June 2007 Number 1

English Version

BEACHMED-e

Regional Framework Operation

STRATEGIC MANAGEMENT OF BEACH PROTECTION MEASURES FOR THE SOUSTAINABLE DEVELOPMENT OF MEDITERRANEAN COASTAL AREAS

NEWSLETTER

CONFERENCE "BEACHMED-e" IN BARCELONA, CATALUNYA (JUNE 29TH 2007)

SIGNED THE "CARTA DI BOLOGNA" FOR THE SUSTAINABLE COASTAL DEFENCE OF THE MEDITERRANEAN

PUBLISHED ON FEBRUARY THE TECHNICAL BOOK PHASE A

SUMMARY

Nord Est SUD Ouest INTERREG IIIC

BEACHMED-e Regional Framework Operation
"Strategic management of beach protection measures
for the sustainable development of Mediterranean coastal areas"

Lead Partner
Regione Lazio, Italy
Assessorato Ambiente e
Cooperazione tra i Popoli

Coordinator
Paolo Lupino, Regione Lazio
Gestione Aree Naturali Marine
Protette

Partner Regions
- Regione Toscana, Italy
- Regione Liguria, Italy
- Regione Emilia-Romagna, Italy
- Département de l'Hérault, France
- DRE-LR, France
- Generalitat de Catalunya, Spain
- Région Macedoine Est et Thrace, Greece
- Région de Créte, Greece

Observer Partners
- Generalitat Valenciana, Espana
- Drapor, Sociéte de dragage des Ports, Maroc
- APAL, Agence de Protection et d'Aménagement du Littoral, Tunisia
- Regione Veneto, Italy
- Marevivo, Italy,
- Ordine degli Ingegneri della Provincia di Napoli, Italy
- Centro di Educazione Ambientale, Italy
- Regione Marche, Italy
- Forum Città Adriatiche e Ioniche c/o Comune di Ancona, Italy
- Acqua SPA, Italy
- Parco Regionale del Delta del Po, Italy

Total Budget
€ 7.668.366,50
(54% FEDER, 46% Co-financed)

Duration of the Operation
July 2005 – June 2008

What is BEACHMED-e?
BEACHMED-e is an INTERREG IIIC Regional Framework Operation (RFO) that draws of Coastal Defence on Mediterranean Areas. BEACHMED-e is the result of the collaboration between 9 regional partner of 4 EU Nations: Italy, France, Spain and Greece. The RFO provides for the development of 9 Subprojects with the participation of 36 Public Institutes (Universities, Institutes of research and local Administrations) that have applied for a Public Call. The 9 Subprojects refer to the Measures of 3 technical Components.

General objectives
1) Design and construct technical instruments to characterize erosion at European scale and for the sustainable use of resources.
2) Set up of management instruments for relation between urbanland development and morphologically fragile areas, related to ordinary and exceptional sea storms.
3) Set up of normative and organisational instruments to define, regulate and manage coastal defence by all parties involved.

The Outputs
The results for the Operation will be collected in 3 Technical Books and published as and when each of the three planned phases come to an end.

The Progress
The first Technical Book for phase A was published in February 2007 and can also be found on the Operation's official website (www.beachmed.eu). On 29th June 2007 the results of the activities included in phase B of the Operation will be presented in the Barcelona meeting. These include detailed information on methodological aspects and the choice of pilot projects on which to apply the methodologies proposed. During the 5th Steering Committee in Bologna, the political representatives of the Regions have signed the "Carta di Bologna".

CONFERENCE "BEACHMED-e" IN BARCELONA, CATALUNYA (JUNE 28TH AND 29TH 2007)

The RFO BEACHMED-e has reached the conclusion of Phase B regarding the methodological aspects, activity of research, problem solving and create archives in common. Next June, 28th and 29th-30th the Spanish partner "Generalitat de Catalunya" will receive in Barcelona the 6th Steering / Components Committee and

the Conference of Phase B Components 3 and 4. During the 6th Steering Committee the RFO Regional Partners will discuss about the future programming of BEACHMED initiatives in the domain of the new European funding programs 2007-2013 (INTERREG IVC, MED Espace, ENPI, e-Contentplus, etc.).

SIGNED THE "CARTA DI BOLOGNA" FOR THE SUSTAINABLE COASTAL DEFENCE OF THE MEDITERRANEAN

The "Carta di Bologna" represents an important step in ahead towards the Sustainable Coastal Defence of the Mediterranean. Through the signature of this document

many European Regions have been engaged to collaborate for the promotion of an interregional European Observatory for the Mediterranean Coastal Defence.

PUBLISHED ON FEBRUARY THE TECHNICAL BOOK PHASE A

Published in Bologna the Technical book Phase A (French version) on the state of the art, bibliographical search, analysis of database and the

exchange of common experiences.
On www.beachmed.eu the download of .pdf version.

...from the Network

U.S.A.C.E. & BEACHMED-e Operation

20th-21st June
The Hague (Netherlands).
The BEACHMED-e coordinator ing. Paolo Lupino has been invited from the U.S. Army Corps of Engineers to introduce the BEACHMED-e Operation during the "Fact Finding Meeting".

PAP/RAC & ICZM-MED Subproject

2nd-3rd July
Malta
"Regional Workshop to Discuss and Adopt the Good Practices Guidelines on beach Management in the Mediterranean". A representative of ICZM-MED Project will participate to the Workshop organized by PAP/RAC in Malta.

Introduction to measure 2.1

This is without a doubt one of the most important BEACHMED-e Subprojects, and not only because of the budget assigned to it.
A well-defined request was made by the Authorities following the Objectives Report for an in depth analysis of monitoring processes and their suitability as a tool for assessing the morphological status of the coast.
What has become increasingly clear when looking at past BEACHMED projects as well as those currently underway (Intrinsic Beach Variability Analysis) is that there is a subdivision in the monitoring techniques based on the objectives you are trying to achieve.
If, as an example, you wish to monitor the effectiveness of a defence system (local monitoring) you need to monitor a small area (a few kilometres) with high precision systems (centimetric) at frequent intervals (from days to months) for medium-short periods (a few seasons).
If you want to discover the evolution of large parts of the coastline on a regional level in order to ascertain the presence of chronic erosion phenomena (regional scale monitoring), you need to adopt a monitoring system which can cover wide areas of the coast (hundreds of km), does not need to be highly precise in its measurements (a few metres) and needs to be repeated infrequently (even every few years). The surveys need to be compared over long periods of time (some decades).
The Optimal subproject is moving in this direction, trying to equip the Authorities with the information they need (performance criteria, implementation lead times, costs, etc.) to be able to choose and plan a monitoring system which can be used in coastal defence strategies.

OpTIMAL - Optimisation of Integrated Monitoring Techniques Applied to Coastlines

Satellite remote sensing techniques
Satellite detection technology, which can provide precise information across wide areas, is currently being used by Toscana, Lazio, Emilia-Romagna and Hérault. It is still an expensive tool (from a minimum of 50 euros to a maximum of 120 euros per km²) for surveys of small coastal areas due to the minimum surface sizes sold by the agencies, but is without a doubt competitive for medium to long term regional monitoring projects. An automated coastline extraction methodology is being developed and tested as part of OpTIMAL. Pilot sites used for these activities are San Rossore and Follonica (Tuscany), Eastern Macedonia and Terracina (Lazio).

Video/Webcam systems
They are currently being used by Toscana, Emilia-Romagna, Liguria and Lazio and enable changes which affect the beach (local monitoring) to be portrayed using high temporal resolution, although these are still not uniform in their approximations. The most widely used and tried and tested system is *Argus*. OpTIMAL will test some alternative monitoring systems using webcams and a type of image processing software which is better suited to coastal monitoring. The pilot sites for these initiatives are Igea Marina and Lido di Dante (Emilia-Romagna) and Levanto (Liguria).

