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Fluctuation of mid-frequency propagation in shallow water

Dajun Tang^a, Frank Henyey^a, Kevin L. Williams^a, Daniel Rouseff^a, Peter Dahl^a, Zhongkang Wang^b, Jorge Quijano^c and Jee Woong Choi^d

^aApplied Physics Laboratory, University of Washington, 1013 NE 40th St, Seattle, WA 98105, USA

^bHangzhou Applied Acoustics Research Institute, PO Box 1249, 310012 Hangzhou, China

^cNEAR Lab-Portland State University, 1900 SW 4th Avenue, Suite 160, Portland, OR 97201, USA

^dDept. of Environmental Marine Sciences, Hanyang Univ., 1271, Sa-3-dong, Sangrok-gu, 426-791 Ansan, Republic of Korea

As part of the ONR-sponsored SW06 experiment, mid-frequency sound propagation was measured at ranges 1-10 km in the frequency band of 2-10 kHz in August, 2006. The water depth is 80 m and the source depth is 30 m, close to the minimum of a duct with a thermocline above and a warm salty water below. The receivers are clustered into two groups, one at 25 m depth, the other at 50 m. The region has active internal wave activity during this time. Because the source is near the axis of the sound channel, it is observed that propagation is dominated by trapped modes and behaves similar to sound propagation in a deep water duct. Amplitude fluctuations and cross-frequency correlations are estimated. The scintillation index as a function of frequency and bandwidth is calculated.