

Study of the relationship between tectonic structures and hydrogeological setting in the axial zone of the southern Apennines, aimed at defining strategic groundwater resources

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INTRODUCTION

In recent years, climate change and the increase global temperature¹ (+1.5°C in 2025) have intensified water crises. This study aims to improve the understanding of the geological²⁻³, structural and hydrogeological⁴ framework in order to allow the quantification and sustainable management of groundwater resources in High Agri Valley (Fig.1).

METHODS

- Collection, analysis and integration of geological maps⁵ and unpublished hydrogeological datasets.
- Geological mapping of the pulverized Triassic Dolostones (Fig. 1).
- Revision of the 18 hydrostructures (Fig.2) already recognized in the Agri valley area.
- Hydrogeological balance calculation within GIS environment.
- Groundwater flow modeling using MODFLOW

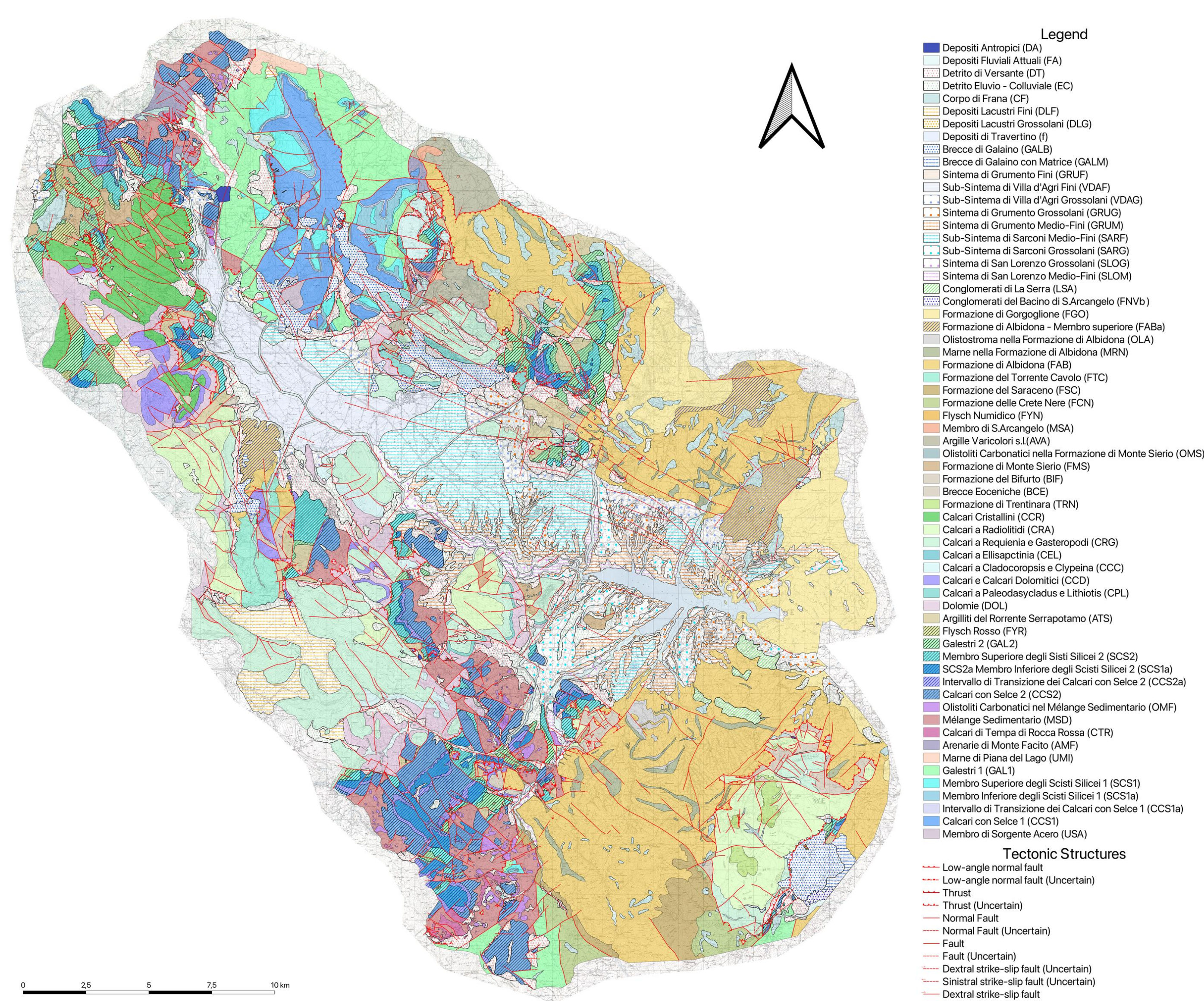


Figure 1. Geological Map of the High Agri Valley.

