



Mapping of volcanic eruption based on InSAR

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Radar interferometry often used only as the method for calculation of heights or vertical displacements. Meanwhile it's a multistage processing which allows to use results of these stages for thematic analysis. Author has explored and described two-pass differential radar interferometry as an independent method of mapping of changes in lava flow topography. The study region is Tolbachinsky Dol (Kamchatka), where a fissure eruption occurred in 2012-2013. Remote sensing data (optical and radar imagery) were regularly acquired during the whole eruption period. Radar imagery was acquired by Radarsat-2 in June – October 2013 from both descending and ascending orbits. These series of radar interferometric pairs, optical imagery, digital elevation model (DEM) and results of fieldwork provide valuable information for complex thematic mapping. A series of thematic maps was created as a result of the study. They show dynamics of lava flow areas, and also provide complex maps of lava flow formation. These maps demonstrate the possibility of radar interferometry for thematic mapping topography changes in volcanic regions. Author analyzed the method accuracy using two series of radar imagery (from ascending and descending orbits). The comparison showed good agreement between maps based on the processing of radar data from different orbits.