ALB-LIDAR surveying systems
The marine LIDAR technology is especially well suited to surveys of coastal waters when there is a need to locate many points across wide areas. After a test carried out in Toscana during the previous BEACHMED, it is now being used in Emilia-Romagna and Hérault. This system ensures that data is obtained quickly, and costs are also reasonable if those incurred during the mob/demob phase are sustained as part of a wider regional survey. The main limitation is imposed by the maximum soundable depth which is linked to the physical conditions of the water when the survey is carried out (ex. turbidity). A LIDAR pre-test has been carried out along the sandy Hérault coasts in the Aigues Mortes Gulf. Results have been very satisfactory with regards to campaign organisation, penetration ability, land-sea connection, geographical references. The objective in Emilia-Romagna is to compare LIDAR data with data obtained from traditional topo-bathymetric surveys carried out at the same time.

Traditional Multibeam and singlebeam survey techniques with *Sea Control Points (SCP)*
These traditional monitoring systems, which are currently being used by nearly all participating Regions, will be compared to the new LIDAR technologies. To further increase accuracy of the surveys, especially for the calculation of volumes eroded/deposited, a Sea Control Point network is being developed, composed of plates placed on top of pipes fixed to the seabed. The University of Florence is carrying out repeated surveys, passing over SCPs of known coordinates and depths, in order to assess any increase in accuracy for bathymetrical data.

Analysis of Beach Intrinsic Variability
This area, covered by the University of Firenze, aims to analyse the intrinsic variability for the position of the coastline so that timing of surveys can be as set as effectively as possible. Knowledge of this data will allow for brief variations to be "filtered" so that longer lasting trends can be extracted and the frequency of the surveys be set, thus improving the cost/benefit ratio. As far as beach profile variability is concerned, the closure depth – for a number of return periods- has been calculated for all Tuscan beaches, so that the size of the offshore surveys can be established based on the temporal scale of each monitoring project.

Forecasting model for beach nourishment effectiveness
A new model for the forecasting of morphological changes for coastlines undergoing nourishment activities is being assessed as part of OpTIMAL. The model simulates the redistribution of material placed along the beach and takes into consideration the granulometric characteristics of native and borrow material and beach morphology. This model, created by La Sapienza Rome University, will be tested and validated for the first time using real scenarios such as the Ladispoli, Minturno and Fondi beaches in Lazio and the Marina di Carrrara beach in Toscana.

Modelling of coastal dynamics
The Istituto de Ciencias del Mar of the Catalunya Region is trying to integrate a series of coastal management systems (Coastal Modelling System/CMS) which can be used together. The system currently has the advantage of being standardised for all public Authorities in Spain This system will be applied, together with high resolution seismic techniques and traditional bathymetric techniques, to assess the sedimentary dynamics for the Masnou (Catalunya) coast. The Institute for Applied Computational Mathematics IACM/FORTH is also developing a medium term morphodynamic model (MTM) which is almost 3D. This will be used to compare results with those for monitoring carried out using other technologies along the coasts of Crete.

"Coastal monitoring, due to its many different goals, is built on specific techniques and protocols as well as a thorough understanding of coastal processes, survey technology and user requirements."

Introduction to measure 2.2

The relationship between wave climate and erosive phenomena plays an important role, especially due to the feared and impending climate changes which pose new threats and require an even greater ability to foresee external events.
This means implementing and testing new wave climate monitoring systems. The final goal is to set up "Wave Climate Annals" covering erosive phenomena which has either been registered or can be expected. The Authorities can, with these tools, prepare and confirm the strategies to be used in planning coastal defence strategies as well as their integration within the environment.

Authorities require summaries for phenomena that are this complex and one of the objectives of the NAUSICAA Subproject is to match, also using joint experiences, the right models with a summarised representation of the phenomenon being simulated.
The variation in wave energy along the coast is not only connected to climate changes but can also be the result of changes in wave propagation conditions, such as the condition of the seabeds where entire *Posidonia Oceanica* grasslands have disappeared. These phenomena also need to be monitored in order to understand the erosive processes affecting the coastli-

NAUSICAA - Characterisation of hydrometeorological conditions of coastlines, analysis of risks to coastlines, behaviour of protective measures and dynamics of *Posidonia oceanica* grasslands

Tools acquired for onsite measurements
The GEOSCIENCES-M Institute of the University of Montpellier has purchased and is positioning a directional buoy and some current measurers (ADCP) to measure hydrodynamic characteristics of the zones bounded by the identified sedimentary cells. These tools will be positioned in front of the coast south of Sète. The wave monitoring station will also be useful to measure the characteristics of the volumes of water being exchanged in the northern part of the Gulf of Lion.
ARPA Emilia-Romagna has set the technical specifications for the purchase of an oceanographic station which is to be positioned along the coast. The station will be equipped with a waverider buoy, a temperature probe and a GPS system. The station will be located at a depth of 10 m.
FRI-NAGREF has modified an existing buoy located out to sea from the delta of the Nestos River, turning it into a directional one.

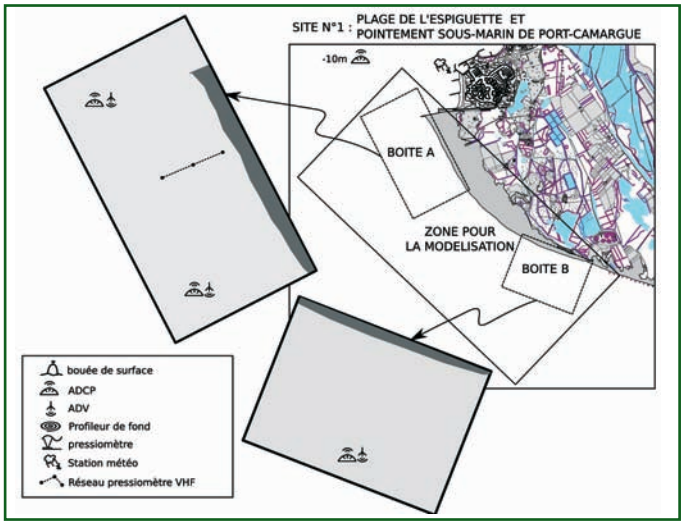
Transversal initiatives within the Subproject
There are many transversal initiatives within the NAUSICAA suite:

- FRI-NAGREF and GEOSCIENCES-M will work together to implement modelling projects in selected East Macedonia and Thrace sites.
- GEOSCIENCES-M, I3M Montpellier (partner external to Project) and UNIBO-DISTART will collaborate together for the development of a supporting numerical instrument in order to optimise coastal defence infrastructure.
- All partners involved work for the coordination on the quality of instrumental data and the representation of hydrodynamic measures. A first work session for this field took place in Alexandroupolis (conclusion of phase A).

Circulation of wave Hydrodynamic Atlas
GEOSCIENCES-M is involved in the implementation of a database to be used as a tool for the circulation of the Coastal Hydrodynamic Atlas using the internet.
The implementation of hydrodynamic measurement campaigns, using the equipment acquired, on the one hand means that SYMPHONIE-S (latest generation 3D models, wave energy/currents) and SHORECIRC (Q3D model, wave energy/currents) can be validated, and on the other are useful for the definition of wave climates and characteristics of the currents.

Hydrodynamic models for the characterisation of coastal dynamics (waves and currents)
3D and nearly 3D models are simplified because of the huge amount of data that needs to be processed that would be required if carrying out short and medium term morphodynamic forecasts. Some SHORECIRC model application has been carried out by defining the long-shore and cross-shore currents at the Leucte (Gulf of Lion) site.

