



## **Comparison between 3D model of Pisciarelli area (Campi Flegrei caldera) through Terrestrial Laser Scanner**

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The volcanic/geothermal area of Pisciarelli is located within Campi Flegrei caldera. This last is a densely populated area, including the Pozzuoli town and bordering the western side of the Naples city, this causes a high vulnerability and consequently a high volcanic risk. In the recent decades this area has experienced minor ground uplift episodes accompanied by low magnitude seismicity and by strong intensification of degassing activity in particular localized at Pisciarelli area. We present the results of the Terrestrial Laser Scanner (TLS), using a Reigl VZ1000<sup>®</sup>, analysis of Pisciarelli area performed in June 2013 and the comparison with the data acquired later in March 2014. We apply the TLS technique based on Time of Flight (TOF) method in order to define an accurate 3D digital model for detailed analysis of this area performing numerous scans from different points of view in the area. In this way was ensured a good coverage of the whole investigated area in order to avoid shaded portion due to the high soil degassing activity. Such fact limits the capacity of laser penetration is caused by wavelength near infrared range. For each survey was obtained a Digital Terrain Model (DTM) from the reconstructed data and both were compared. In particular, we have identified two "critical" areas of interest that will be monitored more frequently. These are: 1) in the lower part of the studied area a major fault line that bounding the Agnano caldera moderately NE-dipping; 2) in the upper part of the study area a zone of depletion with its zone of accumulation. The DTM were georeferenced into the UTM-WGS84 reference frame. The aim of this work is to define a procedure to compare between 3D model applied to monitoring of this area. Also to evaluate of volumetric and morphologic changes and to recognizing unstable masses by comparison of 3D data. For this purpose other TLS surveys will be performed in the upcoming in this active volcanic/geothermal area.