

# Acoustic Data Analysis

JASCO Applied Sciences provides comprehensive processing and analysis of acoustic data and meaningful reporting of results through advanced automated processing software and scientific expertise.

## Expert Analysis and Reporting

We work with clients to provide accurate and scientifically defensible results within required time frames:

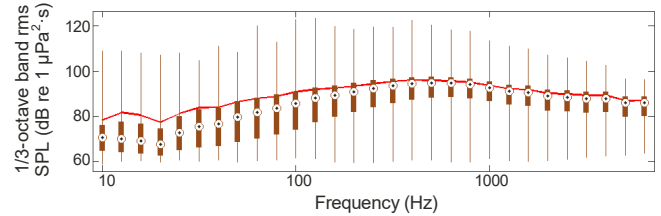
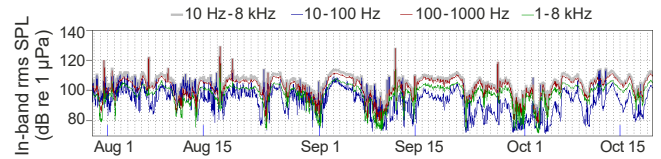
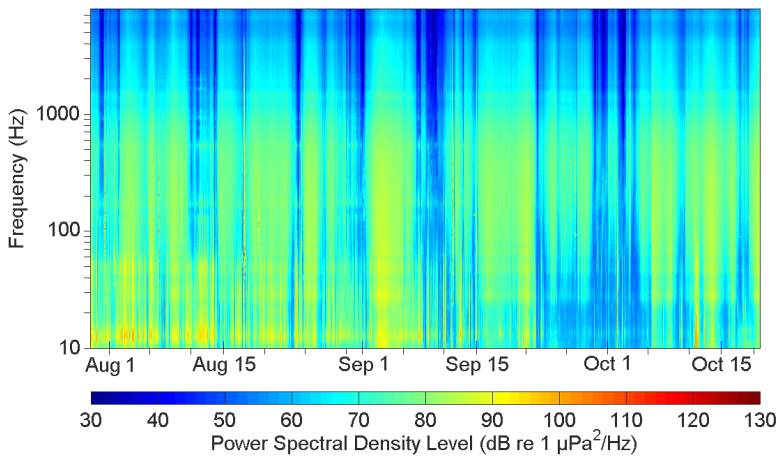
- Preliminary interpretations of results while still in the field
- Presentation of fully analyzed and interpreted results in comprehensive reports
- Synthesis of multi-year results into comprehensive soundscape descriptions

JASCO's rigorous editorial review process ensures quality in all our deliverables. Our senior scientific reviewers verify each report before it is released to ensure it is scientifically accurate and focused on our client's objectives.

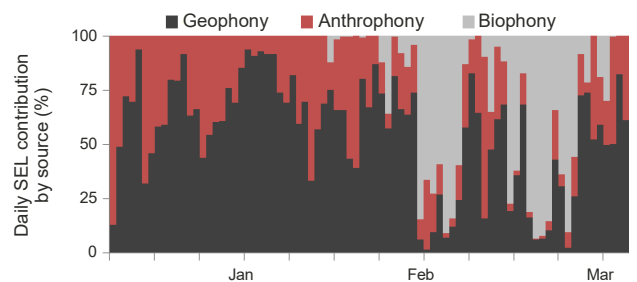
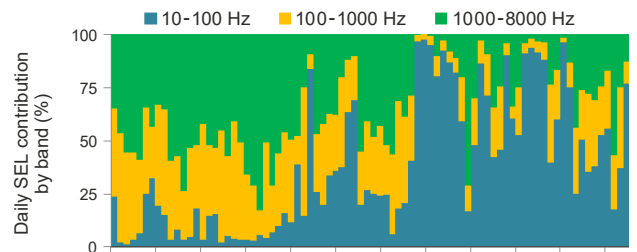
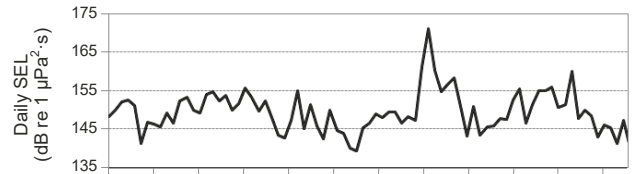
## Advanced Automated Processing

Our comprehensive data analysis software suite and marine mammal detection algorithms are continually developed and improved to keep abreast of innovations in the field and our internal research programs. We use high-performance computing clusters to process efficiently and reliably large volumes of acoustic data:

