

Groups of Surface Faults with Small Displacement of the 2016 Kumamoto Earthquake Detected by ALOS-2 SAR Interferometry

*Satoshi Fujiwara¹, Hiroshi Yarai¹, Tomokazu Kobayashi¹, Yu Morishita¹, Takayuki Nakano¹, Basara Miyahara¹, Hiroyuki Nakai¹, Yuji Miura¹, Haruka Ueshiba¹, Yasuaki Kakiage¹, Hiroshi Une¹

1.GSI of Japan

The 2016 Kumamoto earthquake in Japan caused large crustal deformation, and several exposed faults have been identified by ground survey. We mapped the displacement field on the surface associated with the earthquake using satellite radar interferometry images of ALOS-2 operated by JAXA. The Synthetic Aperture Radar (SAR) interferogram generally shows elastic motion caused by the main earthquakes but many discontinuities of fault like displacements are found.

More than 200 lineaments are found and the position of some lineaments coincides with known active faults, such as the Futagawa fault zone, the Hinagu fault zone and other minor faults, however the number of the lineaments were much more than that of the known active faults. In each area, the lineaments have similar direction and motion each other, then they can be classified into several groups of faults. Since the direction of the lineaments coincides with that of the known active faults or that of their conjugate faults, the cause of the lineaments was related with the tectonic field of this region.

The lineaments are classified into the following several categories; (a) the main earthquake faults and their branched sub-faults, (b) earthquake faults which are not directly related to the main earthquake, (c) landslides and/or creep along geologically weak surfaces caused by the strong earthquake motion.

Keywords: 2016 Kumamoto earthquake, SAR interferometry, Fault

