- Coastal ECO Research projects -

A SEA OF DATA
FOR COASTAL RESTORATION

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CIIRC
Centre Internacional
d'Investigació
dels Recursos Costaners

LIM / UPC
At Campus Nord (Barcelona)

https://lim.upc.edu/en

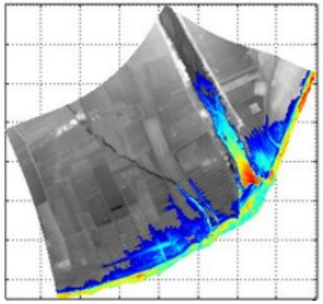
LIM/UPC

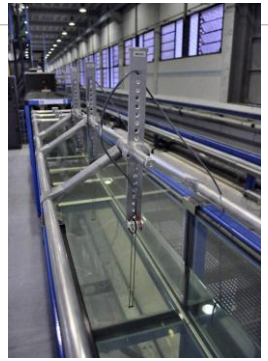
The Maritime Engineering Laboratory of the Universitat Politècnica de Catalunya·BarcelonaTech (LIM / UPC) is a Specific Research Center (CER) within the framework of the Department of Civil & Environmental Engineering of the Civil Engineering School at Barcelona. LIM/UPC is a non-profit public research center whose purpose is to generate and transfer knowledge and technology, innovate and train highly qualified professionals and researchers in the fields of Maritime Engineering and Marine Sciences.

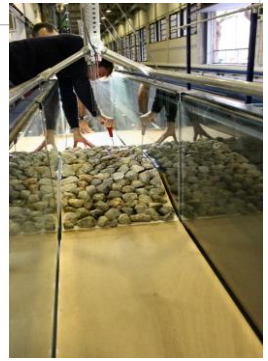
LIM/UPC was founded in 1987 and it is formed by a group of high level researchers with a large experience in research and technology transfer. Their background comes from a number of disciplines related to its main aim (civil engineering, oceanography, physics, geology, mathematics). LIM/UPC has a solid research infrastructure (laboratory and field equipment) and has developed and uses a variety of software packages in its fields of action.

Its large wave flume CIEM has been selected as a "Large Scale Facility" by the European Union since 1997 and as a Singular Research Facility of Spain since 2006.

LIM/UPC is part of MARHIS, Maritime Aggregated Research Hydraulic Infrastructures ,a distributed research infrastructure (ICTS) of the Ministry of Economy and Competitiveness in Spain.

