12th ewtec 2017
European Wave and Tidal Energy Conference Series

Acoustic Characteristics of the Lifesaver Wave Energy Converter

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Study Motivation

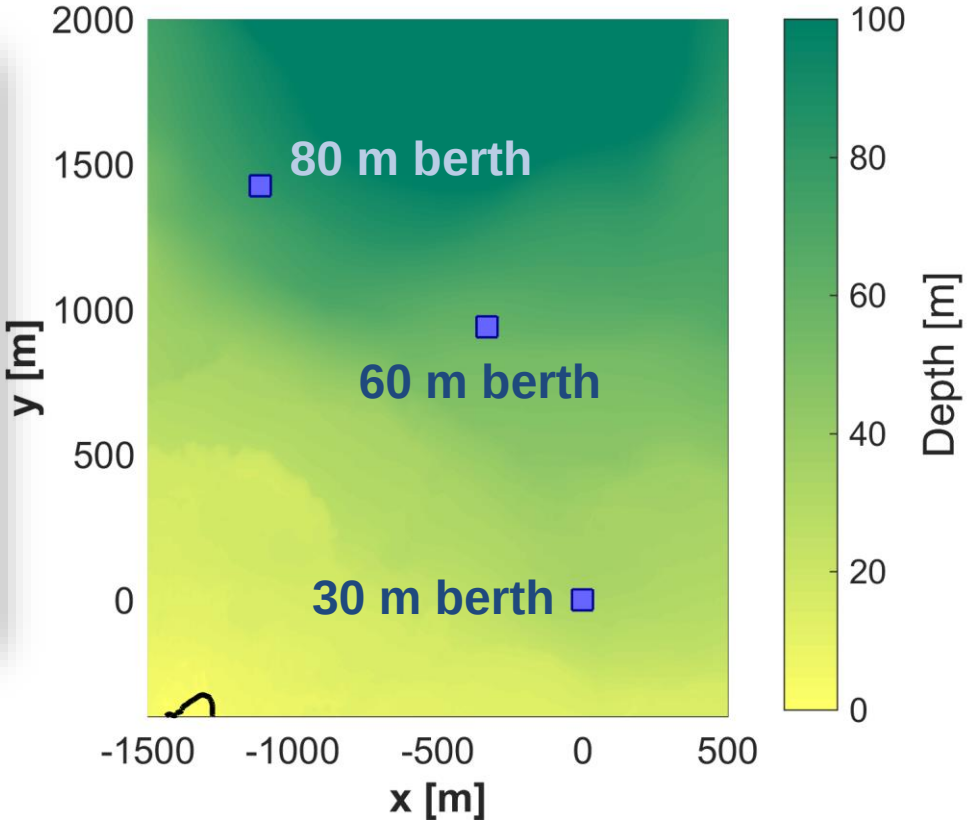
- *Research*: Improve understanding of sound produced by marine energy converters
- *Permitting*: Ensure sound levels do not exceed agreed thresholds

Credit: www.uwphotographyguide.com

US Navy Wave Energy Test Site

Credit: Google Earth

NAVFAC
Naval Facilities Engineering Command

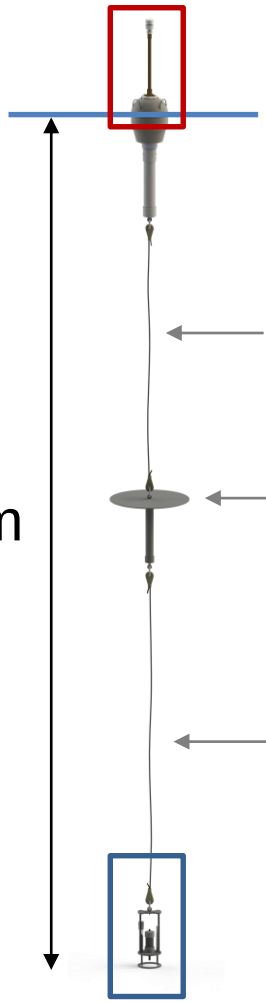


Fred. Olsen BOLT Lifesaver

- Point absorber
- Air-side electric power take-off
- Shallow draft (0.5 m)

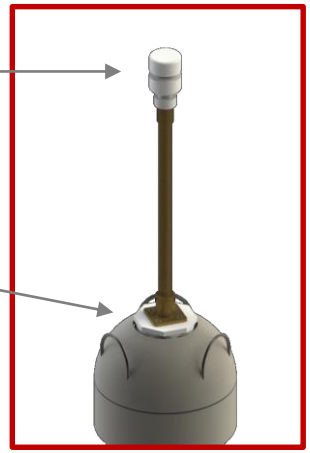
Drifting Measurements

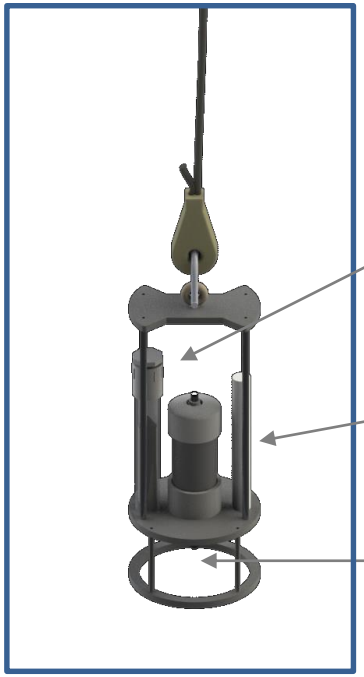
DAISY: Drifting Acoustic Instrumentation SYstem



