

Earth Crustal Movement Detection by Airborne Repeat-Pass Interferometric SAR

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Spaceborne repeat-pass SAR interferometry (RP-INSAR) is an excellent tool to detect the very slight earth crustal movements caused by an earthquake, a volcanic activity, and so on. In principal, an airborne SAR system has an ability to detect the movement as well. In order to realize an airborne RP-INSAR, the airplane must be flown on almost the same pass repeatedly and very precise airplane motion data are required to process the RP-INSAR data.

We experimented the airborne RP-INSAR using GSI-SAR. GSI-SAR is an X-band airborne SAR installed to Cessna 208. In order to realize the repeat-pass flight, we used the D-GPS navigation system. And in order to correct the platform motion precisely, we used the phase information from corner reflectors set on the ground. As a result, we almost succeeded the RP-INSAR processing.

In the future, we hope to develop L-band airborne RP-INSAR system with auto-pilot function for repeat-pass flight, because L-band is superior to X-band in keeping the interferometric property for a long time interval.

