

## Hidromod's Curriculum

Designation	Description	Year	Client
Environmental Incidents Assessment of the Project for the Reinforcement of the Armona and Tavira Islands dunes	The objective of this project was to provide support to the Environmental Incidences Assessment of the project for the Implementation of Reinforcement of the Dunes in the Islands of Armona and Tavira in the aspects related to hydrodynamics and hydromorphology. The work carried out included a critical analysis of previous works for the site, namely (among others) in the scope of the Environmental Impact Study, the Ria Formosa Lagunar System Requalification Project (ICN, 2000) and the studies carried out by LNEC in Scope of the Study of the Recovery and Valorisation of the Armona Island Dunes	2016	Matos e Fonseca
Aquasafe platform maintenance services for the Lisbon sewage network relating the period 2016/2017	AQUASAFE platform provides a set of the services for the Lisbon sewage network allowing the integration of data (including data acquired in real time) and forecast models to support the operation, issuing warnings and alerts and automatic production of reports. These tools allow the integration of data and models, communicate with databases and extract information with the characteristics considered necessary for network management. This includes the ability to search the data in a georeferenced system, with a user-friendly interface, and ask questions that allow you to meet operational requirements	2016	EPAL - Empresa Portuguesa de águas Livres, S.A.
Hydrodynamic Impacts assessment of the construction of coastal structures in the Marmara Sea near Istanbul	The present project refers to the modelling work done in the framework of the Marmara Adalari Preliminary Design Concept Master Plan sub-contract by CENOR to HIDROMOD. This modelling work was essentially focused in quantifying the foreseen impact of three artificial islands over the coastal circulation along a coastal stretch west of the Bosphorus strait. The hydrodynamic model was set up using MOHID modelling system. A one-way nesting approach (with several levels) was implemented and the model boundary conditions were defined using large scale modelling solutions publicly available	2016	Consulmar

Study of flood propagation in the lower course of the Vouga River. Study on the hydraulic infrastructures of the tidal flood defence system of Rio Velho and Rio Novo do Príncipe	Hydraulic study to support the construction of infrastructures in the lower Vouga River that constitute a system of defence against floods and tides. The study took into account the propagation of flood waves with different return periods, using the FLDWAV model. The changes introduced by the new infrastructures in the Vouga River's hydraulic regime were evaluated.	2016	Aveiro Region
Study of the effect of rainwater discharge from Monsanto/Sta. Apolonia and Chelas/Beato tunnels in the local hydrodynamics and sediment dynamics along the Tagus estuary	The Lisbon wastewater network is being improved in order to reduce the flood risk due to the storm water discharges. In this context new wastewater interceptors are being built to divert the storm water to more favourable locations along the Tagus estuary. The object of the present study was the assessment of the impact of these fresh water discharges in the Tagus estuary. There were considered two possible discharging points (Santa Apolónia and Beato) and, for each one, there were made simulations of the storm water discharges and the resulting plumes dispersion. The simulations were made with a high resolution 3D baroclinic model considering 150 m <sup>3</sup> /s 100 years return period flow and 30 m <sup>3</sup> /s flow corresponding to a frequent flood.	2016	Lisbon Municipality
Assessment of potential flooding areas in the region of Pante Massacar, Timor	This project aimed to make a delimitation of the potential flooding zones in the area of Pante Macassar - Timor. To this end there were made flow simulations with the MOHID Land model to simulate the catchment flow and integrate the effect of hydraulic structures (existing or planned) used to control the flow in the lowlands	2016	Cenor
Leakage Control System for Water Transmission Network in Muscat Governorate	This project aimed to solve some operational problems in the system previously installed by Hidromod, carry out robustness tests and deliver training to new operators and system users.	2016	L&T
Assessment of alternative solutions to improve Funchal Marina sheltering conditions	This project purpose was the execution of modelling studies of wave conditions in the Funchal marina to evaluate the effectiveness of different solutions capable to improve the marina sheltering conditions. In this context there was performed different simulations for a set of different layouts aiming to verify the effectiveness of each one to fulfil the marina sheltering requirements	2016	Proman

Assessment of the effectiveness of different project solutions to enlarge Funchal (Madeira island) port breakwater	This project purpose was the execution of modelling studies of wave conditions in the port of Funchal to evaluate the effectiveness of different breakwater extension options to improve the port sheltering conditions. In this context there was performed different simulations for a set of expansion layouts aiming to: i) characterize the extreme wave conditions; ii) characterize the operational conditions within the port	2016	Proman
Project of an oceanic swimming pool in Rabat, Morocco	This study aims to characterize the water quality and the water renewal required to keep the water quality within proper limits of a large oceanic swimming pool to be built near Rabat (Morocco). This swimming pool will have a volume of between 25 000 and 27 000 m <sup>3</sup> , a maximum depth of 4 m and an average depth of about 2 m. The study included two implementations of a full 3D baroclinic model based on MOHID: one to simulate the swimming pool water mass and the other to simulate the water circulation in the adjacent coastal area. In the first case, the goal was to characterize the ability to renew the swimming pool water for two scenarios (distribution of water injectors and pool geometry), identifying such possible stagnation areas. Regarding the coastal zone, the goal was to detect situations in which oceanographic weather some type of short circuit could occur between the intake and discharge.	2016	Consulmar
Preliminary studies and environmental impact assessment of the Barreiro' Container Terminal, Port of Lisbon	The evolution of containers ship traffic in recent decades, the increasing size of container ships and the forecasts that point to a continued increase in containerized cargo traffic worldwide, led to APL to equate the construction of a new container terminal in Barreiro. This project was designed to take into account the needs for a project container ship with a capacity of 8,000 TEU, which is estimated to reach about 352 meters long, 43 meters mouth and 14.5 meters draft. To this end it was considered the need to dredge a new access channel and the respective manoeuvre basin and the construction of a new wharf. Hidromod joined a consortium that developed the previous study and the environmental impact study concerning this project and was responsible for the characterization and evaluation of the impacts on hydrodynamic and sediment dynamics	2015	Lisbon Port Authority
LIFE SWSS - Smart Water Supply System	SWSS is an innovative platform for management and decision support for water supply systems (WSS) under real working conditions. The SWSS platform is composed by five modules: (1) Predictive, (2) Hydraulic simulation, (3) Assessment, (4) Leakage and (5) Optimization, which together enable to support the water companies to improve energy efficiency and water efficiency in their systems. The SWSS modules are based on previous developments from consortium partners, which will be integrated in one single platform in this project. The SWSS platform will be demonstrated in 3 demonstration WSS from AdA, AdC and AdO, which were selected due to their distinctive characteristics and instrumentation level	2015-2017	LIFE program

Assessment of potential inundation areas resulting from the occurrence of a tsunami in the Portuguese coast	Under this project there were prepared high resolution inundation maps for different locations along the Portuguese coast resulting from the possible occurrence of a tsunami. For this purpose there were simulated different scenarios of tsunami generation and respective stages of propagation and flooding. The analysis is supported by a system of nested models including regional and local scales of the order of meters. Based on the forecasted inundation areas and in the local topologies there were also produced the correspondent risk analysis.	2015	ANPC
Evaluation of the alternative solutions for the deepening of the Setubal harbour access channel	In response to the expected changes in the hinterland containerized trade demand, the Setubal port administration (APSS) planned to start a program to improve the sea accesses contemplating a deepening of the access channel that will offer, initially, a permanent access to 3000 TEU Under -Panamax type vessels up to 12 m draft and, on a second stage, a permanent access to 4000 TEU Panamax type vessels of up to 13 m draft in any normal sea conditions. In the framework of this process HIDROMOD was hired to advise APSS in the evaluation of potential impacts associated with the deepening of the access channel, particularly with regard to aspects associated with the wave climate, hydrodynamics and transport processes, including the assessment of the channel maintenance conditions	2015	Setubal Port Authority
Water resources management in Myanmar and Cambodia	Satellite data was used as input for a Soil Plant Air model allowing to estimate variables useful to support irrigation channels project. There were estimated the water needs, the energy needs for pumping and the drought impact. Aquasafe was used to demonstrate the possibility of using these models in an operational system to support irrigation management. Final clients of the project was ADB and local ministry of Cambodia (MOWRAM - Ministry of Water Resources and Meteorology) that is delineating the irrigation channels. The project was done in partnership with GISAT and it was funded by ESA	2015	GISAT / ESA
AMOS - Advanced meteorological Forecasting Services for sea	<p>The first goal of the present project is to make available a high resolution sea storm warning service covering Portugal's mainland and autonomous regions at scales compatible with the coastal uses and activities. The service have the ability to communicate with different data sources and provide detailed daily forecast of:</p> <ul style="list-style-type: none"> <li>• Meteorology (wind, precipitation, visibility, etc.);</li> <li>• Oceanography (sea temperature, currents, water levels and salinity);</li> <li>• Waves (Hs, T, Dir, spectral parameters);</li> </ul> <p>These services may be used to provide advice (and warning) to the navigation, fishing, coastal recreational activities, coastal erosion and flooding. The system is ready to provide daily forecasts for the upcoming days and it may be used not only to issue alerts but also to provide high resolution forecasts for the remaining periods. It may also be used to provide support to other related activities such as search and rescue missions or sea pollution events.</p>	2015-2016	Sea Policy Services

Assessment of the future sustainability of the Sines power plant water intake.	In the framework of this project it was performed an the evaluation of the present situation of the Sines power plant water intake and assessed its sustainability for the horizons 2025 and 2030. For this purpose there were considered the processes associated with the algae blooms, the sediment transport and the possibility of occurrence of short-circuit phenomena between the water rejection and intaking facilities, taking into account its historical evolution and the evolution scenarios for the Sines port infrastructure.	2015	EDP
Updating of the S. Francisco river Catchment Water Resources Plan	The São Francisco River Basin Management Plan (PRHSF) deals with the water availability requirements necessary for the maintenance of a good status of the aquatic ecosystems. The current Basin Plan was drawn to the horizon of 10 years, covering the period 2004 to 2013. Given that since 2004 some changes and advances have occurred in the institutional and legal arrangement of the water management, it is objective of this project to proceed to the respective update, producing an instrument for continuing the activities of the various institutions responsible for the management of the surface and groundwater resources in order to ensure a multiple, rational and sustainable use of water and the achievement of a good environmental status of the basin. Under the consortium gather for the execution of this work Hidromod is responsible for the evaluation of surface water resources.	2015	Nemus
Implementation of real data service in Intecmar (Galicia)	The main goal of this project was to centralize at a single point (AquaSafe Server) access (AquaSafe client) all met ocean measured data (e.g. buoys, campaigns, HF-Radar) and modelling results (e.g. wave climate, winds and currents forecasts) relevant to INTECMAR's activity. The implemented system allows users to analyse in real-time all the relevant meteocean data (measured/modelled) both in time and in space.	2015	INTECMAR
Simulation of mud and oil dispersion processes resulting from sea bottom drilling activities over Argentinean Continental Platform	Under this project it was evaluated the probability of Argentina and Uruguay coastal areas being affected by the occurrence of possible oil blow-outs resulting from new drilling areas offshore of the Uruguayan coast. Additionally it was also assessed the potential impact of the dispersion of waste from these drilling works (e.g. sewage, oily water, mud, etc.)	2014	YPF (Petroliera Argentina)

Lisbon wastewater network: AQUASAFE platform maintenance and addition of new capabilities	AQUASAFE platform has been used along the last years to generate operational information from data and model results to support the management of Simtejo's infrastructure. This project is a continuation of the activities that have been developed around the platform over the past few years that have allowed to increase continuously the number of data sources managed by the system and the number of key performance indicators to help on the real-time infrastructure management.	2014-2015	SIMTEJO
RA City real estate development project in Yeroskipou/Paphos. Preliminary study for marine infrastructures & bridge design	The present project is related with a preliminary evaluation of the RA City Real Estate Development Project (CREDP) in Yeroskipou/Paphos. The project include an artificial island of about 105 ha (reclaimed land, protections, beaches), an access bridge, a new marina and the artificial island protections. In the framework of this project Hidromod took the responsibility for the hydrodynamic and hydromorphologic assessment studies which included the evaluation of the local wave climate, the currents fields and the sediment transport processes.	2014-2015	Consulgal
Implementation of the model MOHID the west coast Galician (Rias Baixas)	In this work we implemented the model to all Rias Baixas with a 300m horizontal resolution and 40 layers in the vertical. The model is run on a linux cluster in 16 colors and four days each simulation takes ~ 2 h.	2014-2015	MeteoGalicia
Praia da Vitória coastal lagoon hydrodynamic characterization and water quality improvement assessment studies	Praia da Vitória coastal lagoon suffers from poor water quality problems that are intended to be reduced or eliminated. Whereas the quality of water in Paul is influenced by climatic conditions, in particular by rainfall and the seawater exchange, there were conducted monitoring studies to characterize the salinity distribution and there were performed numerical simulations to simulate the lagoon dynamics and establish a conceptual model for defining the operation of the system. As a result there were proposed potential intervention solutions that may contribute to increase the dynamics of the system, thereby reducing the time required for the water renewal.	2014	CMPV (Praia da Vitória Municipality)

Operational forecasting of river flow into EDP's hydro power plants on the Douro river	In the framework of this project it was implemented a river flows forecasting system capable to predict the flows arriving to the hydro power plants of EDP in Douro and Tâmega rivers. This system is the basis of a daily forecast service covering eleven sections of the watershed of the River Douro based on different rainfall forecast scenarios from different meteorological models. Forecasts are made daily for the next 7 days and the entire management of the simulations and information flows is secured by AQUASAFE platform.	2014-2016	EDP - Energias de Portugal
Licensing, updating and maintenance of Aquasafe software and respective forecasting models for Leixões harbor	This project has the purpose of providing upgrade and maintenance services to the AQUASAFE system installed in the port of Leixões. Several external metocean forecast models are used, along with several internal models for 3D hydrodynamics and waves, for both ports. Real time data connections to sea level gauges, wave buoys, meteo stations and river flow meters are available in the platform. A mobile platform was also developed in close cooperation with the client. The services currently provided are: <ul style="list-style-type: none"> <li>• Automatic daily reports and execution of numerical forecasting models (at regional and local level, for meteorology, waves and hydrodynamics);</li> <li>• System audit services;</li> <li>• Corrective maintenance;</li> <li>• Preventive maintenance;</li> </ul>	2014-2017	APDL – Leixões Port Authority
Moche Surf Tour: wave forecasts to support the surf competition	Under this project the Hidromod provided high resolution waves forecasting services covering the beaches where took place the various competitions included in world surfing championship made in Portugal	2014	Federação nacional de Surf
Fecal contamination warning system for the Santos estuary	A fecal contamination alert service for the Santos urban beaches is implemented. This alert service is based mainly in numerical models run in forecast mode (urban runoff - SWMM, sea currents - MOHID, waves - SWAN). The models are forced with rainfall data provide by the CEMADEN network (rain gauges) and atmospheric forecasts provided by CPTEC and NOAA. The alert service aims to support a more efficient management of urban drainage channels' s locks that prevent the urban sewage being discharged directly on the beaches. The system was implemented together with the University of Santa Cecilia, in collaboration with the company SABESP (for data campaigns) and the municipal authorities of Santos.	2014	Universidade de Santa Cecilia

