



Coseismic Deformation From the Haiti Earthquake of January 12, 2010, Detected by ALOS/PALSAR

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On January 12, 2010, a Mw7.0 earthquake hit southern Haiti and caused severe damages in and around Port au Prince. This region has not suffered from strong earthquakes since 18th century, but rather high seismic risk is inferred from GPS observation (Mannaker et al., 2008). This earthquake is considered to have occurred on the Enriquillo fault. It is essential to reveal coseismic deformation from this earthquake and estimate fault parameters for the understanding of earthquake generation process and future seismic hazard evaluation. Unfortunately, no continuous GPS data are available at present. Therefore we utilize synthetic aperture radar images.

PALSAR (Phased Array type L-band SAR) is a L-band synthetic aperture radar onboard the Japanese satellite named Advanced Land Observation Satellite (hereafter ALOS). ALOS made an urgent observation of PALSAR on January 16 from the Path 138 with the off-nadir angle of 34.3 degree. Performing interferometry with the image acquired on October 11, 2007, we obtained an interferogram with CGIAR hole-filled SRTM DEM. The eastern edge of the obtained image is about 30km west of the epicenter. This area corresponds to an about 30km wide peninsula which extends westward from Port au Prince. However, we found at least three cycles of fringes ($\sim 40\text{cm}$), which show increase of range toward the center of fringes, on the south side of the Enriquillo fault. We also recognized three cycles of fringes on the north side of the fault, but their gradient is much steeper than the south side. This observation implies eastward and/or subsidence of the southern block of the fault, which is consistent with left lateral strike-slip motion on a nearly vertical fault. Very preliminary analysis of fault model suggests that the western edge of the source fault is located about 30km west of the epicenter and slip may reach the surface and be as large as 2m, though there must be a trade off between slip and depth of fault.

Observation of ALOS/PALSAR from different paths including ScanSAR mode will be made within a month. We are going to analyze all these images and detect coseismic deformation to reveal the nature of this earthquake.