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Acces Rules

GOBIERNO DE ESPAÑA
MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD

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1 Scope

The present document aims to approve the calls to ICTS MARHIS in order to grant the access of external researchers to the facilities held by any of the nodes conforming MARHIS.

2 Applicants

Applicants to the calls can be researchers or industrials, public or private from Spanish or foreign institutions.

All public/private bodies are encouraged to access MARHIS facilities using the **www.ictsmarhis.com** application.

3 Facilities

Distributed Infrastructure's Node	Facility name	Facility description	Instruments, Equipments
I1a-1- Physical Scale Laboratory	CIEM - Canal d'Investigació i Experimentació Marítima Large Scale	The CIEM wave and currents flume which is 100 m long, 3 m wide and up to 7 m deep inside the current generator's wells. It is a facility of excellence for scaled tests and studies under close-to-real conditions. Typical working scales are between 1:2 and 1:10, although it is also possible to work at other scales. The larger scale ratios enable the scale effects, inherent to all scaled experiments, to be amply reduced.	Nationally designed/built PXI equipment distributed along the Wave Flume and interconnected by a fiber optic system. Data analysis software Wavelab. Sensors, which includes among others, resistive wave probes, acoustic level sensors , miniature echo sounders, high resolution cameras, current meters and doppler acoustic profilers, 3D laser scanner, load cells, turbidity sensors and profilers, concentration profilers and backscatter sensors etc. It also featuresw an advanced unstructured light system for swash zone measurements and a high resolution (basis for development) vertical velocity and concentration acoustic profiler.
I1a-2- Physical Scale Laboratory	CIEMITO Wave Flume - Canal d'Investigació i Experimentació Marítima small scale	CIEMito is a small scale wave and currents flume. It has a total length of 18m, with a useful section of 0.38m wide and 0.56m high and a maximum water depth of 0.36m. The support structure consists of square section metal frames and both laterals and bottom walls are of tempered glass 5 +5 mm thick. For ease of operation at both ends are arranged wells of 0.20m in diameter, which allows both filling and emptying and controlled recirculation of water through the current generation system. It also has a 3m3 tank and a pumping system and filter to maintain its autonomy from other facilities. The wave generation is conducted using a piston-type board, whose motion is provided by a linear actuator with a 1m maximum stroke and 1.6m/s speed of response . The maximum theoretical capacity to a depth of 0.36m corresponds to a wave period and height of 1.7s and 0.28m. The software for wave generation has been developed at LIM / UPC and allows the generation of regular and irregular waves and time series reproduction.	National Instruments PXI equipment distributed along the Wave flume and interconnected by a fiber optic system. Data analysis software Wavelab. Sensors, which includes among others, resistive wave probes, acoustic level sensors , miniature, cho sounders, high resolution cameras, current meters and doppler acoustic profilers, load cells, turbidity sensors and profilers and sediment concentration profilers etc..
I1a-3- Physical Scale Laboratory	La Bassa Wave Basin	LaBassA, is a 12 x 4,6 basin with a maximum depth of 2,5 m, whose main purpose is the testing of reduced scale models of offshore structures such as marine wind turbines, anchoring structures, at-sea berthing structures, underwater robots, etc. For this, it will be equipped with a wave/current generator capable of operating in variable depths, as well as a wind forcing system. To facilitate its use, it has a glazed side with five 1.6x1.6 m2 observation windows, a submerged lighting system and a filtration system to maintain the water transparency. Although mainly oriented towards research, it will also have a relevant educational role in both undergraduate and post-graduate courses related to marine engineering.	Observational equipment conmmensurate with those in the large and small scale flumes
I1a-4 - Physical Scale Laboratory	rWLab: Remote Laboratory	rWLaB is a teaching, research and knowledge dissemination platform that allows the remote access to the laboratory facilitites and to the different field data acquisition stations (XIOM and Pont del Petroli) . The advantages and innovations introduced by the rWLab with respect to traditional laboratories are various, including the reduction of costs associated with such facilities and the way to provide access to research infrastructures.	N/A
I1b - Numeric Modelling	Numerical Laboratory	Furnished with an array of state-of-the-art advanced computational models (both original and adapted codes) this lab has the capacity to provide services ranging from the replication of the large and small scale hydraulic models to the pre-operational prediction systems of meteo-oceanographic features at coastal and shelf scales. Within this range, the numerical lab is adequate to simulate, for instance, the wave and wave-current flumes in 2DV and 3D, the interaction of waves and currents with structures in 2D and 3D or the interaction of waves and currents with sediments in 2DV and 3D. It also provides a sert of adaptive hydrodynamic toolboxes for the simulation of open sea/shelf/nearshore works, morphodynamic toolboxes to model seabed and beach evolution (profiles and plan), and water quality toolboxes to simulate dispersion and water quality in local (near field) and regional (far field) analyses. Furthermore, all these models and toolboxes can be suitably combined to provide a risk analysis framework for individual assessment of particular situations.	Numerical models, pre and post processinf routines, coupling toolkits, pre-operational sequences, data base supporting software and set of archived results (observational and numerical)

