

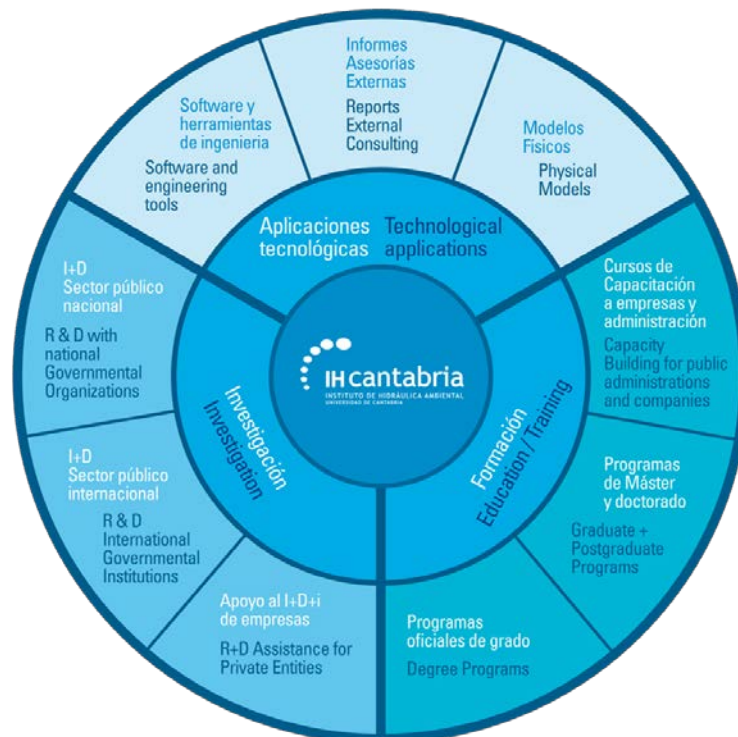
**Environmental Hydraulics Institute
IH Cantabria**



Environmental Hydraulics Institute IH Cantabria

The Environmental Hydraulics Institute “IH Cantabria”, is a joint research centre between the University of Cantabria and the Foundation for Environmental Hydraulics Institute.

IH Cantabria is made up of approximately one hundred forty researchers, with over twenty years of expertise in the fields of hydrodynamics, sediment transport, coastal evolution, coastal structures, coastal/ports/river engineering, estuarine dynamics, transport processes, marine and river environmental sciences, water quality, numerical and physical modelling of water-related processes and integrated coastal and river basin management. IH Cantabria focuses its activities on three main pillars: research & development, consultancy and education & training activities.



The mission of IH Cantabria is to become an international reference centre specialising in basic and applied research as well as focusing on the development of studies, methodologies, and tools for the management of aquatic ecosystems including superficial and subterranean waters, transitional and coastal water bodies integrating the relevant processes as well as the socio-economic aspects associated with an efficient and sustainable management of the water cycle.

Some of IH Cantabria's main goals are:

- To explore our knowledge of the water cycle and the related systems, increasing the state of the art in this field of research and technologies.

- To educate and train researchers and specialists in the field of environmental Hydraulics
- To translate to society and transform into specific social benefits the successes obtained through the study of the integral water cycle and its related systems by establishing solid channels to transfer knowledge, tools and technologies to public administrations and private companies alike.
- To develop models, patents and know-how to increase the international competitiveness of Spanish companies, while at the same time increasing the expectation level required by authorities and public bodies.
- To provide the knowledge and tools necessary for developing countries to improve their living standards and their quality of life

During the last decade, IH Cantabria has been deeply involved in national, regional and international scientific initiatives and projects dealing with coastal modelling systems, integrated management of coastal zones and river engineering. Those projects, that IH Cantabria has conducted, have been funded by public and private bodies such as the European Union, ECLAC, the North-Atlantic Treaty Organisation, and the British Council, with the involvement of European, US, Spanish and Latin-American institutions.

