

THE APAT LIBRARY-OWNED DOCUMENTS RELATED TO THE GROUNDWATER RESOURCES: AN EXAMPLE OF UTILIZATION BY MEANS OF A GEOGRAPHICAL INFORMATION SYSTEM.

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A research project promoted and developed by APAT starting from 2003 collected the studies related to the groundwater resources (identification, quantitative and qualitative characteristics, utilization, vulnerability) realized by universities, research institutes and public administrations. The aim is to define the degree of knowledge on groundwater resources in the national territory and to carry out a Geographical Information System. Internet and the APAT Library represented the starting point of the inventory. The main scientific journals, the proceedings of the conferences and the publications of some research institutes and universities have been collected in specific files. Hydrogeological and thematic maps (hydrochemical, intrinsic vulnerability, permeability, groundwater resources), graphic and cartographic representations (tables, figures) related to more than 300 studies and researches have been collected with a scanning procedure and stored in CD Rom. The list of the studies related to each scientific journal or congress and the list of hydrogeological and thematic maps represent the first results of the research project. It is possible to query them using key words (for example: geographical localization, maps, groundwater). This way of utilization however seemed reductive as regards the quantitative and qualitative characteristics of the data collected and the Geographical Information System potentialities too.

The purpose of the Geographical Information System is to verify the documentation upgrades, to improve the information and to obtain a more effective use by matching the data with their real geographic position.

The paper describes the approach to the GIS realization and the conceptual scheme, the relational logical model, a preliminary geodatabase and the functional analysis. The result of the query is a report with data required, the total number of objects and/or the cartographic representation of the studies.

Several different queries have been considered: for geographic areas, with indication of type (article or map), author, title, year of publication, and with possibility to filter the information related to the study or to the presence of specific elements as hydrogeological complexes, permeability, intrinsic vulnerability, quantitative or qualitative monitoring network, database and so on.

A database management software (data entry, modification and validation) and a consultation software (query, visualization and reporting) have been specifically designed. An user interface (Windows environment) allows to insert the data collected (studies and maps). Finally backup and other functions directly usable by means of the interface have been added. Now the data entry activities related to the main studies and hydrogeological maps are in progress.

Moreover the paper describes the utilization of the APAT library-owned documents related to the groundwater resources by means of a Geographical Information System. The Geographical Information System proves to be a useful resource for geologists and researchers on environmental subjects and at the same time represents a technical-scientific tool to increase and improve the customer services.