Assessment of the impacts over the wind fields resulting from a new development on the Carcavelos beach seafront	In view of the intention of building a set of new infrastructures in Carcavelos seafront, in the framework of this project there were carried out simulations on numerical model for assessment of potential impacts on the wind fields that might have effects on Carcavelos beach surfing conditions.	2014	Cascais Municipality
Sines power plant algae blooms risk assessment forecasting service	The main goal of this project was the upgrade of the service that provides daily forecasts of the conditions that can induce the occurrence of algae blooms to the pumping basin of the cooling water circuit of the Sines electric power plant. The actual warning system, developed in previous projects, is based on results of numerical models and local measured data. The service is managed by AQUASAFE platform which is responsible for the preparation of a daily report assessing the risk level sent by email to a set of EDP addresses. This service is in continuous operation since the end of 2008	2014	EDP - Gestão da Produção de Energia S.A.
Environmental assessment and characterization of the marine conditions related with the expansion of Sines port container terminal	Sines is a major deep-water port in the Portuguese west coast that is benefiting from a fast growth. In the context of the studies for the expansion of the container terminal, HIDROMOD was in charge of the assessment of the potential impacts of the works, mainly on the local hydrodynamic conditions. This assessment included the effects over the currents, the port wave sheltering, the coastal dynamics, the cooling water intake of the nearby thermoelectric power plant and the growing conditions of some algae species that are dependent of some particular hydrodynamic conditions.	2014	Sines Port Authority
MOHID upgrade in the framework of EnergyMare project	Under this contract was made an upgrade of MOHID numerical model in order to be able to evenly distribute the computation effort across multiple processors using a domain composition approach	2014	Meteogalicia
Salvador - Itaparica bridge environmental impact assessment	In the framework of this project there were made simulations of the hydrodynamic and sediment transport processes and made an assessment of the potential impacts that may occur as a result of the construction of the Salvador - Itaparica bridge. The study involved the evaluation of the hydrodynamics, the wave climate and sediment transport patterns in the bridge influence area considering the actual and after construction situations	2013	Nemus



<p>Mira estuary hydromorphological study to define action steps to minimize the eroding processes observed in Franquia beach</p>	<p>This project aimed to identify the causes of the erosion process observed in the Franquia beach in the Mira Estuary and propose possible actions that may contribute to the elimination or minimization of the problem. To support this assessment there were performed model simulations based on the current situation and different intervention scenarios</p>	<p>2013</p>	<p>Nemus</p>
<p>Implementation of an information management system for navigation support in Setúbal port area</p>	<p>In the framework of this project it was deployed an operational system supported by AQUASAFE platform that aims to make easily available different data sets and meteorological and estuarine forecasts that, among other purposes, may be used to provide information for navigation support and to implement analysis tools that may contribute to optimize the dredging effort.</p>	<p>2013</p>	<p>APSS</p>
<p>Madeira Archipelago River Basin Districts Management Plan</p>	<p>Hidromod's work in this project was focused in providing support to River Basin Management Plans in what concerns the evaluation of water quantity, quality, water masses classification, scenarios evaluation and effectiveness of measures to improve ecologic/potential status in water masses that are below the good status.</p>	<p>2013</p>	<p>DROTA - Direcção Regional do Ordenamento do Território e Ambiente</p>
<p>Leakage Detyection System for Water Transmission Network in Muscat Governorate (Oman)</p>	<p>The existing Water Transmission Network in Muscat Governorate includes components such as reservoirs, pumping stations, transmission and distribution pipelines and district metering points. The integration of these components, through a centralized <i>Scada</i> and leak detection system located in the Bausher Reservoir Compound, was managed with the AQUASAFE® software. An hydraulic model of the Muscat network (implemented with WaterGEMS), capable to provide a network forecast tool and an operation management tool by means of scenario simulation, was also integrated in AQUASAFE® enabling the operation improvement and the water leakages reduction.</p>	<p>2013</p>	<p>PAEW</p>

SW4E - Smart Water 4 Energy	The project Smart Water 4 Energy (SW4E) aims to develop an energy management smart system for application in waste water treatment plants. The project was developed by a consortium including Simtejo, ISQ and Hidromod, and intends to provide tools for real-time monitoring of energy consumption associated with wastewater treatment processes, as well as changes in the consumptions resulting from the implementation of energy efficiency measures in the WWTP. For the analysis, interpretation, treatment and management of information from the monitoring systems there was developed a smart management tool that aims to make more efficient the operations management enhancing the use of real-time information and predictive and diagnostic tools.	2013	Agência de Inovação
AQUASAFE® operational system implementation in the pacific coast of Colombia	An implementation of the AQUASAFE® platform was done to operationalize oceanographic models for the Pacific coast of Colombia, focusing in the areas of Tumaco and Buenaventura. A downscaling from meteorological (GFS) and oceanographic (NTOFS) models was done in order to include all the relevant forcing mechanisms of the coastal circulation. The hydrodynamic model MOHID model was used to downscale the global solutions. A WWIII to forecast wind waves was also implemented. The AQUASAFE Oil Spill Simulator was installed in several departments of DIMAR.	2013	Dimar
ARCOPOL +: Implementation of a risk management decision support service to support operational actions associated with coastal pollution events resulting from ship accidents	This project aimed to build an integrated risk analysis system for coastal contamination resulting from ship accidents, adaptable to various regions and integrating data obtained from different sources such as AIS, numerical models, coastal sensitivity maps statistical analysis of past accidents, etc. and allowing the access of these information through a website. The system includes of a risk assessment component that may be used in real time or on delayed mode.	2013	IST
Assessment of the effect of the tidal and wind currents in the Port of Casablanca	This projected aimed to perform a characterization of the currents fields at the Port of Casablanca. For this purpose there were simulated current fields considering three study scenarios: windless and typical winds of 4 m/s with North and South directions. The analysis took into account the characterization of the residual circulation fields, the maximum currents intensity and spring tide flood and ebb currents	2013	Consulmar

<p>AQUASAFE platform upgrade to the Lisbon wastewater network under Simtejo's supervision</p>	<p>In the Framework of its activity, Simtejo has a set of data and model results that properly exploited, would achieve gains in the operation and management of the network and which were integrated in AQUASAFE platform. Under this project there were implemented a set of new features in AQUASAFE platform that apart from other, included the link to the WWTPs of Beirolas, Chelas, Vila Franca de Xira and Alverca SCADA, the Alcântara subsystem and data of the pumps of lower Alcântara drainage area</p>	<p>2012</p>	<p>SimTejo</p>
<p>Implementation of an oil spill forecasting sytem for the Straits of Malacca and Singapore</p>	<p>In the framework of MEH (Marine Electronic Highway), a demonstration project promoted by IMO which seeks to place environmental protection and conservation in parallel efforts with safety of navigation, Hidromod implemented a decision support system, capable to provide operational support in case of marine pollution incidents in the Malacca and Singapore Straits. MEH combines an Electronic Chart Display and Information System (ECDIS), an Automated Identification System (AIS), shore-based marine information databases and advanced ship-to-shore communications. Hidromod made use of AQUASAFE platform to set up an operational system capable to gather data for the sea sensors (wave buoys, tide gauges, current meters, meteorological stations) and keep running hydrodynamic operational models to support an oil dispersion model capable to provide on time predictions of the movement, dispersion and trajectory of oil slicks and to assess the potential shore reach points and the potential impact of the pollutants on the coastal area and marine structures.</p>	<p>2012</p>	<p>IMO-International Maritime Organization</p>
<p>Hydraulic optimization of Simtejo's infrastructures: the cases of Frielas and Ericeira WWTP's</p>	<p>In the framework of this project it was developed a methodology for the numerical simulation of three-dimensional movement of the water and suspended solids in secondary sedimentation tanks in order to increase their efficiency. This methodology was applied to secondary sedimentation tanks of sewage treatment plant at Frielas and Ericeira with the objective was to assess how the placement of bulkheads along the surface discharger can help increase the efficiency of the decanter (Frielas) and which processes could be responsible for the reduced efficiency of the secondary sedimentation tank of Ericeira (and what measures could be taken to increase its efficiency)</p>	<p>2012</p>	<p>SimTejo</p>

Water quality studies for the reservoirs of Foz Tua and Régua (Portugal)	In the framework of the Foz Tua Reservoir Spatial Plan, a mathematical modeling study of the water quality in Foz Tua (river Tua) and Régua (river Douro) reservoirs, in northern Portugal, was carried out using the CE-QUAL-W2 model. The study included 3D simulations with MOHID model to simulate the effect of pumping from Régua reservoir into Foz Tua reservoir. The water quality modeling work was preceded by a compilation and analysis of baseline information and an estimate of the loads of nutrients and organic matter produced in the respective watersheds. The influence of the outflow from Foz Tua and the pumping inflow from Régua into Foz Tua was included in the numerical simulations to study the impact of the Foz Tua Hydroelectric Development in the water quality of both reservoirs.	2012	Nemus
ENVITEJO: Development of an internet portal to support Environmental Data Services for the Tagus Estuary	In the framework of the project ENVITEJO, The Tagus Basin Authority hired HIDROMOD to develop a computer application, in the format of an internet Portal that may make available information about the estuary. This information is intended to serve both the general public and professionals that need specific data or forecasts related with the estuary.	2012	ARH Tejo
Dispersion study of the temporary discharge of the WWTP of Ribeira dos Moinhos directly in the beach	In the framework of this project it was made an assessment of the potential impact of a discharge on a beach associated with a by-pass resulting from maintenance works of an outfall. Based on this study it was evaluated an area which should be closed to the public during the period in which the bypass is active.	2012	Águas de Santo André
<b>Figaro</b> - Flexible and Precision Irrigation Platform to Improve Farm Scale Water Productivity	FIGARO aims to increase the water productivity in major water-demanding crops and develop a cost-effective precision irrigation platform. The objective is to offer the farmers a flexible crop oriented management tool with a DSS (Decision Supporting System) module to optimize irrigation.	2012 - 2016	União Europeia
Lenvis grid data service upgrade	Upgrade of the web services developed under the Lenvis project so as to adapt them to the needs of ARIA company. In Lenvis project were developed web services and clients that allow the efficient dissemination of measured and modeled data relevant for bathing.	2012	ARIA Technologies, S.A.

Oil spill in the Caribbean platform, Colombia	In the framework of this project there were assessed the oil dispersion processes, both at the surface and in the water column, resulting from a possible blow-out off the Colombian Atlantic coast.	2012	Hydroceanic Ingeniering
ENVITEJO: Development, Implementation and Testing of appropriate Tools for the exploitation of the Tagus Estuary Model	ENVITEJO aimed to integrate knowledge and information about Tagus estuary. In the framework of this project HIDROMOD developed and implemented a set of tools capable to allow the exploitation of the estuary mathematical models by non-specialized technicians.	2011	SimTejo
Assessment of flood risk situations in Maputo Bay	This work aimed to evaluate the situations leading to potential flooding risks in the delta of the rivers Matola, Umbeluzi and Tembe in Maputo bay area. The work included three major phases: a) Collection of baseline data, b) Implementation / Validation of the models needed to simulate the effect of increased flow in the water level inside the Bay (model MOHID Water / Land, SWAT etc.) and c) Scenarios simulation.	2011	Nemus
Risk assessment of the coastal contamination by shipping and industrial facilities in Galiza (Spain)	This work identified the areas of the Galician coast most likely to be affected by a spill originating from a ship. This study was based on results of current timetables models, winds and waves to the year 2010 and also the position of vessels during the year 2010. This work was the base of the Risk analysis that support the Camgal Plan (Galicia Region) ( <a href="https://vimeo.com/100332577">https://vimeo.com/100332577</a> e <a href="http://ww3.intecmar.org/plancamgal/">http://ww3.intecmar.org/plancamgal/</a> )	2011	Intecmar
Rio de Janeiro vulnerability to floods. Mapping of urban slopes and land use.	In the framework of this project there were used modelling tools to demonstrate the added value of having detailed topography and land cover/land use information to simulate potential flooding areas. The chosen models were Mohid Land and Mohid Water applied to a watershed in Rio de Janeiro. The first was used to estimate water generated in the watershed according to different land uses and the second was used to calculate the inundation area using SPOT topography as main input.	2011	Critical Software, S.A.

EIA of a CCGT in Soyo, Angola. Study of the cooling water intake and disposal	his project was made in the framework of the environmental impact assessment of the construction of a combined cycle power plant in Soyo, Angola, and aimed to perform the study of uptake and rejection of water from the cooling circuit in the Pululu channel, which is one of the channels of the left bank of the Congo River Estuary. The power plant was designed for a capacity of 400 MW in the start-up phase and includes a cooling circuit involving the water intake and rejection in the estuary. In this context, modelling studies were made to characterize the hydrodynamic conditions in the Pululu channel and the over the areas potentially affected by the water uptake and rejection of the cooling circuit and assessed the thermal plume dispersion quantifying the temperature changes in the aquatic environment.	2011	COBA, Consultores para Obras, Barragens e Planeamento,SA
Specialized technical support in the fields of coastal and estuarine hydrodynamics	Technical advisory to ParqueExpo S.A. in fields relating coastal and estuarine hydrodynamics as support to the plans and projects proposed to the Ria Formosa lagoon area under the supervision of the Polis litoral Ria Formosa.	2011	ParqueExpo,S.A.
Web System WW4environment	In the framework of this project it was created a web site for loading and querying data gathered under the project WW4E. The system relies on a database with geospatial capabilities where data can be shared through a web interface. This interface has a "back office" administration (permissions, users, etc.), a searching area and an information loading area.	2011	SimTejo
Assessment of the impacts over the hydromorphology resulting from the planned extension of Cais da Princesa peer	In the framework of this project there were assessed the potential impacts over the hydrodynamic and sediment transport of a floating peer to be added to the Cais da Princesa peer located near Torre de Belém (Lisbon). This new floating peer pretends to provide support to a seaplane.	2011	Instituto de Soldadura e Qualidade
Cap Lopez Bay (Gabon) new harbor project: Simulation of the hydromorphologic conditions and the wave climate	In the framework of this project there were performed several characterization studies to improve the knowledge of the hydromorphological conditions and the local wave climate in the area of Cap Lopez Bay having as objective to provide support to the project of a new port. Beyond the analysis of the existing and collected data there were performed model simulations of hydrodynamics, sediment transport and wave propagation inn order to identify potential constraints and assess potential impacts.	2011	Intecsa-Inarsa, S.A.

