[JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-HW Hydrology & Water Environment

[A-HW24]Hydrological change after the 2016 Kumamoto earthquake

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More than two years have been passed after the occurrence of 2016 Kumamoto earthquake. Many investigators have been investigated the cause of observed coseismic hydrological changes such as spring lake dry up, groundwater level drop and rise. We also found groundwater quality changes before and after the quake and this information has been becoming accumulated. In fact, highly densed groundwater monitoring network installed in Kumamoto enables us to grasp comprehensive view of coseismic hydrological responses in very high resolution, so that, the results of these studies have high potential impact to this academic area globally. In this sense, we are welcome for all topics regarding coseismic hydrological changes after or even before the 2016 Kumamoto earthquake from broad point of view including hydrological cycle, deep water and hydrothermal water contribution, subsurface temperature, water quality, isotopes and microbiology. Topics of earthquake prediction and crustal defamation mechanism, surface morphological change in relation to hydrological changes are also welcomed.

[AHW24-P08]Surface displacement around the Kumamoto plain before and after the 2016 Kumamoto earthquake

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Keywords:SAR interferometry, 2016 Kumamoto earthquake, the Kumamoto plain

A large earthquake often induces groundwater level changes associated with changes in crustal stress and/or permeability. Accordingly, post-seismic displacement around a plain may reflects such groundwater level changes. In this study, I estimated surface displacement around the Kumamoto plain before and after the 2016 Kumamoto earthquake using interferometric synthetic aperture radar (InSAR) analysis. I used 20 PALSAR data acquired between 7 January 2007 and 5 March 2011 for the displacement before the 2016 earthquake, and 8 PALSAR-2 data acquired between 26 April 2016 and 20 June 2017 for the displacement after the 2016 earthquake.

As a result of the analysis, I estimated surface displacement of about 9 mm/year away from the satellite (possible subsidence) using PALSAR data (before the 2016 earthquake). Using the same data, I also estimated surface displacement toward the satellite (possible uplift) with the amount of 5 mm/year at the east part of the Kumamoto plain. On the other hand, using the data acquired at May 2016 and July 2016, I estimated surface displacement of about 25 mm away from the satellite (possible subsidence) at the intersection of the Hinagu and Futagawa fault systems. The amount of the displacement became smaller after the period. Because of the low spatial correlation with the fault systems, I inferred that the displacement after the earthquake correspond to groundwater migration due to the 2016 Kumamoto earthquake.