Is *Posidonia Oceanica* able to slow down the erosive process caused by waves and currents?
The BAU Department of La Sapienza Rome University is working to find an answer to this question, in partnership with the Institute of Marine Sciences of the CNR in Venice. What is certain is that in the last 50 years *Posidonia Oceanica* has regressed by about 4.300 ha (60%) in the areas being researched located between Capo Circeo and Sperlonga, in front of Lazio Region's Southern Pontine coast. This would seem to be a result of rapid transformation of the coastal areas which are increasingly affected by urbanisation, building of ports and coastal works, intensive agriculture of inland areas and illegal trawl fishing. This is demonstrated the stable levels of conservation which have been registered, at least in the last 15 years, in the Posidonia grasslands found offshore from the Pontine islands, where coastal activities do not affect the equilibrium of the grasslands. This will be carried out using onsite data acquisition and the installation of two ADCP placed on the lower and top margins of the Posidonia grasslands in good vegetative conditions and those in obvious states of regression.



Campaign March 2007 on site n°1 (Espiguette, Gard)
Example of deployment card

Mesurements → Modelling (Common Methods)

1. Extraction of trends wave characteristics, winds
2. Time serie analysis → deep sea wave climate and local wind climate
3. Extrapolation of wave climate to the coast (through model)
4. Computation of wave/wind circulation at specific scales

Introduction to measure 2.3

Although the BEACHMED-e Operation does deal with research into environmental impacts and assessments, it also focuses on finding solutions to those issues that the Authorities need to deal with. The identification of sand deposits on the seabeds plays a fundamental role in this process. It would be impossible to have any type of coastal defence policy without the availability of sand resources which can then be used to rebuild the shores. Even though these initiatives need to be managed carefully (it is a non renewable resource), the Authorities need to be able to manage their coastal defence policies and still have the opportunity to "choose" between the various options, including the option of using sand from the seabeds.
Knowledge of sand resources located on the seabeds is an important part of a more complex scenario where marine levels rise. If the coasts have morphologically depressed areas behind them, the risk of inundations can only be offset by reinforcing the protective dune bars. Sand requirements cannot therefore only be measured using the current erosive trends but must also bear in mind future structure of the landscape which may well be modified by climate changes.
All partners involved in the ReSaMMé Subprojects have been involved in classifying the marine beds of the Regions involved and in the search for deposits so that a "Resource Map", which is an increasingly detailed map of its extractive potential, can be supplied to its Authorities.

ReSAMMé - Search for submarine sand in the Mediterranean Sea

ARPA Emilia-Romagna

The Agency has started off a partnership with ISMAR-CNR of Bologna for the use of the database containing the archives for seismic profiles carried out on the Adriatic shelf. Geophysical analysis and geognostic surveys (vibro-drilling) campaigns will be part of Phase C, to be carried out in three distinctive areas in the Northern Adriatic at depths of -50, -40, -36 m m.s.l.

DST University of Rome "La Sapienza"

The guidelines which were partly written during the first BEACHMED Project need to be updated to include some areas which require more work as well as new topics.
Updates will cover:

- Differentiation of surveys/procedures based on morphological, sedimentary and stratigraphic set up.
- More elasticity in the implementation of research programmes with possible variations to survey with possible changes to the surveys according to requirements highlighted by the research process.
- Identification of main features of the deposits so that the use of material can be planned (available volumes, thickness and size of deposits, differences between deposits, granulometry and colour characteristics, etc.).

DIP.TE.RIS of Genova University

The area being studied along Liguria's continental shelf is located between Albenga and Loano. Detailed analysis has been carried out on data related to unconventional coastal deposits during the previous BEACHMED Project:

- 2004 geophysical survey (150 Km of profiles, Sub Bottom Profiler 3,5 kHz et Boomer 200-400 J).
- Calibration of seismic profiles using drilling.
- Granulometric analysis.

Two relict littoral bars have been identified at -60 and -80 m m.s.l., with a horizontal body which can potentially be exploited (sand and gravel covered by 2-3 meters of pelite) with sand volumes estimated at 2.400.000 m³.

BDSI Perpignan University Laboratory

BDSI has chosen to explore the sand and gravel resources in one section of the external shelf of the Gulf of Lion. A potential reserve of a few million cubic metres of sand with medium and coarse granulometry has been identified at 90-100 m in depth.
Available data:

- INFREMER (2002–2005 campaigns);
- Morpho-bathymetric data (multibeam EM300);
- Subsoil geophysical data (sondeur pénétrateur);
- GD ARGO (1995-1996–1998 campaigns);
- Subsoil geophysical data (Mini-sparker).

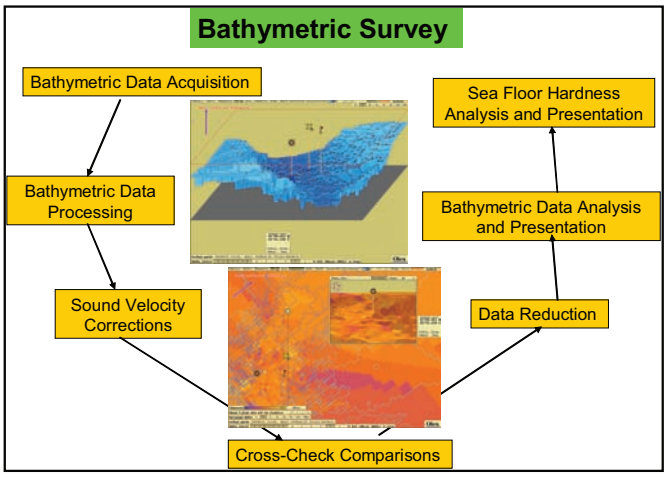
There is still no sedimentary data available, the campaign using vibro-drilling (10) is planned for spring 2007.
Data processing will enable a themed map to be created as well as the estimates for exploitable volumes of sand.

ICM Institute of Ciencias del Mar

ICM has supplied a map of sand deposits found along the Catalan continental shelf, while the estimates for available sand volumes are planned for Phase C.

Democritus University of Thrace - DUTH

DUTH will carry out research into the continental shelf of the Northern Aegean Sea near the Island of Thassos. Planned activities have been summarised in this picture:



Tools

- JMC GP100 (GPS)
- OLEX 3D SURVEY Software
- Simrad ES60 single-beam survey echosounder

ReSaMMè recommends a methodological approach which is split in two phases. A first phase carries out an indirect survey of the seabeds using geophysics and morpho-bathymetry, which will give a general picture of the way deposits are organised. The second phase relies on direct surveys using samples of material which are to be taken, and then analysed, from strategic locations identified during the first phase.

Overall we have registered uniformity in the survey methodologies and scientific criteria used by the ReSaMMè partner regions. The methodological protocol is not to be considered a rigid procedure which has to be followed to the letter. In fact guidelines need to be fluid so that they can be modified according to the results obtained from research campaigns.

Introduction to measure 2.4

Dredging to extract sand from the seabeds is basically a new experience for the Mediterranean area. Northern Europe's long standing experience in the dredging field does not provide much help as the habitat within the Mediterranean is very different.
The cultivation of marine sand deposits on the continental shelves of the Mediterranean has meant that specific studies to establish the environmental compatibility of these interventions have had to be carried out.
The study effects associated with the extraction of sand from the beds must not only allow us to establish the sustainability of the cultivation of the deposits itself but must also direct mineral research programmes towards those areas that are less vulnerable (*Posidonia Oceanica* Grasslands, morphological features, nursery areas, protected marine areas, etc.). It is therefore possible to outline some "Vulnerability Maps" to use for extraction purposes, which, when matched with the "Resource Map" allows the Authorities to create effective coastal defence policies which are also environmentally friendly (sustainable policies).

