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Mid-Frequency Bottom interaction measurements off the New
Jersey continental shelf

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Two kinds of bottom interaction measurements conducted in waters 80 m deep off the North American continental shelf as part of Shallow Water 06 (August 2006) are discussed. In each, acoustic signals were recorded on two, co-located vertical line arrays of length 1.4 m, one at depth 25 m and other at depth 50 m. The source was deployed at depth 40 m from the R/V Knorr that could either be positioned or towed at rate 0.1 m/s. The first, "bottom reflection" is interpreted as a measure of the modulus of the plane wave reflection coefficient as functions of frequency (1-20 kHz) and grazing angle associated with the discrete set of ranges (50-300 m). The second represents a "move-out" type measurement with source towed away from the receiver, and reflection at continuous angles associated with the 50-300 m range. Frequency range was 1-2 kHz, and as the source was 5 m off the bottom, spherical wave effects are investigated. Both measurements were carried out over the same four directions originating from the receiver, each separated by 90 degrees. Physical processes responsible for the observations in each case are discussed and modeled. [Supported by ONR, with partial support from Hanyang University]