

In-situ stress measurement and its significance in the vicinity of the creep segment of Atotsugawa fault, central Japan.

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Atotsugawa fault is a large active fault in central Japan and divided into three segments. Central part has low seismicity in a shallow region but other parts have high seismicity.(e.g., Mikumo and Wada, 1979). In addition, creep deformation is observed by optical distance method (Geographical Survey Institute, 1997). The mechanism of low seismicity and creep deformation is fundamental problem to understand the mechanics and strength of faults as well as Atotsugawa fault itself. We performed in-situ stress measurements in the borehole in the vicinity of the creep segment of Atotsugawa fault to understand the stress distribution along the fault and its relation to creep deformation and fault strength. A vertical borehole (hole radius 123mm, core radius 85mm) of about a depth of 35m was drilled in a chamber (6 m *10 m area and 4 m height) beside a roadway of Kamioka mine, Kamioka town, Gifu prefecture. The drilling site was located at about 1100m distance from a gate of the straight and flat roadway and about 550m below a ground surface. Fully recovered cores were hard and showed not so much number of fractures. The rock seemed to be good for the in-situ stress measurement. Several methods to measure in-situ stress were applied in the borehole: (1) borehole deformation, (2) hydraulic fracturing, (3) BABHY(Baby Borehole Hydro-fracturing), (4) stress relief using intelligent type strainmeter, (5) ASR(An-elastic strain recovery). Results of stress measurements due to each method are presented in the same session as present one. Though an examination on a consistency among results of those methods remains, information of in-situ stress, especially stress direction, will give significant contribution to the investigation on the mechanism of creep deformation of the fault.