EuDREP - European Environmental Protocol for Dredging and Beach Nourishment

Circulation and sharing of ENV1 Protocol

Work carried out during Phase A has confirmed the validity and importance of protocol ENV1, as none of the regions participating in the Subproject has any specific regulations covering this field.
All Eudrep partners, after having carried out careful critical analysis of the ENV1 protocol, have provided specific comments which can help simplify the procedures and make the protocol more widely applicable. These comments will be discussed during the protocol revision process, which is one of the main objectives of this Subproject.

Natural and induced turbidity and its effects on the environment

One of EUDREP's specific objectives is closely connected to pilot project activity and deals with turbidity issues caused by dredging and nourishment activities. These are compared to natural levels of turbidity which are therefore compatible with the preservation of present habitats. Bibliographical research carried out during Phase A on natural turbidity levels and sedimentary levels for the regions involved has highlighted a considerable lack of information. Bibliographical research carried out on possible effects increase in turbidity and/or sedimentary levels can have on *Posidonia Oceanica* has also shown that the number of specific interventions carried out is very scarce and, in any case, is never specifically related to this type of initiative.

Turbidity methodological protocol

The partnership's objective for Phase B consists in searching for the best methodological route to follow for:

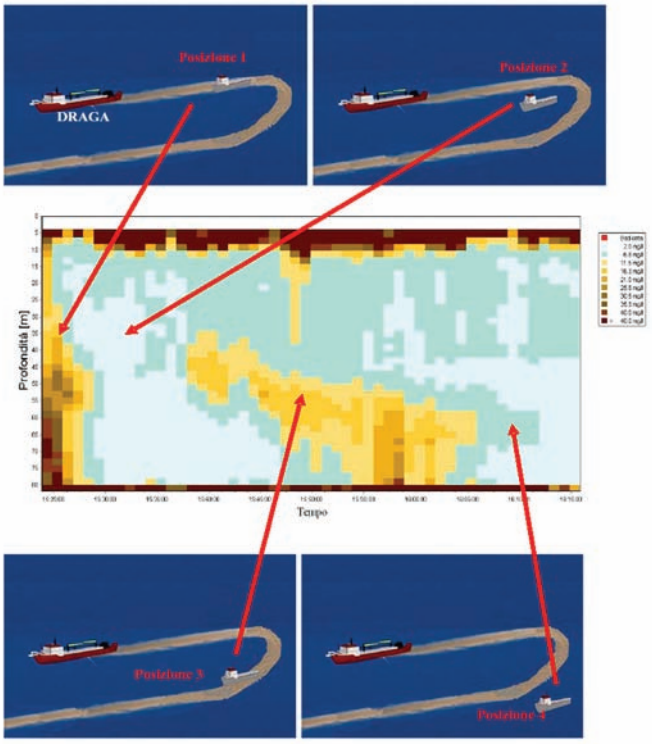
- Estimation of turbidity and sedimentary levels, both natural and induced by dredging of relict sand and nourishment procedures;
- Gain understanding, for analysed sites, of bottom levels for these parameters where there are *Posidonia Oceanica* grasslands. These, to start with, can be used as reference parameters to establish the site-specific threshold values.

A few problems have already come to light as a result of bibliographical research carried out in Phase A, such as:

- The need to standardise turbidity units of measure in order to facilitate the comparison between different sets of data, based on the effects of this phenomenon on the ecosystems: (ex. percentage of incident light);
- Verification the implication of turbidity entity variations caused by the movement of sediments (generally more intense but lasting less) compared to turbidity variation which can be observed in natural conditions.

The EUDREP Subproject aims to set up a methodology and tackle some of the highlighted issues by providing some of the answers (criteria, size of phenomenon etc) with a detailed research plan aimed at better defining the problem and its concrete applications.
More specifically, early results for this phase, also supported by onsite work, have highlighted that a dispersion of the plume is being linked to factors such as meteo-marine conditions, granulometry of dredged sediment, the presence of pelitic material within the deposit, the type of dredging process.

Plume produced during the activities of dredging of fossil sand



Monitoring of the *plume* during the activities of dredging in the central Adriatic (2006)

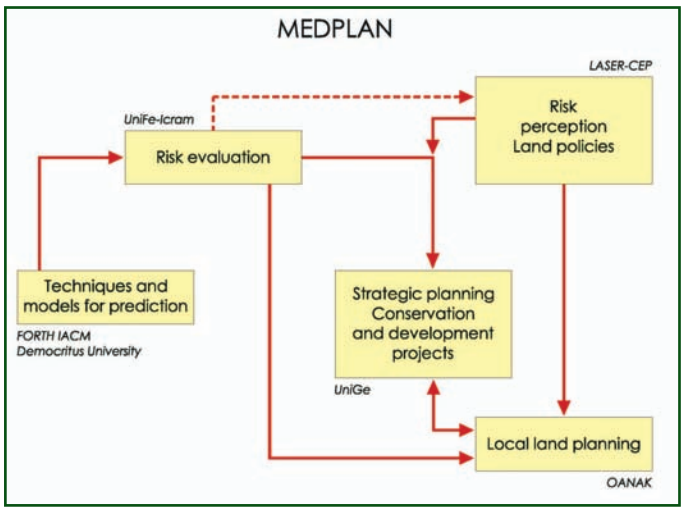
Introduction to measure 3.1

Those areas that border with the coastline and its morphological changes are becoming increasingly important across the whole of Mediterranean Europe. Tourism, port services, landmark preservation, the presence of archaeological and historical remains and many other features linked to economic development and the preservation of the historical and natural heritage are affected by coastal events such as erosion or the withdrawal of the coast line. The urban development of the coastal strip must not only comply with the typical requirements of a Town Planning Scheme (demographical development, mobility, historical and environmental protection etc.) but also needs to allow for the fact that the area may be affected by sudden changes which may or may not be reversible. The concept of "resilience" of the coastal strip introduced by the EUROSION Project requires town planners to introduce new solutions which make the built up areas compatible with this border-zone. The Medplan Project deals with urban planning issues along coastal areas and tries to expand on the concept of "defence structure" by integrating the erosion defence measures, or those compatible with issues that affect coastal areas, into a "flexible" urban structure. A separate chapter is set aside for the calculation of risks for the coastal strip, applying methods which take into consideration the use of the land (exposed values) and the morphological features of the coasts and inland areas (dunes,

Medplan - Evaluate risks and establish integrated plans for Mediterranean coastlines

Littoral management policies linked to threats to the coastline

The analysis of coastal degradation can be seen as the consequence of a crisis in the market, such as the failure of public intervention. The analysis needs to integrate physical elements connected to the risk factor, and in particular its characterisation, based on the criteria used and the way the different areas are used, bearing in mind the presence of housing, the various infrastructure and sensitive structures. An understanding of coastal dynamics is fundamental for the identification of areas at risk of inundations and erosion, which then enable management programmes to be developed. Medplan proposes a methodology for the evaluation of coastal threats and the resulting drawing up of risk documents, which are useful in the development of management plans.
Pilot sites are part of the Municipality of Valras-plage: Sète beach in Marseillan, Palavas-les-Flots and Grau-du-Roi/Port-Camargue (Gard and Hérault Departments).



Organization Chart

Coastal protection and municipal action plans

A real life local planning scenario will be dealt with, which will mean that actions and programmes implemented on a municipal level can be compared with strategies and projects applied to larger areas. Two pilot areas have been identified along the northern coast of Crete (Municipality of Georghioupoli), a residential area whose buildings are at high risk of flooding due to the type of land, an area which is of special environmental interest (P.E.P.). A study is planned which will decide on which initiatives to authorise and the work that is to be carried out (light structures using environmentally friendly material).

