

# Localized postseismic deformation following inland strike-slip event: Kobe and Kumamoto earthquakes

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Recent development of space geodesy enables us to observe unprecedented anomalous deformations. Especially, interferometry SAR gives us detailed information of pre-, co-, and postseismic deformation. In this report, we show a couple of examples.

We observed localized deformation following large inland strike-slip fault earthquakes such as the 1995 Kobe and 2016 Kumamoto earthquakes with InSAR. After the Kobe earthquake, we detected subsidence of ~ 10 mm/yr in a wedge-shaped zone near the northeastern edge of the source faults bounded by the Arima-Tatkatsuki and branches of the Rokko faults based on the analysis of ERS-1/2, Envisat and ALOS-1 images. Ozawa et al. (2004) already pointed out this zone of deformation using JERS-1 images.

The 2016 Kumamoto earthquake is followed by range increase in narrow zones bounded by the Futagawa and Idenokuchi faults and near the junction of Futagawa and Hinagu faults, which is derived from the analysis of ALOS-2 images up to mid-2017. The detected deformations show clear discontinuities between those in the surrounding zones, where no significant deformations are detected.

It is hard to understand these deformations with simple afterslip or viscoelastic relaxation models. Their spatial pattern implies a heterogeneous structure near the surface might control the process. It is important to take this kind of localized deformation into account when we understand postseismic deformation, especially based on less dense GNSS observations.

Figure. (Left) Stacked interferogram of ERS-1/2 during 1995 and 2004. (Right) Interferogram of ALOS-2 images acquired on April 18, 2016 and June 12, 2017.

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