- Automated detection and classification of marine mammal call types
- Calculation of the sound levels of background or ambient noise
- Detection and quantification of sound from seismic surveys, vessels, pile driving, and blasting



Sound levels and statistical distributions for pertinent frequency bands



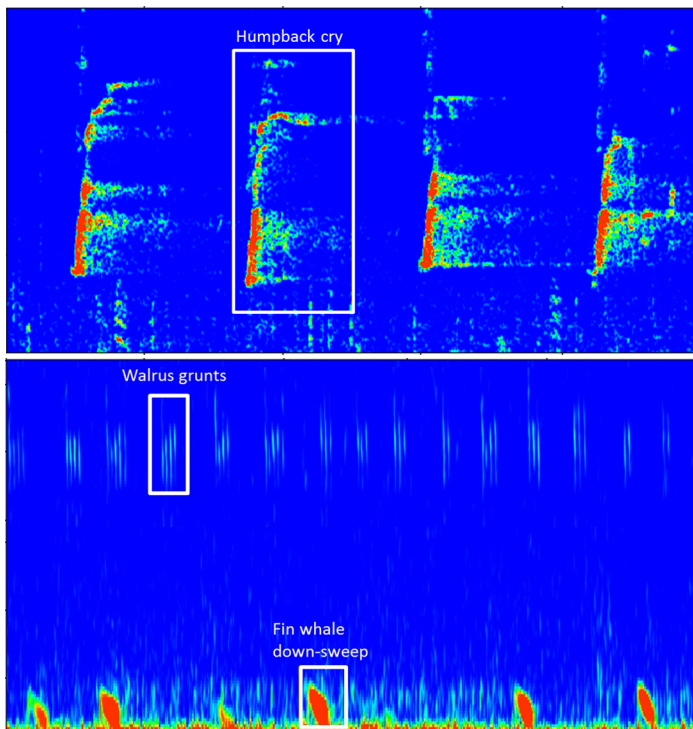
Daily exposure levels, frequency content, and sources of measured sounds

## Targeted Manual Analysis

Our experienced bio-acousticians review subsets of audio data and spectrograms to validate the automated marine mammal detections and identifications at a fraction of the effort of exhaustive manual analysis. They also interpret vocalizations in the context of a given project and environment. Specialized analysis can:

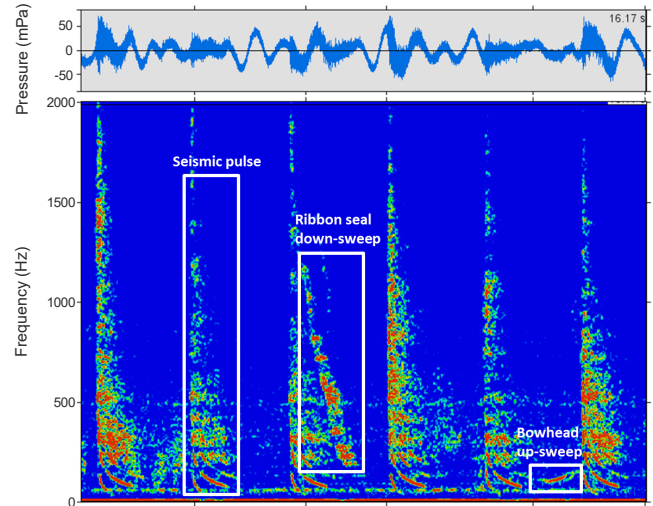
- Identify presence or document absence of vocalizations for marine mammal species of interest
- Classify marine mammal calls by species and call type
- Identify presence or document absence of seismic survey activity
- Characterize the time and frequency properties of acoustic events

We customize our manual analysis protocols to meet the needs of your project.



## PAMlab Software Suite

JASCO's PAMlab software suite enables our analysts to process and interpret acoustic data both automatically and manually. The software calculates ambient noise levels and detects and characterizes acoustic events. Manual annotations are used to train the detection and classification algorithms for vocalizations and human-made sounds.



## Real-time Analysis: Passive Acoustic Monitoring

JASCO field scientists provide real-time passive acoustic monitoring (PAM) solutions during industrial operations. Our experienced PAM operators rely on auditory clues and inspection of spectrograms to identify in real time anthropogenic noise and marine mammal calls. They log systematically all pertinent events and can immediately notify operators of marine mammal detections. We can immediately provide raw data and brief detection reports, for traceability of responsive actions.



For more information, contact your nearest JASCO Applied Sciences office:

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