Meteorological station

GPS logger





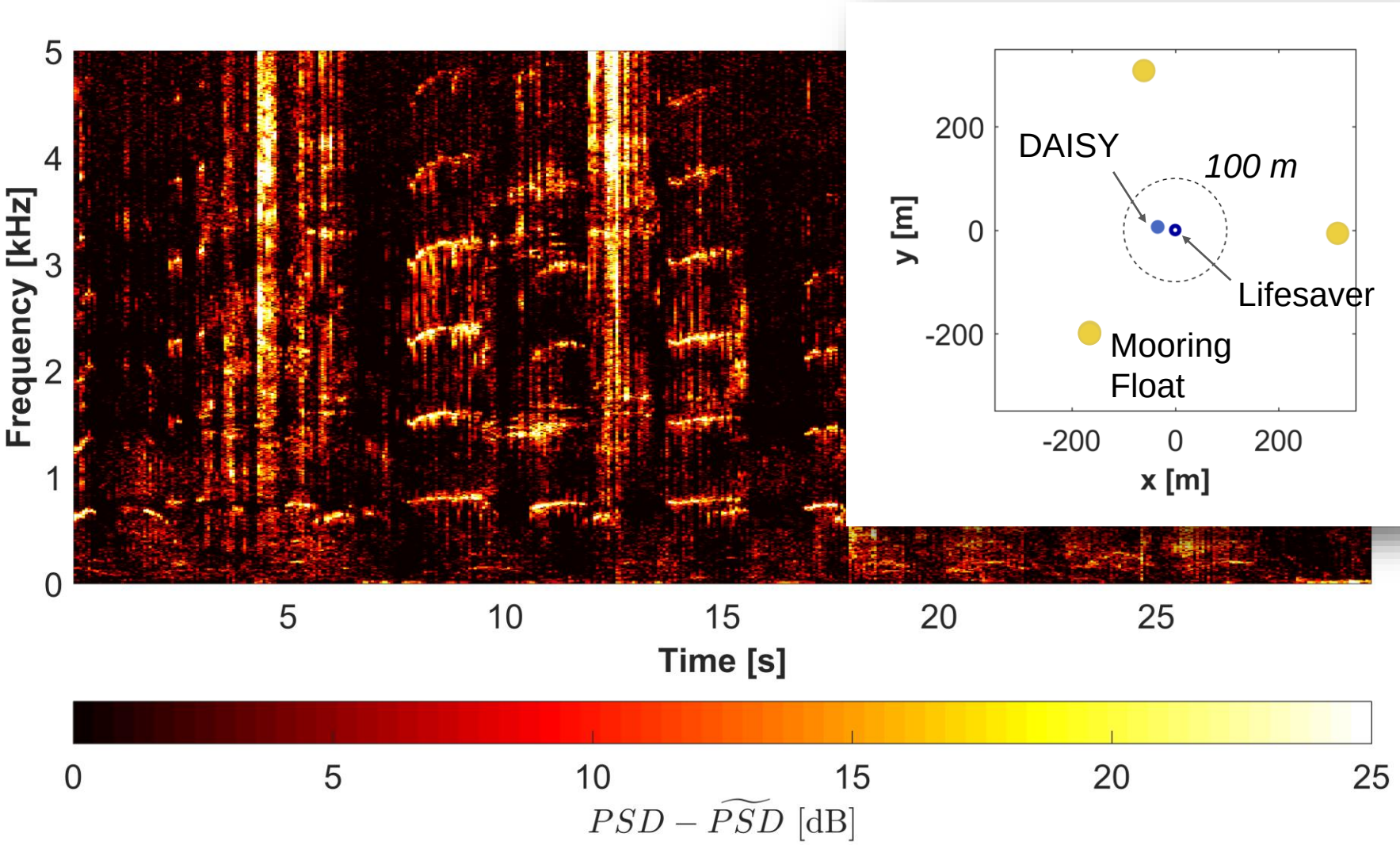
Pressure logger

IMU

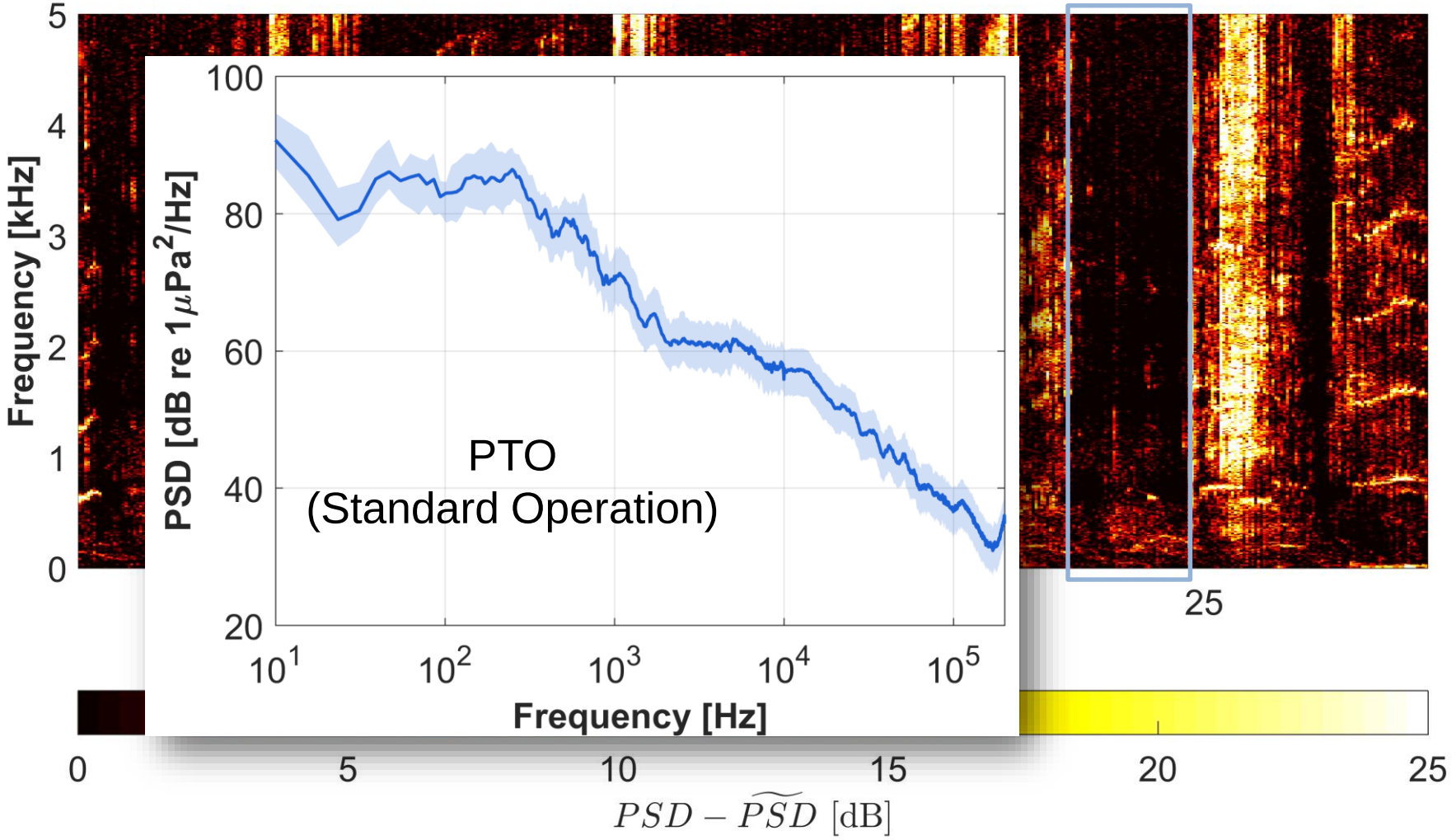
Hydrophone

