Applications on SAR and GNSS Data Used in Studying a Landslide "Trifon Zarezan" - Bulgaria (10922)

Mila Atanasova-Zlatareva and Hristo Nikolov (Bulgaria)

SUMMARY

This paper focuses on studying landslide processes based on the use of Global Navigation Satellite System (GNSS) surveys to detect deformations of the ground surface in the area of "Trifon Zarezan" landslide located on the Northern Bulgarian Black Sea coast. The geodynamic GNSS networks established for landslides monitoring consist generally of two types of points – reference or fixed points located on geologically stable terrain and survey points located within the landslide. Some of the points of the purposely created geodynamic network located inside the studied landslide were destroyed as a result of the activations of the landslide processes throughout the years. Nevertheless the monitoring of the landslide movements continued and complemented by studying landslide processes based on the use of differential interferometric Synthetic Aperture Radar techniques (DInSAR) that make use of data acquired by space borne SAR sensors.

The presented research implements an advanced technique for studying very slowly moving landslides by combining GNNS measurements and results from interferometric processing of SAR data by DInSAR technique. This technique can be considered as an innovative method and operational tool in overcoming geological hazard problems such as detection of landslides and ground-surface deformation detection and monitoring. The objective selected for research in this paper is of utmost importance for the studied area since the residents and population as whole are seriously affected by the researched phenomena. Here is to be underlined that in the last 30 years there were several activations of the studied landslide causing serious damages to houses, buildings and infrastructure, and this is why information provided to the wide public will contribute to tackle the consequences of them. This research paper presents the latest achievements of the authors in studying geo-hazards that are registered in larger coastal area of North Black Sea which is highly susceptible to destructive geodynamical processes. The main contribution of this paper is in providing reliable information for the temporal behavior of the investigated landslide, which

Applications on SAR and GNSS Data Used in Studying a Landslide "Trifon Zarezan" - Bulgaria (10922) (10922)
Mila Atanasova-Zlatareva and Hristo Nikolov (Bulgaria)

FIG e-Working Week 2021
Smart Surveyors for Land and Water Management - Challenges in a New Reality
Virtually in the Netherlands, 21–25 June 2021

already has a serious impact on the area where it is located. The findings and the technology introduced shall facilitate the local authorities, and most specifically the experts in charge for landslides monitoring, in taking informed decisions concerning the overall environmental situation in the studied area.

Applications on SAR and GNSS Data Used in Studying a Landslide "Trifon Zarezan" - Bulgaria (10922) (10922)
Mila Atanasova-Zlatareva and Hristo Nikolov (Bulgaria)

FIG e-Working Week 2021
Smart Surveyors for Land and Water Management - Challenges in a New Reality
Virtually in the Netherlands, 21–25 June 2021