Coastal management strategies and renovation projects for the coastal strip

Nourishment initiatives have been carried out along the western coast of Liguria and more are planned. A method for creating a PLAN-PROJECT aimed at renovating a strip of coastline will be tested. The aim is to carry out local coastal interventions which are part of a larger scale coastal management scenario.
Chosen pilot sites are part of the Municipalities of Ventimiglia, Caporosso, Vallecrosia and Bordighera.
The Plan-Project aims to:

- Create an Intervention Framework which will establish general criteria and guidelines for the management of the coastal area;
- Search for Suitable Areas for Development Projects, matching local data, future plans and local conditions;
- Creation of General Projects for specific local scenarios.

Analysis of coastal dynamics for the implementation of new planning methods

Medplan will provide risk assessment documentation for the coastal areas in the Lazio Region (between Capo Circeo and Terracina) and the Emilia-Romagna Region (between Lido di Spina and foce del Reno). We can forecast an intensification of flooding phenomena over the next few decades which will increase beach erosion, based on processing carried out using the most up-to-date forecasting models. This highlights the need to carefully asses the vulnerability and risk of flooding for the coastal area in the short and medium term.
Calculation methods for flooding simulation will be applied to the coastal area south of Crete in the Canée and Réthymnon departments.

Beach erosion at Bordighera (Liguria)

Introduction to measure 3.2

Public Authorities are interested in applying Integrated Management to Coastal defence policies in a quest to avoid any errors or "imbalance" of any sort. The BEACHEMED-e Operation is particularly interested in the assessment of what may happen when an intervention is carried out which is aimed at fighting beach erosion. If following Integrated Management, for example, you need to study the relationship between an "extended" beach and nourishment procedures or other factors or "indicators" that have been involved (tourist facilities new solution aimed at managing increases in traffic, reduction of environmental impacts, etc.). Basically, the main "indicators" for the case being studied need to be identified, as well as the reciprocal relationships between these "indicators" and one or more function-objectives that need to be assessed in order to find the best possible "integrated" solution. In other words what is required is a "methodology" that can help Public Authorities to choose the best solution for each individual requirement. "Management" therefore includes the notion of "methodology" because logical tools are required to identify and manage many parameters that are typical of Integrated Management. The ICZM-MED Subproject is operating under these guidelines:

1) Identification of the different scenarios (wide beaches close to densely populated areas, small beaches in natural bays, etc.);
2) Identification of main indicators that influence management (from bibliography, previous local experience, etc.);
3) Define relationship between indicators;
4) Identification of functions-objectives that need to be met in order to optimise Integrated Management.

The ICZM-MED Subproject also takes care of "assessing" identified methodologies, which basically means that, in set test zones (pilot), "tools" identified during previous stages correspond to a certain number of "indicators" which are then used to check the effectiveness of the interventions themselves. This means that a number of tasks can be pre-prepared before a pilot project is launched. This is why effective preventative analysis needs to be carried out, as it will highlight why a set evaluation needs to be made, and, above all, what the results may be used for.

ICZM-MED - Agreed actions, tools and criteria for the implementation of Mediterranean Integrated Coastal Zone Management (ICZM)

ICZM in the Mediterranean

The Mediterranean Action Plan (MAP) was adopted in 1975 as part of the Barcelona Convention. Its effectiveness has been due to the development of specific programmes implemented by Regional Centres, and specifically the Regional Activity Centre for the Priority Actions Program (PAP/RAC). PAP/RAC activities basically consist in the implementation of several of ICZM's pilot programmes and the Coastal Area Management Programme (CAMP) (UNEP/MAP/PAP, 2001) was launched in 1989. The PAP/RAC plays a fundamental role in the preparation of the Mediterranean Protocol and OCR BEACHMED-e has kicked off a partnership aimed at promoting and supporting results obtained from the ICZM-MED Subproject.

ICZM Tools (East Macedonia-Thrace Region)

Two demo projects have previously been implemented on the Eastern Macedonian and Thrace Regions: Strymonikos (financed as part of the LIFE programme) and the TERRA GZC Project (part of the TERRA Project). A "Coastal Observatory for the Prefecture of Kavala" Project has also been implemented.
The pilot site chosen for ICZM-MED is the Delta of the Nestos River. A GIS document will provide information on ICZM, assessing the various defence systems that can be applied to the chosen area. A questionnaire will be presented for the selected area to be used to analyse and assess opinions of local residents, users of coastal areas (such as fishermen) and tourists on the various systems used in coastal defence. Finally the tools that are to be used and applied will be chosen (according to the PAP/RAC protocol) and/or the description of their possible use as part of a future project completed.

Integrated Intervention Programme (Regione Lazio)

The implementation of the Programme is in three phases:
1) Defining local areas.
2) Criteria for the definition of pilot areas.
3) Creation of guidelines to be used at a local level.

ICZM-MED Project previews that a socio-economic evaluation it will realized of the benefits that the nourishment of pilot site (Tarquinia) has brought. Such activity involves the definition of a socio-environmental balance of the beach through the analysis of the Beach Using Plan (Piano di Utilizzazione degli Arenili) and the satisfaction of the final users. Moreover it will defined the financial and economic benefits for the producers and the customers, compared with the costs of construction of works in a Model of Costs/Benefits Analysis.

Territorial Coordination Plan (Regione Liguria)

The Territorial Coastal Coordination Scheme (PCTC) was approved by Liguria's Regional Council in 1999. The PCTC aims to improve quality levels of the coastal area and its natural and manmade features by also focusing on the coastal environment, reconstructing the coastal habitat and the development of economic activities in Liguria. On a regional level the PCTC takes on a pivotal role within the coastal management sector and is the only example of integrated management.
Other activities connected to the sector of the ICZM can be characterized to lowergrade territorial level:

- The Beigua Riviera (a strip of Liguria coast located between Genoa and Savona composed of 6 coastal Municipalities). Environmental quality has been affected by the chronic heavy metal pollution caused by the chemical industry and the sinking of oil tanker Haven in 1991.
- Municipality of Porto Venere (area of high environmental value in the La Spezia Province). Management policies aim to reinstate the natural habitat which has been threatened by the exploitation of the coast (tourism, socio and economic factors, presence of military areas, migration from rural areas).

Regional Public Project (Regione Emilia-Romagna)

One of the largest regional public projects was kicked off in 2002 and is based on the EU's ICZM objectives. The Institutional Committee, set up by the Regional Government is composed of local representatives tasked with establishing guidelines that will manage the coastlines' future development. The ICZM guidelines were published in 2005 through Regional Law N. 645 20/01/2005.
The pilot site is the beach of Riccione, where the MVC method will be applied (Method for Contingent Evaluation). Two questionnaires will be used, one for beach operators and one for visitors.

Interministerial Management Committee (Languedoc-Roussillon Region)

In 2001 the Territorial Interministerial Management and Development Committee was were ICZM started off as a national entity. Then in 2004 the State adopted a new framework for coastal policies and bids were called for the sustainable development of the coasts. As a result of the call 25 test projects were received. The Littoral National Coast Council which operates as part of ICZM was kicked off in 2006.
The pilot sites consist of 4 Municipalities in the Gard and Hérault Departments. The aim is to define a common methodological approach between partners of measure 3.2 in order to assess the risks of erosion and the perception of coastal erosion defence mechanisms.

Introduction to measure 3.3

All resources available to us on the planet need to be saved and managed correctly. This simple fact can be applied to coastal defence mechanisms via the use of sand deposits intercepted by sea infrastructure (ports, piers, pennants, dams outside of the harbour, etc.) or by infrastructure built inland (dams, mountain solutions, river banks etc.).
The use of these resources is strategic, as it allows us to get to the root of many erosive issues and because sand deposits on the coastal shelf are in any case non renewable resources.
The GESA Subproject therefore focuses on classifying the ways that sand deposits intercepted along the coast or waterways can be used.
The Subproject also looks at quantifying volumes of intercepted sediment, characterisation of chemical, physical and biological qualities and techniques for extracting material and nourishing procedures.
Reusing intercepted material needs to become an important part of maintenance procedures for eroding beaches if applying sustainable policies. Marine deposits must only provide sand for "one-off" beach rebuilding projects.
This is why the GESA Subproject plays a crucial role, as it provides new ideas for this sector as well as concepts that can be used for other research projects aimed at the correct reuse of sand deposits.

