

Pore pressure measurement in the 800-m borehole drilled in the Nojima fault

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Using an 800-m-deep borehole, which is one of the three boreholes drilled by the project, 'Fault zone probe', we have continued pore pressure monitoring. On August 2006, we installed a new pressure gauge and fixed the seal of the wellhead. We analyzed the data between August 2006 and March 2007 to estimate the poroelastic constants that characterize the rockmass around the borehole. The pressure inside the borehole fluctuates around 197 kPa. Barometric and tidal responses are clearly observed. From the barometric response, we can determine loading efficiency. We obtained a loading efficiency of 0.45 by fitting the barometric and pore pressure records which are low-pass-filtered at a period of 1.25 day for each month. Combining tidal response, and the loading efficiency, we can determine the shear modulus. The ratio of observed pore pressure to calculated tidal areal strain is 22 GPa, which yields an estimate for the shear modulus to be 24 GPa. Hydraulic diffusivity can be estimated from the attenuation of the ratio of pore pressure change to barometric pressure change at lower frequency bands. The cutoff does not appear in the period range shorter than 11.5 days. Assuming the water table to be a surface of one-dimensional fluid flow, the upper bound of hydraulic diffusivity is estimated to be $1.5 \text{ m}^2/\text{s}$.