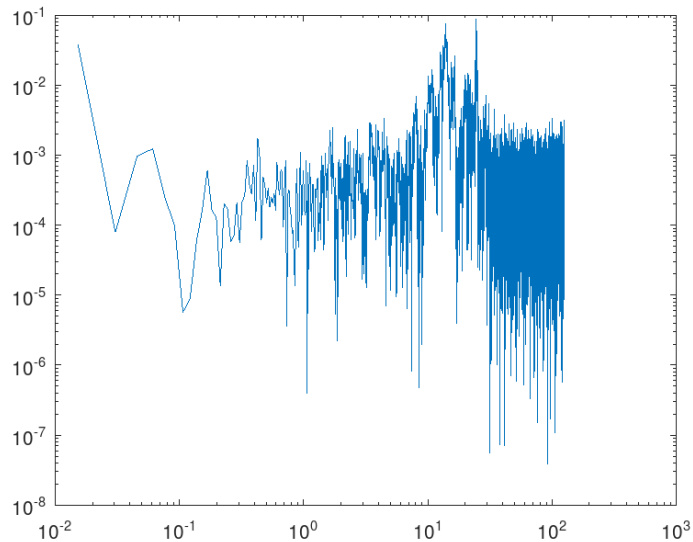
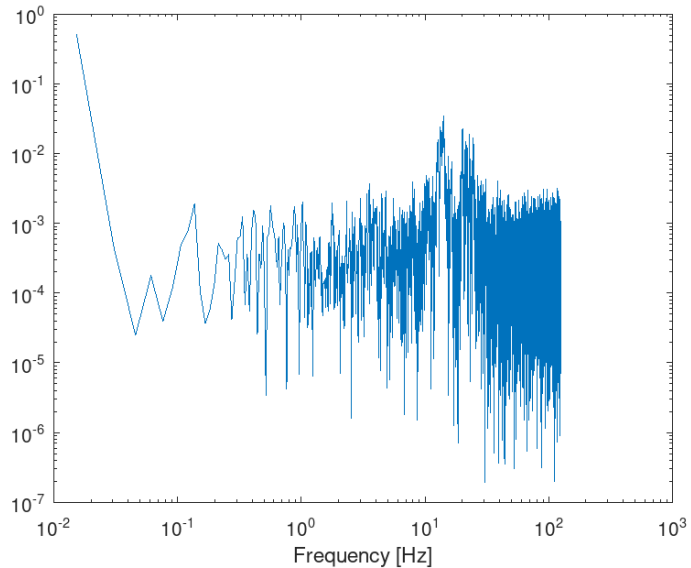
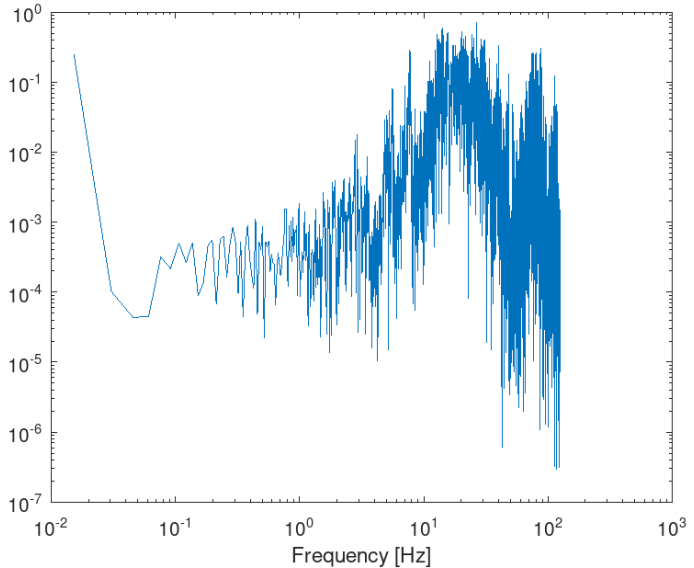
Coherence 1 3



Coherence 2 3



Coherence ST1 ST2

Coherence 1 2**Coherence 1 2****Coherence 1 2****Coherence 1 2**

Conclusions

- Outside infrasound has no influence on the inside
- Inside coherence length ~100meter
- Coherent infrasound in the 10-100Hz range
- Coherence pattern changes from day to day