

SCIENTIFIC AND TECHNICAL offer

Geomatics laboratory

DESCRIPTION

IMDEA Water works on the methodological development and application of different spatial tools to support water resource management, including environmental cartography, remote sensing, the design and implementation of spatial databases and geoportals, the implementation of systems and devices for the continuous and remote measurement of water quality, its application to supply networks, and hydrological and hydrogeological modelling.

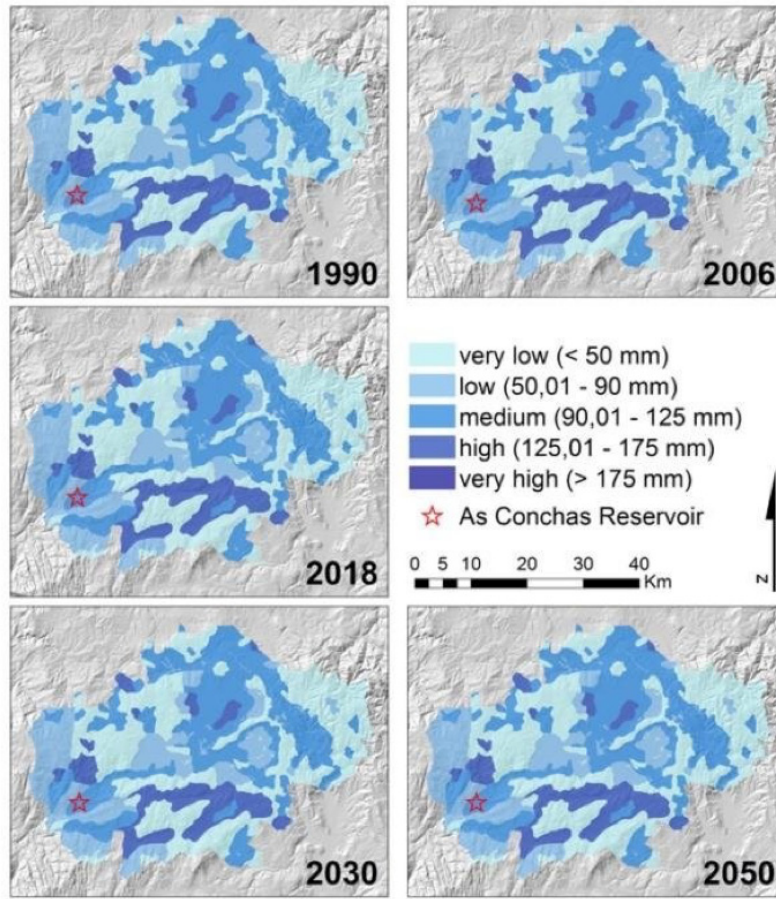
The new sources of spatial information (LIDAR, GPS, digital terrain models, high-resolution images, drones or even IoT technologies) allow the generation of new high-resolution thematic cartography. From Remote sensing techniques is possible to derive biophysical variables from vegetation, geological cartography, land use, etc.

Spatial databases register and order this information, forming a Hydrological Information System with the capacity to analyze the topological and quantitative relationships of different variables, the preparation of advanced 3D cartography and its implementation in web geoportals, as well as the incorporation of a large number of data collected continuously in real time in distant places and received in digital storage systems. Hydrogeological modelling through individual numerical models and/or coupled to hydro geochemical models allows the evaluation of water resources in terms of their quantity and quality, and will be the basis for decision-making in the management of water resources of surface water bodies as well as groundwater. The combination of data extraction contained in old cartographies and GPS location techniques allows the identification of elements of the hydraulic heritage for the development of support strategies for decision-making. The combination of different technologies (e.g., hydrological models, data quality parameters and environmental variables) allow multiple statistical analysis and the creation of alert systems.