GESA - Management of sand deposits collected by coastal and river infrastructure. Recovery of sediment transport

Sedimentary balance for delta and coastal formation

It is a known fact that the building of ports, rigid protective measures and other systems influence the morphodynamic features of the coastal area. The coast of Maresme (Catalunya) has seen its sedimentary material decrease since the 60s which has been the cause for a generalised withdrawal of the beaches. The Delta of the Ebro can reach sedimentary deficits of up to 2.000.000 m³/year.

Erosion/accumulation of volumes of sand around the coastal infrastructure

Nearly all coastal areas where coastal infrastructure is present suffer from inner breakwater erosion and outer breakwater accumulation problems. Examples are: the Maresme (Catalunya) port, Canet (Languedoc-Roussillon), Marina di Carrara and Viareggio Port (Toscana), the mouth of the river Nestos (East Macedonia and Thrace), a total of 40 Km of the Emilia-Romagna Region's coast and a portion of the northern coast of the island of Crete.

Hydrogeological risk along the coast and river basin

A hydro geological study of the Magra Basin in the Tuscany Region has located two areas at high risk of flooding, where a significant accumulation of sediment can be found.
If monitored correctly this scenario enables you to reinstate the downflow of the waterways by nourishing the beaches located at its mouth.
There is currently an agreement in force to use sedimentary material from the River Magra which is blocking the natural flow of water.
The Emilia-Romagna Region has already adopted a coastal hydrogeological risk map.
A recent law has created an important opportunity for the assessment of the potential of sedimentary material intercepted by artificial dams. This law decrees that operators managing the work need to draw up and present a Disposal Plan for the sediments to the Regions. It has been highlighted that only 28% of the dams which are "operating normally" and are State managed (n. 394) have presented their disposal Plan to the relevant management Body. Further work needs to be carried out to define the intercepted sediment, any opportunities for naturally or artificially moving the sediments again and the tools required to manage this resource. An interesting and related project has been the work carried out by the European INTERREG IIIB Alpine Space Programm/ALPRESERV Project.

Nourishment and dredging with sand coming from littoral stock

Catalunya
For the Generalitat de Catalunya the Port of Masnou is an example of how sand accumulates at the mouth due to the interception of solid coastal material. Dredging has been used for many years to free the entrance to the port and in 2006 sand was moved to the inner breakwater coast. (Generalitat Catalunya 2006, around 400.000 m³ on the Maresme beach, of which 92.400 taken from the Port of Masnou). During the last century over 2.000.000 m³ of sand have been taken from the Basin of Tordera.

Languedoc-Roussillon
The Region of Languedoc-Roussillon uses dredging within its port, but only recently have these been carried out using nourishing procedures composed of inner coast sand near the port infrastructure itself.
Toscana
The Toscana Region has required dredging procedures in order to guarantee access to the port of Viareggio (LU) due to the silting up phenomenon which has always been a problem for the port. The canals which transport the sand became operational in 1980: they serve the entire outer port and facing area. This infrastructure remained active until 1995 when a bypass was introduced which was operational until 1998. There are no other significant examples of sedimentary deposits being managed in other ports of the region.
Emilia-Romagna
In the Emilia-Romagna Region the status of sediments along the coast has been reconstructed in the coastal plans of 1981, which has highlighted the need for periodical nourishment procedures. The new coastal plan for 1996 has shown the need for nourishment procedures along the coast totalling 2.000.000 m³/year. The main problem is the availability of good quality and reasonably priced sand. A small but important source of sediment has resulted from dredging the canals which access the ports and reutilising sediments which are often artificially held back. The areas which are regularly being dredged, from north to south are: mouth of the Goro Po, Goro location, Port Garibaldi, mouth of Logonovo, Port of Ravenna, Port of Cervia, Port of Cesenatico, Port of Bellaria, Port of Rimini, Port of Riccione, Port Verde and Port of Cattolica. Of special interest is the very recent dredging initiative in the Port of Ravenna (800.000 m³) where the sand has not been placed on the beach but at a depth of -8 and -5 which resulted in substantial cost reductions.
The case study chosen for GESA is located between Milano Marittima and the Port of Cervia and is an example of where quantities dredged and put back into circulation reach about 30% of the amount required to maintain the beach's inner breakwater

Introduction to measure 3.4

The solution to a structural problem involving morphological dynamics such as coastal erosion is to be found in a system of integrated solutions which interact together, in the same way as natural systems manage to survive and resist adversities. The concept of resilience introduced by EUROSION, which has already been mentioned previously, is based on the reserves which a system can draw from when it needs to adapt itself, and the coastline has two forms of natural protection which can guarantee its stability over time: the dunes and the *Posidonia Oceanica* grasslands. A project which wishes to highlight all the tools which the Authorities can use to contrast or mitigate erosion cannot exist without focusing on these two habitats which interact with each other.
The Grasslands disperse the energy of the waves and protect the coasts from meteo-marine events, while the dunes are a sand reserve which can be used when there are violent sea storms as they are then rebuilt thanks to the wind. What needs to be highlighted is the interaction of the two systems when the Posidonia leaves, which have been ripped off during the storms, turn into recharge material for the beaches and dunes themselves.
The objective of the Posidune subproject is therefore to help define the dune systems, identify their locations and protect and rebuild the system wherever possible. The *Posidonia Oceanica* grasslands have the same objectives although their reconstruction takes place with great difficulty.
A very important objective of the Posidune Project is to analyse the technological and legal options available for the reuse of beached Posidonia to recharge the dunes. What needs to be highlighted is that current legislation classifies this material as waste and makes the Authorities store them in unnatural tips.

Posidune - Interaction of Sand and *Posidonia Oceanica* with the environment of Natural Dunes

Status of coastal dunes and methodological approaches for their characterisation
What can be seen from documentation researched during the bibliographical research carried out during phase A is that the coastal dune systems located in the areas involved in the project are in a worrying state of conservation. This is due to adverse dynamic conditions, significant human interference and the absence or insufficiency of effective coastal management strategies.
For some scenarios the elimination of disturbing elements, together with interventions aimed at recreating the right environmental conditions could ensure that their natural habitat is reinstated.
This is why the need has arisen to prepare methodological protocols to be used for: characterisation of the dunes, specific monitoring methodologies (phreatic stratum, wind entrainment rate), conservation (relevant to vegetation) and the reinstating of these environments (through the use of natural techniques).

Presence, characteristics and management of beached plant biomasses
As far as accumulation of beached sea phanerogams is concerned the following has been observed while revising rules and regulations: these can be (1) left along the beaches, (2) moved or (3) sent to waste tips. There is currently only one study available on the distribution and characterisation of accumulations of marine beached phanerogams. However this is not sufficient to enable us to plan a coastal defence strategy which can allow us to make use of these deposits or quantify their effect on mitigating the effects of wave energy. As part of this project we have therefore decided to carry out a sampling campaign aimed at the physical and chemical characterisation of beached plant biomasses located along the coasts of the Lazio region. This task is a preparatory step in the definition of transfer and reutilisation procedures for coastal plant biomasses as well as natural techniques for the morphological recovery of the dunes. This would mean that they would be allowed to complete their biological cycle and carry out their environmental functions.

Dune bar protection and rebuilding techniques
A review of traditional techniques used in the protection and defence of dune bars was carried out during the bibliographical research phase. Results show that these techniques can either be used on their own or combined between them and can be grouped together into four different categories:
1. "Dead coverage",
2. "Wind breaking" structures which protect the sand from the effect of the wind and trap moving sand.
3. Consolidation/restoration of dunes by implanting vegetation.
4. Reconstruction of the dune bar by reproducing natural shapes which correspond as much as possible to the original ones.

