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### Long-term Ground Deformation Measurement by Time SAR Interferometry

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#### Abstract

Interferometric SAR (InSAR), which is an application technique of SAR, is becoming established as the method for monitoring of ground displacement. In order to observe subtle surface movement over a wide area at high resolution, the authors developed the method to measure a long-term deformation and time series analysis, aiming at establishment of practical and flexible technique. It utilizes smoothness constrained inversion which assumes deformation as unknown parameter for time series analysis. The procedure separates with ground change and noise components from each con

and composes long-term deformation.

We applied it to the measurement of ground subsidence around Kar ENVISAT/ASAR data, and verified its accuracy by comparing with around Kujukuri area. As a result, it was shown that the spatial shape of subsidence areas detected by the proposed method were analogous to the map generated from leveling data. In addition, it was also shown that the coefficient of correlation between the result of proposed method and leveling data was about 0.9, and a bias of about 10mm was included.

Keywords: [InSAR](#), [time series analysis](#), [long-term deformation](#), [EARTH OBSERVATION](#), [Plain](#)

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