An Angular Independent Backscattered Amplitude Imagery of Multi-Beam Echo Sounder for Sediment Boundary Extraction

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Abstracts

The National Oceanographic Research Institute of KOREA started to survey for the basic data necessary to territorial sea and EEZ identification and marine development with Multi-Beam Echo Sounder(L3 SeaBeam 2112) since 1996.

The Multi-Beam surveys has provided a very new and precise way of describing the morphology and nature of the underwater seabed. Multi-Beam Echo Sounder systems employ sound waves propagating at angles which vary from vertical to nearly horizontal. The locations on the bottom where echoes are generated cover a swath whose port to starboard width may be equal to many times the water depth. Newer Multi-beam bathymetric sonars provide both a beam by beam depth and backscatter amplitude of the bottom. But The backscattered amplitude didn't use for identification of bottom properties because backscatter amplitude effects by the many environmental variables of underwater and seabed.

We investigates the utilization of geo-referenced backscatter amplitude and analysis of relationship between The Backscattered Amplitude and Sidescan Sonar imagery from Sea Beam 2112. For the backscattered amplitude imagery mainly represents the properties of sediment, we computed the beam geometry, time-varied amplifier gain, and mainly incidence angle to the topography using bathymetric model at each ping.

In this paper, those issues are illustrated, and the angular independent imagery based on swath topographic model is described.