Once these tasks have been completed what is required is a policy aimed at managing access to the dunes.
During the second phase, in line with the Subproject's objectives, some innovative natural techniques have been identified for the recovery and protection of the dune systems which also make use of beached plant biomass remains.

The Province of Pisa (Toscana) has defined a legal framework which will enable *Posidonia oceanica* remains to be transported and used when rebuilding or restoring the dune bars affected by erosion (caused by both the wind and the sea).

ICRAM, the Posidune Lead Partner Steering Committee has intensified its links with the InterregIIIA Gerer and Interreg IIIC CosCo projects in order to share any significant information and work together in managing beached phanerogams.

Dunes carry out a fundamental role in protecting the phreatic stratum from the entry of sea water. A small piezometric network has been created in the river Bevano area (pilot site of Bologna University) to monitor this phenomenon.

Wind entrainment is an ongoing and important process for the equilibrium of the dunes. Formulas using various limits have been introduced in order to assess the balance of incoming and outgoing sediments. On site experiments have been carried out to validate theoretical results.

Introduction to measure 4.1

The 4th Component of Operation BEACHMED-e covers the organisational and legal tools required by a coastal defence policy which is both feasible and sustainable.
New technology and environmental problems are still not sufficiently catered for by the current organisational and legal frameworks. Dredging along the continental shelf for sand extraction, moving sand deposits long the coast and beach nourishment initiatives are still governed, in nearly all European states by rules and regulations which reduce and sometimes block any possibility of carrying out an intervention. The obvious link between coastal defence issues and the political and administrative scenario which governs coastal Regions is still not reflected in the laws of many European nations which bestow central Authorities with a lot of the power. On a European level there is increasing awareness of this issue and the coastal Regions, due to their direct experience, can aim to strive for the promotion of specific European policies, culminating on a "Coastal Directive". The Obsemedi Subproject on this topic aims to focus on the problem and supply the technical and legal elements required for European wide regulations.
As well as the correct laws, a coastal defence policy which takes the structural characteristics of the problems into account as well as the peculiarities of an area such as the Mediterranean needs organisational tools to carry out permanent monitoring. This is based on standardised methods which are shared by the allocated regional technical offices. The Obsomedi Project is defining a framework for the status of coastal monitoring activities within the Mediterranean as well as what is required to be able to quantify and adequately define the phenomenon. This objective can be reached by coordinating the existing monitoring infrastructure, creating it where it does not exist and implementing a European observatory in the Mediterranean to deal with more generic problems. This is a critical step towards the sustainable planning of interventions and credible implementation of Integrated Coastal Zone Management.

ObsEMedi - Regulations and Promotion of an European Observatory for the Defence of the Mediterranean Coast

Goals and strategies

The need to monitor is obviously connected to the objective of observation, and what needs to be achieved. It is clear that the objective is territorial planning and that therefore, what needs to be observed are morphological changes to the coast in the medium and long scale (5-10-20 years) and that what must be achieved is a tool capable of analysing erosion on a territorial scale (regional, national, international). Lastly the reason behind a Mediterranean scale is linked to the peculiarities of this particular area which overlooks three continents, combined with the morphological, climatic, environmental and social aspects of these coasts which distinguish them from those of European ocean coasts.
In order to maintain its indispensable flexibility and overall applicability, the feasibility study is not concerning "an observatory" but an "Observatory system" which must find its basic foundations in current, potential or existing organisational assets.
A nucleus of organisation which already possess some experience in coastal morphological monitoring are of primary importance, especially if these are already integrated within existing administrative structures or, nevertheless, have some authority in terms of defending coastlines.

The Questionnaires

As part of the activities planned for Phase A of ObsEMedi, in October 2006 a first Questionnaire was sent out to the Authorities that had been identified by partners as being responsible for the defence of the coast. This was entitled "Questionnaire on the state of art of structures and technical services for the defence of the coast". It was aimed at screening European pre-existing public regional structures working and/or having institutional competences on coastal monitoring and defence, and then at surveying their effective operativity level.
The structures identified and interviewed were situated in coastal areas of Italy (all regions), France (Languedoc-Roussillon Region), Spain (Catalunya), Greece (Macedonia de l'Est-Thrace and Crete), Tunisia, Maroc, Cyprus and Malta.
From the most of 70 structures contacted, circa 50% have answered the questionnaire.
The succeeding activity was the development of technical details on the methodologies made by all Obsemedi partners, related to the activities and services that have been of most interest to the contacted structures, aiming at providing complete indications to future users (also considering economic feasibility).
The methodological details have been organised in charts which will be sent out as appendixes to the second Questionnaire.
The second Questionnaire "Requirements for the Planning of European Mediterranean Beach Defence Strategies" aims at evaluating the capacity of realistic expenses that these interested public regional structures could dedicate to the technical prospected services about coastal defence domain, without obviously predetermining any specific engagements with that regard. The Questionnaire seeks to evaluate the availability of resources of the public regional structures contacted, regarding the creation and/or improvement of the corresponding offices/structures in order to allow the development of services and activities, or the possibility to contract them externally, aspiring to the final goal of creating an European Interregional Observatory for the Mediterranean Coastal Defence (EURIOMCODE). The new European financial programming period 2007-2013 will be an important source to find out budgets needed, since the theme of coastal management is one of the priorities of most of the European programs.

Legislative framework and regulatory experience in managing and defending the Mediterranean coastlines

A suite of documentation was created during Phase A of the Project which included existing legislation, controls, legal aspects and information concerning the management and defence of the Mediterranean coasts. The criteria followed for the classification of documents was analytical in nature, therefore the abovementioned documentation was filed and listed according to the various fields.
This was due to the need to make this collection usable and effective. As there was so much material available simply listing it by category would not have been enabled the document and topic of interested to be linked together quickly, as had been the goal. We would also like to highlight that the content of many documents can be easily looked up by following the link to the website where it is published.
Additionally, at the beginning of phase B a detailed diagram of the analysis carried out on the rules and regulations covering the various areas of interest were created. The topics can be summarised as follows:

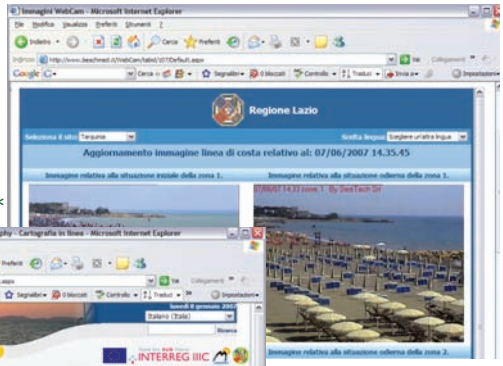
- Information covering authorities, legislation and regulations for the defence of the coasts as part of the "integrated management of coastal areas".
- Legal aspects and examples of "regulations" covering initiatives with impact on coastal areas in the Mediterranean areas.
- Specific coastal defence initiatives: nourishment, recovery of dune systems, protection and recovery of phanerogam grasslands.
- Analysis of the role of the Municipality within the Italian legislative framework: the case of the Municipality of Follonica.

