

ACOUSTICS2008/3427 Reverberation inversion for seabed properties

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This paper applies nonlinear inversion to reverberation and/or propagation data recorded on a towed horizontal array for geoacoustic and scattering properties of the seabed. A Bayesian inversion approach is applied to estimate properties of the posterior probability density, such as the maximum a posteriori (most-probable) model, 1-D and 2-D marginal probability distributions, and covariance/correlation matrices, providing optimal parameter estimates and quantifying parameter uncertainties and inter-relationships. Of particular interest is quantifying the information content of different combinations of data (e.g., reverberation or propagation data; joint inversion of reverberation and propagation data) to resolve seabed parameters, and understanding strong parameter inter-relationships (correlations) which, in some cases, act as the limiting factor in resolving geoacoustic/scattering parameters. The inversion is also applied to shallow-water reverberation and propagation data recorded in Mediterranean Sea.