- OceanSonics icListen HF

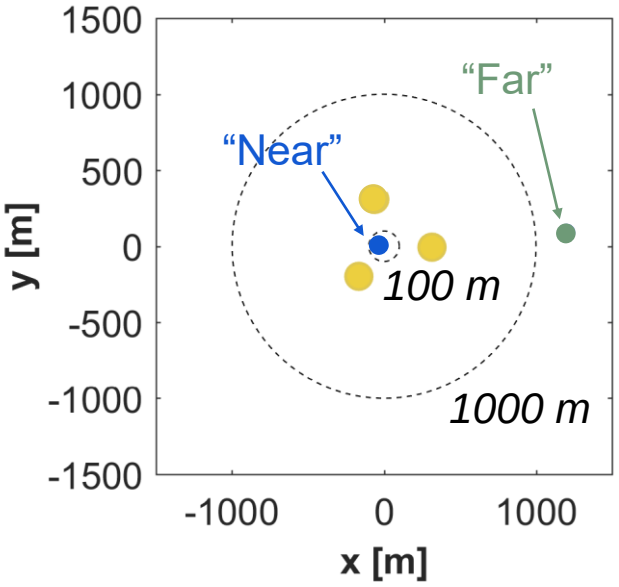
Acoustic Characteristics



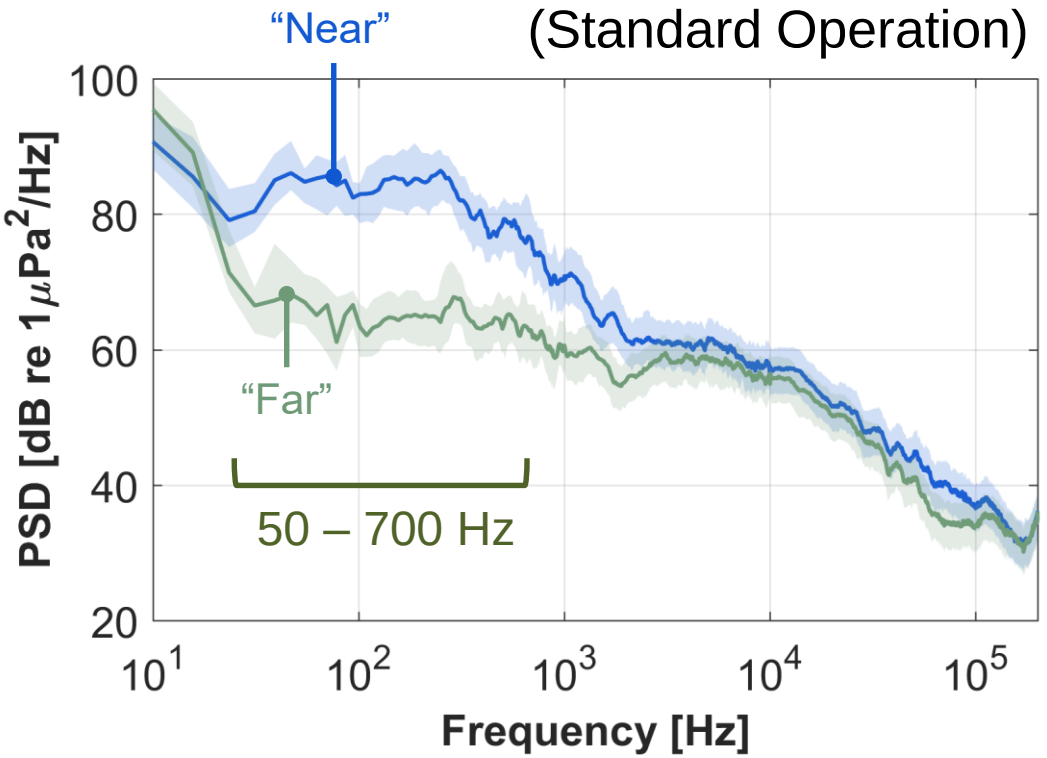