Some of the areas and fields IH Cantabria is currently working on are the following:

Hydrobiology and Environmental Management Area

- Continental Ecosystems Group
- Coastal Ecosystems Group

Climate, Energy and Marine Infrastructures Area

- Ocean, Energy and Engineering Group
- Coastal Hydrodynamics and Infrastructures Group
- Marine Climate and Climate Change Group

Hydraulic and Coastal Engineering Area

- Hydraulic Engineering Group
- Coastal Engineering and Management Group
- Oceanography, Estuaries and Water Quality Group

Testing Facilities

- Hydraulic, Coastal and Ocean Lab
- Environmental Lab

Knowledge Transfer

- Information Technology

IH Cantabria has conducted a great number of R&D projects funded by the European Union, the North-Atlantic Treaty Organisation and the British Council, with the involvement of European, US, Spanish and Latin-American institutions. IH Cantabria actively collaborates with public and private sectors both nationally and internationally, providing integrated solutions to water related issues in river, coastal and marine environments. Projects have been carried out for the Spanish Ministries of Environment, Science and Technology, Spanish Agency for International Cooperation and Development, Coastal and Port Authorities, etc.

Concerning Climate Change, IH Cantabria is a member of the IPCC, being the only Spanish representative in the Nairobi Programme of the UN. It also acts as an advisor to the Spanish Office of Climate Change on policies and strategies to counter the effects of global climate change on the coast. As far as natural disasters and risk management is concerned, IH Cantabria is a member of the European Tsunami Alert development Network TRANSFER, and has been awarded several Spanish National Environmental Awards for projects as the Development of the Spanish Atlas for Coastal Floods (1999) and the Development of the model for oil spill trajectory predictions for the Spanish system ESSEO (2007).

The study of wave hydrodynamics and wave interaction with coastal infrastructures is the main scientific motivation of the Coastal Hydrodynamics and Infrastructures Group. This group has more than twenty years of experience in the development of numerical tools and the use of the most advanced experimental techniques to analyse the wave induced flow in the vicinity of coastal structures. The Coastal Hydrodynamics and Infrastructures Group also develop active collaboration with public and private sectors both nationally and internationally, providing integrated solutions to problems related with design of harbour facilities, functional design for conventional and non-conventional structures, structural design for conventional and non-conventional structures, operational systems, structural and functional design for conventional and non-conventional coastal structures. The group also has experience on environmental flows such as desalination plant discharge design and diagnosis or coastal and submarine pipelines, pumping and sewage collection.

CAPACITY BUILDING EXPERIENCE

IH Cantabria also works on capacity building and training activities and projects for scientists, technicians and managers of the Mediterranean, Kuwait and Latin America regions regarding all these fields of expertise. Specific trainings were carried out in Tunisia and Brazil regarding the Coastal Modelling System and in Albania, Algeria, Bosnia- Herzegovina, Egypt, Kuwait, the Lebanon, Morocco, Mauritania, Serbia-Montenegro, Palestinian Territories and Tunisia regarding Integrated Coastal Zone Management in cooperation with the Spanish Agency of International Cooperation for Development. Most of these initiatives are dealing with transferring knowledge and expertise and increasing local capacities for sustainable coastal management.

IH Cantabria also organizes every year several coastal related seminars and summer schools on wave climate and climate change, renewable energies, river sampling design, water pollution, ICZM, etc.

IH Cantabria (University of Cantabria) has been working for more than twenty years in the field of Environmental Hydraulics applied to Education. The professors at IH Cantabria are considered experts both nationally and internationally in the coastal and river engineering, integrated coastal zone management and field monitoring. IH Cantabria's expertise is also widely recognized in the fields of wetland restoration, beach nourishment (restoration and regeneration), outfall design and hydrodynamics modelling.

The Graduate programs offered by IH Cantabria (University of Cantabria) have received ever since 2003 the highest possible merit in education conferred by the Spanish Ministry of Education and Science, known as "Mención de Calidad". This distinction has been granted every year since then. The Graduate programs include three MSc Courses in Integrated Coastal Zone Management, Harbour and Coastal Engineering, and Environmental Management of Water Systems; and two PhD programs focused on Marine Science and Technology and Science and Technology for Water Systems Management.

The Latin American University Graduate Association (AUIP) has also granted this program with its highest award, describing it as the best program in the field of Applied Sciences in Latin America.

