

# **Geospatial, Petrographic and Geochemical Investigations into the Volcanic Breccia Quarries of the Euganean Hills**

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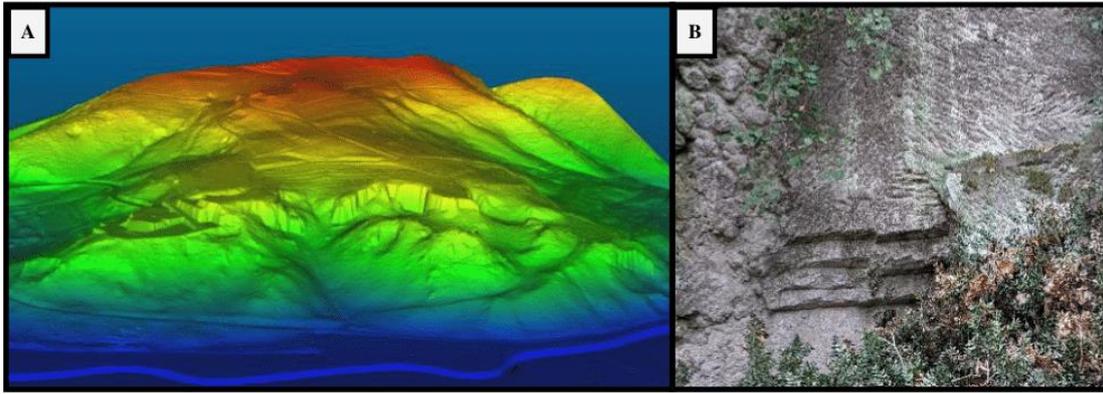
This PhD project aims to investigate Roman quarrying practices in the Euganean Hills, focusing on the extraction and use of volcanic breccia — a historically significant yet underexplored resource in ancient construction. While extensive research has examined Euganean trachyte, the quarrying techniques, spatial distribution, and material characteristics of volcanic breccia remain poorly understood.

The study will employ geomatics analysis using LiDAR, satellite, and UAV-acquired datasets, alongside geochemical characterisation and field surveys, to identify quarry sites, geochemically characterise the samples, and establish links between geological sources and Roman construction materials.

The research will be conducted within the framework of the EuQuGeA project (Bando Ricerca Scientifica di Eccellenza 2023 – Fondazione Cariparo, Principal Investigator: Prof. Michele Secco), leveraging resources and expertise from the Departments of Geosciences (DG) and Cultural Heritage (dBC) at the University of Padova. Collaboration with project partners specialising in archaeology, geomatics, and materials science will provide access to analytical facilities, geochemical laboratories, and remote sensing datasets.

This interdisciplinary environment will support the integration of archaeological field surveys, geomatics analysis, and multi-methodological archaeometric characterisation, with particular emphasis on petrography and geochemistry. It will ensure a comprehensive study of volcanic breccia quarrying in the Euganean Hills, with a focus on the recently discovered Villa Draghi quarry site (Montegrotto Terme, Padova).

This PhD will integrate seamlessly with ongoing research at the University of Padova and partner institutions within the EuQuGeA framework. Funding from the EuQuGeA project will support essential fieldwork, laboratory analyses, and dissemination of findings through international conferences and publications. The project's outcomes will refine our understanding of Roman-period resource exploitation, contribute to provenance studies of volcanic breccia in ancient architecture, and support the broader valorisation of Euganean quarrying heritage.



*Figure A: 3D model of the Villa Draghi quarry complex created through the processing of a ground classified point cloud from the EuQuGeA project high-resolution UAV LiDAR survey. Figure B: Image of a quarry front at Villa Draghi showing heavy pick marks and extracted blocks.*