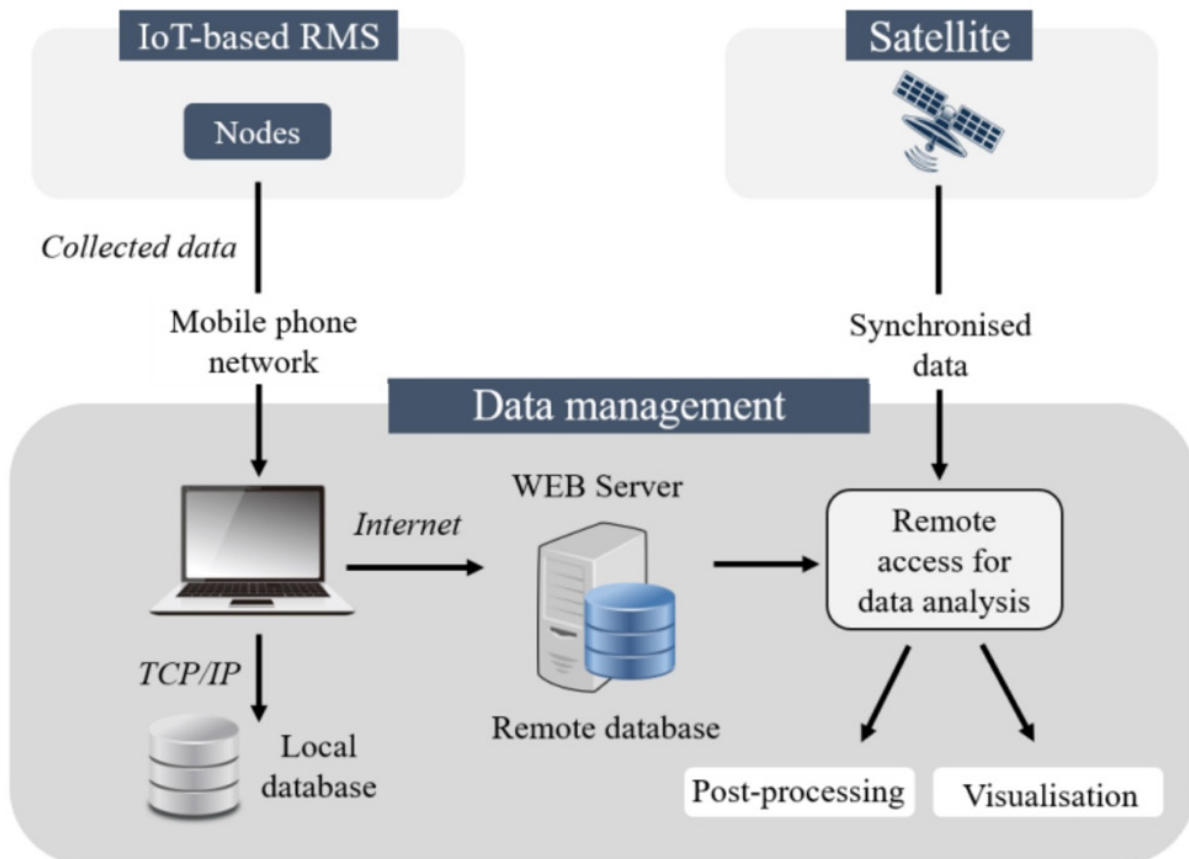
IMDEA WATER SOLUTIONS

The Geomatic Unit is a resource made up of infrastructures that provide solutions based on new technologies. The laboratory has a complete structure consisting on hardware, software and databases, which covers a wide range of needs such as:

- Hydrological and hydrogeological modeling.
- Preparation of thematic cartography using remote sensing techniques, LIDAR, GPS, Drones and conventional documentary sources.
- Automation of information gathering and creation of remote systems for measuring water parameters.
- Simulation of future scenarios to evaluate the incidence of climate change and environmental changes in water resources.



LUCC-Soils-water-retention-capacity-in-As-Conchas-Reservoir



IMPLEMENTATION SECTOR

- Precision agriculture
- Hydrological planning
- Water body quality control and monitoring
- Water body pollution control and monitoring
- Flooding and drought
- Hydraulic heritage
- Ecological status of water bodies
- Water reutilisation
- Water network management tools for supplier companies
- Water footprint

These tools can be useful for:

- Consultants and certification entities
- Irrigation communities; Agricultural associations and owners of agricultural lands of medium-large dimensions
- Hydrographical Confederations (water management agencies)
- Water Companies

ADDITIONAL INFORMATION

[Water Heritage in “Comunidad de Madrid”](#)

[Cianomod: Procedures for the analysis of inland water quality parameters related to cyanobacterial blooms](#)

KEYWORDS

Digital Water, Digital Transition, Remote Sensing, Cellular Automat, Internet of Things

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