

A Physical Modeling Study for the Suppression of Water Reverberations by Multi-depth Streamers

Technique

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Ghost reflections and water reverberations are the major and inevitable seismic noises in marine seismic exploration. In this study, the data acquired by multi-depth streamers to suppress reverberations is proposed and evaluated by physical modeling.

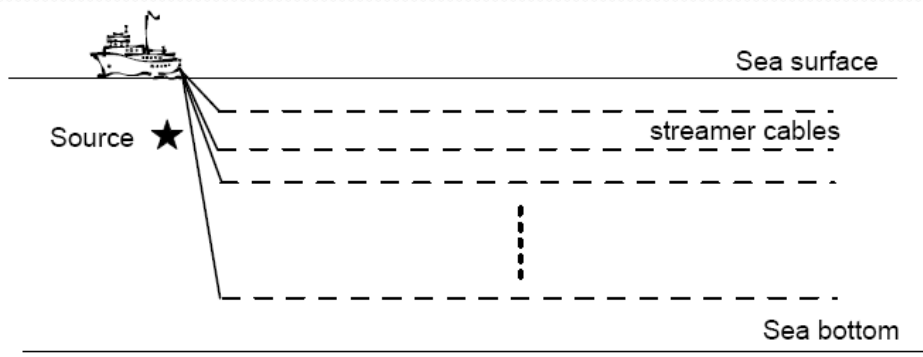
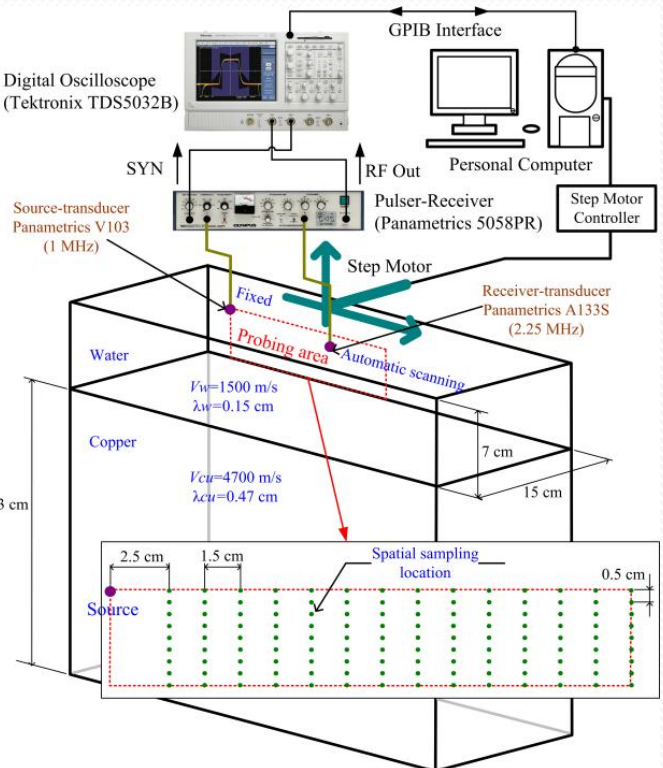


Figure 2. Physical model, apparatus, and recording geometry used in this study.

Figure 1. Schematic diagram of the multi-depth streamers technique.

