



Surface Deformation Analysis of the Active Faults revealed by InSAR Observations and Geodetic Data in Southern Part of the Taitung Longitudinal Valley, Eastern Taiwan

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The NNE-striking Longitudinal Valley Fault (LVF) in eastern Taiwan is an extremely active inverse fault, which is considered as a collision boundary between the Eurasian and the Philippine Sea plates. The fault segments of the LVF demonstrate different slip behaviors, especially in the southern segment of the LVF. The deformation is partitioned by the strike-slip (Lichi fault segment) and the reverse faulting (Luyeh segment). Thus we investigate crustal deformation pattern along the southern LVF by using SAR interferometry and precise leveling data. The SAR data of the Longitudinal Valley area were collected by ERS-1, ERS-2 and Envisat satellite of the European Space Agency in both descending (track: 232; frame: 3141) and ascending (track: 311; frame: 459) orbits. However, this area is so heavily vegetated that high coherence area is limited in the Taitung City and good interferograms with better coherence are limited to short time span and small perpendicular baseline pairs. Therefore we made three stacking image from the higher coherence interferograms representing deformation interval from 1995-1996, 1996-1998 and 2006-2008 separately. These three results show a same relative subsidence between Luyeh fault and Lichi fault, which is consistent with leveling data measured that time. Besides, we also used the PSInSAR technique to trace the discrete points that were minimally affected by the decorrelation of radar signals through time. Finally we constrain the deformation map based on PSInSAR with leveling data for better understanding the deformation patterns in the southern Longitudinal Valley area.