ACOUSTIC RESPONSE OF UNDERWATER OBJECTS: NUMERICAL MODELS AND AT-SEA MEASUREMENTS

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The detection and classification of discarded munitions and unexploded ordnance in shallow water environments remains a challenge in munition remediation. The numerical modeling techniques that are used to investigate the acoustic response of an object near a water-sediment interface are described. These techniques have been validated through comparison with measured data, and they provide insight into the observed scattered signals collected during at-sea measurements. Historical experimental data are briefly mentioned, and an overview of the Clutter Experiment 2017 (ClutterEx17) is provided. The objectives of ClutterEx17 and our current progress on data analysis will be presented. ClutterEx17 represents the final experiment in a series of at-sea measurements of the acoustic scattering from objects near a water-sediment interface. The primary goal for ClutterEx17 was the acquisition of synthetic aperture sonar (SAS) data for scientific targets and unexploded ordnance in the presence of man-made clutter and under high clutter scenarios. As in past at-sea measurements, APL-UW deployed a 42-m long rail on which a sonar tower traveled. The rail-tower system simultaneously collected low and high-frequency SAS data in the Gulf of Mexico, south of Panama City, FL. [Research supported by the Strategic Environmental Research and Development Program (SERDP) and the Office of Naval Research (ONR)]