

## The creep model and the Weak zone model

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We made a qualitative modeling for the stress state and deformation style in and around the concentrated deformation zone. In this model a weak zone with low viscosity exists in the lower crust beneath the concentrated deformation zone. In the surrounding region, however, the viscosity in the lower crust is very high and can be regarded as elastic for the periods of a recurrence interval of intraplate earthquakes. The concentrated deformation is basically attributed to the low viscosity in the weak zone. We inferred from different kinds of observations and surveys that a weak zone consists of several fault zones. From the spatial and temporal correlation of Coda Q-1 and seismicity, it is inferred that a creep occurs on numerous faults distributed in and around the brittle-ductile transition zone (Jin and Aki, 1989; Jin and Aki, 1993; Aki, 1995; 1996). Furthermore, extensive surveys on an exposed ductile fault zone in the Hidaka mountain region in Japan shows that numerous ductile fault zones are distributed below the seismogenic region (Shimada and Tanaka, 2004). It is inferred that the distribution of the fault zones is controlled by pre-existing heterogeneities (Tanaka and Shimada, 2004). These estimates are basically consistent with each other and will open a new avenue about the earthquake prediction research.