Quasi-Spherical FDM (3): For SH Waves

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For global modeling, axisymmetric modeling represents a reasonable compromise between realism and computational efficiency. However, conventional axisymmetric modeling cannot treat asymmetric structure with respect to the source axis. In addition, scattered and reflected waves from the symmetric continuation of the structure can be returned to the target zone as artificial numerical noise.

In order to overcome these problems, we proposed a new method a ``quasi-spherical finite-difference method''. In this method, the elastodynamic equation for spherical coordinates is solved in the ``quasi-spherical domain'' instead of in the conventional spherical domain. This method can simulate seismic wave propagation in a 2D slice of global earth model with an arbitrary lateral heterogeneity with similar computation time and storage as for 2D modeling, but with full 3D geometrical spreading.

We have treated P-SV waves for explosion seismic sources. Here we develop a numerical code for SH waves as the next step. In this presentation we show some numerical examples calculated by this code.