



Application of the newly constructed Chirp raw data recording system for shallow gas in the Korea Strait shelf mud off SE Korea

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Chirp is a marine high-resolution sub-bottom profiling system applied in a variety of marine geological and geo-physical fields. Chirp source systems generate the sweep pulse with a frequency modulation of 2 - 7 kHz bandwidth. Commercial Chirp data acquisition systems provide the seismic data of the envelope type without polarity and phase information after real-time processing. To record the raw data preserving the polarity and phase information, we constructed the new data acquisition system and acquired the field data in the southeastern coast of Korea using the newly constructed system and the conventional Chirp system simultaneously. The survey data contains the acoustic blanking caused by shallow gas and the feature of rough seafloor in KSSM(Korea Strait shelf mud) off SE Korea. We performed the correlation of raw seismic data with the estimated sweep signature, deconvolution, swell effect correction and migration to compare the resolution of Chirp SBP sections and to enhance the features associated with shallow gas. When we compare Chirp SBP section preserving polarity and phase information with the conventional envelope section, the new section shows better continuity of the sedimentary layers and higher resolution than conventional section. Through the thorough examination of the Chirp sections after the data processing, a possible gas related acoustic anomaly was found at the rough seafloor and underlying sediments. The low P-wave velocity was identified among the physical properties measured from a piston core recovered at the survey area.