Using the detailed kinematic source model of the 2004, Chuetsu, Japan, earthquake of Mw 6.6 occurred as shallow thrust event (Hikima and Koketsu, 2005) and the 3D seismic velocity model estimated by Kato et al. (2006), we study the relationship between the source process and the crustal structure. The seismic velocities in the hanging wall above the main shock fault is lower than those in the footwall, with the velocity contrast extending to a depth of approximately 10 km (Kato et al. 2006). Their results also show the high velocity on the asperity. We extracted the modeling space of 100km x 100km x 40km from the velocity structure. Then we add the tectonic stress on the sides of the structure model, and calculate stress field by using finite difference method. The absolute value of tectonic stress, static and dynamic frictional coefficients are constrained by grid search scheme.

The calculated stress field on the main shock fault has the following features,
1) The high shear stress peaks appear around the hypocenter. This is caused by stress concentration of the low rigidity wedge shaped sediment.
2) High stress drop is expected on the asperity part.
3) High tectonic stress requires high frictional coefficients up to 0.75.
4) The difference between static and dynamic frictional coefficients is about 0.05.