



Torino 19-21 September 2022

ABSTRACT BOOK

a cura della Società Geologica Italiana



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COVER IMAGE:

Aerial cityscape image of Turin during sunset.

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S40.

Environmental geology supporting the European Green Deal

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Risk evaluation and management in lacustrine environment: bathymetric and morphologic survey of Martignano and Bracciano lakes (metropolitan area of Rome, Italy)

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Keywords: risk evaluation, Rome metropolitan area, volcanic lakes.

The metropolitan area of Rome is characterized by the presence of four main lacustrine basins, located within the volcanic districts of the Roman magmatic Province. Namely, the Lakes of Bracciano (56.5 km²) and Martignano (2.44 Km²) fill the calderas of the Sabatini Mounts, whereas the Lakes Albano of Castel Gandolfo (6 km²) and of Nemi (1.67 Km²) basins are situated in the central zone of the Alban Hills.

Lakes represent an important natural, environmental and economic value, and are thus all included in regional natural parks. Conversely, the interaction of natural hazard (endogenous gas emissions, local seismicity, landslides, water table lowering) and human activities in lacustrine environments (navigation, swimming, presence of relic weapons of war) can determine serious risk factors.

Therefore, the Metropolitan City of Rome Capital (CMRC), carrying out its duties of land planning and management, implemented in recent years a special project of survey of the lakebeds. The interest lies in combining CMRC responsibilities about control of navigation in inland waters with territorial risks assessment studies. The final goal is the constitution of a geographic information system of lakes, in order to support strategic planning and emergency management in the metropolitan area. This tool will support a positive synergy between different institutions (municipalities, local authorities, police forces, fire brigade, civil protection, management authorities of natural parks, etc.), sharing information and knowledge.

Lack of updated bathymetry represents a critical issue for rescue operations in lakes. In recent years, several tragic incidents occurred; the recovering of victims and wrecks can be hindered also by an inadequate state of knowledge. The case of Bracciano and Martignano basins is emblematic, because the available bathymetric map dates back to half a century ago (Barbanti & Carollo, 1969). Conversely, the Lake Albano got more attention in recent times, and modern disciplinary studies are available (Anzidei & Esposito, 2010).

Hence, CMRC selected the Martignano site for a multiparametric exploration of the lake; a complete bathymetric and seismic prospection, including a detailed topographic survey of the circumlacual coastal area, was performed in 2020. A second project was carried out in 2021 in the Lake of Bracciano, applying the same methodology to four test areas, selected as the most frequented sectors for swimming and sailing.

Here we present preliminary results, which will help and guide next exploration programs, starting from the upcoming survey of the new 1:50.000 scale geological map, in the framework of the CARG project. The convergence of interest between basic and applied research will foster progress of hazard assessment and risk prevention in lacustrine environments, by means of detailed knowledge of what lies beneath water surface.

Anzidei M. & Esposito A. (2010) - Lake Albano: bathymetry and level changes, in The Colli Albani Volcano. In: Funicello R. & Giordano G. Eds., Special Publications of IAVCEI, 3, 229-244. Geological Society, London.

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