Acoustic Characteristics



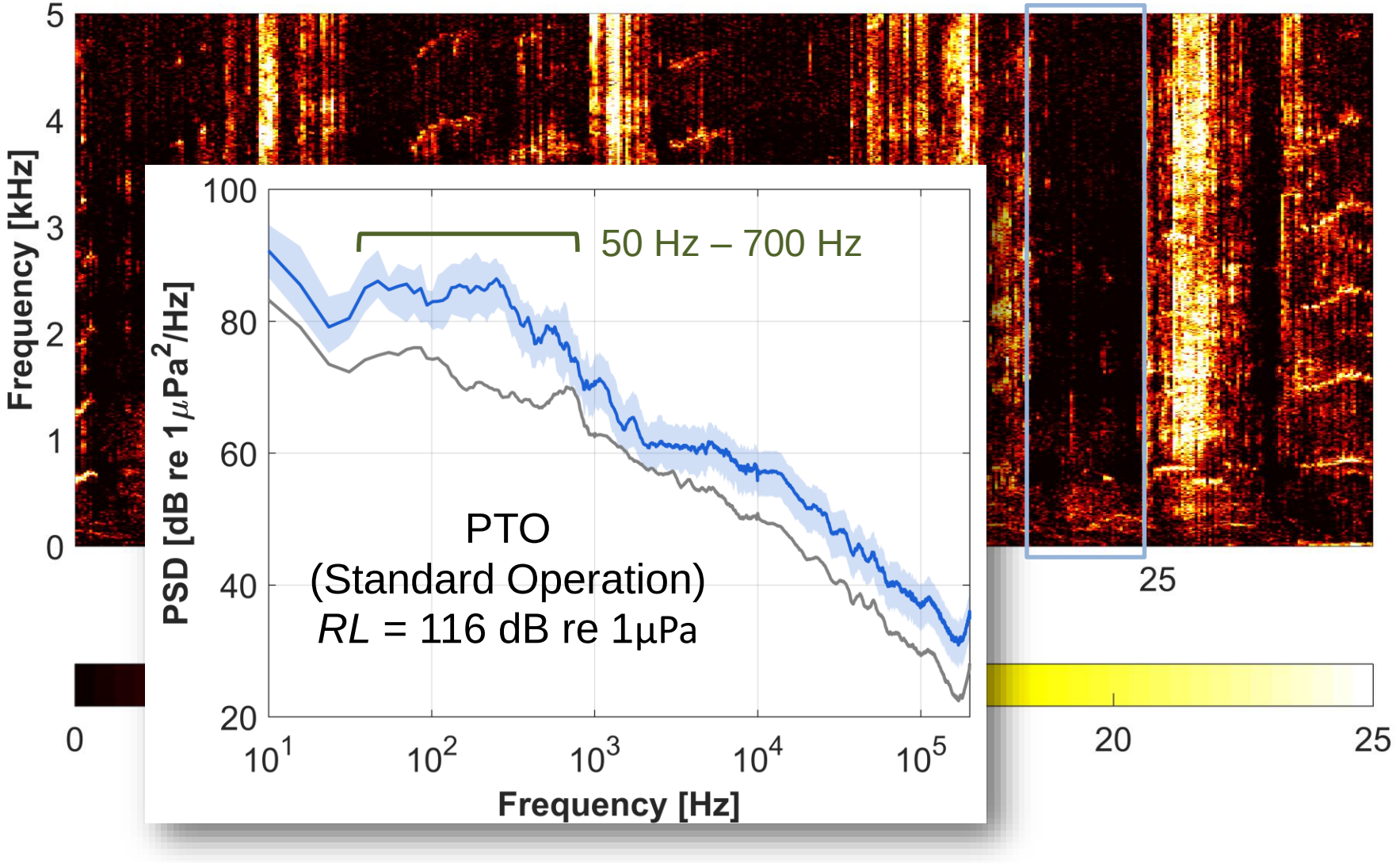
WEC Sound Identification



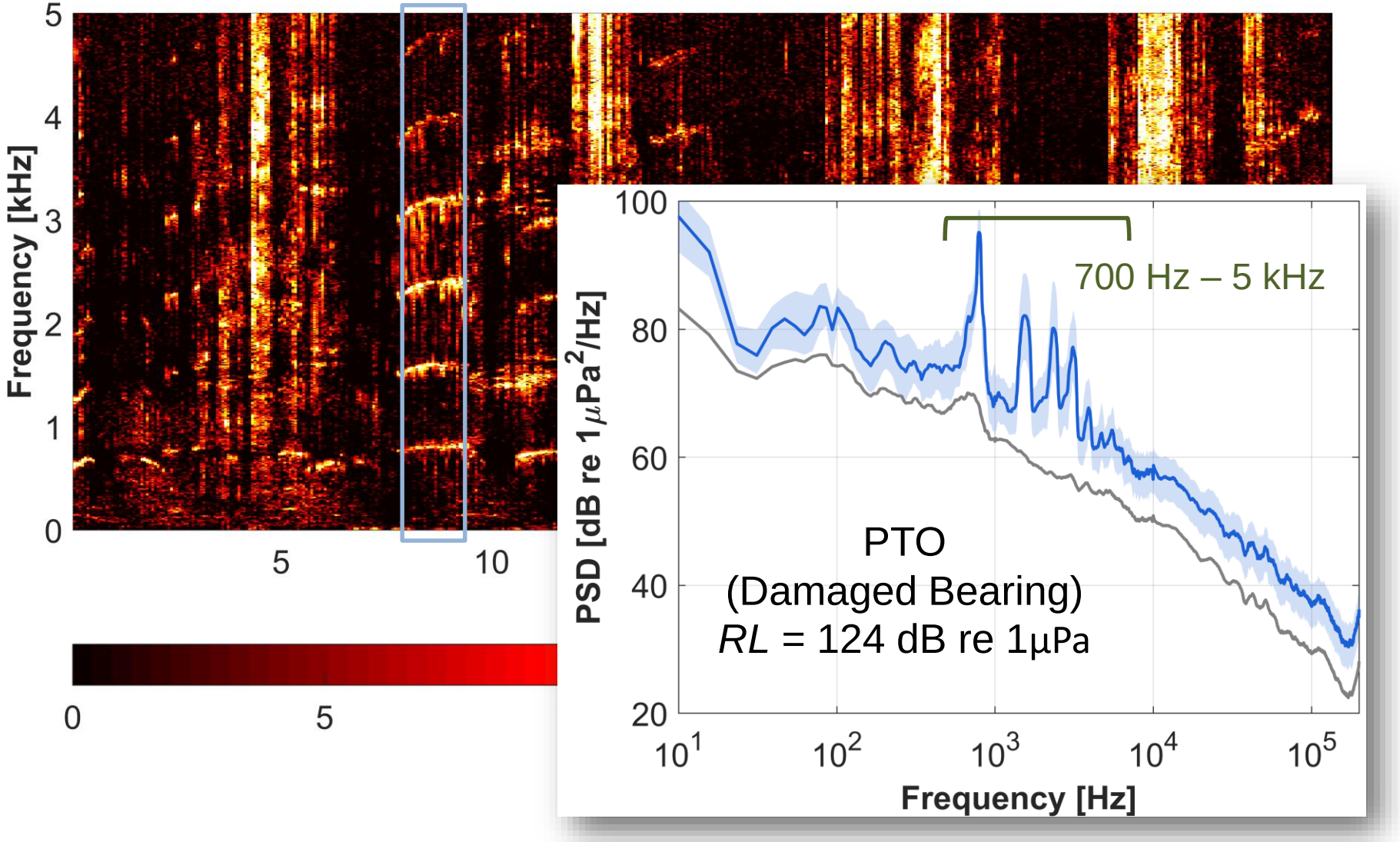
PTO
(Standard Operation)



