[EJ] Evening Poster | S (Solid Earth Sciences) | S-TT Technology & Techniques

[S-TT48]Synthetic Aperture Radar

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ALOS-2 and Sentinel-1, which have highly enhanced capacity compared to previous SAR satellites, were launched in 2014, and their utilization has been widely expanding as the data has accumulated. Now we are facing a new and abundant era of the satellite SAR, along with a worldwide trend to an open and free data policy of satellite data, and with next-generation advanced SAR satellite plans by several countries. In addition, SAR technologies with other platforms, such as ground-based SAR with high temporal resolution and UAV (Unmanned Aerial Vehicle) SAR with flexible operability, have also been developed and used for various targets. These facts indicate that the SAR utilization data has become widespread in both basic researches (e.g., earth science) and diverse applications (e.g., disaster prevention and forest monitoring). In this session, we would like to share a broad knowledge and information regarding SAR. A wide range of research topics from basic researches to advanced applications will be welcomed.

[STT48-P04]Source model of the 2016 Valentine’s day earthquake (Mw 5.7) off the east of Christchurch, New Zealand, inferred from InSAR and GPS

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On 14th February, 2016, a Mw 5.7 earthquake occurred 17km off the east coast of Christchurch, New Zealand. Fortunately, there were no fatalities but widespread rockfalls and liquefaction were observed across the region. The earthquake was part of the aftershock sequence following the devastating Canterbury earthquakes in 2010 and 2011. The earthquake was the largest to have occurred since the Mw5.9 earthquake on 23rd December 2011. Due to the offshore position of the epicenter, the orientation of the fault plane is ambiguous with either a north-south or east-west trending fault plane explaining the seismic data. In this study we used geodetic data to investigate the co-seismic deformation pattern to find the best fitting slip model. Despite the offshore location, InSAR and GPS indicated displacements of up to 10 cm located along the coastal region east of the city center. Despite the large number of continuous and campaign GPS data across the region, the orientation of the fault plane remains ambiguous when inverting GPS data alone. However, the inclusion of ascending and descending ALOS-2 data in addition to GPS indicate an east-west trending fault. We estimate slip of ~1m on a fault plane whose width and length is about 4 and 6 km respectively. The orientation of the fault is consistent with the December 2011 aftershock and may represent a continuation of the fault offshore.