CONCLUSIONS AND EXPECTED RESULTS

- Improved reconstruction of the geological and hydrogeological framework in the Agri Valley area.
- More accurate definition of hydrostructures geometry and the interconnections between adjacent aquifers.
- Enhanced capability to model carbonate and mixed aquifers systems.
- Reliable quantification of groundwater resources.
- Possibility to define sustainable yields for groundwater exploitation strategies and management during water crises.

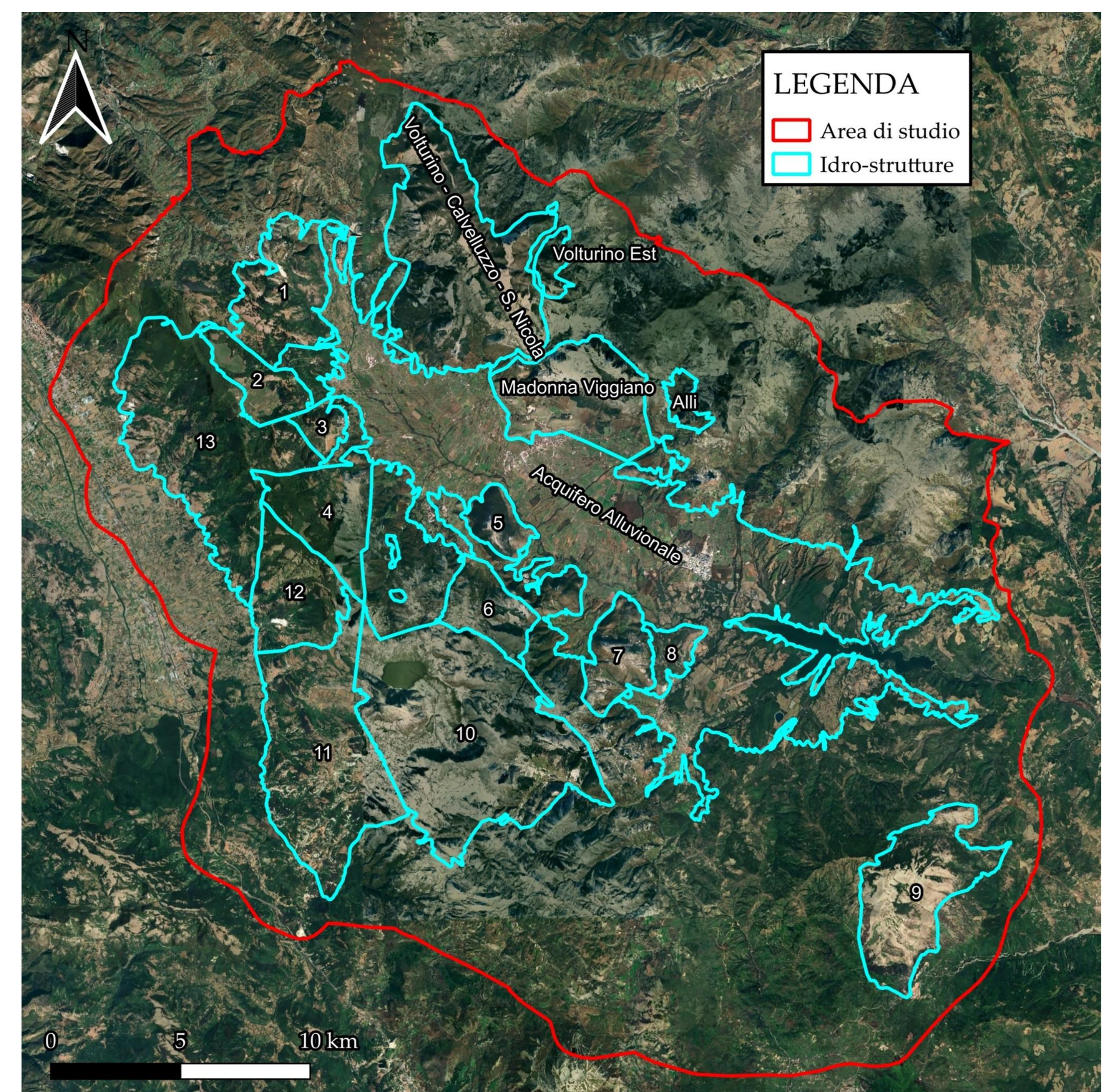


Figure 2. Boundaries of the hydrostructures defined in the study area.

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