

## Seismicity of the 2016 Kumamoto earthquakes controlled by resistivity structure

# Aizawa Koki Research Group for the resistivity structure around the regions of the 2016 Kumamoto earthquakes[1]  
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The Mj 7.3 Kumamoto earthquake that occurred at 1:25 JST, on 16 April 2016 not only triggered aftershocks in the vicinity of the epicenter, but also triggered earthquakes that were 50 to 100 km away from the epicenter of the main shock. The number of aftershocks and triggered earthquakes that exceeded Mj 3.5 reached 230 on 8 May 2016, located mainly along a NE-SW striking line that is approximate to the western extension of the Median Tectonic Line (MTL). The active seismicity can be divided into three regions: (1) the vicinity of the main faults, (2) the northern region of Aso volcano (50 km northeast of the mainshock epicenter), and (3) the regions around three volcanoes, Yufu, Tsurumi and Garan (100 km northeast of the mainshock epicenter). Notably, the zones between these regions are distinctively seismically inactive. The electric resistivity structure estimated from one-dimensional analysis of the 247 broadband (0.005 to 3000 s) magnetotelluric observation sites clearly shows that the earthquakes occurred in resistive regions adjacent to conductive zones or resistive-conductive transition zones. In contrast, seismicity is quite low in electrically conductive zones, which are interpreted as regions of connected fluids. We suggest that the series of the earthquakes was induced by a combination of local accumulated stress and fluid supply from conductive zones. Because the relationship between the earthquakes and the resistivity structure is consistent with previous studies, evaluations of seismic risk generally can be improved by taking into account the resistivity structure.

Research Group for the resistivity structure around the regions of the 2016 Kumamoto earthquakes consists of following members,

Koki Aizawa, Hisafumi Asaue, Katsuaki Koike, Shinichi Takakura, Mitsuru Utsugi, Hiroyuki Inoue, Ryohei Yoshimura, Ken'ichi Yamazaki, Shintaro Komatsu, Makoto Uyeshima, Takao Koyama, Wataru Kanda, Taro Shiotani, Nobuo Matsushima, Maki Hata, Tohru Yoshinaga, Kazunari Uchida, Yuko Tsukashima, Azusa Shito, Shiori Fujita, Asuma Wakabayashi, Kaori Tsukamoto, Takeshi Matsushima, Masahiro Miyazaki, Kentaro Kondo, Kanade Takashima, Takeshi Hashimoto, Makoto Tamura, Satoshi Matsumoto, Yusuke Yamashita, Manami Nakamoto, and Hiroshi Shimizu.