WATER AND NATURAL HAZARDS MANAGEMENT

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ABSTRACT

The Interuniversity Institute of Geography (IIG), at its headquarters at the University of Alicante, has extensive experience in the design of territorial management and development projects.

Currently, its work on water management and natural hazards is particularly noteworthy. Therefore, the Institute is looking for companies or institutions interested in developing projects to solve their needs or problems within these fields of research.

ADVANTAGES AND INNOVATIVE ASPECTS

MAIN ADVANTAGES OF THE TECHNOLOGY

The Institute has two laboratories from which it obtains all kinds of data necessary to provide knowledge and thus address any need or problem with maximum guarantees:

- *Climatology Laboratory:* it carries out research, teaching and scientific dissemination work for the knowledge of weather and climates in our country and, especially, in the lands of Alicante. It has facilities where different climatic variables are monitored by means of daily observation using a variety of traditional and automatic meteorological equipment.
- *Geomatics Laboratory:* it specialises in the development of thematic cartography and geographic information systems in areas such as water resources, climatic risks, land use, landscape, as well as cadastral cartography for the management of real estate assets. The Laboratory staff always uses free software tools for each of its projects.
  It is worth mentioning the creation of the Geographic Information System of the University of Alicante (SIGUA) more than 20 years ago. A tool that has obtained great international recognition and that is adding new functionalities adapted to the new needs of the University.

INNOVATIVE ASPECTS

Researchers incorporate all the information obtained in each project into a Geographical Information System (GIS), designed and developed for territorial management. For example, in the case of projects on water resources, the GIS provides the following advantages:

- The possibility of homogenising data on supply sources, consumption, areas of use, infrastructures.
- The continuous updating of the generated databases, as well as the obtained spatial representations.
- The identification of management scenarios for aquifers, surface water, water transfers and non-conventional sources.
- Monitoring and control of the exploitation of all supply sources.
- Monitoring and control of agricultural, urban, tourist and industrial use areas by means of exploitation plans.
- Modelling of the operation and supply regimes of supply sources.
- Modelling of the operation of high- and low-level distribution, sanitation and purification infrastructures.
- Consultation, in real time, of existing operations and even the design of models to identify future trends.

MARKET APPLICATIONS

The most interested sectors may be the Public Administrations (national, regional, provincial, county or local) responsible for urban planning and environmental competences, as well as those concessionary companies in charge of the collection, potabilisation, distribution, purification and reuse of water in a specific territory.

Recent national and European regulations oblige administrations to incorporate hydrological variables in land-use planning and development. These policies, under a global perspective based on the integral water cycle, must have an objective system of environmental and hydrological indicators to assess the costs and benefits derived from the introduction of new demands and the changes in use introduced by expanding productive activities such as tourism and second homes.

Some of the most recent research projects are worth highlighting, for example:

- Assessment of water poverty in urban environments on the Mediterranean coast. Case study (Alicante, Murcia and the metropolitan area of Barcelona). Funded by the Ministry of Science, Innovation and Universities and due to finish in 2023.
- The Lower Segura as a geostrategic enclave of the European Union: historical-normative study of water law as a basis for the future Territorial Action Plan. Vice-rectorate for Research and Knowledge Transfer of the University of Alicante, to be completed in 2022.
- Simulating tourism water consumption with stakeholders (SIMTWIST). European project funded by the Joint Programming Initiative (JPI)-WATER and with completion in 2022.
- Climate change and water: non-conventional resources as an adaptive strategy to increase the resilience of agricultural and urban-tourist uses on the Alicante coast. Conselleria de Innovación, Universidades, Ciencia y Sociedad Digital (Regional Ministry of Innovation, Universities, Science and Digital Society) and ending in 2021.

COLLABORATION SOUGHT

- Type of client sought: companies, universities and public or private institutions.
- The research group is interested in the application of its know-how in specific projects.