

Post-seismic deformation of 2016 Kumamoto Earthquake by continuous GNSS network

*中尾 茂¹、松島 健²、田部井 隆雄³、大久保 慎人⁴、山品 匡史⁴、大倉 敬宏⁵、西村 卓也⁶、澁谷 拓郎⁶、寺石 眞弘⁶、伊藤 武男⁷、鷺谷 威⁸、松廣 健二郎⁷、加藤 照之⁹、福田 淳一⁹、渡邊 篤志⁹、三浦 哲¹⁰、太田 雄策¹⁰、出町 知嗣¹⁰、高橋 浩晃¹¹、大園 真子¹¹、山口 照寛¹¹、岡田 和見¹¹

*Shigeru Nakao¹, Takeshi Matsushima², Takao Tabei³, Makoto OKUBO⁴, Tadashi Yamashina⁴, Takahiro Ohkura⁵, Takuya NISHIMURA⁶, Takuo Shibutani⁶, Masahiro Teraishi⁶, Takeo Ito⁷, Takeshi Sagiya⁸, Kenjiro Matsuhira⁷, Teruyuki Kato⁹, Jun'ichi Fukuda⁹, Atsushi Watanabe⁹, Satoshi Miura¹⁰, Yusaku Ohta¹⁰, Tomotsugu Demachi¹⁰, Hiroaki Takahashi¹¹, Mako Ohzono¹¹, Teruhiro Yamaguchi¹¹, Kazumi Okada¹¹

1. 鹿児島大学大学院理工学研究科地球環境科学専攻、2. 九州大学大学院理学研究院附属地震火山観測研究センター、3. 高知大学理学部応用理学科、4. 高知大学理学部附属高知地震観測所、5. 京都大学大学院理学研究科附属地球熱学研究施設火山研究センター、6. 京都大学防災研究所、7. 名古屋大学大学院環境学研究科附属地震山研究センター、8. 名古屋大学減災連携研究センター、9. 東京大学地震研究所、10. 東北大学大学院理学研究科附属地震・噴火予知研究観測センター、11. 北海道大学大学院理学研究院附属地震火山研究観測センター

1. Department of Earth and Environmental Sciences, Graduate School of Science and Engineering, Kagoshima University, 2. Institute of Seismology and Volcanology, Faculty of Sciences, Kyushu University, 3. Department of Applied Science Department, Faculty of Science, Kochi University, 4. Kochi Earthquake Observatory, Faculty of Science, Kochi University, 5. Aso Volcanological Laboratory, Institute for Geothermal Sciences, Graduate School of Science, Kyoto University, 6. Disaster Prevention Research Institute, Kyoto University, 7. Earthquake and Volcano Research Center, Graduate School of Environmental Studies, Nagoya University, 8. Disaster Mitigation Research Center, Nagoya University, 9. Earthquake Research Institute, University of Tokyo, 10. Research Center for Prediction of Earthquakes and Volcanic Eruptions, Graduate School of Science, Tohoku University, 11. Institute of Seismology and Volcanology, Graduate School of Science, Hokkaido University

The 2016 Kumamoto Earthquake (M 7.3) attacked to Kumamoto prefecture in Japan on April 16, 2016. Seismic intensity 7 was observed twice in the 2016 Kumamoto Earthquake. Post-seismic deformation was observed after the large earthquake occurred in land and trench. Twenty-one continuous GNSS observation sites were occupied after the 2016 Kumamoto Earthquake to observed post-seismic deformation. Thirteen of our twenty-one sites were near Futagawa and Hinagu fault zones, four of our sites were around Aso Volcano, which is east from Futagawa fault zones and the others were in Ohita Prefecture, which is east of Kumamoto Prefecture

Bernese GNSS Software Ver. 5.2 is used for GNSS data analysis of our newly sites together with GEONET and JMA GNSS sites for volcanoes in Kyushu for the period from April 15 to December 31, 2016. We used CODE precise ephemerides and CODE Earth rotation parameters. The coordinates of the GNSS sites are estimated respect to ITRF2008.

Large post-seismic deformation in horizontal component was observed at CGNSS sites near Hinagu and Futagawa fault zone. However, there is almost no observation in vertical component. Largest post-seismic deformation of 11cm from April to December, 2016 is observed in NS-component at MIFN, which is located east side of Hinagu fault zone. It seems that post-seismic deformation does not come to stop. After slip model is assumed for initial post-seismic deformation from April to July, 2016. We assumed two faults, one is located in Futagawa fault zone and the other is Hinagu fault zone. Fault parameters of length, width, strike, dip, amount of slip, position are estimated by simulated annealing method. Top and

bottom of fault plane are 0.1 to 40 km in Hinagu fault and 0.8 to 32 km in Futagawa fault. Two fault planes extended to mantle. It suggests that there are several phenomena in initial post-seismic deformation, effect of viscoelastic etc.

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