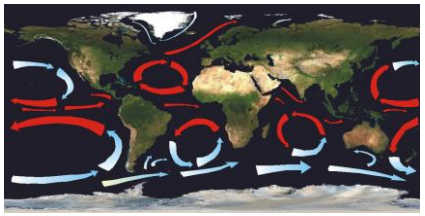


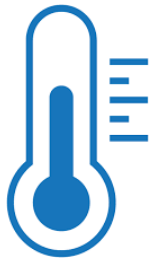


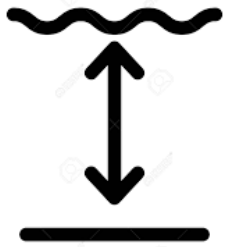


COMMON TYPE OF DATA AT LIM/UPC

Physical parameters coming from observations







COMMON TYPE OF DATA AT LIM/UPC

Moorings

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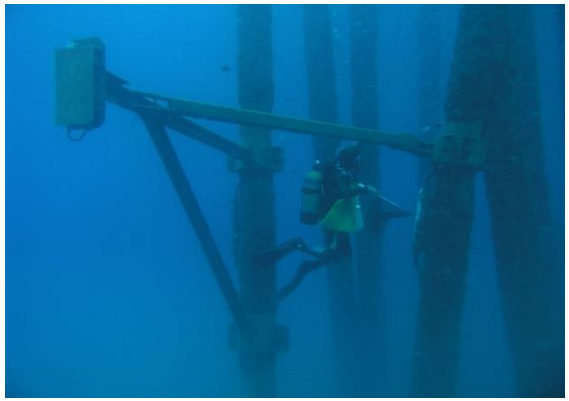
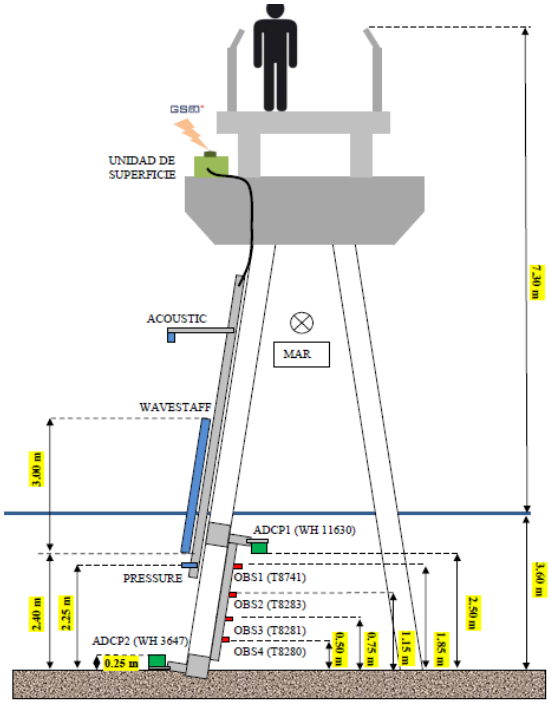
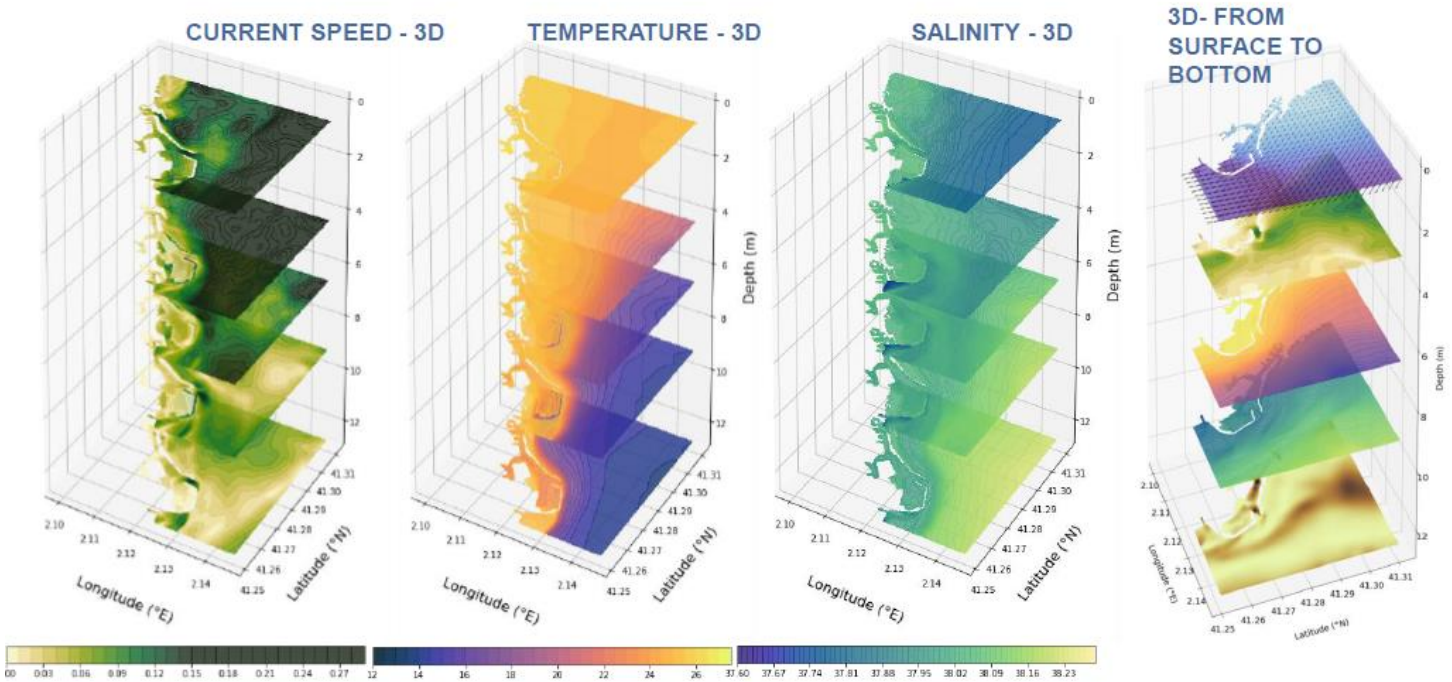
Moorings





