

A strategy for noise level monitoring based on SPL calculation

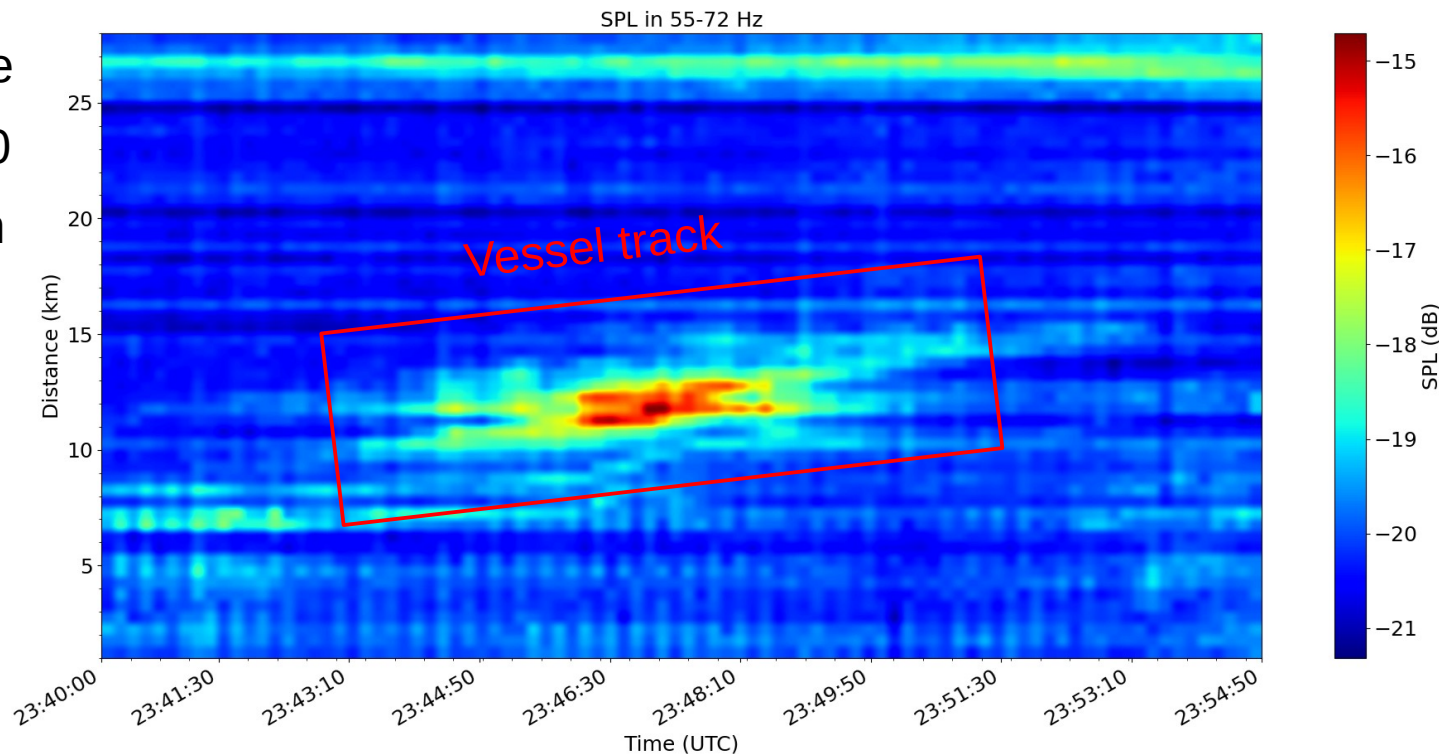
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Introduction

- A method analyze DAS data using the Sound Pressure Level (SPL) calculation
- The approach based on the calculation of SPL values in a selected frequency band, time windows and distance bins.
- The method is optimized in term of computational resources and detection efficiency
- The results are visualized as a heatmap showing SPL variations over time and distance, also there is the possibility to save in hdf5 files for storage.
- The method can be used to monitor different acoustic signals.

