

## NICT third generation airborne SAR system

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National institute of Information and Communications Technology (NICT) developed the second generation polarimetric and interferometric X-band airborne synthetic aperture radar in 2008. NICT has carried out the observation for the application research such as environmental and disaster monitoring since 2011. For example, the Tsunami hit areas in Tohoku region and the crater after the eruption were observed. In addition, the wave height distribution was estimated from the sea surface velocity measured by the along track interferometric mode in the Pi-SAR X2.

Now, NICT is developing the third generation polarimetric and interferometric X-band SAR system. This system is designed to acquire a high-quality SAR image, high performance single and repeat track interferometric SAR data and high performance along track interferometric SAR data. In this study, the expected function and performance of the Pi-SAR X3 is reported. Fig.1 shows the observation targets. NICT plan to perform the disaster monitoring such as the Tsunami hit areas and the crater after the eruption and environmental measurement such as ocean and agriculture by using the Pi-SAR X3. To measure these targets with high precision, 3 performances of the Pi-SAR X2 will be improved and a new function will be added. A basic performance such as the spatial resolution and sensitivity will be improved to enhance the visibility of the image. The accuracy of the elevation measured by the single-track interferometry will be improved. We aim to reduce the estimation error in the elevation to less than 2m. The range of the velocity measured by the along track interferometry will be improved to measure high wave under the typhoon. The repeat-track interferometric observations such as CCD, DinSAR and topography will be realized by controlling the flight course precisely, and the ground deformation and the artificial structure deformation such as a building and bridge will be able to detect.

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