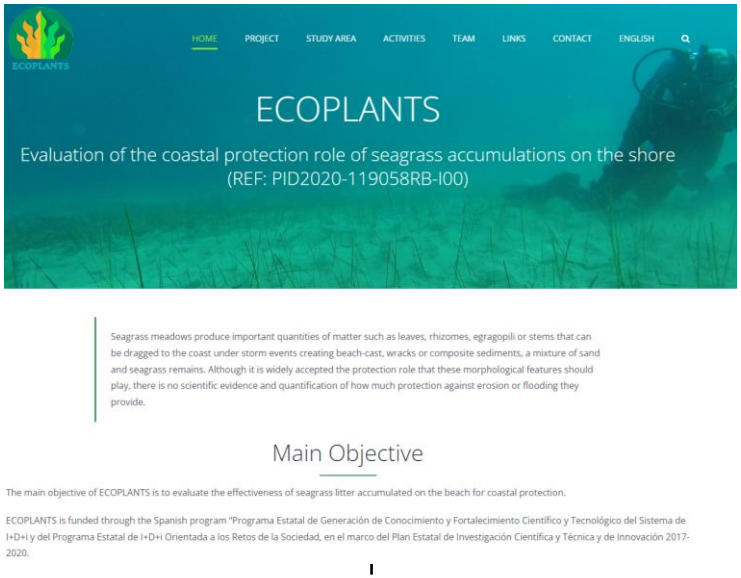
COMMON TYPE OF DATA AT LIM/UPC

Numerical model results



plus new ones →

ECO – PROJECTS AT LIM



ECOBAYS

DOORS BLACK SEA

DANUBIUS-RI
International Centre for Advanced Studies on River-Sea Systems

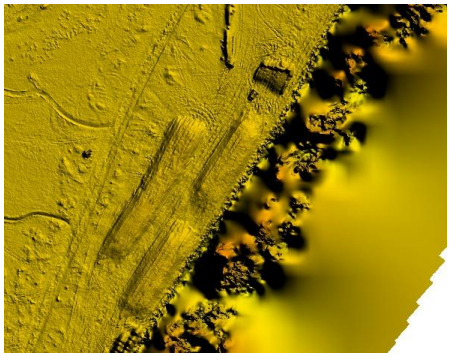
REST-COAST GOALS

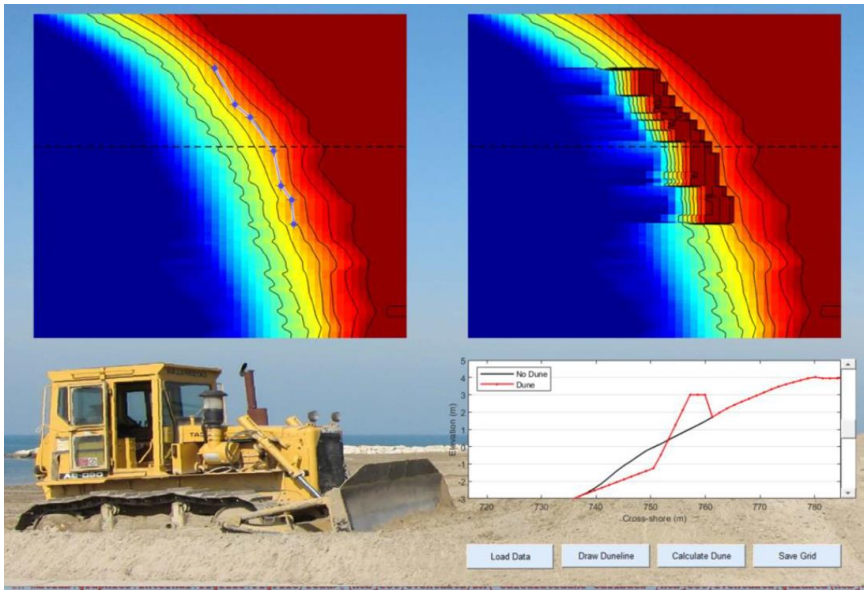
REST-COAST

GOALS

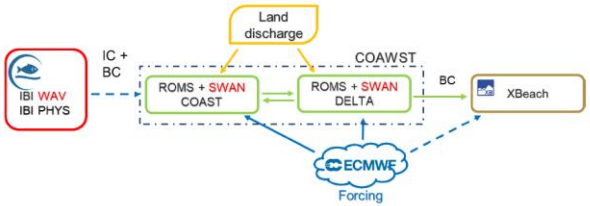
Generate new tools and data to assess risk reduction at different climate change levels to provide consistent risk estimates across time scales and lower financial, social and political barriers to large scale restoration.

WP2 Climate risk reduction through innovative restoration +





