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ACOUSTIC BACKSCATTER MEASUREMENTS ON THE U.S. CONTINENTAL SHELF

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ABSTRACT

High frequency reverberation measurements were made at a shallow water site south of Fisher's Island in Block Island Sound during September 1991. Approximately 250 sonar echoes were collected with sonar heads mounted on a remotely controlled tow system deployed from the R/V Onrust, a 20 m research vessel. Tests were conducted in depths of 35-55 m over various bottom materials including gravel, sand, shells, gravel and cobbles. Each of the elements in the (8 x 8) arrays were coherently, digitally recorded on compact disc by an advanced data acquisition and processing system. Concurrent physical oceanographic and geologic measurements were extensive; three-dimensional conductivity, temperature, salinity; current; surface wave height; sidescan sonar mapping and stereo photography of the bottom; ambient noise; bottom coring; underwater video. The sonar heads were remotely controlled from topside for both pan and tilt. GPS and acoustic transponders (mounted on ship, bottom and tow system) were integrated by onboard computer for precise navigation and tracking. Calibrated targets were deployed to validate transmission loss estimates. Data have been analysed, and compared with model predictions, to characterise boundary reverberation for cases representative of the variability encountered during the experiment.