Postseismic deformation detected by InSAR analysis and comparison deformation caused by earthquake between postseismic deformation

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Although it is known that postseismic deformation occurs after the major earthquake, detailed information on the ground fluctuation caused by postseismic deformation is often not understood very much. For example, in the case of 2016 Kumamoto earthquake, GPS measurement and InSAR analysis have been confirmed that postseismic deformation have occurred. however, considering the scope, variation period, When the ground fluctuation due to postseismic deformation continues, there is a possibility that the structure will be deformed after the reconstruction work, so investigate the details of the ground fluctuation caused by postseismic deformation after a large earthquake It is important to proceed.
The 2016 Northern Ibaraki Prefecture Earthquake recorded a maximum Magnitude of 6 or more, occurrence of postseismic deformation was confirmed by GPS measurement, but the detailed surface distribution of postseismic deformation was unknown. Therefore, InSAR analysis was carried out using observation data immediately after the earthquake with ALOS-2 and observation data that had been almost one year after the earthquake.
As a result, it was possible to confirm the planar distribution of postseismic deformation with the LC-InSAR diagram and InSAR analysis. And, it is confirmed that the discontinuity of the stripes almost coincides with each other, and the southwest side, which is the upper plate side, varies in the direction away from the satellite.
Next, we compared the ground fluctuation caused by the main fluctuation caused by the main shock of the 2016 Kumamoto earthquake and the 2016 Northern Ibaraki Prefecture Earthquake to the ground fluctuation caused by the postseismic deformataion .
In the 2016 Kumamoto earthquake, the Hinagu fault zone In the northern part, clear surface seismic fault was confirmed in the fault line indicated clearly topographically and past history of active fault map. However, InSAR analysis shows crustal deformation in the west side of this fault line On the other hand, in the crustal deformation due to postseismic fluctuation, the fluctuation was confirmed at the position close to the fault line where the surface earthquake fault was confirmed, and the crustal deformation at the time of the earthquake and the preliminary In addition, in the range corresponding to the Uda section of the Futagawa fault zone where the earthquake fault is not confirmed at the time of the earthquake, the InSAR analysis by the pair after the earthquake suggests postseismic fluctuation Gap of InSAR fringes was confirmed.
In the 2016 Northern Ibaraki prefecture Earthquake, the range of the ground fluctuation is small in the crustal deformation due to postseismic fluctuation, and the fluctuation is not seen in the northeast side of the fault as compared with the fluctuation caused by the main shock, It can be confirmed that the maximum position moves to the southeast side.
As described above, interference analysis has made it possible to grasp the planar distribution due to postseismic deformation.
In order to observe the domestic periodically, the data that contributes to the extraction of postseismic deformation is accumulating.The future will monitor the range of crustal movement and time change of crustal deformation using these observation data It is desired to do.

Keywords: InSAR, Postseismic deformation, 2016 Northern Ibaraki Prefecture Earthquake, 2016 Kumamoto earthquake