The Tohoku earthquake of March 11, 2011, caused a remarkably large deformation over Honshu as is shown by continuous GPS and InSAR. This large deformation induced activities of local earthquakes of which are of magnitude 6 or larger, and volcanoes. For example, a M6.7 event hit northern Nagano Prefecture, central Japan, on March 12. On March 15, a M6.4 earthquake occurred in the vicinity of Mt. Fuji. On March 19, a M6.1 event occurred northern Ibaraki Prefecture, where there was no shallow seismicity before the March 11 mainshock. Furthermore a swarm started near the Yakedake volcano, central Japan. It is highly important to reveal the associated deformation and their mechanism for the understanding of triggering process and forecast of activities.

ALOS/PALSAR gives images with so spatially high resolution that coseismic deformations associated with these activities can be detected. We carefully investigated interferograms of the pairs of ALOS/PALSAR images spanning the March 11 mainshock and found disturbances in fringes associated with the mainshock at several spots. The most prominent one is the concentric fringe with a diameter of ~10 km near the epicenter of the Ibaraki event of March 19. We detected 3 cycles of fringe, implying to ~35 cm of range increase for both the ascending and descending pairs. This observation suggests that subsidence, which is consistent with normal faulting mechanism. We also found a disturbance in the source region of the 2008 Iwate-Miyagi earthquake. We will discuss if there is a change in mode of postseismic deformation.