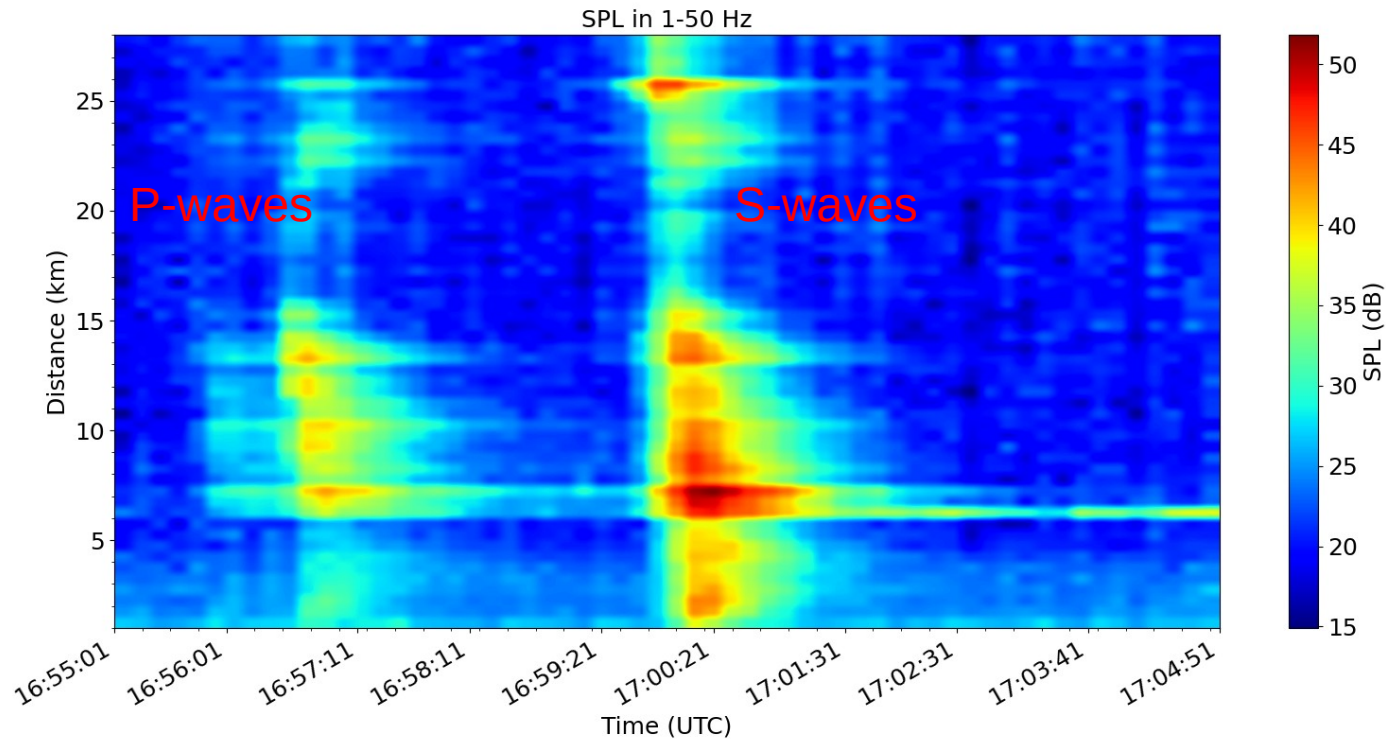
Results

- 15 minutes of data during the passage of a vessel using 10 seconds time window, 500 m distance bins and 55-72 frequency range
- Vessel signal well separated from the background noise
- The signal can be tracked in space and time



Results

- 10 minutes of data during an earthquake using 10 seconds time window and 500 m distance bins
- The seismic waves are well observed and separated from background noise



<https://terremoti.ingv.it/en/event/41748192>

Conclusion

- Fast and long term monitoring of noise level
- Can be applied for shipping traffic monitoring (third octave bands centered at 63 and 125 Hz according MSFD recommendations)
- Low frequencies for geophysics
- Track the variation of signal in space and time
- Further improvements still ongoing