

Kinematic history along the Hinagu fault zone, Kumamoto Prefecture, Kyushu, Japan

*Kenta Kobayashi¹, Keiji Ogashiwa¹, Keita Takahashi², Shun Suzuki², Yumeki Hoshika², Naoki Takahashi¹, Chihiro Takahashi¹

1. Department of Geology, Faculty of Science, Niigata University, 2. Graduate School of Science and Technology, Niigata University

The Hinagu fault zone was activated at the time of the 2016 Kumamoto earthquake. To understand how fault zone has developed over a long period of time, it is necessary to observe fault zone structures at the macro to microscope scales. We carried out field surveys in the NE-SW trending aftershock area of the earthquake, and analyzed the development of fractures and slip senses at the fault zone.

Brittle fault rock zones were distributed in the Higo metamorphic rocks (Permian-Triassic). NE-SW striking Y surfaces indicated sinistral (early stage) and dextral (late stage) slip senses. NE-SW striking remarkable brittle shear zone was also recognized in the Hinagu Formation (Early Cretaceous), indicated dextral slip sense. On the other hand, ENE-WSW trending fold structures adjacent to the east, indicated sinistral slip sense.

Viewed from the kinematics, the macroscale fault zone in the aftershock area has a long history of deformations. Parts of them were selected, and activated at the time of the 2016 Kumamoto earthquake.

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