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# Precisely determined the surface displacement by the ionospheric mitigation using the L-band SAR Interferometry over Mt.Baekdu

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Mt. Baekdu (Changbaishan in Chinese) is located on the border between China and North Korea. It has recently attracted the attention of volcanic unrest during 2002-2005. Many researchers have applied geophysical approaches to detect magma system of beneath Mt.Baekdu such as leveling, Global Positioning System (GPS), gases analysis, seismic analysis, etc. Among them, deformation measuring instruments are important tool to evaluate for volcanism. In contrast to GPS or other deformation measuring instruments, Synthetic Aperture Radar Interferometry (InSAR) has provided high resolution of 2-D surface displacement from remote sensed data. However, Mt. Baekdu area has disturbed by decorrelation on interferogram because of wide vegetation coverage. To overcome this limitation, L-band system of long wavelength is more effective to detect surface deformation. In spite of this advantage, L-band can surfer from more severe ionospheric phase distortions than X- or C- band system because ionospheric phase distortions are inverse proportion to the radar frequency. Recently, Multiple Aperture Interferometry (MAI) based ionospheric phase distortions mitigation method have proposed and investigated. We have applied this technique to the Mt.Baekdu area to measure surface deformation precisely using L-band Advanced Land Observing Satellite-1(ALOS-1) Phased Array type L-band Synthetic Aperture Radar(PALSAR) data acquiring from 2006 to 2011.