



3D reverse-time migration using the excitation amplitude method and GPUs

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We developed a 3D acoustic time-domain reverse-time migration algorithm using the excitation amplitude method and graphical processing units (GPUs). The excitation amplitude imaging condition avoids full crosscorrelation between the source and receiver wavefields and exploits the maximum amplitude wavefield and the corresponding time. By adopting the excitation amplitude method, we could save the memory required to store the full source wavefield. Since the excitation amplitude and the excitation time can be saved in the GPU memory, we can reduce data communication between the host and devices and enhance the performance of the reverse-time migration program. We demonstrate the proposed method using the SEG/EAGE 3D salt and the overthrust velocity models.