Fridão hydroelectric development. Mathematical modeling of water quality in Fridão reservoir	In the framework of environmental impact assessment of Fridão dam it was done a study for modeling water quality in the two reservoirs to be built having in mind the optimization of the quality of water discharged for Tâmega river.	2011	Agri-Pro Ambiente Consultores, SA
Saint Roque Harbor: Wave propagation simulations	Simulation of the wave climate inside Saint Roque Harbor (S. Miguel Island – Azores) in order to evaluate the potential benefits of the improvement of the sheltering conditions. The simulations were performed using MOHID modeling system.	2011	Consulmar
Implementation of the Mohid model and management tool applied to Ria Arousa	In the framework of this project it was provided support to MeteoGalicia in the validation of the Arousa hydrodynamic model. It was Implemented and validated a model able to simulate the water quality and the shellfish fecal contamination due to WWTP discharges and implemented AQUASAFE platform to provide support to the interaction with model results and measured data .	2011	Intecmar
Ribeira Quente Harbor: Wave propagation simulations	Simulation of the wave climate inside Ribeira Quente Harbor (S. Miguel Island – Azores) in order to evaluate the potential benefits of the improvement of the sheltering conditions. The simulations were performed using MOHID modeling system.	2011	Consulmar
<b>MyWater</b> – Merging Hydrologic models and EO data for reliable information on water	MyWater is a R&D FP7 funded project in the framework of which it was developed a water management system integrating satellite data, models and in situ data in order to improve knowledge and create the forecasting capabilities necessary to catchment managers, and at the same time optimizing the ratio cost/benefit of water resources monitoring.	2011 - 2014	União Europeia

<p>Water Availability in the Guadiana River Basin</p>	<p>The aim of this study was to produce the necessary elements to support , technically and scientifically the Alentejo Regional Hydrographic Administration in its negotiations with Spain in relation to a possible claim for a water intake in the main course of the Guadiana River in the section of Pomarão , near the confluence with river Chanza . Elements were collected and analysed, while maintaining a close connection with RH 7's River Basin Management Plan, particularly in terms of the methodologies adopted, which allowed:</p> <ul style="list-style-type: none"> <li>• Framing the study under existing agreements between Portugal and Spain, as regards the sharing of border and trans boundary rivers;</li> <li>• Presenting the prospective scenarios, inherent to the current and future consumptive pressures on the basin of the Guadiana river, both in Portugal and in Spain ;</li> <li>• Assessing the availability and use of water, considering various simulation scenarios as well as different sections of the Guadiana river, along its course in the country;</li> <li>• Display the quality status of the main water bodies;</li> <li>• Analyse potential changes in ecosystems, with emphasis on the Guadiana estuary, resulting from various flow scenarios.</li> </ul>	<p>2010</p>	<p>APA</p>
<p>Albufeira Fishing Harbour. Simulation of the local wave climate considering the increasing of the West breakwater length.</p>	<p>In the framework of this project there were carried out simulations of wave propagation and littoral drift in order to assess the potential benefits of extending Albufeira's fishing harbour western breakwater to improve the present shelter conditions. The simulations were performed using MOHID and SWAN models. MOHID model was used to compute the wave climate inside the harbor and the littoral currents. SWAN model was used to compute the radiation stress for subsequent determination of littoral drift.</p>	<p>2010</p>	<p>Consulmar</p>
<p>ROMS model results conversion tool from NetCDF to HDF5</p>	<p>The goal was to develop a Java tool able to convert in Windows and Linux environments the NetCDF output of ROMS model in HDF5 format used by the Mohid model.</p>	<p>2010</p>	<p>Meteogalicia</p>



Assessment of the dispersion conditions of a salt plume in Figueira da Foz coastal zone	This study aimed to verify the dilution conditions of a brine effluent resulting from the construction of gas storage caverns in a beach in Figueira da Foz area. The work included the characterization of the local wave climate, the computation of the littoral drift and the simulation of effluent dispersion conditions.	2010	Consulmar
Alert system for the entrance of algae in the water intake of the Sines Power Plant	The objective of this contract was to maintain the alert system for the excess of algae in the water intake of the Sines Power Plant (which is working since 2007) and to migrate this service to the AQUASAFE platform. This alert service uses forecasts from meteorological and wave propagation models, while comparing it with data acquired in a wave buoy, a tide gauge and a meteorological station from the Port Authority of Sines. Additionally, sampling of algae at the water intake and at the beaches south of the water intake structures is also made in order to better predict algae biomass and species in the area. The system is also based in a previous study that characterized the transport processes of algae to the water intake.	2010	EDP Produção
Tanger fishing harbor project. Evaluation of the sheltering conditions	Simulation of the wave climate inside Tanger Fishing Harbor (Marocco) in order to evaluate the sheltering conditions provided by different project options. There were considered different offshore wave conditions including the evaluation the potential resonance effects due to the presence of long waves. The simulations were performed using MOHID modeling system.	2010	Consulmar
Assessment of the impacts on the water quality of Foz do Lizandro WWTP emergency discharges	This project aimed to assess the possible impacts on the water quality of emergency discharges of Foz do Lizandro wastewater treatment plant. The work included the simulation of the effluent plume dispersion in the coastal zone considering two possible points of discharge and the comparative analysis of the two solutions. The study results also have the function to support the definition of the characteristics of diffusers (number, diameter, geometry, orientation, spacing, etc.).	2010	SimTejo

<p><b>SOWFIA</b> - Streamlining of Ocean Wave Farms Impact Assessment</p>	<p>The SOWFIA project aims to achieve the sharing and consolidation of pan-European experience of consenting processes and environmental and socio-economic impact assessment (IA) best practices for offshore wave energy conversion developments. Studies of wave farm demonstration projects in each of the collaborating EU nations are contributing to the findings. The study sites comprise a wide range of device technologies, environmental settings and stakeholder interests. The overall goal of the SOWFIA project is to provide recommendations for approval process streamlining and European-wide streamlining of IA processes, thereby helping to remove legal, environmental and socio-economic barriers to the development of offshore power generation from waves. Hidromod was the main responsible and executor of the Data Management Platform made in the project.</p>	<p>2010 - 2013</p>	<p>Intelligent Energy Europe</p>
<p>Algarve River Basin Districts Management Plans</p>	<p>Hidromod's work in this project was focused in providing support to River Basin Management Plans in what concerns the evaluation of water quantity, quality, water mass classification, scenario evaluation and effectiveness of measures to improve ecologic/potential status in water masses that are below the good status.</p>	<p>2010</p>	<p>APA</p>
<p>Development of a computer platform to support EASYCO and ARCOPOL projects data</p>	<p>This project aimed to develop a computer platform capable to aggregate different modelling solutions from the partners of EASYCO and ARCOPOL projects. Additionally this tool allows the simulation of the dispersion of pollutants in the sea through a web interface.</p>	<p>2010</p>	<p>Instituto Superior Técnico</p>
<p>National Operational Plan Ships in Distress</p>	<p>Hidromod was part of a consortium that developed the Operational system that supports the decision of Places of Refuge for Ships in Distress. In the framework of this project Hidromod was responsible for the access to operational meteo-oceanographic forecast, oil spill modelling, HNS modelling and aerial spills modelling in the North Atlantic area where Portugal has Search and Rescue responsibilities. The AQUASAFE system was used to provide data through web services to the team in charge of the web user interface.</p>	<p>2010</p>	<p>IPTM – Instituto Português e dos Transportes Marítimos</p>
<p>EIA of the relocation of Tanquipor port terminal in Barreiro: Hydrodynamic, sediment transport and dispersion of pollutants assessment</p>	<p>This project aimed to evaluate the potential impacts on hydrodynamics and transport processes resulting from the construction of the new wharf of Tanquipor Liquid Terminal. The numerical simulations were based on the hydrodynamic and transport model of the Tagus Estuary whose mesh was locally reworked to ensure an adequate description of processes. The numerical modelling was performed with the MOHID system (<a href="http://www.mohid.com">www.mohid.com</a>) to study hydrodynamics and residence times, and the SWAN model was used to study the wave climate.</p>	<p>2010</p>	<p>Nemus</p>

Tagus estuary managing plan	In the framework of Tagus Estuary Managing Plan Hidromod carried out a set of activities related to the characterization of hydrodynamic processes that evaluate the transport mechanisms inside the estuary, identifying water residence times in each region of the estuary (including in each of the water bodies)	2010	DHV-FBO Consultores, S.A.
ARGOMARINE: software services to support research activities in operational modeling	This work was performed in the framework of ARGOMARINE project that, among other activities, aimed at the implementation of an operating system for the simulation of oil slicks drift based on the use hydrodynamic and meteorological modelling forecasts. The contribution of Hidromod was focused on three main tasks: i) make available tools for easy data format conversion and to allow the interoperability of different models and data storage structures; ii) adaptation of an existing "multimesh" lagrangian model in order to enable it to simulate oil slicks dispersion processes by the combined effect of currents, wind and wave climate and, iii) development of an web based operational interface for managing modelling runs.	2010	Universidade do Algarve
Evaluation of the wave climate on Madalena harbor considering the construction of a new structure in the fishing harbor area	Simulation of the wave climate inside Madalena harbor (Pico Island – Azores) in order to evaluate the potential benefits of the improvement of the sheltering conditions. The simulations were performed using MOHID modeling system.	2010	Consulmar
Planning of Angeiras area and building of boat shelter area	The present work refers to the studies made in the framework of the planning of Angeiras area as it is defined in the Caminha-Espinho coastal development plan which foresees the requalification of Angeiras urban area and the improvement of the local fishing infrastructures. In 2002 Hidromod made a detailed evaluation of 4 project solutions for the construction of a breakwater that could improve the access to the beach of the local fishing boats. It was now decided to choose the Project solution 4 with some design adjustments. In the present study this new solution is evaluated in what concerns its ability to provide proper sheltering conditions and in its possible impacts over the littoral drift.	2010	Consulmar
Meteogalicia operational model upgrade	This project aimed to improve the accuracy of the current operational model used by MeteoGalicia to perform hydrodynamic forecasts in the Galician coast. The present model configuration has been improved in terms of the parametrization, spatial discretization and boundary conditions.	2009	Intecmar

Trophic status in 29 Portuguese reservoirs	In the framework of this project it was performed a detailed analysis of the available data regarding the concentrations of nutrients, chlorophyll-a, dissolved oxygen and transparency in 29 Portuguese dam reservoirs having as main objective the evaluation of the reservoirs trophic status and simultaneously to develop a new index concept.	2009	IST
Alentejo River Basin Districts Management Plans	Hidromod's work in this project was focused in providing support to River Basin Management Plans in what concerns the evaluation of water quantity, quality, water mass classification, scenario evaluation and effectiveness of measures to improve ecologic/potential status in water masses that are below the good status.	2009	Nemus
Expansion of REN Atlântico's LNG Terminal – Hydrodynamic study of the sea water intake	The aim of this study was to characterize the main flow features of the sea water intake of the Expansion of REN Atlântico's LNG Terminal, at Sines, for different sea levels, values of flow and entrance channels.	2009	Consulmar
Sesimbra fishing harbor wave climate evaluation	In the aim of the call for tenders for the construction of the docking deck number 4 of Sesimbra fishing harbor it was requested to Hidromod to perform a number of modeling simulations in order to assess the wave climate inside the harbor for different wave climate situations. The simulations intended to act as a support element to discuss the need to build a heavier or a lighter solution that in any case may provide the requested shelter in conditions. This study only had a preliminary evaluation motivation and only considered swell situations. The sea conditions, that according the fishermen opinion, in some occasions may also introduce unfavourable wave conditions inside the harbor were not evaluated	2009	APSS, Administração dos Portos de Setúbal e Sesimbra, SA
Simulation of the water quality added to Caliços reservoir	This project was done for GIBB Portugal and the objective was the simulation of the quality in the water added to Caliços reservoir as well as the quality of the reservoir itself. The study was divided in three phases: inventory of existent data, load estimation for Amoreira reservoir and water quality simulation for Caliços reservoir.	2009	GIBB Portugal
Submarine coastal groundwater resources assessment. A marine modeling approach.	In the framework of this project there were estimated the potential impacts of groundwater discharges of fresh water made directly into the sea in two places of the Spanish Mediterranean coast (La Herradura and Cabo Gata dee). Based on the performed simulations it was evaluated the potential impact of underwater discharges of freshwater into the marine environment in the temperature and salinity. The results of these simulations were then compared with available field data in order to check the validity of estimates (location, flow rate and discharge type) made by teams of hydrogeology.	2009	Intecsa-Inarsa, S.A.

Sediment dynamics impact assessment of the Vila Moura harbor breakwater increase of length	In the framework of the project of increase of the length of the Vila Moura harbor breakwater it was requested to Hidromod to make an assessment of the potential effects of the Works on the sediment dynamics. In this framework there were performed model simulations to evaluate the potential changes that might be introduced in the sediment dynamics with consequences on the coastal erosion processes	2009	Nemus
<b>RAIA</b>	The RAIA project intends to consolidate an extended grid of oceanic-meteorological observations and operational models on the continental shelf in the trans-frontier region of Northern Portugal and Galicia. A common data platform (observations and predictions) was created with the application of international standards, such as OpenDAP and WMS. This project has 13 partners in Portugal and Spain. In the context of this project, Hidromod was commissioned with an implementation of its AQUASAFE solution where data and models are downscaled for the ports of Leixoes and Viana do Castelo. Therefore, several levels of hydrodynamic and wave propagation models were implemented and dynamically coupled with the larger scale models available in the RAIA OpenDAP service. The AQUASAFE system was installed and customized to port's needs.	2009	Interreg
Monitoring program of the S. Martinho do Porto outfall and of the ecosystems receiving the water treated by the WWTP	The objective of this monitoring program is to evaluate any potential impacts in the water quality that may be related with the wastewater discharged in the coastal zone trough the S. Martinho do Porto outfall and with the Tornada river outflow inside the S. Martinho do Porto bay. The work performed in the framework of this project included the collection of water samples in several points and the characterization of the circulation patterns using a mathematical model capable to deal with the hydrodynamic and dispersion processes.	2009	Águas do Oeste, S.A.
Douro inlet breakwaters final impact assessment evaluation of the hydrodynamic and sediment transport	In the framework of the construction of the Douro inlet breakwaters there were performed several mathematical modeling studies to forecast the potential impacts on the hydrodynamics and sediment transport associated with the coastal works. During the construction period it was maintained a monitoring program that included the evaluation of the movements of the coastline, bathymetric surveys and beach profiles. Being the Works in its final stage it was requested to Hidromod to make an assessment of the present situation and in what extent the models were able to predict the system behavior until now and to make new simulations that may help to increase the level of confidence in the system evolution forecasts. It was given special attention to the issues related with: effectiveness of the coastal structures to protect the Douro river entrance from the waves; the potential effects of saline intrusion; the potential effects of the structures on the floods outflow; the potential effects on the stability of the coast south to Douro river.	2008	Nemus

