Detection of medium scale residential area and small scale subsidence around the time by time series SAR interferometry

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The inclination of the building often causes cracks in the wall and hindrances opening and closing of doors and windows. In many cases, the ground itself, which is the foundation of the building itself, is loose due to extraction of groundwater, embankment, cuts, earthquakes and it is distorted due to aged deterioration of the building itself. Using this high resolution synthetic aperture radar (SAR) using microwaves to measure this minute surface change, measure the amount of change of the ground surface from the phase difference of the two images observed and detect a wide range Are listed as issues.

Therefore, in this research, using the observation data of November 2006 to June 2017 of PALSAR and PALSAR-2 mounted in JAXA's ALOS, ALOS 2, the watermark of Saitama prefecture's Hatoyama city I studied about the Hatoyama community center and compared the numerical values obtained using the interference SAR technique and the observation data of the water mark by the Geographical Survey Institute to verify the accuracy. In addition, as a study of analytical methodology, we also made an approach on the time baseline length (how to combine timings when setting up interference pairs).

As a result, we obtained the leveling data and mean square residual of sediment volume: 2.14 mm, root mean squared residuals of mean annual sedimentation rate: 4.40 mm / year. Also, in the two types of time baseline length setting methods, different motions were detected, and better results were obtained by interfering the center with the axis this time. In addition, we extracted the places where it can be presumed that three variations occurred in Hatoyama city, apart from accuracy verification.

As future developments, GPS equipment will be installed in the place where estimation of fluctuation was made and verification with higher accuracy will be carried out. Moreover, it can be thought that not only the survey of the variation of that point by verification with plural GPSs but also to be able to grasp the topography in plan.