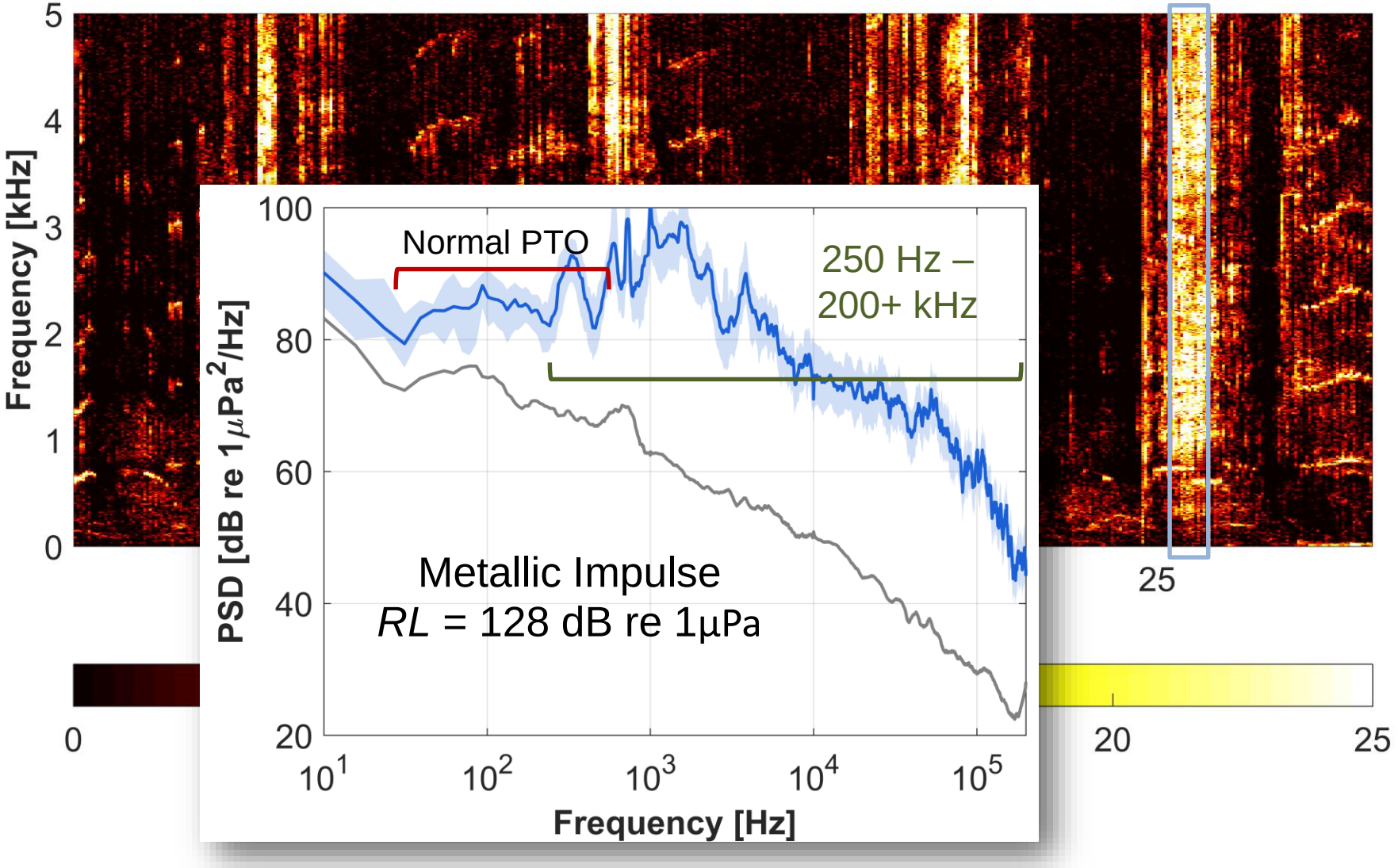
Acoustic Characteristics



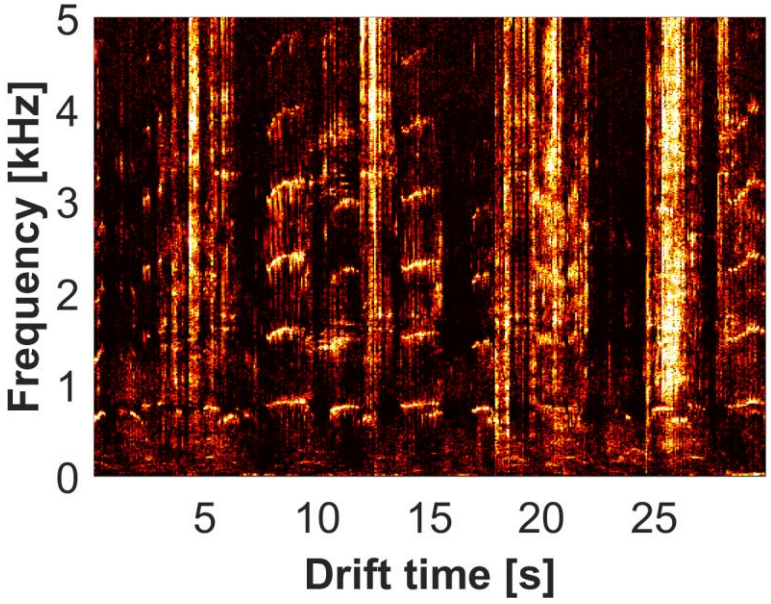
Acoustic Characteristics

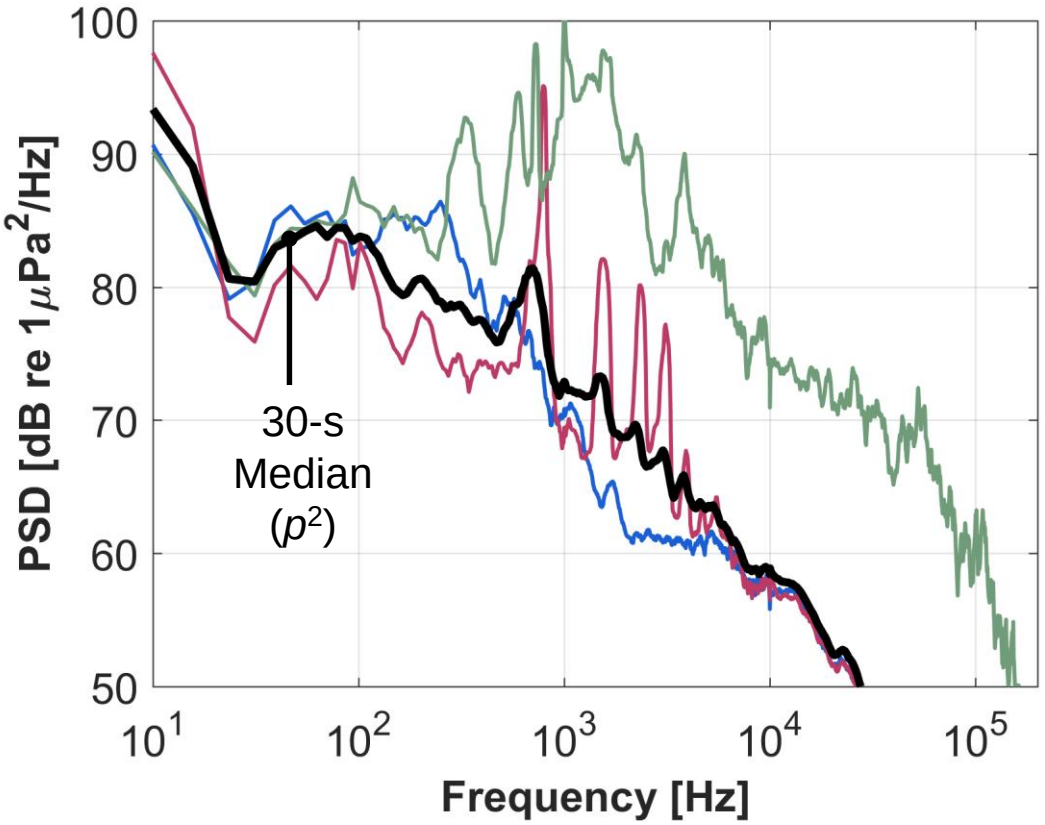


Acoustic Characteristics



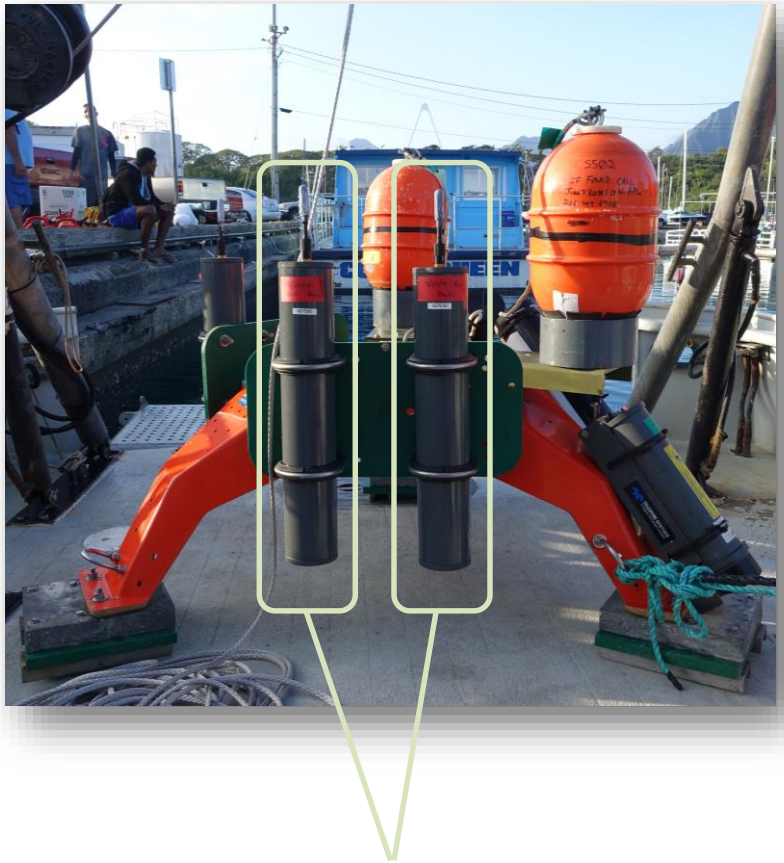
Statistical Representation



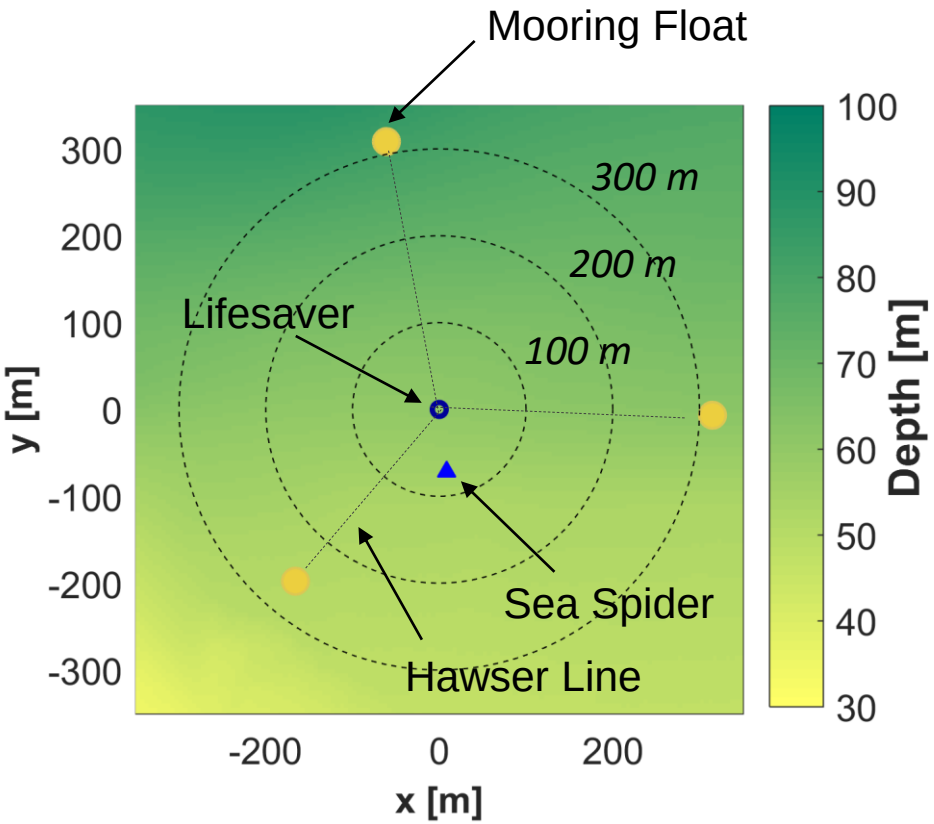