Assessment of the impacts on sediment transport and surface water quality due to the construction of Gouvães, Padroselos, Alto Tâmega and Daivões dams	This project was focused in environmental impact assessment of Gouvães, Padroselos, Alto Tâmega and Daivões dam reservoirs construction. In the framework of this the study nutrient and organic matter loads to each reservoir were estimated as well as the interactions between them according to exploitation plan proposed by Iberdrola. 16 different alternatives were studied. Among the results obtained are the legal classification of the reservoirs in the framework of actual legislation and proposals for impact minimization. An example of this is the deviation of Louredo river around Gouvães reservoir. The study also contemplates an analysis of impacts on sediment transport in Louredo, Beça and Tâmega rivers.	2008	Procesl, Engenharia Hidráulica e Ambiente, Lda.
Odeleite reservoir Management Plan	This project was made in the framework of Odeleite Reservoir Management Plan. A water quality model for the reservoir was implemented. Nutrient and organic loads were estimated by means of catchment modeling. The results obtained showed a mesotrophic reservoir and it was recommended that the low pressures over the water body were maintained.	2008	Nemus
<b>SARA E</b> - Assessment of transport and dispersion processes in the Sado estuary	SARA E project main objective was the development of methodologies to meet the needs, operational responsibilities and technical activities covered by the environmental liability regime in terms of the environmental responsibility (Decree-Law No. 147/2008 of July 29th). Under this project the paper mill of Portucel located in the Sado estuary was used as a case study and Hidromod was responsible for developing approaches for the assessment of the impacts that may result from accidents supported by simulation studies. For this purpose there were evaluated the potential consequences of two types of accidents: a fuel discharge resulting from a road accident and a by-pass to the WWTP due to the need of an emergency intervention.	2008	Agência de Inovação
<b>AQUASAFE</b>	AQUASAFE project, funded by the Portuguese Innovation Agency through the QREN program, it was specially focused in providing advanced real time data management and forecasting capabilities. Presently it represents a step forward in issues such as monitoring programs, improved system exploitation schemes and improved public communication methods, providing answers in four relevant sectors: the urban water cycle (water and wastewater), the bathing water quality (continuous status and alert systems), coastal pollution (oil spills) and navigation safety (high resolution forecasts and real time data management). Taking advantage of the team know-how and of the most recent technologic solutions that allow making easier the process of integration and interaction of different data sources it enables the integration of data and models in order to achieve improved diagnostic and prognostic capabilities.	2008	Agência de Inovação

<p><b>LENVIS</b> – Localised environmental and health information services for all</p>	<p>LENVIS aimed to fill the existing gap between environmental management and health management systems. The main goal of the LENVIS was to develop an innovative collaborative decision support network for exchange of location-based environmental and health services between all stakeholders, for enhanced capacity to assess population exposure and health risks and better management of the concerned ecosystems. As a result, in the framework of LENVIS there were proposed health indicators as integral part of the environmental management. In the framework of the project it was also developed a generic ICT solution that combines <i>service-oriented-architecture</i> (SOA) and <i>user-centric approach</i> (peer-to-peer network, P2P) by fusion of location-based environmental and health data, information and modelling services.</p>	<p>2008-2011</p>	<p>União Europeia</p>
<p>AIA Process - Combined Cycle Power Plant of ENDESA at Sines</p>	<p>Under the EIA of a Combined Cycle Power Plant of ENDESA at Sines, the dispersion in the marine environment of the thermal plume of the effluent of the Water Cooling Circuit was evaluated with a mathematical model. The current Sines Thermal Power Plant effluent, and future scenarios of other Power Plants in the area, were also considered.</p>	<p>2008</p>	<p>Procesl, Engenharia Hidráulica e Ambiente, Lda.</p>
<p>Assessment of transport and dispersion processes resulting from Sesimbra WWTP effluent discharges</p>	<p>This project had as main objective to assess the potential impact of the environmental responsibility directive in the activity of Águas de Portugal utilities. In this context the Hidromod had the mission to assess the impact on the environment of emergency discharges in terms of faecal contamination and nutrients concentration.</p>	<p>2008</p>	<p>E.Value</p>
<p>Hydrodynamic and sediment transport studies for the Mearim Port Terminal (MA-Brazil)</p>	<p>In the framework of this project a 2D hydrodynamic model, with 4 levels of sub-models, for the Baía de S. Marcos (MA-Brazil) was implemented and validated. As a result there characterized the currents fields in the vessels manoeuvring and berthing areas and assessed the interference of the Port structures with the local sediment transport processes.</p>	<p>2008</p>	<p>Mercoshipping</p>
<p>Hydrodynamic impact assessment of the changes to introduce in the navigation channel of Aveiro Port</p>	<p>The main objective of the present work was to evaluate the potential impacts associated to some engineering works that are intended to be implemented in some parts of the Aveiro port navigation channel. These works includes the realignment of the edge of Monte Farinha island and the partial demolition of the south wall of S. Jacinto dike. In this perspective there are presented the results of hydrodynamic simulations on a numerical model based on MOHID modeling system for the reference and project channel configurations. On the basis of these results it is made an evaluation of the impact of the works over the currents field and over the tidal prisms in different sections of the lagoon</p>	<p>2008</p>	<p>Administração do Porto de Aveiro</p>

Study of wave propagation inside the Port of Velas – Azores	This study had the objective of studying wave propagation inside the Port of Velas (Açores) and comparing the current situation with the situation of extending the West breakwater by 150 m	2008	Consulmar
Study of wave propagation inside the Port of São Roque – Azores	This study had the objective of studying wave propagation inside the Port of São Roque (Açores) and comparing the current situation with the situation after completion of two new sheltering structures.	2008	Consulmar
Saint Helen island mathematical modeling of the wave climate	Saint Helen is a lone mid-Atlantic island 1200 miles west of Angola. There is as yet no airport and the port facilities, the only door for the exterior, impose severe restrictions to the people and goods movements. In the framework of the present study different project solutions were evaluated in what respects the protection against wave action that each one could provide. This evaluation was done by means of the use of a wave propagation model, based on MOHID code that helped to identify the sheltering provided by the different possible options.	2008	Consulmar
Environmental impact study of the treatment of the Companheira waste water plant	It is presented a numerical modeling study that aimed the quantification of the fecal contamination impact of the effluent of the Companheira Waste Water Treatment Plant in normal and emergency situations. In this study were tested two possible locations to discharge the effluent.	2008	Nemus
COASTALT: Development of radar altimetry data processing in the ocean coastal zone	In this work a sea level high resolution solution forced by atmospheric tide to the Portuguese coast was generated. The project had the final objective of deliver a more precise sea level of anomaly for the Portuguese coast.	2008	Faculdade de ciências da Universidade do Porto
COSTA DO SAL - Preliminary studies on the techno-economic feasibility and water quality of the artificial lake infrastructures	This study was designed to carry out a series of studies that contribute to a preliminary analysis of techno-economic feasibility of the hydraulic infrastructure planned for the resort-estate Costa do Sal, located at the area of Vagueira, south of Aveiro. The scope of this study was the identification and characterization of the problems involved in the construction of an artificial lake and related infrastructures, the description and cost estimates of the most viable construction alternatives and the simulation of water quality in the lake for those alternatives.	2008	Promodois, Investimento Imobiliários, SA



COWAMA – Biarritz	In the framework of this project it was made na implementation of COWAMA platform on the Basque Coast and introduced in the platform the concept of Lagrangian discharges and startup by boxes. It was also developed a tool that allows to record in the database of COWAMA data acquired by Lyonnaise Eaux in real time.	2008	Lyonnaise des Eaux
Dande Port (Angola) mathematical modeling of the wave climate	In the framework of this project there were performed wave propagation simulations with MOHID model in order to evaluate the inner shelter conditions. These simulations had essentially a preliminary evaluation goal and intended to provide some guiding to the need of introducing minor adjustments in the geometry. Later it should be made additional simulations in order to evaluate the effects of different reflection coefficients in the different areas of the port.	2008	Consulmar
Water information data management system – GIBDQA	In the framework of this project it was developed an information management tool adapted to the specific needs of Águas do Oeste and which objective is to manage the monitoring data collected in the aim of different field programs. This tool includes the implementation of a data base (MSSQL Server 2005), capabilities to deal with the information (delete, edit, add data) and capabilities of georeference search and automatic reporting.	2008	Águas do Oeste
Sediment transport evaluation on Sado estuary, Setúbal harbor	In the framework of the Setúbal harbour maintenance dredging works monitoring it was implemented a sediment transport model supported by the available data that may help to quantify the sediment fluxes observed in the different channels in the past and, consequently, to propose recommendations that may help to optimize the maintenance costs. The sediment transport model should act as the basis of a dredging management tool that associated to statistic methods and empirical models may lead to the quantification of the amount of sand to dredge each year.	2007	APSS, Administração dos Portos de Setúbal e Sesimbra, SA

<p><b>SCHEMA</b> - Scenarios for Hazard-induced Emergencies Management</p>	<p>A consortium of 12 organisations participated in this research project aiming at using earth observation data to develop a generic methodology able to help experts build vulnerability and hazard impact maps associated with tsunamis. As a result there were proposed methodologies for the creation of vulnerability maps which involves intrinsic vulnerability variables of systems facing a hazard (types of building, categories of inhabitants, ...), secondary environment vulnerability variables (location of buildings in old areas, access conditions, ...) and crisis organisations vulnerability variables which shape efficient rescue operations (enhance or inhibit actions near the impacted regions). The notion of hazard scenario was revisited with end-users (including Turkey) and players in countries recently impacted by coupled earthquakes/tsunamis events.</p>	<p>2007-2010</p>	<p>União Europeia</p>
<p>Grand'Rivière port (Martinica) mathematical modelling of the wave climate</p>	<p>In the framework of this study there we performed simulations of wave propagation on Grand'Rivière (Martinique) port. The simulations were performed with MOHID model.</p>	<p>2007</p>	<p>Consulmar</p>
<p>Lajes port (Flores island) mathematical modelling of the wave climate</p>	<p>In the framework of this study there we performed simulations of wave propagation on Lajes port. The simulations were performed with MOHID model.</p>	<p>2007</p>	<p>Consulmar</p>
<p>Evaluation of the impacts over the hydrodynamic and littoral drift resulting from offshore sand extraction</p>	<p>In the framework of this project are being conducted studies for the evaluation of the impacts over the hydrodynamic and littoral drift resulting from offshore sand extraction that are intended to take place in 8 different sites of the Portuguese coast. This evaluation includes the study in mathematical model of the potential modifications on the wave propagation patterns and over the littoral drift that may result from dredging at depths ranging from -20 m to -30 m.</p>	<p>2007</p>	<p>Amb &amp; Veritas</p>
<p>Environmental impact study regarding the project for the dredging of the channels and protection of the Óbidos lagoon south margin</p>	<p>Óbidos Lagoon suffers from a progressive process of sediment deposition that contributes for reduction of the water renewal and an increasing of the water quality problems. Also the lagoon inlet is mobile and, during the last years it has been located near the lagoon south margin posing some important erosion problems. In view of this situation there were proposed solutions having as objective to increase the water renewing capacity and solve the problem of the south margin erosion. In this work the proposed solutions were analysed from the hydrodynamic point of view. The results obtained shows that these interventions will in fact contribute to achieve the project objectives once it will be able to reduce the water residence time inside the lagoon and guarantee that the inlet will become fix in the lagoon central part.</p>	<p>2007</p>	<p>Nemus</p>

Foz do Lisandro outfall environmental impact evaluation	A numerical modeling study where is quantified the fecal contamination originate by emergency discharges of the Foz do Lizandro WWTP. In this study were tested several discharges location for the most common wind and wave climate scenarios	2007	SimTejo
S.Martinho do Porto and S. Martinho do Porto bay monitoring program	The objective of this monitoring program is to evaluate any potential impacts in the water quality that may be related with the wastewater discharged in the coastal zone trough the S. Martinho do Porto outfall and with the the Tornada river outflow inside the S. Martinho do Porto bay. The tasks performed in the framework of this project included the collection of water samples in seven points (4 in the coastal area and 3 inside the bay) and the characterization of the circulation patterns using a mathematical model capable to deal with the hydrodynamic and dispersion processes. In the framework of this project it was designed and implemented a monitoring program to evaluate the effects over the environment of the beginning of the discharges trough the S. Martinho do Porto outfall. Three field campaigns were carried out having as objective to collect water samples to characterize the nutrient concentrations and the microbiological contamination before the start of the outfall discharges and, after, in winter and summer conditions.	2007	Águas do Oeste
COWAMA Platform	In the framework of this project it was developed an IT platform called COWAMA which consists in a management information system in real time of measured and modelled data having as a purpose to predict faecal contamination in beaches located in urban areas. This system was implemented in operational mode in Barcelona with the aim to support the decision to close the beaches of Barcelona if there is a strong likelihood of faecal contamination	2007	CLABSA, Clavegueram de Barcelona, S.A.
Aveiro port access channel reconfiguration project and navigability conditions evaluation	The main objective of the present project was to find a suitable solution for the inlet and navigation channel of Aveiro harbor in order to able the navigation of ships of larger dimension than the ones that presently demand this port. In this perspective a number of different solutions for the configuration of the breakwaters were evaluated. These solutions were analysed from the point of view of the navigation and impacts on the hydro morphology, having in mind the minimization of the dredging effort and a safer route for the ships.	2007	Consulmar
Wave climate and hydromorphology processes evaluation along the south channel of Lisbon Port	In the framework of this project a modeling system capable to deal with the combined action of waves and currents was implemented to simulate the wave propagation and hydro morphological processes in the Tagus inlet. The model results are intended to support the implementation of a methodology capable to assure the optimization of the water depths in which the ships that are about to use the Lisbon port south channel may sail safely.	2007	Adm. do Porto de Lisboa

Evaluation of the wave climate Socorridos harbor	In the framework of this study there we performed simulations of wave propagation on Socorridos harbor. The simulations were performed with MOHID model.	2006	CONSULMAR
Zezeze river flood risk assessment	In the framework of this project there were made modeling studies to define the floodplain of Rio Zêzeze near Covilhã for return periods of 50 and 100 years. To achieve that goal, the flow generated in the upstream watershed was computed for rain events with the mentioned return periods and the flood wave propagation in the river network was simulated. For the flood wave generation, the MOHID LAND model and some empirical models were used. For the flood wave propagation and the definition of the floodplain, FLDWAV was used.	2006	PROCESL
Environmental impact study of the construction of the Faro airport lane 10 ILS infra-structures, increasing of the platforms and routes of circulation and remodeling of the airport lounge	This study aimed to answer of some of the question related with the enlargement works of Faro airport in what concerns the aspects related with the hydrology, hydro morphology and water quality.	2006	PROFICO
Evaluation of the wave climate on Madalena Harbor considering the construction of a new West breakwater	In the framework of this study there we performed simulations of wave propagation on Madalena harbor. The main purpose of these simulations was the evaluation of the main benefits that may result from the construction of a new West breakwater and/or increasing of the existent one. The simulations were performed with MOHID model.	2006	Consulmar
Wave propagation modeling on Lajes, Pico island	In the framework of this study there we performed simulations of wave propagation with STWAVE model.	2006	Consulmar
Vale do Lobo Nautilus island. Preliminary evaluation of the potential impacts on the littoral dynamics	In the framework of a project for a construction of an artificial island on the south of Portugal, in front of Vale do Lobo, it was made a preliminary evaluation of the potential impacts of the island on the littoral drift.	2006	Consulmar