Distributed Infrastructure's Node	Facility name	Facility description	Instruments, Equipments
I2-1- Field Observation Martitime Laboratory	XIOM	The XIOM network consists of a set of instruments deployed along the Catalan coast, allowing the measurement of the most significant coastal variables using different types of buoys, tide gauges, current meters and profilers and weather stations. It provides information at selected sites of the Catalan littoral on wave characteristics, meteorological parameters, water levels and water temperature plus currents at two depths.	Scalar , directional and meteo-oceanographic buoys, meteorological stations and tide gauges
I2-2 - Field Observation Martitime Laboratory	Pont del Petroli	This coastal observatory is a shallow to mid water depth pier, built in an open beach, which extends about 250 m into the sea, reaching a water depth of about 12 m, and is used socially as a coastal promenade. One of the offshoremost pier pillars has been instrumented in order to acquire environmental and biological measurements that permit taking advantage of the uniqueness of this structure. Similarly, the other pillars of the pier can be fitted with measuring sensors to increase the scientific utility of the structure, which can also be accessible to external researchers. This infrastructure is the first of its kind in the European Union, comparable worldwide to only a few other similar structures (e.g. HORS in Japan, and Duck in the USA), although these are used exclusively for scientific purposes.	Meteoceanographic estation, power and land connection at each pile. A set of advanced metoeanographic instruments for deployments.
I3a-1 - Physical Scale Laboratory	CCOB	44 m x 30 m x 3,7 m multidirectional wave basin with capacity to simultaneous generation of waves, currents and wind. The basin has a 10 m depth pit at the basin centre for large depth offshore tests	Multi paddle directional wave machine, active absortion system in wave paddles. Pasive wave dissipators on all boundaries. Omnidirectional current generation system. Wind generation system up to 72 Km/h. All kind of gauges to properly measure water free surface, current velocity and direction, pressure, floating bodies dynamics, load cells, laser profilers, video cameras, sediment concentration, etc.
I3a-2 - Physical Scale Laboratory	CoCoTsu	55 m x 2 m x 2 m flume with capacity to simultaneous generation of waves and currents, specially designed for tsunami generation and monitoring	Active absorption wave generation paddle. Passive wave dissipator at the opposite end. Current generation system along the full flume, in both directions. Towing system for ships and floating bodies.Full range of sensors to properly measure water free surface, current velocity and profiles, pressure, floating bodies dynamics, load cells, laser sediment profilers, video cameras, sediment concentration, laser anemometry (PIV-LIV),etc.
I3a-3 - Physical Scale Laboratory	GTIM-WS	1000 m2 open space for scale model building, modification, reparation, validation, measurement, surveying, etc.	Proper tools to build and modify scale models. Full range of mechanical workshop tools. Heavy pallet truck, 10 Ton bridge crane, etc.
I3b - Numeric Modelling	Numerical Laboratory	Based on a computer cluster with 1296 cores, total RAM exceeding 5 TB. Also the available disk space is enough to simulate 2,000 years of maritime climate worldwide, with levels of accuracy available today, including high resolution at all costs (100 TB).	N/A

