Simulation Study of Acoustic Wave Propagation in Ocean

Abstract

Many reports are available on the sound attenuation and speed in the deep ocean, as a function of different ingredients of sea. The absorption and speed of sound waves are related to the change in sound speed, depth, salinity, temperature, PH, pressure and frequency. Five different simulation models have been developed to determine sound speed in sea water by inputting the sea water parameter data. It is observed that in all the models, except Chen and Millero model, the speeds evaluated using the simulation models match satisfactorily with the observed speed of sound in sea water. Deviation exists and it tends to increase with the depth. The errors from different models are within acceptable margin except for the Chen and Millero model. The Mackenzie Equation model gives least error.
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Reference

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- Thomas J. Hayward and T.C. Yang “Underwater acoustic communication Channel Capacity: A simulation study”. Naval Research Laboratory, Washinton DC 20375.
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Index Terms

Computer Science
Communications

Key words

Sound absorption
Simulation model
Salinity
Temperature

Pressure

Sound Speed

Depth

Frequency

Mathematical formulae