Geophysical Research Abstracts
Vol. 20, EGU2018-7404, 2018
EGU General Assembly 2018

Surface Deformation of the North-Eastern India Using Sentinel-1 Persistent Scatterers Interferometry

Jui-Chi Lee (1), Chung-Pai Chang (1,2), Kuo-Hsin Tseng (2,3), Geng-Pei Lin (1), and Hao Kuo-Chen (1)

(1) Department of Earth Sciences, National Central University, Taoyuan, Taiwan (jclee@g.ncu.edu.tw), (2) Center for Space and Remote Sensing Research, National Central University, Taoyuan, Taiwan, (3) Department of Civil Engineering, National Central University, Taoyuan, Taiwan

This study contributes to tectonic questions of north-eastern India by using the technique of Persistent Scatterers Interferometry (PSI). The northeastern India is a tectonically active region, where the geomorphophic development is a consequence of collision between the Indian subcontinent and the Tibetan Plateau in the north and the oblique subduction between Indian-Australia plate and Eurasian plate in the east. The present tectonic configuration of this region is due to the north-eastward movement of the Indo-Australian Plate. Shillong Plateau is the only raised topography in the Himalayan foreland intersecting east with the Indo-Burman Ranges. It is suspected to be a pop-up structure or uplifted through the mechanism of backthrust. The dextral Dhubri-Chungthang fault zone is in the north-west part of Shillong Plateau connecting the deformation front of the Himalayan and Shillong Plateau. Previous seismotectonic studies suggest that this dextral fault might penetrate the Indian crust down to the Moho. There is compressive force nowhere in north-east India that made so much complexity as in this area. Thus, the natural tectonic setting of Shillong and Dhubri-Chungthang fault zone offers an ideal location to study the active tectonic movements and to monitor the present surface deformation. Various aspects in geology and geophysics of this region had been studied earlier by previous studies. However, the possibility of utilizing advanced remote sensing technology is poorly investigated. Therefore, we intend to use ESA's Sentinel-1 satellite that equips with a C-band synthetic aperture radar (SAR) sensor, which is an effective sensor system for monitoring crustal deformation over vegetated area and as an important tool for exploring the mechanisms of fault movements. Our results will give a systematic understanding and insights about the structural complexity of the tectonically active regions, as the natural tectonic settings make the region very prone to hazards, such as landslides, land subsidence and earthquakes.