Detection, Monitoring of landslides by using Differential Interferometry Synthetic Aperture RADAR
Kourosh Shirani, Morteza Khodagholi
Iran, Isfahan center for agriculture and natural resources research and education

Abstract

Differential interferometry synthetic aperture radar (D-InSAR) is an efficient way to detection and measure the displacement of the Earth’s surface. So that using this technology allows for continuous monitoring of small movements of the Earth's surface, with high precision and in a wide range is possible. Because of the wide coverage of satellite images, timeliness and low cost of this technology in them than other methods of field investigation of geologic hazards such as landslide detection, subsidence, earthquakes and volcanic activity is very is common. In this study, the differential interferometric techniques was applied to monitor and determine the amount of displacement of landslide in 70km south of the city Semirom, Isfahan. For this purpose, the six radar images of ASAR sensor ENVISAT satellite were selected and processed by DInSAR technique. As a result, initial processing, from the images the produced couples, the five couples related to 2010 and 2011 was appropriate further processing. The results of processing of radar images revealed a maximum vertical displacement of the sliding in 2010, from June 24 th 2010 to October 2010 period of 105 days, equivalent to 5 cm, and in 2011, the displacement maximum of the sliding mass of image pairs, September 2011 and October 31, 2011 with a 120-day period, equivalent to 6 cm respectively.

Key words: Landslides, Interferogram, SAR