



**OCS Scientific Committee Meeting
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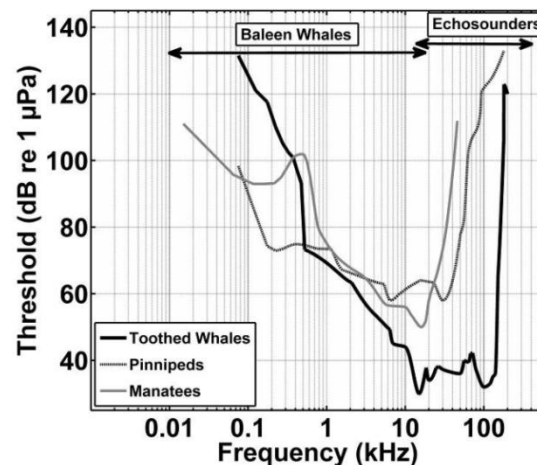


Information Need:

Limited information on underwater noise propagation of high frequency, high resolution sound sources, especially in shallow and intermediate water depths. Improved understanding of sound source and propagation characteristics is crucial to assess effects to marine species (marine mammals, sea turtles, fish) and determine appropriate mitigation (e.g., exclusion zones).

Date Information is Required:

Ongoing



Tentative Ranking: 11

Background:

- Sources of interest include boomers, sparkers, chirpers, side-scan sonar, and single, swath, and multi-beam bathymetry (210 to 240 dB re 1 μ Pa @1 m, 500 Hz to several hundred KHz)
- Unique beam directionality and pulse length (relative to animal hearing integration time) compared to air guns.

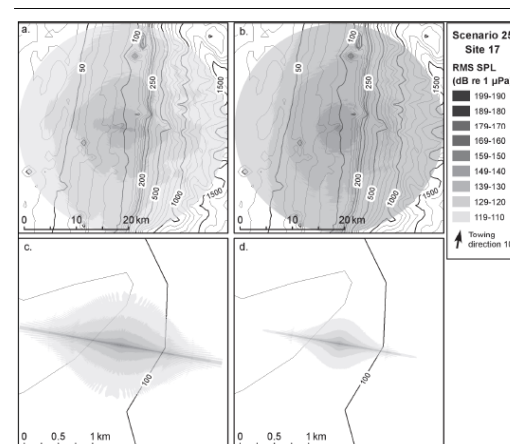


Figure Attachment A-25. Predicted SPL (ms) for Modeling Scenario 25 (Water Depth: 100 m at the Source). The Sources Are (a) Subbottom Profiler, (b) Boomer, (c) Side-Scan Sonar, and (d) Multibeam Depth Sounder.

- Acoustic propagation in shallow water is affected by complex seafloor and sea conditions that are temporarily and spatially variable.

Background:

Relationship with Past and Current Efforts

- Sound propagation focuses on air gun and active sonar sources (e.g., Joint Industry Programme, ONR / NRL, NMFS).
- Sophisticated ray tracing, range-dependent, and range-independent models developed and tested.
- Complementary BOEM studies on construction-related and ambient noise.
- Recent programmatic NEPA modeling assessments

Study's Objectives:

1. Define in situ sound source and determine propagation characteristics of high frequency, high resolution sound sources.
2. Modify and validate an existing sound propagation model to improve the accuracy of transmission loss and received level predictions for use in shallow/intermediate waters.

Methods:

1. Design and undertake field work necessary to: (1) fully characterize representative sound source(s); (2) environmental complexities at a representative field site(s); and (3) document propagation characteristics.
2. Modify and tune acoustic propagation/transmission loss model(s) accounting for the potential influence of bathymetry, geology, shallow water processes, and mesoscale and seasonal oceanography / meteorology.
3. Develop and implement an approach to validate and test sensitivity of model.

Additional Pertinent Information:

Potential collaboration with JIP for Sound and Marine Life
(R. Gentry 2012)