

Stress tensor inversion in the Atotsugawa fault area, Central Honshu, Japan

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A stress tensor inversion method was applied to 151 focal mechanism solutions obtained by using a first motion polarity of P-wave in the Atotsugawa fault area, Central Honshu, Japan. The study area was gridded with 23 km and 18 km spacing in the east-west and north-south directions, respectively. We obtained the stress parameters at five nodes. The orientation of the maximum principal stress (S_1) was very similar to each other at the all five nodes. We found that the azimuth of S_1 was ranging from N72W to N77W, and its dip was close to be horizontal near the Atotsugawa fault. The results are consistent with the averaged direction of P-axis for the focal mechanisms. We also found that except for one node the azimuth of the minimum principal stress (S_3) was ranging from N14E to N20E, and its dip was close to be horizontal. The results were consistent with the averaged direction of T-axis. The direction of the surface trace of the Atotsugawa fault is approximately N60E. Therefore the angle is 43-48 degrees between the fault trace and the direction of S_1 . Even if the estimation error is taking into account, it is clear that the S_1 is neither perpendicular nor parallel to the Atotsugawa fault. This fact suggests that the internal friction of the Atotsugawa fault is not small.