EWS framework



MED WAV
- Hourly Tp
- Hourly Dir
- Hourly Hs

MED PHYS
- Hourly sea level
- 15 minutes 2D currents
- Hourly 3D T/S
- Hourly 3D currents

ECMWF ERA 5
- Hourly Patm
- Hourly wind at 10 m
- Hourly Tair
- Hourly precipitation
- Hourly net solar/thermal radiation
- Hourly relative humidity

COAWST
- Hourly Hs; Tp; Dir
- Hourly wind at 10 m
- Hourly MWL

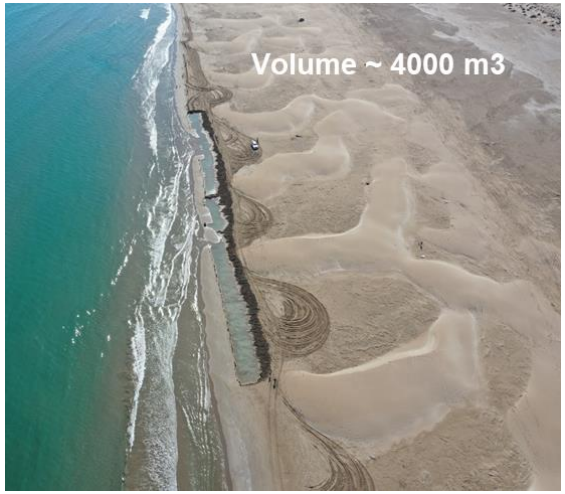
REST-COAST GOALS

REST-COAST

GOALS

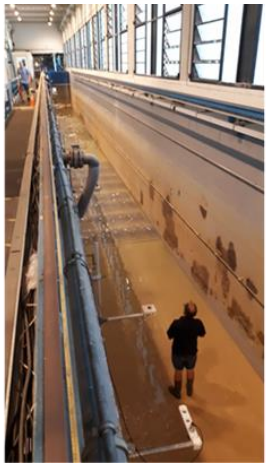
Improve coastal restoration practice and techniques through new hands-on restoration projects within the REST-COAST Pilots, supported by Restoration Platforms to demonstrate and scale-up measures for wider use.

