

Passive Acoustic Monitoring Program for the Northern Gulf of Mexico

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Abstract

Underwater acoustic data were collected using a mix of stationary and mobile platforms under BOEM's GOM PAM Program, the primary objective of which was to design and field test implementation of a large-scale, multi-year, underwater PAM program. A 24-month data collection effort was conducted within a strategically delineated 100- by 200-kilometer study area, which included portions of the underwater Mississippi and DeSoto Canyons.

The primary purpose of the two-year data collection and analysis was to 1) characterize the existing soundscape in the GOM, and 2) improve understanding of the influence of prominent geological features such as canyons on the soundscape. A site-specific 3D underwater sound propagation numerical model was setup and simulation outputs were used to assess sound focusing and defocusing effects caused by 3D variations in underwater bathymetry. Acoustic data were analyzed using standardized software packages and acoustic metrics to provide data products consistent with standard guidelines.

The experimental design targeted collection of underwater acoustic data in the 10 Hertz to 96 kilohertz frequency range. A systematic random design, which ensured that survey effort was evenly distributed over the study area while avoiding underwater infrastructure, was selected for placement of data recorders. Data were collected at depths ranging from 53 to 2,148 meters. Results indicated that the key dominant sound sources recorded during this study varied seasonally and primarily consisted of seismic surveys, shipping, storms, and marine mammal calls.