

# Geotectonic history of the Inadani fault zone in southern part of Nagano prefecture, central Japan

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Central Japan is a region where many active faults are distributed, one of Japan's most active fault-dense areas (active fault study, 1991). Many of these active faults are characterized as high angle strike slip fault group with NE-SW strike and NW-SE strike. The Inadani fault zone, which is located in the southern part of Nagano Prefecture, is a unique fault zone characterized as a low-angle reverse fault, while the lateral slippage is dominant in this area.

The Inadani fault zone has been considered as a parallel reverse fault group of the conventional NE trending, but in recent years the evaluation of the activity to the fault group in the southern fault zone was revised, and the Inadani fault zone main part and the southeast part of the Inadani fault zone. The Inadani fault zone main part and the southeastern part were connected by the Shimojo sanroku fault which is the active fault of the NW strike, and it turned out that it is forming complicated fault geometry than conventionally thought. In this way, it is an important task to understand the tectonics of the Central Japan to elucidate how the Inadani fault zone, whose recognition for its motion image has been modified, has developed a unique form It is considered to be.

In order to elucidate the structural development history of the Inadani fault zone, a survey was conducted in the granitic distribution area expected to record longer deformation. Surface survey focused on the form of the fault, sense of movement, properties of the fault rock and so on. Stress analysis using multiple inverse method (Yamaji, 1999) was carried out in indoor work from the data obtained in the survey. In addition, XRD analysis was performed on the obtained fault rock samples to identify clay minerals contained.

From the cutting relationship between faults and the estimation of stress field, the deformation of the area was divided into three deformation stages. Stage: 1 ~ Stage: 2 is deformation with cataclasite with high angle N - S stroke, and Stage: 3 was deformation with fault gouge at low angle to medium angle. In Stage: 1, lateral shear stress solution of EW compression was detected, lateral stress stress solution of NW - SE compression in Stage: 2, and lateral shift to reverse tomographic stress solution of ENE - WSW compression in Stage: 3.

As a result of the XRD analysis, Illite and Smectite were included in all fault gouges, and the quantity ratio was changed depending on the sample.

This area is located in eastern south of southwestern Japan and is subject to clockwise rotation of the massive mass accompanying the enlargement of the Sea of Japan and counterclockwise rotation of the mass due to collision of the Izu arc. In order to discuss the stress direction, It is necessary to correct this influence. The corrected stress field is Stage: 1: E-W compressive stress field, Stage: 2: N-S compressive stress field, Stage: 3: E-W to NE-SW compressive stress field, and the Scaenzuyama fault detected by Katori (2016 MS) This is in good agreement with the stress direction in which the same correction is applied to the stress direction. Therefore, it can be said that the stress detected this time is stress acting widely on the Chubu region. If the cause of the wide area stress is required for the motion of the plate, it is possible that the cataclasite which is the oldest fault rock in this area was formed by driving the westward movement of the Pacific plate after 40 Ma.

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