Viana do Castelo harbor Commercial sector expansion project. Characterization of the engineering works impacts in what concerns the hydrodynamic and transport processes	The main objective of the present work is to answer to some of the questions raised by the Environmental Impact Declaration of the Project of the Expansion of Viana do Castelo Harbor. The questions raised by the Environmental Protection Agency are essentially related with the following aspects: penetration of the salt water upstream in the river, possible increasing of the erosion processes in the upper estuary and impacts associated to the maintenance dredging works. In the framework of this study a mathematical model capable to deal with hydrodynamic and transport processes has been implemented. The model results are used to help to characterize and to understand the system dynamic and to evaluate the possible impacts of the works envisaged in the framework of the referred Viana do Castelo expansion project.	2006	Proman
Sines harbor wave climate study	The main objective of this Project was the evaluation of the benefits resulting from a possible partial reconstruction of Sines harbor breakwater, namely in what concerns the rehabilitation of Birth 1. In order to accomplish these objectives there were made simulations of the wave propagation for different options of the breakwater reconstruction length using MOHID and STWAVE numerical models.	2006	Consulmar
Albufeira outfall - Modeling the plume dispersion	In this work, the microbiologic impact of the effluent of the new Albufeira outfall, for several wind scenarios, was quantified. The MOHID modeling system was used.	2006	Consulmar
S.Martinho do Porto outfall monitoring program	In the framework of this project it was designed and implemented a monitoring program to evaluate the effects over the environment of the beginning of the discharges trough the S. Martinho do Porto outfall. Three field campaigns were carried out having as objective to collect water samples to characterize the nutrient concentrations and the microbiological contamination before the start of the outfall discharges and, after, in winter and summer conditions.	2006	Águas do Oeste
Modeling Water Quality on the Reservoirs of Pocinho, Vale do Gaio, Maranhão, Pracana, Alqueva and Roxo	The project had the following objectives: Evaluation of processes and loads responsible for the trophic state observed in the reservoirs; Evaluation of the capacity for nutrient removal from Urban Discharges along streams; Distinction between punctual and diffuse loads; Identification of the TMDL (Total Maximum Daily Load) in a reservoir; Identification of the recovery time in a reservoir	2005	IMAR
Afurada fishing harbor platform project (Douro river)	The numerical work presented was done in the framework of the Afurada fishing harbor platform project. The main goal was to identify the impact in flood conditions over the morph dynamics of several solutions to protect the fishing harbor platform.	2005	Consulmar

Mathematical modeling simulations on the reservoir of Odelouca	In the framework of this project there were made a set of mathematical modeling simulations taking into account the following aspects: Simulation of water volumes stored in the reservoir, seasonal and inter-annual water column height; Water quality in the reservoir (physical, chemical, biological and microbiological characterization); Characterization of the reservoir trophic state and forecasting its evolution for the next years. Those simulations supplied data that allows an evaluation of the water quality in the reservoir based on climatologically scenarios and exploitation regimes.	2005	Nemus
DYNCOSTAL	Physical and biogeochemical characterisation of the Algarve coastal current luff. The main objectives were to understand the physical driving mechanism for the formation of coastal currents, to study the biogeochemical consequences of coastal currents, namely their role in the structure of planktonic assemblages, in the transport of marine organisms and metals and in carbon flux in the microbial food web. In the framework of the project it was implemented a 3D ocean model and made developments in data assimilation schemes.	2006-2009	FCT
Simulation of the wave climate and the tidal currents on Pedrouços dock (Lisbon)	The main purpose of this work was to find solutions for two main problems identified in Pedrouços dock: The wave penetration in the dock for some sea conditions and the sand filling that is observed in the area between the dock entrance and the VTS structure. In order to understand the problems and evaluate the possible benefits of project solutions there were made simulations for the tide currents and the waves using MOHID modeling system.	2005	Consulmar
Improvement of Praia da Vitória coastal area	The aim of the present work was to provide wave propagation numerical results able to support the project for improvement of the Praia da Vitória coastal area both in what concerns the engineering structures and the sediment transport processes associated with the beach nourishment that is intended to take place. The simulations were performed using MOHID and STWAVE models.	2005	Provias
S. Mateus (Terceira Island – Azores) fishing harbor: evaluation of the local wave climate	In the framework of this project there were performed mathematical modeling wave propagation simulations for different wave climate conditions in order to characterize the wave sheltering provide by the port structures. The simulations were performed using boussinesq wave module of MOHID modeling system.	2005	Consulmar
Improvement of Praia da Vitória coastal area	The aim of the present work was to provide wave propagation numerical results able to support the project for improvement of the Praia da Vitória coastal area both in what concerns the engineering structures and the sediment transport processes associated with the beach nourishment that is intended to take place. The simulations were performed using MOHID and STWAVE models.	2005	Projectual

POCUS	In the framework of this project it was implemented a modelling system to simulate the large scale circulation in the NE Atlantic including the implementation of data assimilation schemes. During a second stage a model was implemented for the Iberian Coast using as boundary conditions the results provided by the large scale model.	2006-2009	FCT
Seixal Sewer Treatment Plant – Effluent discharge in creek do Rio Coina	Preliminary selection of the discharge location of the Sewer Treatment Plant of Seixal in the Tejo Estuary	2005	Procesl
EROCIPS: Emergency Response to Coastal Oil, Chemical and Inert Pollution from Shipping	In the framework of EROCIPS there were developed common transnational methodologies, tools and techniques for dealing with the shoreline response to coastal pollution incidents, transferable across the EU, in order to support the sustainability of sea transport systems. In order to achieve this, Regional and Local Governments were called to share an understanding of the many socio economic and environmental factors that contribute to achieving an effective response to addressing coastal pollution problems from shipping. This includes understanding the baseline situation along coastlines and what tools and techniques can be effectively applied in different situations, in relation to different environments and types of pollution (oil, chemical and inert).	2004-2007	União Europeia
Carregado Bridge. Hydrodynamic and sediment transport modeling in the River Tagus	In this work the validation of a hydrodynamic model with a curvilinear grid was presented. The model domain goes from Cabo Raso to Santarém. This model was used to simulate several flood scenarios. The currents variability in the section of the new bridge Carregado-Benavente was analyzed carefully. A high resolution model for the study zone was nested in this large scale model. The sub-model was used to estimate the impact in the currents field of a channel to be dredged during the bridge construction. a sediment transport model to estimate the impact of the channel over the bottom evolution was coupled to the hydrodynamic sub-model.	2005	Coba
Ardila irrigation subsystem water quality assessment	This study's main objective was to evaluate the surface water quality in the various components of the Ardila irrigation subsystem, particularly in the reservoirs of Brenhas, Brinches, Amoreira, Serpa and Enxoé. The simulations of water quality in these reservoirs covered a period of 30 years following the requirements of the Technical and Economic exploitation Comparative Study	2004	Nemus

Odivelas dam reservoir managing plan	This study's main objective was to evaluate the water quality in the Odivelas reservoir in the framework of its Managing Planning Scheme. The simulations made in the framework of this project contributed to propose an interpretation of the reservoir available data, including the availability of nutrients, light, mixing conditions, residence time and temperature, which are key factors for the growth of algae and its composition. The simulations of the hydrodynamics and the water quality also made possible to determine maximum nutrient loads compatible with the objective of the maintenance of an acceptable water quality and a low trophic level in the reservoir	2004	DHV FBO - Consultores S.A.
Environmental auditing to the APRAM harbor infra-structures – Marine dynamic characterization and quantification of the renewal rates	In this work the areas under the jurisdiction of APRAM were characterized in terms of marine hydrodynamics and of rate of water renovation inside the harbor areas. These tasks were done with the MOHID modeling system. This system was implemented in a way that enabled the simulation of the hydrodynamics at the scale of the whole Madeira archipelago down to harbor structures of significantly smaller scales. Detailed descriptions of the hydrodynamic processes occurring in the harbors of Funchal, Caniçal and Porto Santo, due to tide and wind, were presented	2005	Nemus
Hydrodynamic characterisation of the São Jacinto Bay - Ria de Aveiro	The main goal of this work was the description of the hydrodynamic characteristics of the São Jacinto Bay and the near areas.	2004	Rogério Leal & Filhos
Sines Combined Cycle Power Plant - Hydrodynamics and thermal plume dispersion	In this work, a 3D hydrodynamic model was used to simulate the dispersion of hot water plume generated in the existing Thermoelectric Plant. Future scenarios of hot water effluent from the Combined Cycle Power Plant were added to the present Thermoelectric Plant discharge.	2004	Procesl
Atmospheric pollution dispersion modeling in IC2	In this work, atmospheric pollution dispersion in IC2 was studied, using the Caline4 model to simulate 7 alternative solutions for the road. Each solution was represented by around 150 links and values of CO e NO2 were calculated in around 7000 receptors located in sections along the road at 50 m form each other, and with a perpendicular distance to the side of the road of 20, 60, 100, 200 and 300 m.	2004	Impacte



<p><b>INSEA</b> - Data Integration System for Eutrophication assesment in Coastal Waters</p>	<p>Coastal waters are transitional ecosystems buffered by variable landward-based freshwater input volumes and constituents, influences of oceanic provinces, and human disturbances, including nutrient enrichment, superimposed on these natural regimes. One of the results of this project was the development of methodologies to downscale physics from large scale data systems to regional models in order to force ecological modelling systems on coastal areas and make use of the full potential given by the fast growing computer power and IT skills to deliver useful information to decision makers and other data users. Following these type of methods it was demonstrated the potential of the combination of Earth Observation (EO) data, numerical modelling and in-situ data. This project was leaded by Instituto Superior Técnico which is responsible by the project coordination and by Hidromod which was responsible by the executive implementation. It gathered teams from 5 European countries and it had a budget of about 2.5 millions Euros.</p>	<p>2005-2008</p>	<p>União Europeia</p>
<p>Figueira da Foz power plant. Mathematical modelling and field data collection of currents, temperature and salinity.</p>	<p>This study aimed to describe, based on field data and model simulations, the circulation pattern and the variability of thermohaline structure in Figueira da Foz coastal area. The data sources used were field data campaigns conducted by the Hydrographic Institute in the 80's and campaigns conducted by GeoSub in the framework of this project. Based on these data sets a conceptual model that seeks to identify the main sources of variability in terms of currents and thermohaline structure in the study area was proposed. The numerical modelling simulations were also used to test the efficiency, in terms of impacts on the near and far fields of the proposed flow discharge solutions.</p>	<p>2004</p>	<p>IDOM</p>
<p>Environmental impact study of the project for the improvement of the bathing conditions on Faial da Terra beach</p>	<p>The aim of the present study was the evaluation of the impact of the construction of a breakwater and the nourishment of the adjacent beach in the village of Faial da Terra, Azores. The study aimed to show the impact over the littoral currents and on the discharge of a local river.</p>	<p>2004</p>	<p>Ecossistema</p>
<p>Numerical study of the impact of Ribeira de Ilhas outfall</p>	<p>The main goal of this work was the quantification of the microbiological impact of the Ribeira de Ilhas outfall. This impact was estimated using a numerical approach validated with field data.</p>	<p>2004</p>	<p>SimTejo</p>

Enxoé dam reservoir water quality assessment	This study's main objective was to evaluate the water quality in Enxoé dam reservoir. In the framework of the study the available data was analysed and there were proposed explanations for the causes that led to its rapid eutrophication (with a marked dominance of cyanobacteria). A set of simulations of the reservoir hydrodynamics and water quality were performed to characterize the reservoir water quality and evaluate the potential effect of possible solutions to minimize the eutrophication problems. Was also implemented A model for the watershed that drains into the reservoir was also implemented to estimate reservoir diffuse nutrient loads.	2004	Nemus
Douro estuary inlet accessibility and security improvement project: answers to the questions formulated by the Environmental Impact Assessment Declaration Evaluation Committee	This project objective was to answer several questions raised by the Evaluation Committee to the Environmental Impact Statement regarding the Douro inlet accessibility and security of the Douro improvement project. These questions refers to different aspects related to hydrodynamics and transport phenomena associated	2004	Nemus
Óbidos Lagoon. Characterization processes of water quality and sediment transportation	The aim of the present study is to provide Finisterra group Authority specialized technical support in what concerns the identification of possible causes for the present erosion problems that are affecting the lagoon south margin. One of the prime issues is to verify the existence of possible links between the present situation and the lagoon north margin protection works that have been build in the end of the nineties. In the framework of these studies a mathematical model capable to simulate the hydrodynamic and the sediment transport has been implemented and different geometries have been simulated. A second project target is to simulate the lagoon water quality and evaluate the environmental impact of the reduction of the organic loads that is nowadays taking place.	2004	Programa Finisterra
Hydrographic basin of Monte Novo reservoir	The main goal of this work was the impact evaluation of a new irrigation system in the Degebe catchment over tie water quality in the Alqueva reservoir.	2004	Nemus
Mathematical model of Sado estuary to evaluate the hydrodynamic and transportation conditions	The aim of the present study is to provide to the Setúbal Port Administration specialized technical support in what concerns the dredging works that they may have need to do in order to maintain the navigation channels. In the framework of these studies a mathematical model capable to simulate the hydrodynamic and the sediment transport has been implemented. A special attention has been given to the Eurominas area in order to evaluate if there are any engineering solution that may contribute to reduce the present dredging effort.	2004	APSS

