



The survey of “Pozzo del Merro” cenote: an integration of different geomatic methodologies

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“Pozzo del Merro” (Merro’s Well) is a cenote situated in the rural area north of Rome, between the Cornicolani Mountains and the valley of Tevere river, in the provincial wildlife park called “Riserva naturale della Maccia di Gattaceca e della Macchia del Barco” in the area of Sant’Angelo Romano municipal administration.

The well is entirely a carsic formation, morphologically is a deep crater with walls covered by vegetation that hide completely the crater to the sight. In the lowest part of abyss of the “Pozzo del Merro” is a lake with almost circular contour, it has around ten meters of diameter, but the depth is not completely verified; the surface of the lake till now was supposed to be around 80 meters by the edge of the abyss.

The underwater exploration of the abyss executed with a R.O.V. (Remote Operated Vehicle) has esteemed a depth of 392 meters from the level of the lake: the “Pozzo del Merro” cenote results so the carsic deeper lake of the world.

The purpose of our job is to study the possibilities to effect a survey of the morphology of the emerged area and, particularly, the position of the “zero” of an hydrometric pole to which all the measure were referred but whose absolute height is still unknown.

The technique used for the analysis of morphology was a laser scanning survey; this technique was convenient because it will made possible also to analyze the stratification of rock formation along the face of the well, cause it integrate the laser scanning data with the image acquired by the camera built in the laser scanner device. The laser scanning survey was carried out during the wintertime with the purpose of reducing the impact of cover vegetation.

For the calculation of the height of the pole it was necessary to perform a detail combined survey with total station and geodetic GNSS receiver, this because the morphology and the depth of the well together with the vegetation cover make the direct use of geodetic GNSS receivers impossible in the area

Finally, other points nearby the “Pozzo del Merro” cenote where groundwater emerge, were surveyed with the purpose of evaluating the possible connection between the cenote and other local groundwater.

The “Pozzo del Merro” cenote area protection is guaranteed, because it’s in the area of provincial wildlife park of “Macchia di Gattaceca” and “Macchia di Barco”, founded with Region Lazio law no. 22/97. It’s protection is under the responsibility of the Provincial administration of Rome.