

Paleostress transition estimated by microcracks in the Neogene Granitoids in the South Fossa Magna region

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Orientation measurements of healed, sealed and open extension microcracks in the granitic rocks distributed in the South Fossa Magna region were performed to estimate the paleostress transition in the collision zone of the Izu-Ogasawara arc. Samples are collected from the Fujikawa plutonic mass, the Tokuwana plutonic mass and the Ashigawa plutonic mass. The age of the healed microcracks formation was restricted by K-Ar biotite age and microthermometry data of fluid inclusions (i.e. 275-410C for the Tanzawa Tonalite (Sato,2008MS)), however, the timing of formation of sealed and open microcracks can be restricted only after the healed microcracks formation.

1. Paleostress field of the Fujikawa plutonic mass

Newly determined K-Ar ages for three granitic samples in the Fujikawa plutonic mass yield the biotite age of 5.4Ma and hornblende ages ranging 6.1-5.0Ma. Based on the K-Ar biotite age, the healed microcracks of the Fujikawa plutonic mass were formed around 5.4Ma. The orientations of healed microcracks in the Fujikawa plutonic mass indicate that the sigma-Hmax orientation is NW-SE, whereas those of sealed and open microcracks indicate that the sigma-Hmax orientation is WNW-ESE.

2. Paleostress field of the Kofu Granitoids

K-Ar biotite ages of Tokuwana plutonic mass range 12.0-9.0Ma (Shibata et al.,1984; Saito et al.,1997) and K-Ar hornblende ages of Ashigawa plutonic mass yield 11.3Ma (Saito et al.,1997). Accordingly, healed microcracks of Tokuwana plutonic mass were formed around 12.0-9.0Ma and those of Ashigawa plutonic mass were formed just after 11.3Ma. Healed microcracks in the Tokuwana and Ashigawa plutonic masses indicate that the sigma-Hmax orientations are NW-SE and around E-W, whereas sealed and open microcracks in the both masses indicate that the sigma-Hmax orientations are N-S and NNW-SSE.

Based on these results, we will discuss the paleostress transition in the South Fossa Magna region related with the collision of the Izu-Ogasawara arc that has occurred since late Miocene.