Monitoring of ground subsidence with InSAR

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The leveling survey has been used for subsidence investigation to map the height variations in an area. It can measure with very high precision, but only provides us the data at limited numbers of spots along the routes. Therefore, we have to arrange densely-deployed leveling routes to estimate the area-wide deformation pattern and accurately grasp the subsidence.

On the other hand, InSAR can provide the surface deformation patterns by large-scale monitoring. At present, JAXA's ALOS continuously provides us the observation data that covers the whole land of Japan. However, InSAR is inferior in precision to the leveling (-0.1mm) and could not detect small variations in a short period of time.

If the two techniques are combined in a complementary manner as to make most of their advantages, it will be possible to reduce the labor-requiring leveling surveys while maintaining the precision of the observation.

GSI is conducting researches on the fusion of InSAR and leveling for an improved efficiency in the subsidence investigation in Japan. Summary and progress of our researches will be presented.