For more information visit www.ictsmarhis.com

4 Services

ID	Service name	Service description	Access facilities
S1	2DV Physical Modelling	Hydraulic wave/current/mean sea level modelling (small and large scale) in 2DV Analysis of renewable energy wave/current converters (large/small scale) in 2DV Analysis of hybrid converters (large/small scale) in 2DV Offshore engineering for: wind turbines (large scale) in 2DV, offshore platforms (large scale) in 2DV, riders (large scale) in 2DV, submarine pipelines (large scale) in 2DV Hydro-morphodynamic analysis of sedimentary deposits (large/small scale) in 2DV, Coastal Engineering tests in intermediate/shallow depths (large/small scale)in 2DV, Breakwater functional and resistence analysis (large/small scale) in 2DV, Harbor Engineering tests in intermediate/shallow depths (large/small scale)in 2DV	I1a-1, I1a-2, I3a-1, I3a-2
S2	3D Physical Modelling	Hydraulic wave/current/mean sea level modelling (small and large scale) in 3D Hydraulic wave/current/wind/mean sea level modelling (large scale) in 3D Analysis of renewable energy wave/current converters (large/small scale) in 3D Offshore engineering for: wind turbines (large scale) in 3D, offshore platforms (large scale) in 3D, riders (large scale) in 3D, submarine pipelines (large scale) in 3D Hydro-morphodynamic analysis of sedimentary deposits (large/small scale) in 3D, Coastal Engineering tests in intermediate/shallow depths (large/small scale)in 3D, Breakwater functional and resistence analysis (large/small scale) in 3D Harbor Engineering tests in intermediate/shallow depths (large/small scale)in 3D Analysis of hybrid converters (large/small scale) in 3D	I1a-3, I3a-1, I3a-3
S3	2D/3D Vehicles Hydrodynamic Analysis	Hydrodynamic analysis of autonomous submarine vehicles in 2D/3D	I1a-1, I1a-2, , I1a-3, I3a-1, I3a-2
S4	Analysis of observational equipment	Analysis of observational equipment (2DV, 3D, small/large scale)	I1a-1, I1a-2, I1a-3, I3a-1, I3a-2
S5	Data bases	Data Adquisition on the Facilicties for a) Wave/Current data base analyses (shelf) b) Water levels (various drivers) data base analyses (coastal) c) Marine meteo data base analyses (shelf and coastal)	I2-1, I2-2
S6	Field campaigns	Intensive Field campaigns in nearshore coastal transect hydro/morpho physical and bio-geo-chemical parametres (Pont Petroli-Coastal Pier) // Field testing (prototype scale) of observational equipment and of energy convertors- Pont Petroli-Coastal Pier // Field testing of harbor instrumentation-instrumented Harbor Section	I2-2
S7	2D/3D Numerical Modelling	Numerical wave/wave-current flume modelling in 2DV // Numerical wave/wave-current modelling in 3D // Numerical wave-current interaction with structures in 2DV/3D // Numerical wave-current interaction with sediments in 2DV/3D	I1b
S8	Applied Toolbox	Hydrodynamic (wave/current) tool box for open /shelf works (physical and engineering applications, including renewable energy) // Hydrodynamic (wave-current) tool box for nearshore dephts, Morphodynamic tool box for sea-bed (inner shelf),for beach profiles and for beach plan Disperson and water quality tool box for near field (local analyses) and for far field (regional analyses)	I1b, I3b
S9	Risk Analysis	Risk analysis framework for individual assessment	I1b, I3b
S10	Pre-operational System Assessment	Pre-operational system assessment for meteo-oceanographic fields shelf/coastal	I1b, I3b
S11	Model Manufacturing	Building and/or modifying of hydraulic tailored made scale models (rivers, locks, dams, pumping stations, etc)	I3a-3
S12	Numerical Mirror and Hybrid Modelling	Numerical Mirror. Numerical GTIM-TSU replication wave-current flume modelling in 2DV Numerical GTIM-CCOB replication wave-current-wind modelling in 3D Numerical GTIM-WS replication wave-current/flows-wind modelling in 2D/3D Interaction with coastal, floating and offshore structures.	I3a-1, I3a-2, I3a-3, I3b