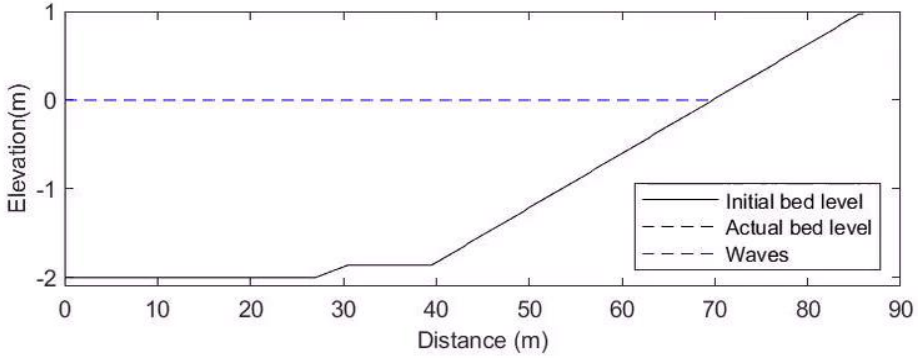
WP1 Hands-on restoration of coastal ecosystems and upscaling potential technical aspects +

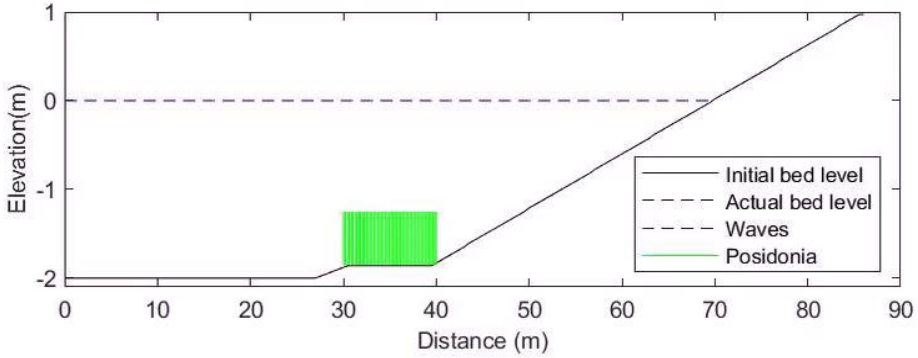


GOBIERNO DE ESPAÑA
MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

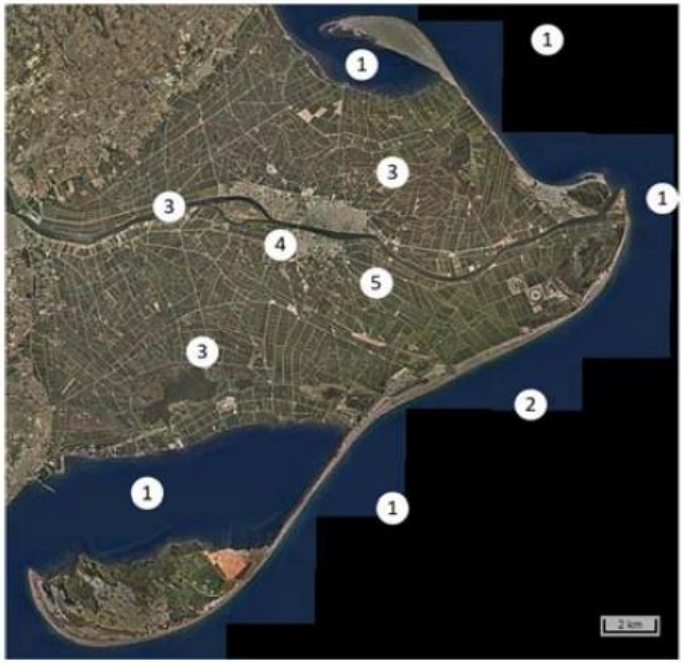
ECOPLANTS GOALS







NEED OF DATA
FOR CALIBRATION/VALIDATION



Cathegory
(1) Marine factors:
• Mean water level • Wind • Waves • Currents • Conductivity /Temperature • Turbidity • pH • Dissolved oxygen • Redox potential • Earth-Sea exchanges • Sea water acidification
(2) Coastal fringe factors:
• Shoreline position • Sediment characteristics • Bathymetry • Vegetation

(3) River factors:

- Liquid discharge
- Solid discharge
- Nutrient discharge
- Bed and suspended loads
- pH
- Dissolved oxygen
- Redox potential

