



Petrographic geodatabase of Alpine ornamental rocks (Cultural Heritage of Piemonte region, NW Italy) compliant with the “GeoPiemonte Map” web-GIS service

Alessandro Borghi (1), Francesca Gambino (1), Anna d’Atri (1,4), Giovanna Dino (1), Sergio Enrico Favero-Longo (2), Marco Giardino (3), Vincenzo Lombardo (3), Luca Martire (1), Luigi Perotti (1), and Fabrizio Piana (4)

(1) University of Torino, Department of Earth Sciences, Torino, Italy (alessandro.borghi@unito.it), (2) University of Torino, Department of Life Sciences and Systems Biology, Torino, Italy, (3) University of Torino, Department of Informatics, Torino, Italy, (4) CNR-IGG, Institute of Geosciences and Earth Resources, Torino, Italy

The geological map of Piemonte Region (Italy), GeoPiemonte Map, supported the representation and classification of the Piemonte ornamental stones. The GeoPiemonte Map is a graphic representation of the geology of the region, derived from a thorough revision of existing geological maps and papers, and grounded on a large geodatabase: it is available on a WebGIS application as an interactive scalable map (<http://arpapiemonte.maps.arcgis.com/apps/webappviewer/index.html?id=fff173266afa4f6fa206be53a77f6321>).

The geological features represented on the map are described following explicit criteria, firstly aimed at providing a lithostratigraphic, hierarchic subdivision of Piemonte geologic units and then to describe the features using shared concepts and vocabularies, consistent with IUGS descriptive standards for the geosciences.

The Piemonte region shows an extraordinary variety of ornamental stones, as more than 50 lithotypes are employed in the Historical and Modern Architecture Heritage. The aim of the study consists in the creation of a petrographic geodatabase of the ornamental stones, derived from Alpine rocks, used in historical buildings in the cities of Piemonte. The geodatabase refers to the data model of the GeoPiemonte map/web-GIS and allow descriptions of the ornamental stones in a way compliant with some authoritative standard for the geosciences, namely the “Earth material” and the “Simple lithology” controlled vocabularies. A detailed census of historical and contemporary stones quarried in Piemonte and used in art and architecture was implemented. The stone materials were classified by lithology and provenance, also identifying the historic quarries, and defining their geological properties and use. A comprehensive database of stone materials used in historic buildings and the most significant monuments of the Piemonte cities is being realized, including commercial and scientific name of the rock, location of the quarry, its main uses, and its petrographic description. Patterns of interaction of lithobiontic (micro-)organisms with the different lithologies, and their impact on surface durability (biodeterioration vs. bioprotection), are also considered and addressed to conservation issues.

The interactive GeoPiemonte Map is also the geological base of the geoDIVE research project concerning the geodiversity of the Piemonte region, “from rocks to stones, from landforms to landscapes”.

The data will be used to implement an application for smartphones and tablets useful to disseminate and develop the knowledge of ornamental stones of Piemonte. This innovative instrument promotes, increases and enhances the urban geological heritage, allowing the visitor to enjoy the cultural and the scientific content at once. Moreover, a collection of samples and thin sections representative of the petrographic geodiversity of Piemonte ornamental stones will be created and used for didactic and disseminating purposes.