

3D model of the surface deformation associate with the 2016 Kumamoto Earthquake ,Kumamoto prefecture, central Kyusyu, Japan

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The 2016 Kumamoto Earthquake occurred on 14 April 2016 (Mj=6.5), 16 April (Mj=7.3). The surface rupture associate with the earthquake appeared along the Futagawa fault zone and Hinagu fault zone (Ikeda et al., 2001; Nakata and Imaizumi., 2002). To reveal features of the surface deformation, we carried out surface exploration from 15 April to 18. And we took aerial photo from 15 April to 22. As a result of these investigations, we found surface deformation trace at besides the active fault trace of the past report. We used PALS (Portable Aerialphotography and Locator System) of in-house development by photograph taking from the airplane. Simultaneously with taking a photograph PALS is the system to acquire a coordinate in the photography location and the subject location by a GPS. 3D model was generated using SfM (Structure from Motion) software from the photographs of which we took aerial photographs. SfM software is using Smart 3D Capture (made by Acute3D company). To make 3D model can confirm the local circumstances which can be observed only from one-way from the various angles with a single aerial photograph. We can observe while scaling it freely from the topography situation of the wide range to the in-depth structure of the surface deformation. We can use much times, we can study the surface deformation more than we observe from the sky on airplane. As the correct distribution location of the surface deformation can be done clearly, it's suitable for in-depth mapping. In Matoishi area at Aso-city, we can observe the surface deformations of straight line in the northeast-southwest direction, parallel more than one. The surface deformation made graben with Normal faults. We can't say a definite thing about an origin of this surface deformation by this stage. In Mitake area at Mashiki-town, there was the surface rupture that does not match the known active faults. This surface rupture made right lateral offset at roads and R-shear by the right lateral shear. Between two dextral faults, we found the sinistral fault. This sinistral fault is conjugate fault of main faults.

Keywords: 2016 Kumamoto Earthquake, active fault, 3D model, surface rupture, Futagawa fault zone and Hinagu fault zone, SfM