Researchers at IH Cantabria participate actively in other Masters offered by the Spanish Ministry of Environment as well as other important University based programs.

All the previously mentioned experience makes IH Cantabria suitable for developing the training course, emphasizing the practical point of view of the teaching contents, as well as the accredited awards test the highest standards of IH Cantabria Lecturers. Both aspects provide us with extensive exposure to the implementation of the training course with the appropriate activities and materials, providing attendees with the knowledge and tools to develop ICZM issues taking into consideration at every moment the characteristics and issues of the "Alexandria Coastal Zone Management Project".

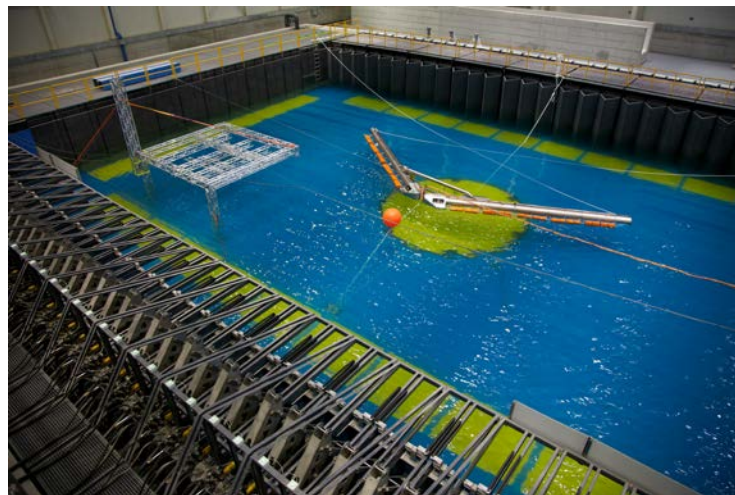
INFRASTRUCTURES

IH Cantabria facilities are currently in the Scientific and Technological Park of Cantabria (PCTCAN). The new facilities consist of three office and laboratories buildings including a space to house new businesses or to create a strategic relationship with the Institute.

The laboratory, IH Lab, is framed within the Singular Techno-Scientific Facilities (ICTS) of the Spanish Ministry for Science and Innovation in which the Government of Cantabria and the European Union (FEDER funds) participate financially.

The laboratory building, IH Lab, houses:

- **IHLab-Hidro:**
 - **CCOB: Cantabria Coastal and Ocean Basin**



- **2D tsunami flume**
 - **Hydromechanics Laboratory**
 - **wave flume 70 m x 2m producing waves of up to 70 cm in height**
 - **wave-current flume 24 m x 60 cm simultaneously generating waves and currents**
 - **wave basin 28 m x 8.5 m generating directional waves up to 25 cm in height**
 - **variable slope channel 8 m long, for unidirectional flow tests**
- **IHLab-Bio: Hydrobiology Lab**
 - Sample processing lab
 - Microbiological lab
 - Physical and chemical analysis
 - Sample separation and identification lab
 - Testing facilities
 - Teaching lab and training programmes

KEY EXPERTS

Raul Medina is Director of the Environmental Hydraulics Institute IH Cantabria and the Vice-president of the Environmental Hydraulics Institute Foundation. Full Professor of coastal engineering at the Universidad de Cantabria (1993) and Doctor in Civil Engineering (Universidad de Cantabria). His research focuses on Integrated Coastal Zone Management and Planning, coastal numerical modelling, beach morphodynamics, inlet dynamics, wave hydrodynamics and wave-structure interaction. He has published 14 book chapters, more than 70 papers in scientific journals and more than 160 conference proceedings on these subjects. He has been the main researcher in projects funded by Spanish CICYT, European Union as well as by several Spanish public administrations (State Ports Authority, Directorate General for Coasts, etc.). He is also Scientific Advisor of the Inter-American Development Bank, Reviewer of European Union INCO, MAST Projects and ANEP Projects, Reviewer of several national and international scientific journals, Member of the Scientific and Doctorate Commission of the University of Cantabria.