Sand extraction in Ponsul River – Hydraulic studies	Mathematical modeling studies of the hydraulic and sediment behavior in Ponsul River, near Castelo Branco (Portugal), with the following components: • Description of the reference situation; • Evaluation of the sand extraction impacts on navigation and recreation in the river, on natural margins, on margin protection structures and on bridges. • Identification of appropriate measures to minimize eventual negative impacts and to enhance positive impacts associated to the extraction of sand.	2004	Horizonte de Projecto
<b>AquaStress</b> - Mitigation of Water Stress through new Approaches to Integrating Management, Technical, Economic and Institutional Instruments	Water stress is a global problem with far-reaching economic and social implications. Demand is increasing while pollution limits the use of resources and increasing climatic variability reduces the available supply for unpredictably long periods. Activities to mitigate water stress are currently highly fragmented between different government departments, private water supply and energy companies, and civil society groups. Decision-makers need to have the capacity to integrate advances in technology with culturally appropriate institutional, economic and social responses, across all sectors. AQUASTRESS delivered innovative, multisectoral and multidisciplinary integrated approaches to diagnose the causes and mitigate the effects of water stress. The project integrated academic and practical skills in order to produce knowledge in the technological, operational management, policy definition, socio-economics and environment aspects. It evolved 36 organizations from 17 countries and it had a budget of about 15 millions Euros.	2004-2008	União Europeia
Afurada fishing harbor platform design project	The main objective of the present study is the characterization of the hydrodynamic and wave propagation processes in Douro estuary that may have influence in the Afurada fishing harbor project options. To achieve this purpose a mathematical model was implemented and there were made simulations considering different environmental conditions in what concerns the river flow and the wave climate	2004	Consulmar
Evaluation of Aveiro Port Maritime Access. Characterization of the present situation and identification of improvement solutions	The main objective of the present work is to give support to the evaluation study of the Aveiro Port access conditions. In the framework of this work a mathematical model capable to deal with hydrodynamic and transport processes by waves and currents has been implemented. The model results were used in both to help to characterize and to understand the system dynamic in conjunction with the historical knowledge of the system behavior and to give support to the evaluation of the expected behavior of the proposed solutions	2004	Consulmar

Study of the environmental impact of Sambade dam	The present study intends to quantify the water quality of Sambade reservoir located in Douro basin. To achieve the main goal of the study a mathematical model was applied to establish hydrodynamics and water quality using the flow rates predicted in the project. Loads were estimated based on the water quality of Estevínha reservoir located nearby (in the same sub-basin).	2004	DHV FBO - Consultores S.A.
Study of the environmental impact of Merufe dam	The present study has as main objective to quantify the water quality of Merufe reservoir located in Mouro river. To achieve the main goal a mathematical model was applied to establish hydrodynamics and water quality using the flow rates predicted in the project. Loads were estimated based on the actual water quality Mouro river. These simulations allowed us to establish the behavior of the reservoir for flow rates and loads expected.	2003	DHV FBO - Consultores S.A.
Mathematical modeling of Minho river estuary tidal currents	In the framework of this study a hydrodynamic mathematical model of Minho river estuary has been implemented. The model results are intended to be used to evaluate an alternative solution for the navigation channel from Caminha to La Guardia (Spain). In order to better characterize the local currents variability two computational grids, based on different bathymetric surveys, were used	2003	Consulmar
Albufeira beach nourishment project. Coast line evaluation study	In the framework of Albufeira Beach improvement, two different project options were evaluated having as objective to guarantee an increase of the sandy area for public use. In both project options beach nourishment is proposed. In the framework of this project Hidromod has performed a number of simulations in a mathematical model in order to evaluate the behavior of the shoreline after the nourishment process. GENESIS model was used to perform the shoreline evolution simulations. In face of the morphologic characteristics of the beach that were not appropriate to the use of GENESIS internal wave calculator, REFDIF wave propagation model was used to compute the waves in the near shore. In order to complement the information provided by GENESIS model, MOHID was also used to compute the littoral drift for some selected wave conditions.	2003	Consulmar
Operational model - Application to Tagus estuary	In the present economic environment the competitive factors are centered in knowledge. Having in mind this, Hidromod strategy in the long term aims in increasing the company competitiveness through recruiting highly qualified human resources. This new members will give an extra advantaged in the areas of R&D and eventually will open new business areas. The new R&D areas to be explored by this new collaborator will be the areas of Oceanography, water quality, oil dispersion, dispersion of outfall plumes and environmental monitoring.	2003	Agência Inovação

<p>Preliminary study of the outfall plume dispersion in Alcântara</p>	<p>This study aimed to quantify the possible environmental benefits of discharge estuary the Alcântara waste water treatment station effluent in the Tagus estuary using an outfall. The study was done using a tridimensional model (MOHID) considering the stratification effect and also secondary flows associated with the channel curvature. The outfall plume dispersion was simulated using a Lagrangian transport model (particle tracking) with a specific module for the near field (MOHIDJET). This module simulates in an integral way using also a Lagrangian approach the dispersion of jets with buoyancy.</p>	<p>2003</p>	<p>SIMTEJO</p>
<p><b>ECOManage</b> - Integrated Ecological Coastal Zone Management System</p>	<p>EcoManage project was aimed at pushing the capacity of managers to join horizontally knowledge from ecological and socio-economic disciplines. The three key aspects of EcoManage were (1) the consideration that a coastal zone depends on local pressures, but also on pressures originated in the drainage basin, transported mostly by rivers and by groundwater, (2) that socio-economic activities are the driving forces of those pressures and that their impacts on the ecosystem have feedback on socio-economics and (3) the impacts depend on physical characteristics of the ecosystem that together with the loads determine its ecological state. Three coastal zones showing conflicting interests between urban, industrial and agricultural pressures and environmental maintenance were selected for developing the system: Aisen Fjord in Chile, Bahía Blanca estuary in Argentina and Santos estuary in Brazil. Relationships between the origins and consequences of environmental problems were described using a Driving forces, Pressures, States, Impacts and Responses (DPSIR) framework and indexes were used to assess links between DPSIR elements. Participatory methods were applied for interaction with stakeholders in order to establishing study scenarios and indexes for social-economic and ecosystem analyses and to measure environmental impacts of management decisions. The project raised the opportunity to improve normative rules for the functioning of the systems, and in this way improved environmental management for the estuaries towards sustainable development.</p>	<p>2004-2008</p>	<p>União Europeia</p>
<p>Waste water simulations of Alcântara waste water plant</p>	<p>The main goal of this work was the quantification of the microbial impact for different waste water discharges scenarios associated with waste water system of the Alcântara waste water plant located in Lisbon (Portugal).</p>	<p>2003</p>	<p>IST</p>
<p>Study of the tidal flow energetic availability near the floating pontoons of Transtejo</p>	<p>To assess the tidal currents energy near the structures of Transtejo, in the Tejo Estuary, the following tasks were completed: (1) evaluation of the hydrodynamic conditions based on the hydrodynamic model of the Estuary, (2) deployment of current meters in the sites with larger currents and depths (Terreiro do Paço and Cacilhas), (3) evaluation of the technological alternatives of tidal energy harnessing and (4) assessment of the extractable energy in each site with a Gorlov turbine.</p>	<p>2003</p>	<p>TRANSTEJO</p>

Environmental Impact Assessment Study of the Maritime Works Needed to Improve the Security and Navigation Conditions of Douro River Inlet	The aim of this project has been the evaluation of the aspects related with the hydrodynamics and morphology of Douro estuary and Douro inlet that were required in the framework of the environmental impact assessment study of the maritime works project that intends to improve the security and navigation conditions of Douro River Inlet	2003	Nemus
Water supply system of a group of municipalities in Trás-os-Montes and Alto Douro (North of Portugal) - water quality simulation in reservoirs	In this study, simulations on water quality using mathematical models will be conducted in two reservoirs. These simulations will provide data to determine the predictable water quality in the reservoirs created by the dam constructions, based on different climatic and water use scenarios.	2003	DHV-FBO, Consultores, SA
Ardila water system. Surface water quality modeling	The Ardila's water system is part of the Alqueva's water system. The purpose of this work is the characterization of the water quality drained by the catchment basins, the quality in the water courses and in the reservoirs.	2002	Nemus
Melides Lagoon water quality assessment	In the framework of the Integrated Study of Melides Lagoon, HIDROMOD performed a set of model simulations of the hydrodynamics and water quality of Melides lagoon with the aim to support the definition of an environmental management model for the lagoon, its catchment and tidal inlet. The simulations allowed to successfully characterize the lagoon dynamics with respect of the hydrodynamic and sediment transport and objectively assess the relationships between the nutrient and fecal loads and the periodic opening of the tidal inlet in the status of the lagoon water quality.	2002	Nemus
Mathematical modelling of the dispersion of the Sines electric power plant thermal plume	In the framework of this project there were made a set of modelling studies in the Sines area in order to simulate hydrodynamics due to the tidal wave, wind stresses and wave propagation. Based on this approach it was simulated the dispersion of sulfur compounds originated by the coal desulfurization process, used in the thermoelectric power plant.	2002	IMAR

Study of solutions to the protection of the Tunisian coast against sea erosion. Site 3: Rades - Soliman	In the framework of this project it was accessed the current status of the coastal zone in the stretch Rades-Soliman, south of Tunis, with regard to the aspects of coastal erosion. In this framework there were implemented a set of simulation models for the wave propagation, the coastal currents and the associated transport. The aim of the study was to analyze different project options that may lead to the reduction of the erosive effects on this stretch of coast.	2002	Services Aeriens et Maritimes
Vila das Lajes (Azores) coastal zone protection study. Mathematical modeling of the wave induced set-up	Vila das Lajes (Azores) has been subjected to partial or total sea water flood situations. The environmental conditions in which this phenomenon is usually observed are of local knowledge and connected to the wave induced set-up. The objective of this study is to analyze different options in order to reduce these phenomena consequences. For this purpose, a group of mathematical models were used and all the different wave induced set-ups were evaluated.	2002	Consulmar
Design of a fishing harbor in Cabanas - hydrodynamic modeling	The Ria Formosa mathematical model was used in this study, in order to characterize the hydrodynamic actual situation aspects, the related transportation phenomena and evaluate the possible impacts that might occur during the construction of the fishing harbor in Cabanas (Ria Formosa).	2002	Instituto Portuário do Sul
Design of a fishing harbor in Santa Luzia - Hydrodynamic modeling	In this study, the Ria Formosa mathematical model was used , in order to characterize the hydrodynamic actual situation aspects, the related transportation phenomena and evaluate the possible impacts that might occur during the construction of the fishing harbor in Santa Luzia (Ria Formosa).	2002	Consulmar
Plume study of Espinho outfall	Dispersion plume mathematical model simulation of Espinho outfall, located in front of Paramos beach.	2002	DHV FBO - Consultores S.A.
Supply of data from 3D hydrodynamic modelling	Being involved in the COAST study (Coastal Monitoring and Management) of the JRC (Joint Research Center), the Inland and Marine Waters Unit needs monthly average data taken from physical models of European coastline areas to study and monitor the eutrophication. This data should allow the monthly establishment of physically sensitive areas maps (PSA) and eutrophication risk (EUTRISK) that will be given to the European Environmental Agency and to several marine conventions. HIDROMOD is responsible for supplying the mentioned data for all the Iberian Peninsula coastline, from the Gibraltar Narrow to the Biscayan Gulf.	2002	União Europeia

Environmental impact studies of Caminha dockyard access channel dredging works.	In the framework of this study there were evaluated the impacts on hydrodynamics, water quality and sedimentation due to the dredging of the access channel to the Caminha dockyard (Rio Minho). For this purpose, several hydrodynamic and salinity simulations were performed to properly characterize the reference and project situations.	2002	Nemus
Mathematical modeling of the incident wave propagation in albufeira beach area	In this study several simulations were elaborated using the Boussinesq model, with the objective of analyzing Albufeira beach wave conditions. The results were used for the preliminary evaluation of actions concerning beach preservation.	2002	Consulmar
Wave hydrodynamic studies in Chicala – Luanda	Due to the construction of a residential area in Chicala, the wave propagation effects inside the future lagoons were studied, as well as wave propagation outside the reef. This study was based on the application of MOHID modeling system to all Mussulo lagoon system. The currents field and tide levels inside the North and South lagoons, the water flows between several lagoon areas and the wave propagation in the reef were evaluated.	2002	Consulmar
Peroject of a small fishing harbor in Fuzeta	The mathematical model of Ria Formosa was applied in this study, with the objective of characterizing the current situation of the hydrodynamic aspects, the associated transportation phenomena, and the evaluation of the possible impacts resulting from the access channel dredging to the coasting dock.	2002	Instituto Portuário do Sul
Mathematical model simulations to evaluate the constructions works impact in Praia harbour in Graciosa island.	The goal of this study is to understand the processes involved in the coastal area evolution near the Graciosa island beach harbor on one hand, and predicting possible impacts in the nearby costal area resulting from new projected constructions, on the other. Meeting these objectives depends on the implementation of an integrated modeling system, capable of simulating wave propagation and determining near-coast currents and the associated transport processes.	2002	Junta Autónoma do Porto de Angra do Heroísmo
Albufeira outfall - Plume dispersion results	Plume dilution study of an outfall by using the CORMIX model system. Five different discharge structure configurations were simulated and the fecal coliforms concentration in the nearby field of the outfall discharge was evaluated, applying several situations of maritime currents.	2002	Consulmar



<p>Areas determination of the dredging discharge material in the outside oceanic area of Santos Bay</p>	<p>In consequence of studies elaborated in former years, the hydrodynamic characterization of Santos coastal area was studied to further extent in this project, as well as the Santos harbor drained mud deposition site dispersive characteristics. The main work supports were measurement campaigns and mathematical modeling. The measurement campaigns were meant to characterize the several weather and oceanographic parameters, in summer and winter time. The mathematical modulation purpose was to describe the hydrodynamic regime in all of Santos coastal zones, including the interior of the estuary. This hydrodynamic regime was the main support for the mathematical model simulation of the dispersion of mud drained by CODESP. The mathematical model for the hydrodynamics and the mud dispersion model are part of the MOHID modeling system.</p>	<p>2002</p>	<p>UNISANTA</p>
<p>Prolongation of the West pier of Quarteira fishing harbor</p>	<p>Due to studies related with the extension of the west pier of Quarteira fishing harbor, a set of incident wave propagation simulations were conducted in mathematical models. The study purpose was to simulate the wave conditions inside the Quarteira fishing harbor, in order to evaluate the efficiency of this extension, allowing the characterization of the wave propagation in the present situation and evaluate eventual effects, in the same wave propagation conditions, of the pier extension works.</p>	<p>2001</p>	<p>Consulmar</p>
<p>Water quality study in the ditch of Peniche main wall</p>	<p>The purpose of this study was to simulate water renewal inside the ditch of Peniche main wall, considering that the ditch edge floodgate has the same functioning regime as the tide, allowing water entrance only above the 2.5m quota. The CE-QUAL-W2 model was used. This model is integrated laterally and vertically two-dimensional. The studied parameters were: Temperature, OD, seaweeds and nutrients.</p>	<p>2001</p>	<p>Consulmar</p>
<p>Preliminary hydraulic study of the feeding channels and pumping wheel of the Sines gas terminal</p>	<p>The dredging simulations in the access channels and the pumping well in study were performed using the MOHID 3D model. This model allowed the calculation of the velocity pattern in the pumping well, for several functioning combinations of the feeding channels and pumps.</p>	<p>2001</p>	<p>Consulmar</p>
<p>Silting up evolution study of the new SAPEC rotation bay</p>	<p>Mathematical model evaluation of the changes that will occur, after the dredging, in hydrodynamics of the dredging bay zone of the new SAPEC landing. Evaluation of the differences between the current situation and the one before the 1998 drainage in the maneuvers bay and SAPEC channel. The 2D hydrodynamics model of the MOHID system was used.</p>	<p>2001</p>	<p>SAPEC</p>

