

# Postseismic deformation following the 2016 Kumamoto earthquake detected by ALOS-2/PALSAR-2 with ionospheric correction

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We have been conducting study of postseismic deformation following the 2016 Kumamoto earthquake using ALOS-2/PALSAR-2 acquired till 2018. We presented preliminary results in 2019 JpGU meeting, in which we found remarkable deformation possibly due to afterslip of shallow part of source faults as well as several local spots of deformation. However, we did not apply ionospheric correction to processing of SAR images, and observe discontinuities of line-of-sight (LOS) changes across the boundary of neighboring tracks. It was attributed to a couple of interferograms from ascending orbits. Upward motion was notified around the western rim of the Aso caldera, but we could not deny the possibility of a false signal generated by ionospheric disturbances.

Here we present revised results with the ionospheric correction to postseismic interferograms using the strategy of Wegmueller et al. (2018). Stacked interferogram of two ascending tracks has smooth distribution of LOS changes, showing moderate uplift around the western rim of the Aso caldera. We again found westward shift of southeastern side of the Hinagu fault. The average rate exceeds 6 cm/year till April 2018. Considering the extent of the area of westward shift, we can interpret it with afterslip of the shallow part of this fault. It is noteworthy that this westward shift is abruptly terminated 20 km southwest from the junction of Futagawa and Hinagu faults. We also detected local deformation (~6 cm/year in average till April 2018) in the City of Kumamoto, where small movement was detected in coseismic interferograms. An area of westward shift, whose average rate is estimated ~5 cm/year till April 2018, was found in the city of Kikuchi, about 10 km north of the Futagawa fault.

Keywords: Kumamoto earthquake, Postseismic deformation, ALOS-2/PALSAR-2, ionospheric correction, InSAR