Iñigo Losada is the Research's Director of the Environmental Hydraulics Institute IH Cantabria; Director of the Environmental and Water Sciences and Techniques Department (2000-2003), member of the Ocean & Coastal Research Group (1996-2007) and Full Professor of Hydraulics Engineering at the Universidad de Cantabria; Doctor in Civil Engineering (Universidad de Cantabria –Spain- and Delaware University –USA-). His research focuses on oceanographic and environmental hydraulics engineering. His research projects deal with wave propagation modelling, including tsunamis, functionality and stability of maritime and coastal works, beach morphodynamics, wave-structure interaction, coastal flooding, oil spills pollution, climate change effects and integrated coastal zone management. He has been the main researcher in projects funded by Spanish CICYT, European Union, NATO, NSF as well as by several Spanish public administrations (State Ports Authority, Directorate General for Coasts, etc.). He belongs to several scientific and technical societies such as the American Society of Civil Engineers (ASCE), the International Association of Hydraulic Engineering and Research (IAHR), the American Society of Engineering Education or PIANC, having obtained the international research award from its Spanish section.

Javier López Lara is Ramon and Cajal Researcher (2008-2012) of the Environmental Hydraulics Institute IH Cantabria and Cornell and Cantabria Exchange Program Coordinator at the Universidad de Cantabria since 2011. He is Doctor in Civil Engineering (Universidad de Cantabria) since 1992. His research focuses on coastal engineering, wave and structure interaction and environmental hydraulics engineering combining experiments and numerical modelling. His research projects deal with wave propagation modelling, including tsunamis wave evolution, functionality and stability of maritime and coastal works, surf zone hydrodynamics and brine discharge modelling. He has been the main researcher in several projects funded by Spanish CICYT as well as by several Spanish public administrations (State Ports Authority, Directorate General for Coasts, etc.). He has also taking part as a researcher in projects funded by Spanish CICYT, European Union, NATO, NSF as well as by several Spanish public administrations. He has

published 3 book chapters, 24 papers in peer reviewed scientific journals and more than 40 conference proceedings on these subjects. He is also Scientific Advisor of the Netherlands Organization for Scientific Research (NWO) and ANEP Projects and Reviewer of several national and international scientific journals. He has obtained the international research “De Paepe - Willems” award from PIANC (International Navigation Association) in 2005 and the “Modesto Vigueras” award from its Spanish PIANC section in 2004.

José Juanes is Professor of Environmental Hydraulics at the University of Cantabria and Researcher at the Environmental Hydraulics Institute of the University of Cantabria; M.Sc and Ph.D in Biology (University of Oviedo); Dr. Juanes has been lecturing courses at different levels in the field of management and monitoring of coastal and estuarine ecosystems for the last 16 years. Since 2007 he is the Director of the MS and PhD programs on Environmental Management of Aquatic Systems of the University of Cantabria. His research has focussed on ecology of aquatic ecosystems, water quality monitoring and environmental risk assessment, as well as the development of tools and procedures for Integrated Coastal Zone Management. He has published more than 70 papers in scientific books, journals and conference proceedings on these subjects. Dr. Juanes has been main research in different Spanish National and Interreg projects and has participated in more than 30 projects for the Spanish administration, regarding methodologies and technical analysis of different environmental problems of the coastal areas.

Mauricio González is member of the Environmental Hydraulics Institute IH Cantabria; associate Professor at the Universidad de Cantabria; Doctor in Civil Engineering (Universidad de Cantabria). His research focuses on coastal numerical modelling, coastal morphodynamics and littoral processes. He has published 4 book chapters, more than 30 papers in scientific journals and more than 80 conference proceedings on these subjects. He has been the main researcher in projects funded by European Union, Spanish CICYT, as well as by several Spanish public administrations (State Ports Authority, Directorate General for Coasts, etc.). He is also member of the Spanish National Committee to establish a Tsunami Warning System (TWS), tsunami scientific adviser for the European Commission DG-RTD. Co-Chairman of the working group: Sessional Working Group 1 – Hazard Assessment, Risk and Modelling, Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS) coordinated by the IOC-UNESCO. He has collaborated as Tsunami expert adviser for the UNESCO and participated in several missions in tsunami vulnerable countries. Reviewer of Spanish ANEP research projects, Reviewer of several national and international scientific journals.