Leveling influence modulation in the atmospheric draining in the IP2 valleys. Castelo Branco Sul/Fratel	Study of atmospheric draining in three valleys of IP2 road, using the FLOWSTAR model. This is a quasi-linear model, considering the terrain topography, surface roughness and stratification. The purpose of this study was to quantify the influence of dumping performed in the atmospheric draining valleys.	2001	Impacte
Hydrodynamic impacts and sediment transport. Porto de Vila Praia de Âncora	This work had as its main objective the evaluation of hydrodynamics and sediment transport impacts, resulting from the fishing harbor protection works at Vila Praia de Âncora. Several mathematical models were implemented to simulate wave propagation from high sea to the coast, as well as in the nearby area of the harbor, in a more detailed way. Simulation of the wave-induced current fields was also performed, in order to establish possible impacts on sedimentation flow.	2001	I.M.P.
Intervention plan in Angeiras fishing zone and project of a maritime shelter work - Hydrodynamic studies	Involved in the intervention plan of the Angeiras fishing zone, mathematical model studies were developed, to supply relevant information for the characterization of the present situation, as well as the evaluation of possible impacts on hydrodynamics and sediment transport, caused by projected constructions.	2001	Consulmar
Ericeira harbor master plan and work's projects of the first developing faze	Alternative comparison analysis to allow the selection of the most adequate solution for meeting the proposed goals, by conducting technical, economical, environmental and mathematical modeling evaluation studies.	2001	Consulmar
Sines Power Plant - Mathematical modeling of the hot water plume dispersion and temperature and current measurement campaigns	These modeling work and measuring campaigns were undertaken by HIDROMOD in order to characterize the area that will be used as cooling water source for a new thermoelectric power plant. This area is near Sines, in the Atlantic south coast of Portugal. The study was based in oceanographic data and in a 3D hydrodynamics and transport model (MOHID3D). With this model, the tide and wind-induced circulation was reproduced at a regional scale, for the Atlantic south coast of Portugal. For the area near Sines, a sub-model was used, with boundary conditions supplied by the larger model. The sub-model was able to reproduce an existing hot water plume dispersion (from a neighbor power plant) for different hydrodynamic situations.	2001	IDOM

Re-planning and enlargement of the master plan of Ponta Delgada Harbor and surrounding area - wave propagation studies	This project was conducted according to the enlargement and re-planning of Ponta Delgada master plan. Mathematical modeling studies were conducted, to characterize the wave conditions both on the outside and inside the harbor. Important information was supplied, concerning decision-making about possible interventions to suggest.	2001	Consulmar
Protection of Ponta Delgada recreation harbor mouth	This project was part of study elaboration concerning the possibility of changes on the access structures at Ponta Delgada recreation harbor. Several wave propagation simulations were performed, used mathematical models. These simulations allowed the evaluation of wave conditions at the mouth of the marina and were based on comparisons between the present situation and the projected ones.	2001	EUROMETA
<b>REALTIME</b>	Using the latest technologies in data acquisition, modulation and visualization, this project aims to develop an integrated system of models and acquisition, data storing and publication for the management and research of coastal areas. To achieve these objectives, the adaptation of pre-existing numeric models was used, as well as the development of a result publishing database and an automatic system of acquisition and data transferring.	2001	FCT
Study of the Faro/Olhão inlet and of the access channel to Faro harbor - hydrodynamic and sediment transport studies	Realization of hydrodynamic and sediment transport modeling studies for the definition of the solutions to adopt for the Faro harbor access channel (protection/fixing/guidance works, dredging and signalization).	2001	I.M.P.
Hydrodynamical studies of "Marina da Barra" in Costa Nova (Aveiro Coastal Lagoon)	The purpose of this work is to characterize the hydrodynamic zone of Mira Channel, near Costa Nova, in the present situation and after the construction of the Marina da Barra. The Ria de Aveiro 2D model was used, having been established for this location a sub-model with a spatial step compatible with the width of the smaller channels to build in the Marina complex. Several tidal situations were characterized with different amplitudes, in order to evaluate the hydrodynamic functioning of the system in extreme situations. Also the water renewal conditions in the channel system, to be created in the intervention zone, were evaluated.	2001	Ecossistema
Accidental spills simulations in SAPEC terminal in Sado estuary	Hydrocarbons and other chemicals accidental spill simulations in Sado estuary, using the MOHID modeling system. The Sado estuary hydrodynamic model with the Lagrangian transport module was used. The most probable spill situations were simulated and the probability of any zone of the estuary being reached by an oil spill was analyzed. The pH variations due to the chemical spills were also estimated.	2001	SAPEC

Fortaleza's Port Emergency Plan - mathematical modeling of oil spills	Analyses of risk situations emerging from possible oil spills in the Fortaleza port. Modeling of tide and wind forced hydrodynamics, as well as the simultaneous effect of wind and currents in oil spill transport. Support to the Emergency Plan design.	2001	Petcom, Planejamento, Engenharia, Transporte, Consultoria, Lda.
Study of the thermal plume and of the seaweed and sediment transport into the intake bay of the Sines Thermoelectric Power Plant	Use of 3D mathematical models and measuring campaigns to predict the changes induced by the new Sines seaport pier in the hydrodynamics (tide and wind currents and wave propagation) around the Sines Thermoelectric Power Plant refrigerating water circuit, in the thermal plume dispersion and in the seaweed and sediment transport to the intake bay.	2001	CPPE - Companhia Portuguesa de Produção de Electricidade
Contingency plans' evaluation and revision for Transpetro (subsidiary of PETROBRAS)	Coordination of oil spills simulations using mathematical models from Transpetro. Collaboration in oil spill risk analysis. The work is for 20 sea and river terminals operated by Transpetro (subsidiary of PETROBRAS)	2001	Transpetro (Petrobrás)
Hydrodynamic studies for the new Ferries terminal and for the Troia recreation harbor	Impact studies from a recreation harbor construction and the new Ferry terminal in Tróia peninsula on hydrodynamics and local sand transport. The MOHID modelling system was used.	2001	Imoareia
Dispersion conditions study of the emergency discharge of the ETAR SUL in Ria de Aveiro	Evaluation of dispersion conditions on different alternative areas for the establishment of the emergency discharge location of the ETAR Sul (sewer water treatment station) of Ria de Aveiro. The study involved the simulation of several discharge scenarios at different points considered as possible locations, in order to select the most adequate one.	2000	Teixeira Duarte
Hydrodynamics, salinity and sediment transport in Cávado estuary	Evaluation of impacts on hydrodynamics and sediment transport of different inlet structures solutions to improve the conditions at Cávado river estuary.	2000	Nemus

Mathematical modeling studies in the framework for the Douro estuary inlet protection works	Modeling studies related to the projected structures for the Douro estuary inlet. These studies included the evaluation of the navigability conditions (protection efficiency of the structures) and the impacts on the works on hydrodynamics and sediment transport, considering the conjugated effects of waves and currents.	2000	Consulmar
Modeling of atmospheric pollutants dispersion on IP2	This work's objective was to determine CO and NO2 concentrations in the vicinity of the IP2 motorway between Teixoso and Alcaria and between Castelo Branco and Fratel, checking if those concentrations met the legislation's requirements. The study was done using CALINE4 model for several traffic scenarios, weather conditions and road characteristics.	2000	IMPACTE
Environmental impact study of the new Carregado Thermoelectric Power Plant construction - Modeling of the thermal discharge	The thermal impact of the old Carregado's Power Plant refrigeration water circuit (RWC) on river Tagus was studied, along with the new Power Plant yet to build. The thermal impact of the existing Plant was evaluated using MOHID 3D model. To evaluate river Tagus's hydrodynamics nearby the RWC the 2D version of that model was used, applied to the whole Tagus estuary to the limit of tide propagation. The new Plant's discharge will be underwater, thus having been used the CORMIX modeling system to study its thermal impact in the river.	2000	PROET
Wave study - Porto das Velas	Wave penetration study, using the short wave model of MOHID system (Boussinesq approximation).	2000	Consulmar
Wave study - Vila do Porto's bay - Sta. Maria Island	Wave penetration study, using the short wave model of MOHID system (Boussinesq approximation).	2000	Consulmar
Preliminary environmental impact study of Alqueva's water transfer project	Study of several water quality parameters, in order to measure the environmental impact of water transfers between rivers Guadiana and Sado catchments. The CE-QUAL-W2 model was used.	2000	Edia, SA
Wave modeling at Caniçal harbor	Wave studies, based on MOHID2D model, of Caniçal harbour area - Madeira Island.	1999	Consulmar

MODELRIA: Aveiro lagoon water quality assessment	MODELRIA was focused in the understanding, quantification and modelling of the trophic processes in the Aveiro Lagoon through an interdisciplinary study. Namely, this project arrive to characterize the point and non-point discharges of nutrients and organic carbon into the lagoon; to understand the fate of the materials discharged in the lagoon; to investigate the level of the trophic effects of the benthos on biological activity of the water column; to obtain a validated water quality model, integrating all the processes.	1999	JNICT-Junta Nacional de Investigação Científica e Tecnológica
Mathematical modeling of hydrodynamics and oil spills at Ria Formosa	Determination of risk of pollution by hydrocarbons in the Ria Formosa area, based on mathematical modeling. Instantaneous and continuous spills, both inside and outside Ria Formosa, were analyzed. MOHID modeling system was used in the simulations to describe hydrodynamics and transport in two different application domains: Ria Formosa, with tide hydrodynamics and the Algarve coast between Armação de Pêra and Vila Real de Sto. António, with tide and wind forced hydrodynamics. A high number of simulations were done, in order to obtain probability spill trajectory maps, according to the original spill location.	1999	IDOM
Wave modelling at Vila Praia de Âncora	Wave studies, based on MOHID2D model, of Vila Praia de Âncora's fishing harbor area, by testing several alternatives of protection of the fishing harbor.	1999	Consulmar
Mondego river estuary's hydrodynamic and hydromorphological model implementation	Evaluation of possible impacts resulting from the Figueira da Foz navigation channel's dredging, through hydrodynamic and hydromorphologic modeling. Study of dredging impacts on tide propagation, wave propagation inside the estuary and sediment transport along the shore.	1999	Consulmar
Hydrodynamic conditions evaluation of the future Tróia harbor	Preliminary evaluation of the impacts on hydrodynamics, caused by the construction of a recreation harbor in the Tróia peninsula.	2000	Consulmar
Thermal impact and recirculation study at Setúbal	Free surface thermal plume dispersion study, with 32 m <sup>3</sup> /s, at Sado river estuary. MOHID and CORMIX systems were used to model the estuary's hydrodynamics and the plume dispersion.	1999	PROET

Mathematical modeling of Vouga river	Study of water flow and level resulting from flood waves in the dischargers which connect the River Novo do Príncipe to Ria de Aveiro, Rio Velho and Rio de Mós, along a fragment of Vouga river.	1999	Consulmar
ECORUDI	Study of the impact of physico-chemical variations in sediments on the ecophysiology of impact on the Ruditapes Decussatus in Ria Formosa. This work included the use of the 3D hydrodynamic model of MOHID system in Ria Formosa and the development of a diagenetic model.	1999	JNICT-Junta Nacional de Investigação Científica e Tecnológica
Water levels and currents in the upper Douro Estuary	Supply of values of currents and levels in Douro river to support the construction project of a water pipeline near the shore.	1999	Consulmar
Study of the dilution of effluents, in Tejo estuary, from the sewage treatment plant of Portinho da Costa	Dispersion study in Tejo estuary of the effluents of the ETAR of Portinho da Costa, through a submarine outfall. The study included the utilization of a model for the near zone of the outfall diffuser and a hydrodynamic model of the Tejo estuary.	1998	Consulmar
Arade estuary (Algarve) 2D hydrodynamic modeling	Hydrodynamic simulation in Arade estuary for several tide conditions.	1998	Nemus
Study of the brine dispersion conditions in the surf zone - south of Figueira da Foz (Portuguese western coast)	Offshore wave study and its propagation to the 20m bathymetric. Modeling of wave propagation to the beach and littoral currents calculation. Study of brine dispersion conditions.	1999	TRANSGAS
Wave propagation in Quarteira area (Algarve)	Wave propagation study in Quarteira area using REFDIF model.	1998	Consulmar
Wave modeling in Terreiro do Trigo Dock in the Tejo estuary	Study with Boussinesq model of wave conditions inside the dock. Characterization of the present situation and evaluation of the changes introduced by different design options.	1999	Consulmar
Study on the impacts in the current field and in sediment	Hydrodynamic impact study of a recreation harbor construction nearby Faro in Ria Formosa.	1999	IMPACTE

transport of the new Faro's recreation harbor			
Wave studies for the planning of Peniche Port	Utilization of different wave propagation models to support the studies related to the master plan of Peniche harbor: REFIDIF, MOHID.	1999	Direcção Geral de Portos
Site selection for dredged material disposal outside Santos Bay (Brazil)	Study of mud disposal from Santos harbor dredging, with the objective of determining the best deposition areas. The study included the co-ordination of a vast measuring campaign.	2000	Unisanta, Universidade de Santa Cecília
Plume dispersal study of the Madalena outfall near Vila Nova de Gaia (Portuguese western coast)	Madalena's outfall plume dispersion simulation, using the CORMIX2 model.	1998	PROCESL
Dispersion study of the diffuser zone of Guia outfall	Dispersion study of water masses in the zone where water quality may be affected by the Guia submarine outfall, with the objective of defining - for several time and space scales - the capability of water renewal in the area. The study was based on an application of the MOHID system to the whole Tejo estuary and to the adjacent coastal zone, considering only the tide as forcing agent.	1998	SANEST
Sado estuary south channel dredging	Evaluation of hydrodynamic and sediment transport variations induced by the south channel dredging at Sado estuary.	1998	APSS
<b>F-ECTS</b> - Feed-Backs of Estuarine Circulation and Transport of Sediments on Phytobenthos	F ECTS main focus is the interdisciplinary investigation of the ecosystem loops in estuarine environments involving phytobentos communities, hydrodynamics, nutrient cycling and sediment transport, with the aim of integrating some of the aspects already investigated in other research projects. The Lagoon of Venice (Italy) was considered as a pilot case study, providing a specific background for the assessment of the exportability of the obtained results in other two different European estuarine ecosystems: Ria Formosa Lagoon (Portugal) and Roskilde Fjord (Denmark). In the framework of this project Hidromod applied MOHID3D to Ria Formosa lagoon.	1998	União Europeia
Wave studies in Albufeira harbor (Algarve)	Wave studies inside the Albufeira harbour with the MOHID system (Boussinesq approximation) and the wave climate in Albufeira beach with and without the foreseen works.	1998	Consulmar



