



New gravity interpretations in the northern and eastern side of the Colli Albani Volcanic District: first results

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The Colli Albani is a quiescent Volcanic District, located almost 20 Km southeast of Rome. It has been active since at least 600 ka and it belongs to the potassic and ultrapotassic Roman Magmatic Province, a northwest-trending chain of volcanoes that developed along the Tyrrhenian Sea Margin of Italy during middle and late Pleistocene time. The Albano maar (< 70 ka) represents the most recent activity of the hydromagmatic phase and cannot be considered extinguished yet. First Gravimetric map of Colli Albani Volcanic District was made by the Italian Geological Service from the 1:100,000 Gravimetric Map of Italy (Maino et al., 1969) and later some new gravity interpretations were performed by Di Filippo & Toro (1980, 1995). This paper gives preliminary gravity results in the northern and eastern side of the Volcanic District in order to obtain a detailed gravity map of Colli Albani Volcanic District. A broad area N of lake Albano (Rome, Ciampino-Marino) is the most one strongly characterized by the occurrence of geochemical manifestation of a still-active subvolcanic system which are hazardous factors for the resident population. In eastern side of the volcano the previous studies showed that some areas are completely missing gravity stations. In this study the mesh interval between each gravity station are 500 m² on average; in the previous was 2 km² on average. A new Residual anomaly map has been prepared by subtracting the first order Regional Field from Bouguer anomalies. The Residual anomaly map is very detailed and represents the most suitable picture for understanding the structure of the prevolcanic substratum. Residual anomaly map shows a maximum gravity value of Ciampino High, spatially continuous along the major NW-SE axis, corresponds to where the high distribution of radon and CO₂ was observed. Another maximum value is located in the southern part of the Ciampino High relative to Rocca di Papa, where the second activity of the volcano took place.

A minimum region gravity is located in the eastern part of the Ciampino High. The map shows faults obtained by gravity interpretations. The superficial geological data, the drill log data, and metamorphic xenoliths from the eruption of Colli Albani (Funicello & Parotto, 1978) and gravity data have been analyzed all together in order to know sub-surface structure of this area and make a bi-dimensional gravity model. In order to define the heterogeneity of the lithotypes some sections have been prepared by gravity model.

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