(4) Planning constraints

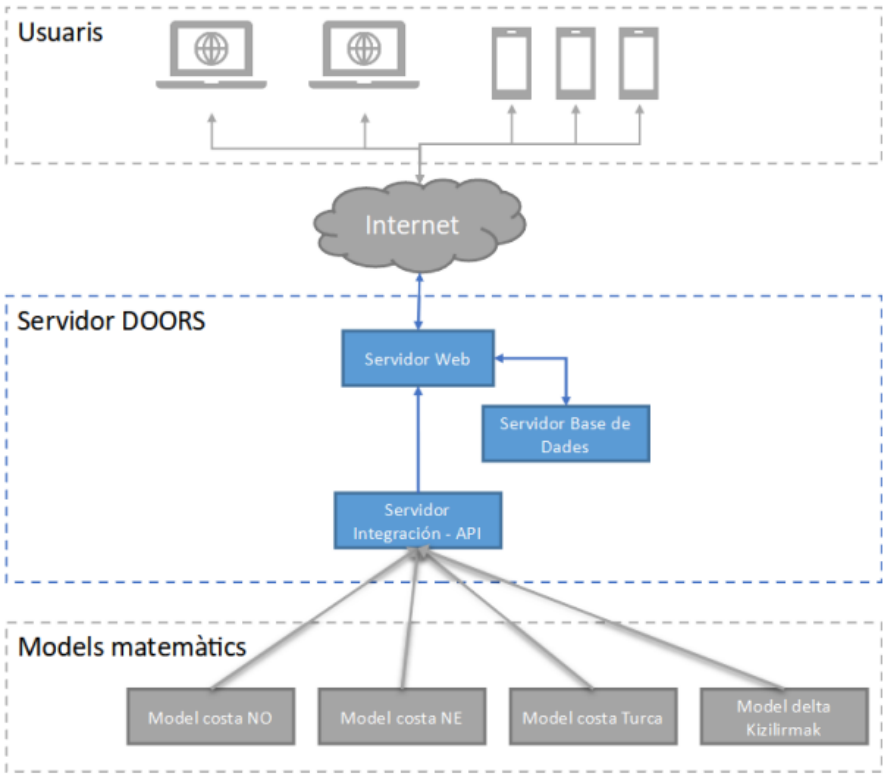
- Existing coastal – river infrastructures
- Plan new infrastructure
- River regulation
- Land uses
- Subsidence

(5) Socio economic activities

- Population density per capita income
- Local economic productivity
- Natural functions
- Inventory of natural systems
- Main functions
- Valuation

NEED OF DATA HARMONISATION AND VISIBILITY

FORMATS	
Qualitative data	Text files with extension - .XML(text according to an appropriate document type) - .RTF(rich text format), .TXT (plain text data), ASCII - .doc/.docs(widely –used proprietary formats, MS Word), .tex (LaTex)
Quantitative tabular data with extensive metadata	--proprietary data formats only if a de facto standard and no international accepted standard exists - Data sets with variable labels - data and metadata inside a relational database -XML file with metadata (WaterML2 etc)
Quantitative tabular data with minimal metadata	- .CSV (comma-separated values), .tab (tab-delimited file) - widely-used formats MS Excel (.xls/.xlsx), MS Access (.mdb/.accdb), open documents spreadsheet (.ods)
Quantitative gridded/ array-oriented data, self-describing formats	.nc (netCDF) with CF conventions - .grb (GRIB) - .hdf
Geospatial data	(vector and raster data), tabular GIS attribute data OGC simple features, proprietary ESRI-shp, …
Digital audio data	-.wav (Waveform Audio Format) -.mp3(MPEG audio format)
Digital video data	-.MP4 (MPEG 4) -.jp2 (motion JPEG)
Documentation and scripts	Files in the .RTF, .PDF or .HTM format, plain text or widely used proprietary formats MSWORD(.doc/.docx), MS EXCEL(.xls/.xlsx), SQL, JAVA, JAVASCRIPT



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