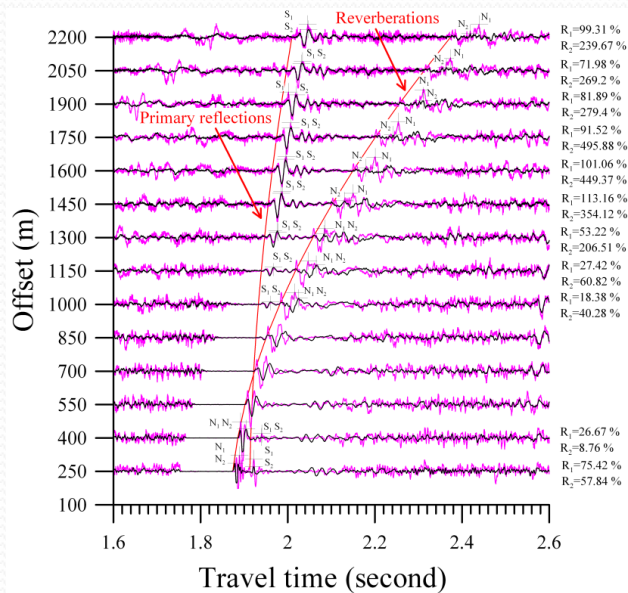
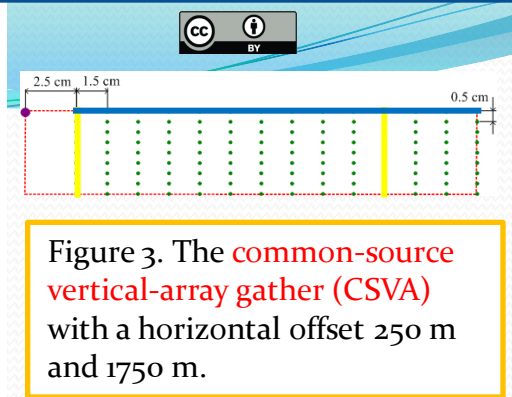
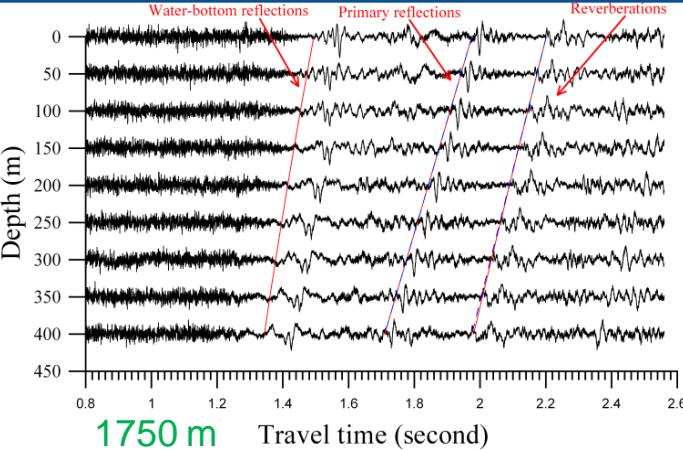
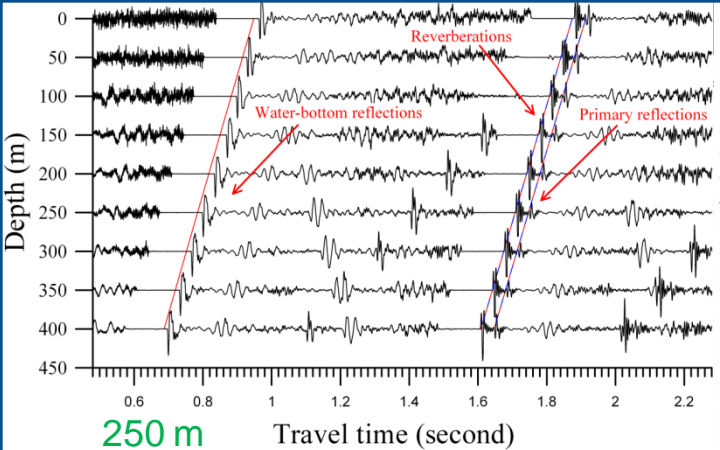


Figure 5. The CDP stacked trace (pink) and the vertical/CDP stacked trace (black).

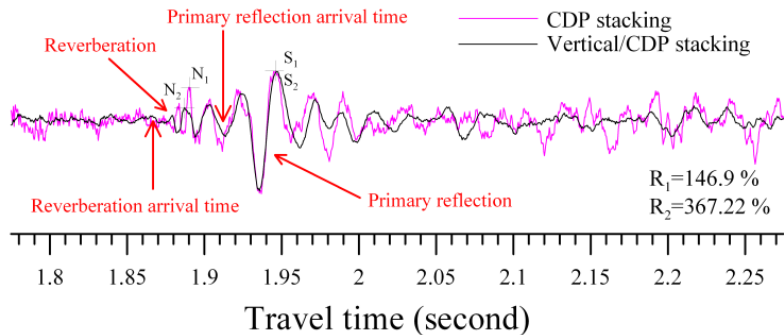


Figure 4. The vertically stacked **common-source horizontal-array gather (CSHA; black)** and non-stacked one (pink) observed along the water surface. The S_1 and N_1 represent the maximum positive amplitudes of the primary reflections and reverberations in the non-stacked traces, respectively. And the S_2 and N_2 are for the vertically stacked seismic traces. The R_1 and R_2 represent the non-stacked S_1/N_1 ratio and vertically stacked S_2/N_2 ratio, respectively.