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Search for Creep Signals along the Sagaing Fault Using ALOS/PALSAR Interferometry

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Sagaing fault is known as a ~1000 km continental transform fault between the India and Sunda plates, and it is one of the great right-lateral strike-slip faults of Southeast Asia. As slip rate is the important aspect of Sagaing fault, during the past 30 years, seismologists did their best to estimate the slip rate in order to get a close value. The value of slip rate estimated from 35.4 mm/yr by Curray et al. (1982) to 18.5 mm/yr suggested by Myint Thein et al. (1998) changes by different seismologists. Since GPS become useful around 21st century, Vigny et al. (2003) used two years GPS observations to estimate 18 mm/yr of elastic deformation across the central Sagaing fault, and Meade (2007) estimated the rate using GPS observations in a block model which suggests that the strike-slip rate between the Indian and Southeast Asian Plate is 17 and 49 mm/yr at across the central and northern Sagaing fault, respectively.

Whereas InSAR is a powerful technique to map the Earth's surface deformation, to our knowledge, no previous studies have been performed along the Sagaing fault, presumably because shorter-wavelength SAR data did not allow preserving interferometric coherence over the densely vegetated regions. The L-band ALOS/PALSAR, however, could keep good coherence even in vegetation, so that we can map out the surface deformation if the fault is deforming with detectable amplitude. As a preliminary study, we applied InSAR technique to such PALSAR data pairs that span 2-3 years if the fault is undergoing creeping signals like found along the San Andreas Fault in the US west coast.

Keywords: creeping signals, right-lateral, strike-slip, slip rate, InSAR