Sea water use and brine rejection project - brine rejection in the sea study	Evaluation of the brine dispersion conditions in the sea, in two alternative locations: breaking/swash zone and through a submarine outfall.	1998	TRANSGAS
Hydrographic planning of the Lima, Cávado, Ave e Leça rivers catchments - modeling of basin water use and 2D hydrodynamic modeling of Lima estuary	Study of the estuary zones of rivers Lima, Cávado, Ave and Leça, including the mathematical modelling of Lima river. Implementation of a model to evaluate the performance and impacts of alternative scenarios of the hydrographic basins water resources use.	1998	Hidrorumo, Projecto e Gestão, SA
Preliminary water quality study and environmental impact study of Loureiro dam and connection to Alvito	Evaluation of water quality changes, resulting from basin water exchanges that may be performed with origin in Alqueva's reservoir.	1998	EDIA
Hydrodynamic study of the intervention areas in the ambit of the project "Containers terminal/multimodal platform, inlet channel dredging, north channel and rotation bay and of the dredged deposit areas in Setúbal harbor	Calibration and implementation of a baroclinic 3D model in Sado estuary based on the MOHID system, with the purpose of evaluating the hydrodynamic, salinity and suspended sediments transport changes due to the dredging of the north channels. For the salinity and suspended sediments study, the Eulerian transport module of the MOHID system was used. To determine the fate of the resuspended sediments during the dredging, the MOHID system Lagrangean transport module was used. Several measurement campaigns were conducted and their results analyzed, to support the several calibration aspects (hydrodynamic, salinity and thin sediments).	1998	APSS
<b>INDIA</b> - Inlet Dynamics Initiative: Algarve	INDIA project was focused in the characterization of the dynamic processes which occur in tidal inlets. In the framework of this project Hidromod was responsible for the Formosa River hydrodynamic simulation, providing the necessary boundary conditions to understand the transport phenomena, currents and wave interactions that occur in Ancão Inlet.	1997	União Europeia

Study to define the silting up causes and Fortaleza harbor	The main objective of the study was to identify the causes of the silting up of Fortaleza harbor (Ceará-Brazil). In this perspective, the hydrodynamic processes of sand transportation and thin sediments were characterized, a conceptual model was proposed for the functioning of the system and preventive/corrective actions of the actual processes were recommended. As supporting tools, studies and available information were used, several field data gathering campaigns were conducted and different mathematic models capable of simulating the local transportation processes were implemented.	1997	Companhia das Docas do Ceará
OPCOM - Operational Modelling for Coastal Zone Management	In the framework of this project there were developed and implemented operational models for several estuaries and coastal zones in Europe. This work included the use of MOHID in Tagus estuary and adjacent coastal zone.	1997	União Europeia
Evaluation of potentials morphologic, hydrodynamic and ecological alterations of Arade/Odelouca estuarine system - Mathematic modulation of the estuarine zone	Evaluation of the alterations in the hydrodynamic regime and salinity based on the alterations that will be introduced in the Ribeira de Odelouca waterfall regime.	1997	COBA
Olhão and Fuzeta harbor planning - Ria de Faro hydrodynamic studies	Evaluation of the introduced changes in Ria Formosa hydrodynamic by different scenarios alteration to the shore and bottom configurations in Olhão e Fuzeta zones	1998	Direcção Geral de Portos
Santos Estuary mathematical modelling (SP, Brasil)	Elaboration of a complete basis study about Santos estuary to support the ports activities established in its shores.	1998	CODESP
New fluvial terminal in Trafaria - Study of a local hydrodynamics with a mathematical model	Hydrodynamic characterization in the near area of the new Trafaria fluvial terminal,	1997	TRANSTEJO

Pedrouços container terminal – wave and hydrodynamic modeling	The wave and hydrodynamic conditions in the area of the future Pedrouços container terminal were verified in a way to evaluate its operational conditions and the impact of the tide circulation in the Tejo estuary.	1996	Consulmar
Support to the institutional development of SUDEMA – hydrodynamic model of Paraíba estuary	Development and installation of a hydrodynamic modeling system and interactive effluents transport in SUDEMA, for the reinforcement of its technical instrumental of environmental control.	1996	SUDEMA
Porto de Aveiro planning - Ria de Aveiro hydrodynamic modelling studies	Implementation of a hydrodynamic model in Ria de Aveiro in order to evaluate the changing in the hydrodynamic regime due to changing in the shore or bottom configurations in relation to the actual situation.	1998	Consulmar
Simulation in 2D hydrodynamic model of an accidental spill in Matinha Dock (Tejo estuary)	Utilization of the Tejo estuary mathematical model for evaluation of the preferential trajectories of a plume resulting of an accidental emission in Matinha Dock.	1996	INETI
Portimão recreation harbor – Mathematical modeling studies of tidal hydrodynamics and wave penetration	Wave regime study inside and outside of the marine and evaluation of the tide currents regime alterations induced by the marine construction. A calibration of the Arade estuary hydrodynamic model was presented.	1996	Marinas de Barlavento, Lda
Trafaria fluvial terminal – Mathematical modeling of hydrodynamics	Evaluation of the impacts in the hydrodynamic associated to the rehabilitation of the Trafaria fluvial terminal.	1995	Consulmar
Cabo Ruivo harbor wave climate study	Implementation of a Boussinesq type model of wave propagation for the study wave climate inside the future harbor. Different drawing scenery of the protection structures were analyzed for short period waves created inside the estuary.	1995	TRIEDE

Wave penetration modeling inside the Rabo de Peixe fishing harbor	Best protection work configuration study of the fishing harbor in function of the local wave.	1995	Região Autónoma dos Açores
Project of the containers terminal/Multimodal platform of the Setúbal Port – Mathematical modeling	The estuary mathematical model was used for the hydrodynamic level impacts evaluation and for the sedimentary traffic due to combined action of waves and currents of the necessary dredging to the construction of the container terminal/Multimodal platform of the Setúbal harbor in the defined configuration.	1995	APSS- Administração dos Portos de Setúbal e Sesimbra
Mussulo and Luanda Bay hydrodynamic and transport processes modeling (Angola)	Hydrodynamic model establishment of the Luanda Bay lagoon complex – Mussulo and it exhaustive characterization. This work includes the effluents dispersion phenomena study in several places.	1996	Consulmar
Wave propagation studies for the Port of Vila Franca do Campo (Azores)	Boussinesq type of simulation in mathematical model of the wave propagation inside the Vila Franca do Campo harbor, considering different layouts options.	1994	Consulmar
Mathematical modeling of the hydrodynamics and waste water dispersion in the Tamega river near Amarante	Several hydrologic study situations of rivulet waste water dispersion in Amarante.	1994	OCTOPUS
Evaluation of the necessary engineering works to improve the accessibility and the safety conditions in the Douro Estuary entrance	Hidromorphologic model implementation for the Douro Estuary entrance, capable of considering the combined wave transport of sediments, tides and fluvial waterfall. Characterization of the sediment traffic, Douro Estuary and adjacent coastal area, in a way to determine the proper solution for the access and safety problems in the Douro entrance	1994	APDL- Administração dos Portos do Douro e Leixões

Evaluation of the causes of Fortaleza Harbor siltation, with alternative solutions and equilibrium profile lifting of the beaches located between Cumbuco and Mucuripe harbor	Transport processes evaluation of the areas located between Cumbuco and Mucuripe harbor beaches and in the interior of Mucuripe Harbor in Brazil.	1997	Petcom, Planejamento, Engenharia, Transporte, Consultoria, Lda.
Wave propagation studies in the Tejo estuary mouth	Study of the wave conditions in the Trafaria area using the REFDIF model for the approach area and the WAVEMOD for the local area.	1996	TRANSTEJO
Mathematical modeling of the wave propagation in the Ribeira Quente waterfront	Wave regime study in Ribeira Quente marginal area for the evaluation of the local work protection characteristics.	1996	Região Autónoma dos Açores
Study of renewal capability of Sado estuary relative to the established activities in its shores	Utilization of the Sado estuary model in the evaluation of the estuary water masses trajectories and definition of big homogenous areas, with the propose of establishing new objective criterion in the determination of the support capacity of Sado estuary relatively t the established activities in its shores.	1995	ICN - Reserva Natural do Estuário do Sado
Wave penetration modeling inside the Ribeira Quente fishing harbor	Best protection work configuration study of the fishing harbor in function of the local wave.	1995	Região Autónoma dos Açores
Hydrodynamic studies for the conception/ construction proposal of the solid waste treatment plant in S. João da Talha (Tejo estuary)	Several waterfall combination scenarios with temperature raisings in the rejection were rehearsal. Each scenery was tested for several levels and velocities combinations, obtained from the hydrodynamic model of the Tejo estuary, in a way to represent the several situations that occurs during a medium tide cycle. The fundamental objective is to study the environment restrictions rejections and don't provoke re-circulation.	1995	Consulmar

Study of the conversion of the Olivais Dock and the marginal upstream regularization	Hydrodynamic modeling of the local currents regime alterations caused by the planned alterations for the river shore in the Expo park intervention area. Alteration evaluation in the sedimentary regime, namely in the future evaluation of the local siltation taxes.	1995	Consulmar
Expo'98: Evaluation of the hydrodynamic impacts in the neighbor areas	Several shore configuration studies of hydrodynamic in the neighbor areas of EXPO'98. This study was made together with LNEC and HIDROPROJECTO.	1995	Laboratório Nacional de Engenharia Civil
Study with a mathematical model of the influence of the new Containers Terminal of Santa Apolónia and the dredging of the local traffic area in the local sediment transport (Tejo estuary)	Hydrodynamic conditions and erosion/accretion study in mathematical model in the actual situation, for a shore advance in the Xabregas area to the new container terminal of Santa Apolónia and the established of a dredge area for parking of the local traffic.	1994	Consulmar
Study of the effect of the new bridge over the hydrodynamics of the Tejo Estuary	Simplified study of the hydrodynamic changes in the Tejo estuary due to the construction of the new bridge.	1994	COBA
Hydrodynamic modeling of Ria Formosa	Implementation, calibration and validation of a hydrodynamic model for Ria Formosa. This project was developed together with Technical University of Lisbon which also guide it.	1994	Instituto Superior Técnico
New bridge over the Tejo in Lisboa - Evaluation of the areas affected by the dredging works during the bridge construction	Study of the hydrodynamic Tejo estuary and evaluation of the areas affected by the dredging works during the new bridge construction.	1994	COBA

Study of the wave climate inside the Port of Angra do Heroísmo	Type of Boussinesq simulation in mathematical model of wave climate inside the Port of Angra do Heroísmo considering the options to the different layouts.	1994	Consulmar
Modeling of the dispersion of effluents in the Alfeite area (Tejo estuary)	Dispersion study of effluents to be emitted in Alfeite area, with the purpose of determine the temporal and space variations of the outfalls concentrations for two alternative locations and waterfall effluents.	1994	DRENA
Study in a mathematical model of the Sado Estuary - Modeling of the north and the inlet channels	Evaluation in a mathematical model of the dredging and maintenance options access channels to Setúbal harbor in the technical-economical study of the new access channel to the containers terminal. Hydrodynamic impacts level, the action of tide currents in sediment transportation and the stability of the dragged channel for different implantation layouts and section draws were evaluated.	1994	BCEOM, Société Française d'Ingénierie
Hydrodynamic studies of Sado Estuary – entrance channel dredging to 12 m depth	Evaluation in mathematical model of the dredging impacts associated to the Setubal harbor access channel dredging at 12m. Hydrodynamics level impacts and the preferential deposition areas of the suspended material during the dredging works were evaluated.	1994	Consulmar
Environmental impact assessment of the new recreation harbor of Quarteira	Boussinesq type simulation in mathematical model of the agitation climate inside the Quarteira fishing harbor, considering different layouts options.	1994	Consulmar
Evaluation of maintenance conditions of the navigation access channel to the FORD/VW quay in the Sado Estuary	Maintenance conditions evaluation in Mathematical model of the navigation access channel to the FORD/VW quay in the Sado harbor. Impacts were analyzed associated to the dredging of the quay, rotating bay and depositions areas of the suspended material due to the dredging work.	1993	IMPACTE
Computation of the currents patterns and strength in the south coast of S. Miguel (Azores)	Tridimensional model implementation in Azores with the purpose of evaluating the currents patterns and strength in the south coast of S. Miguel.	1993	Gov. Reg. Açores

Study of the effect of the new bridge over the hydrodynamics of the Tejo Estuary	Simplified study of the hydrodynamic changes in the Tejo estuary due to the construction of the new bridge as well as the destiny of the suspended sediments during the dredging.	1993	AMBITEC
<b>EUROMODEL</b> – Hydrodynamic modelling of the West Mediterranean Sea	EUROMODEL project main objective was the determination of the circulation in the West Mediterranean. In this work the 3D hydrodynamic MOHID was applied to the region composed by Cádiz Gulf, Gibraltar and Alboran Sea.	1993	União Europeia
Study of the wave climate inside the new Recreation Port of Sines	Mathematical model evaluation of the wave climate inside the new Recreation Port of Sines, considering different project solutions for the protection	1993	Consulmar
Hydrodynamic and sediment modeling in the Mira Estuary	Hydromorphological model implementation in the Mira Estuary for hydrodynamics and sediments impacts of the maintenance dredging access canal to Vila Nova de Milfontes harbor.	1993	Direcção Geral de Portos
Effluent dispersion study from Setúbal's Waste Water Treatment Station in the Sado Estuary	Effluent dispersion study in mathematical model thrown to the Sado Estuary by the new Waste Water Treatment Station. Evaluation of the concentration of phosphorus and outfalls.	1993	Consulmar
Analysis of the effluents capability reception issued in SAPEC region	Mathematical model evaluation of the dispersion conditions of issued effluents in the SAPEC region of the Sado estuary.	1992	DRENA
Study of the wave climate inside the new fishing harbor of S. Miguel (Azores)	Type of Boussinesq simulation in mathematical model of wave climate inside the fishing harbor of S. Miguel considering the options to the different layouts.	1992	Consulmar
Study of the currents field in the new fishing harbor of S. Miguel (Azores)	Currents fields impact level evaluation due to the construction of the new fishing harbor of S. Miguel	1992	IMPACTE



Wave climate study of Figueira da Foz Port	Type of Boussinesq application model of wave propagation to identify some problems in the behavior of tied ship.	1992	Consulmar
Wave climate study of Viana do Castelo Port	Type of Boussinesq application model of wave propagation to support the Engineering project inside the port.	1992	Consulmar
Mathematical modeling of the effluent dispersion of an outfall at Funchal (Madeira)	Conditions study of the effluent dispersion resulting of an outfall at Funchal.	1992	DRENA
Study of the new FORD/VW container and RO/RO terminal influence in the hydrodynamics of the SADO Estuary	Hydrodynamic model application to Sado estuary for evaluation of the hydrodynamic level impact, necessary dredging and quay building.	1992	IMPACTE.