

Seismological Evidence for Fluids in Earthquake Source Areas, Southwest Japan: Its Existence, Origin and Influence

Dapeng Zhao [1], Fumiko Ochi [1]

[1] Earth Sci., Ehime Univ

At the mainshock hypocenter of the 1995 Kobe earthquake, there exists a low-velocity, high Poisson's ratio anomaly which is considered to be a fluid-filled, fractured rock matrix. It has a crack density of 0.15 and a saturation rate of 80%, 3 to 5 times greater than those of the surrounding areas. We used the arrival time data from microearthquakes that occurred in 1993, which indicates that the anomaly has existed there since sometime before the 1995 Kobe earthquake. The fluids at the hypocenter may be due to the dehydration of the subducting Philippine Sea slab because it is located right above the slab. Some big shallow earthquakes that occurred in Shikoku and Kii Peninsula may have also been affected by the slab dehydration.