

3D Acoustic and Elastic Wave Modeling on a High Performance Computing System

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Accurate modeling of seismic wave propagation in complex media is the key to many high end seismic processing algorithms. The performance is achieved by parallel implementation of algorithms on large compute clusters. This article describes the implementation of 3D acoustic and elastic wave propagation algorithms on a high performance computing system. A MPI (Message Passing Interface) implementation of complex modeling algorithms on EKA, CRL's (Computational Research Laboratories) high performance computing system is presented. Scalability and efficiency is achieved by proper structuring of the codes. Performance analysis is carried out for different sizes of the model. Application of seismic modeling is shown by generating seismic seismograms for some complex geological models.