Technical University of Madrid

UPM water

UPM activities on engineering and management of water resources cover the following objectives:

- Research on water engineering on supply, sanitation, irrigation, hydropower and environment
- Provide technical solutions to engineering challenges in water issues
- Promote sustainable development in water, energy and food production
- Research on the integral use of water in society

FOR MORE INFORMATION:

Irrigation Research Group

ETSIA/ETSICCP

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HiDER Tech

TECHNICAL UNIVERSITY OF MADRID

POLITÉCNICA "Ingeniamos el futuro"

CAMPUS DE EXCELENCIA INTERNACIONAL

Hydroinformatics and Water Management Research group

ETSICCP/FI/ETSIA

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http: http://www.upm.es/observatorio/vi/index.jsp?pageac=grupo.jsp&idGrupo=327

Hydrobiology Research Group

Dr. Diego García de Jalón

ETSI Montes

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http://www2.montes.upm.es/Dptos/dsrn/Hidrobiologia/inicio.htm

Universidad Politécnica de Madrid
UPM

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RESEARCH ON WATER RESOURCES ENGINEERING AND MANAGEMENT

HiDER Tech

campus

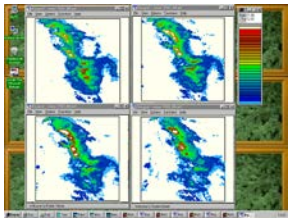
MONCLOA

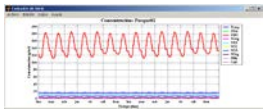
HYDROINFORMATICS AND WATER MANAGEMENT

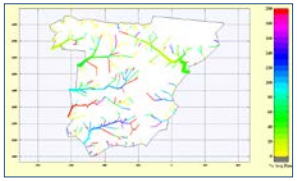
The multidisciplinary Research Group on Hydroinformatics and Water Management includes members of the Departments of Civil Engineering: Hydraulic and Energy Engineering, Artificial Intelligence and Agricultural Economics.
Group members carry out computer-assisted and laboratory research in different fields of water management: Development of computer applications for real-time decision support in water management, Risk analysis and dam safety, Physical modeling of hydraulic structures , Transients, control and stability of hydraulic systems, Economic and social implications of water management, Hydrological extremes and climate change, etc.

RESEARCH LINES

Water resources planning and management: decision support tools
Hydropower systems: modeling and control
Physical and mathematical modeling of hydraulic systems
Real-time flood forecasting and reservoir management
Application of intelligent systems and knowledge engineering to hydraulic problems
Risk and safety analysis of hydraulic structures
Climate change impacts and adaptation on agriculture and water resources





RECENT ACTIVITIES

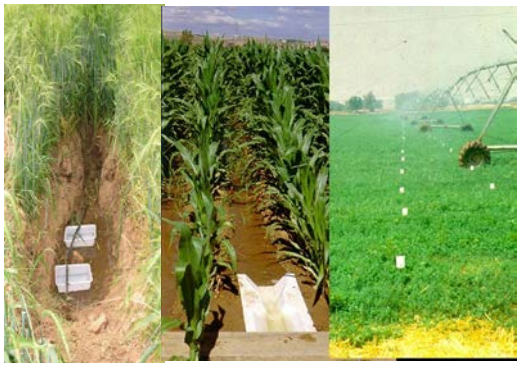
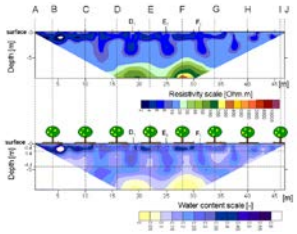
- **CIRCE: Climate change and impact research**. E.U. VIth Framework Program
- **MOCHCA**: METODOLOGIA PARA LA OPTIMIZACION DE LA OPERACION DE CENTRALES HIDROELECTRICAS CON CRITERIOS AMBIENTALES. CGL2009-14258 subprograma CLI. 69.000 €. Oct/09-Oct/11.
- **XPRES Characterization of rockfill dam failure due to overspilling and development of criteria to assess global dam safety** Spanish Ministry of Science and Technology.
- **CLIMATECOST: Full costs of climate change** E.U. VIIth Framework Program
- **VIOMATICA: Automatic surveillance in geographical areas through intelligent generation of multimedia summaries** Spanish Ministry of Science and Technology
- **Application of variable speed and intelligent control technologies to hydropower generation.** Spanish Ministry of Science and Technology
- **ARCO: Climate change vulnerability, impacts and adaptation: integrated study on agricultures, water resources and coastal areas.** Spanish Climate Change Office.

HYDRAULICS for IRRIGATION (HIDER)

The HIDER Group teaches the subjects regarding the hydraulic, hydrology, design and management of irrigation and drainage systems in different Undergraduate and Postgraduate Programs at UPM since 1983. Its main goal in research is to improve the control of water and energy use during irrigation and, in particular, the distribution of water in irrigation networks and within the soil. Since the beginning, the group has been involved in several national and international research projects and also has shared its knowledge with manufacturers and irrigators through specific cooperation programs. The research results are published in peer-review journals at the top of their listing category (irrigation engineering and water resources), extension journals as well as in national or international conference proceedings
.

RESEARCH LINES

Development of criteria for the design and management of irrigation methods: by surface, sprinkler, drip and subsurface drip irrigation.
Evaluation of irrigation systems.
Design and optimization of irrigation units.
Characterization of elements of irrigation systems to optimize water and energy resources.
Hydraulic characterization and simulation of pressure irrigation networks.
Estimation of infiltration in irrigated areas.