5 Guide for Proposals

5.1 Access Proposal: Submission and Documentation

Applicants must apply for their Access to any of the MARHIS facilities through the electronic MARHIS private zone (https://www.ictsmarhis.com/en), see Figure 1

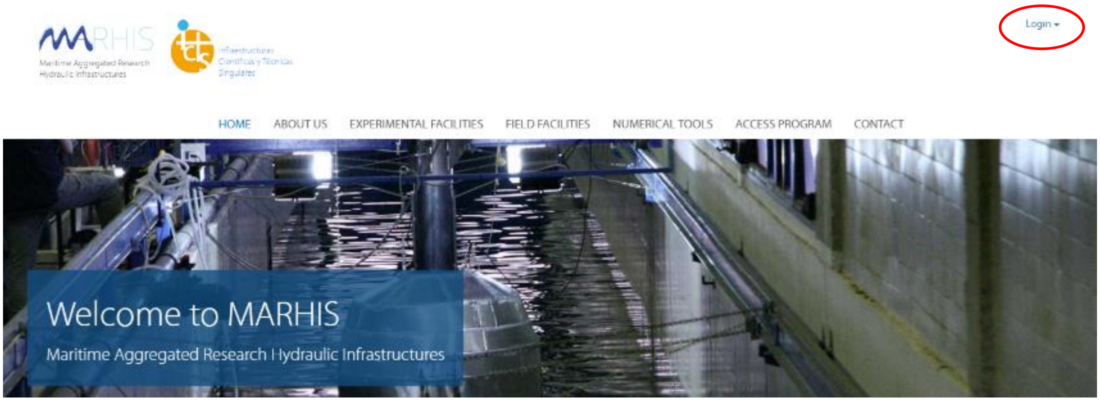

Figure 1. Access to the private zone of MARHIS in order to submit proposal

Further information about private zone is given in a pdf document uploaded at:

https://www.ictsmarhis.com/en/access-program

Main proposer/s must fill in the form stating the names of each and all of the users performing the experiment (https://www.ictsmarhis.com/en/access-program Personal Data.docx) and the main characteristics of the experiments they want to perform (https://www.ictsmarhis.com/en/access-program Extended Proposal.docx). Both documents must be uploaded at the private zone to the specific call.

After submitting the application, researchers can follow the state of decision through the private zone.

5.2 Deadlines

The period for the submission of electronic applicants, together with the documentation are detailed at the website (https://www.ictsmarhis.com/en/access-program) CALLS. It is not allowed to submit electronic applications beyond the deadline of each call and applicants must accept the delay of the decision to the next call.

Electronic applications and all attached documentation will be submitted through the electronic portal set forth in the previous article.

6 Evaluation criteria and phases of the procedure

In order to determine the proposals that will have access to the use of MARHIS facilities, detailed scientific proposals submitted electronically and on due time will be evaluated according to the following criteria and phases:

PHASE 1. Technical criteria

The technician corps of the chosen facility will revise whether the experiment is technically feasible in the proposed experimental beamlines. This decision will be taken the first two weeks after the deadline of the submission. Applicants are encouraged to contact each facility before submitting the proposal in order to pass this evaluation phase.

PHASE 2: Scientific criteria.

Once the technical feasibility is achieved by the proposal, the scientific quality and excellence must be justified in order to develop the requested access under the scope of the ICTS. A Scientific Access Committee will evaluate the proposal documents and might ask for further details to the applicants.

PHASE 3: Availability criteria

In case the facility has been required for the same period by two different applicants, a coordination meeting will be held in order to fit them all at different times.