Geometry of sealed shear cracks in basic schists of Nagatoro area in the Sambagawa metamorphic belt

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Recent discoveries of slow earthquakes have re-revealed the importance of fluid role at the subduction plate boundary. These are such earthquakes that arise from shear slip as like as other regular earthquakes, but have longer characteristic durations and radiating much less seismic energy (Ide et al. 2007). They form a new category of earthquakes, and the mechanism of its generation is unknown. However, there are strong indications that fluids are related to those earthquakes (Shelly et al. 2006), and thus the role of fluids is one of the keys to understand the phenomena.

The relationship between *Vp/Vs* ratio and pore geometry (that is, a form of water in rocks) is well studied (Takei, 2002). It appears that ratios of *Vp/Vs* in low velocity zone under Japan can be explained by water captured in dikes and veins.

It is important to know the distribution of such shear cracks at the plate boundary. Sambagawa metamorphic belt has a number of traces that show large amount of water flow through the oceanic crust. These are veins or sealed cracks that are mainly filled with calcite or albite, and quartz. From the perspective of casting light on the relationship between earthquakes and fluids, shear cracks are especially important to study. Considering that the maximum stress is sub-perpendicular to schistosity, paralell cracks in metamorphic rocks are the shear cracks that are sub-parallel to schistosity. Such structures used to be called as syn-metamorphic veins or axial planar veins. However, the geometry of such structures has not been well studied. In this poster, we will show the geometry and distribution of sealed cracks sub-parallel to schistosity and discuss the process of their formation.