Stationary Measurements

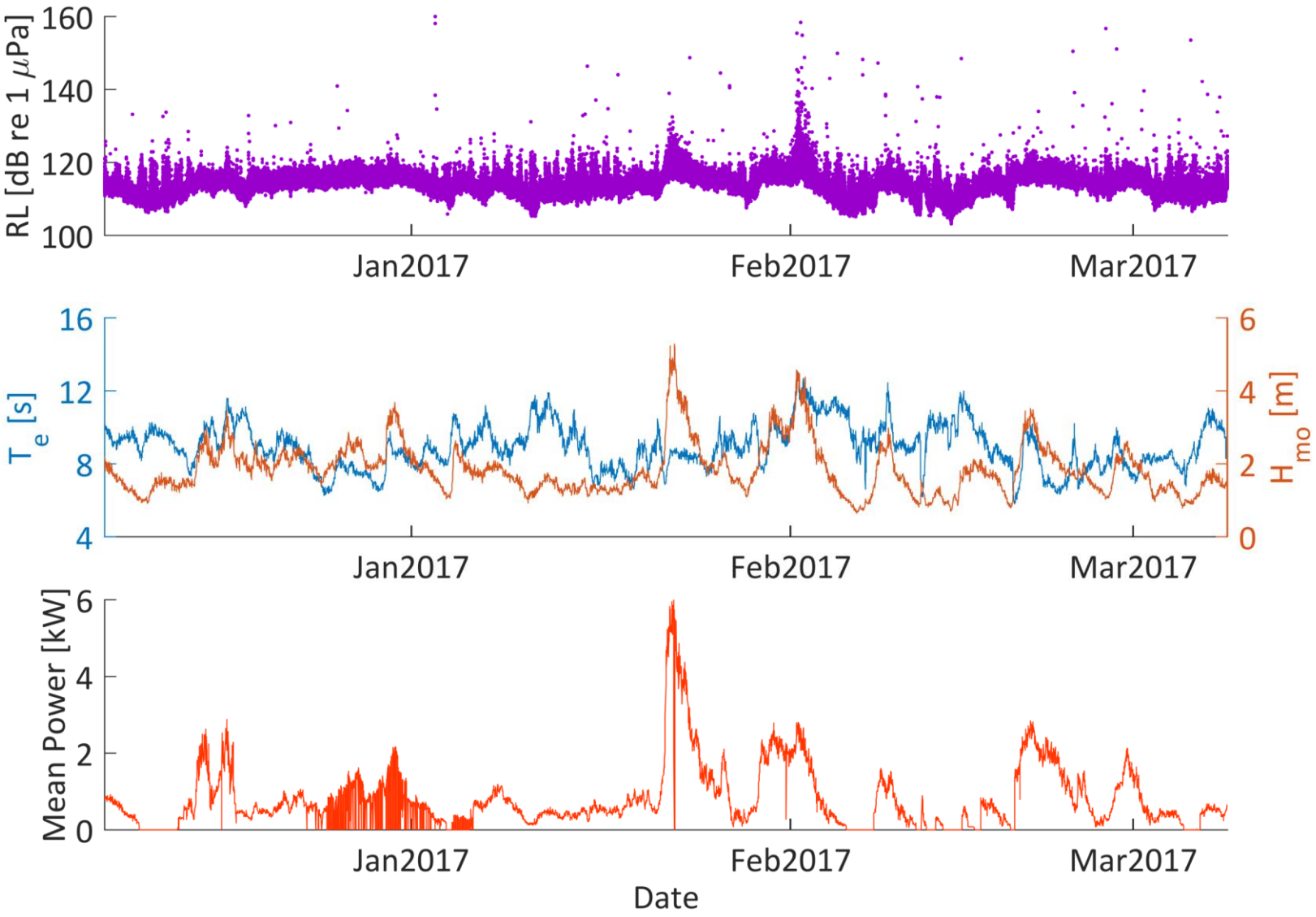
Sea Spider



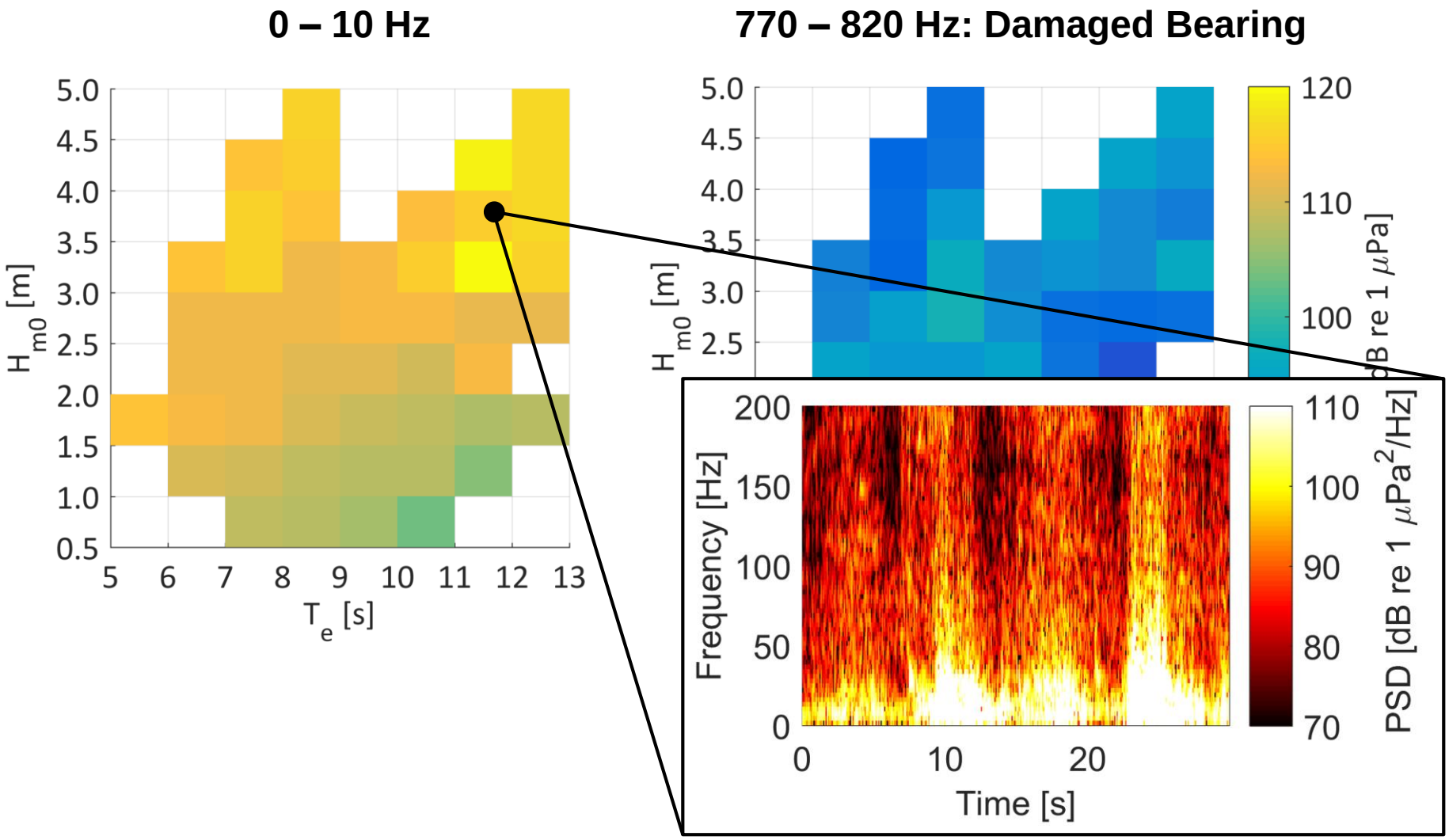
Loggerhead DSG-ST



Temporal Variability



Correlation with WEC Generation?



Conclusions

- Sound around WECs likely to come from a variety of sources
- Combinations of drifting and stationary measurements can be helpful
- At this scale, acoustic contributions from WECs can be limited by design
- *Future work*: Source localization and automatic classification

v2 DAISY

Acknowledgements

HNEI
Hawai'i Natural Energy Institute
University of Hawai'i at Mānoa

U.S. DEPARTMENT OF ENERGY

This project is supported by the US Department of Energy Award DE-FG36-08GO18180.

Many thanks to Sea Engineering for operations support, Keith Bethune and Dan Fitzgerald at HNEI, Jessica Noe, Emma Cotter, and Corey Crisp at UW, and Even Hjetland and Jonas Sjolte at Fred. Olsen.

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