RECENT ACTIVITIES

- **DISTRIBUCIÓN DEL AGUA EN SISTEMAS DE RIEGO POR GOTEO SUBSUPERFICIAL.** Proyectos de Investigación Fundamental no orientada del Ministerio de Ciencia e Innovación. (AGL2000-1366).
- **CATEDRA DE EMPRESAS DE LA ASOCIACIÓN DE FABRICANTES DE RIEGO ESPAÑOLES (AFRE).** Colaboración con las empresas de riego para difundir el conocimiento y los avances en materia de tecnología del agua y riego y fomentar proyectos de investigación.
- **AENOR.** Colaboración a través de diferentes Comités en la elaboración de normativa relacionada con elementos y equipos de riego.
- **Memorandum of Understanding between the Biological and Ecological Eng. Dpt. In Oregon State University y el GI Hidrúalica del Rriego.** Colaboración en proyectos de investigación y movilidad de personal docente e investigador.
- **Convenio de Colaboración con el Centro Internacional de Regadio (CENTER).** Evaluación de sistemas de riego y desarrollo de líneas de investigación en diversos métodos de riego.

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JOINT DEVELOPMENTS AND FUTURE RESEARCH

SUSTAINABILITY AND WATER MANAGEMENT

Water resources allocation in the framework of sustainability

Integration of ecologic, irrigation, population and energy water demands in land use planning

Ecological status of water bodies and development

CLEAN ENERGIES AND ENVIRONMENT

Environmental and economical optimization of hydropower production

Certification for hydropower production: Improving Clean Energy

Integration of hydropower, eolian energy and irrigation

INTEGRATED HYDRAULIC DESIGN AND SIMULATION

Impact of climate change on water availability

Ecohydraulics and river restoration

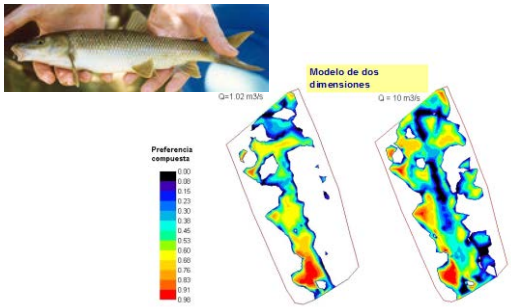
Hydraulic simulation of technical and climate scenarios

HYDROBIOLOGY RESEARCH GROUP

The Hydrobiology Research Group at Universidad Politécnica de Madrid (UPM) has more than twenty years of experience working on applied ecology and fluvial management in Spain. For several years, the group is sharing this knowledge participating in projects dealing with human impacts on aquatic resources, fisheries management and physical habitat evaluation.

LINES OF RESEARCH

Fluvial Ecology and Geomorphology
River and riparian restoration
Fisheries management
Ecological status (Water Framework Directive)
Flow regulation and canalization impacts
Ecological Flow Regimes
Geomatics and aquatic resources
Aquaculture
Global change and hydrology



- **REFORM " REstoring rivers FOR effective catchment Management ".** 7th Framework Program (ENV.20112.1.2-1 nº282656). Nov. 2011-2015. Presupuesto UPM 202.000 €.
- **MOCHCA**: METODOLOGIA PARA LA OPTIMIZACION DE LA OPERACION DE CENTRALES HIDROELECTRICAS CON CRITERIOS AMBIENTALES. CGL2009-14258 subprograma CLI. 69.000 €. Oct/09-Oct/11.
- **FORECASTER:** Facilitating the application of Output from Research and CAse STudies on Ecological Responses to hydromorphological degradation and rehabilitation. IWRM-NET
- **CH_2OICE. C**ertification for **H**ydr**O**: **I**mproving **C**lean **E**nergy. Intelligent Energy
- EFI+: Improvement and spatial extension of European Fish Index. European Comisión. 6th Framework Programme on Research, Technological developement and Demostration.
- **SERELAREFA-** SEmillas REd LAtina Recuperación Ecosistemas Fluviales y Acuáticos (Seeds of a Latin network on fluvial and aquatic ecosystems restoration). International Research Staff Exchange Scheme.: FP7-PEOPLE-2009-IRSES
- **ANALISIS DEL COMPORTAMIENTO DE LOS PECES EN LAS ESCALAS COMO BASE PARA LA MEJORA DE LA CONECTIVIDAD**. Proyectos de Investigación Fundamental no orientada del Ministerio de Ciencia e Innovación. (CGL2009-07420-E/BOS).
- **METODOLOGIA PARA LA OPTIMIZACION DE LA OPERACION DE CENTRALES HIDROELECTRICAS CON CRITERIOS AMBIENTALES**. Proyectos de Investigación Fundamental del Ministerio de Ciencia e Investigación (CGL2009-14258 subprograma CLI)
- **ANÁLISIS, SEGUIMIENTO Y ASESORAMIENTO DE LAS ACTUACIONES DE LA DIRECCIÓN GENERAL DEL AGUA EN RELACIÓN CON LA RESTAURACIÓN DE RIOS**. Entidad financiadota: Ministerio de Medio Ambiente.
- **Foundation of ECOHIDRAULICA S.L.** as a spin-off linked to the UPM in 2005. The idea of ECOHIDRAULICA S.L. was awarded with the ACTUA UPM 2005 third prize www.ecohidraulica.com