Research has been carried out based on the abovementioned topics, and following, where possible, the comparative criteria between Countries and regions contained in the OQR BEACHMED-e.
The first draft of the European Protocol Proposal has also been drawn up. It covers nourishment initiatives and will represent one of the subproject's final products. It lists the main phases for the administrative procedures required to carry out beach

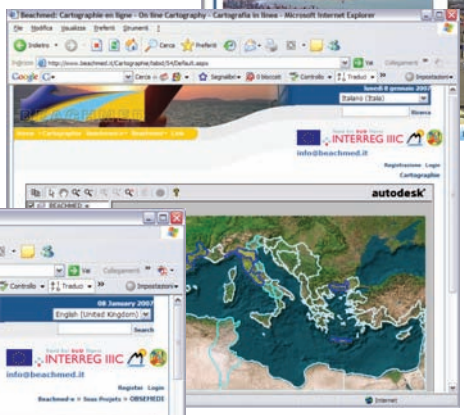
www.beachmed.eu

Available on-line the official Documents BEACHMED-e, Financial Advancement, Archive of Events, WEB-*M.C.I.S.* Project, WEB-CAM Monitoring, Publications, etc.
Each of the 9 Subprojects of the Operation manages an internet page where they can publish news, administrative events, documents and Project results.

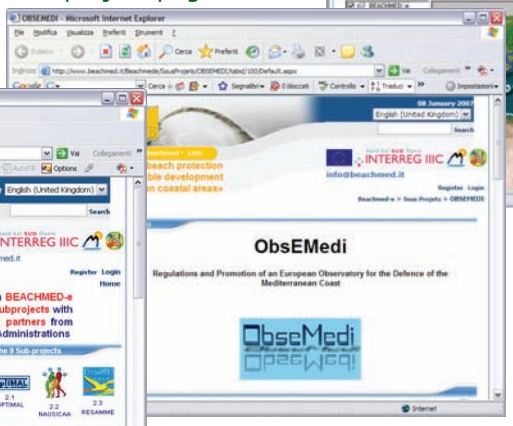
WEB-CAM Monitoring



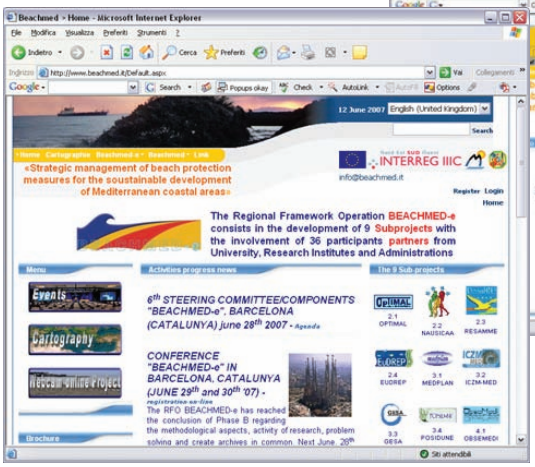
WEB-*M.M.C.I.N.**



Sub-project page



Home

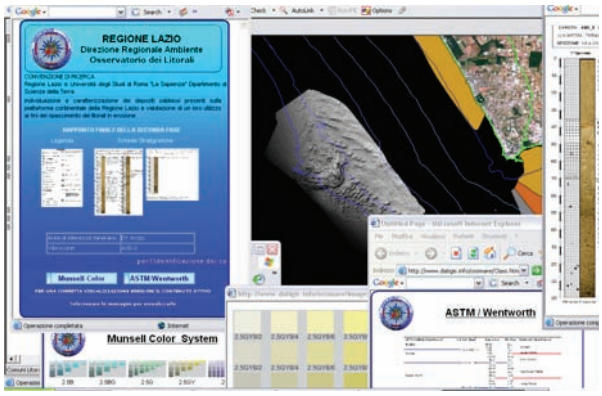


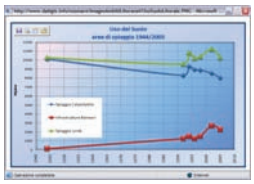
*Mediterranean Marine Coastal Information Network

WEB-*M.C.I.S.* Project

Marine and Coastal Information System

Developed from the "Osservatorio dei Litorali" of Regione Lazio for the BEACHMED-e website, it is one of the first experiences in Italy in the field of Information System for spreading and sharing on-line of digital and geographical data concerning the Coastal Monitoring. The following thematic categories are available for the territory of Lazio:
Administrative units, Statistical units, Shorelines, Elevations, Hydrology, Environment, Mineral resources, Geology, Orthoimagery.
Each thematic category is composed from a minimum of 4 to a maximum of 32 informative levels and has been identified in reference to the Directive of European Community INSPIRE. WEB-*M.C.I.S.* Project is realized on Autodesk MapGuide® platform.
www.beachmed.eu





U.S. ARMY CORPS OF ENGINEERS

An important agreement was established between the BEACHMED-e Operation and the U.S. Army Corps of Engineers (USACE), with the aim of exchange experiences and information about technical and policy approaches to the subjects concerning shore protection and coastal management. The U.S. Army Corps staff will be able to attend BEACHMED Conferences, make presentations, and even draft short papers on the same subjects to be posted on the BEACHMED website.
The U.S.A.C.E. staff will participate to all the BEACHMED Conference with the objective to propose the new experiences and to give a methodological support to the results of the Operation. Last 23th February 2007, during the BEACHMED-e phase B Conference in Bologna, Jack E. Davis, Technical Director of Coastal & Hydraulics Laboratory (**http://chl.erdc.usace.army.mil**), has presented Computational Models about "Modeling for Planning and Designing Shore Protection Project".

ARCO LATINO

Arco Latino is space for cooperation between territorial collectivities in which integrated actions in different strategic spheres can be carried out to strengthen economic and social cohesion in member regions. As the European Union points out in its European Territorial Strategy, this cooperation is crucial to the process of correcting imbalances between northern and southern Europe. It will also help to make us more competitive, better integrated socially and enable us to improve our conservation of our natural and cultural environment, identity and traditions (**http://www.arcolatino.org**).
The 5th BEACHMED-e Steering Committee of Bologna, has proposed an agreement with ARCO LATINO with the aim to promote an European Interregional Observatory for the defence of Mediterranean Coasts. ARCO LATINO has confirmed the will to sign the "Carta di Bologna".

PAP/RAC PRIORITY ACTION PROGRAM/REGIONAL ACTIVITY CENTER

Priority Actions Programme/Regional Activity Centre (PAP/RAC), established in 1978, is a key component of the Mediterranean Action Plan (MAP), itself part of the United Nations Environment Programme (UNEP) (**http://www.pap-thecoastcentre.org**).
Having regard to integrated coastal zone planning and management know-how acquired as a unique expertise by PAP/RAC and to many practical projects completed by PAP in the field of the
Integrated Coastal Zone Management, having regard to the Subproject ICZM-MED, approved in the framework of the RFO BEACHMED-e, whose main objective is to promote the ICZM in different Mediterranean pilot sites from three Mediterranean countries and to contribute towards the setting up of a Mediterranean and local integrated management strategy, the BEACHMED-e Operation and PAP/RAC are going to sign a MEMORANDUM OF UNDERSTANDING with the main objective to will support and ensure a better visibility and use of the BEACHMED-e results. This will be obtained through establishing the links with the Mediterranean Protocol on Integrated Coastal Zone Management; Mediterranean Sustainable Development Strategy, where ICZM and protection of coastal zones are top priority topics; as well as with the Mediterranean ICZM Strategy - Common Regional Framework for ICZM.

INTERREG IIIC PROJECT "M.E.S.S.I.N.A." – Meaning European Shorelines Sharing Information on Nearshore Areas

MESSINA is an initiative that has been proposed by a number of national, regional and local institutions to the INTERREG III C West zone programme of the European Union. This initiative was approved on December 15th, 2003. The long term objective of MESSINA is to help bridge the gaps still remaining by breaking "knowledge isolation" of some local authorities and institutions in Europe and by raising their managerial and technical capabilities through a mutualisation of the experience accumulated by each of them (**http://www.interreg-messina.org**).
The MESSINA Project has been introduced by the Prof. Giovanni Randazzo, of University of Messina, during the BEACHMED-e Conference of Bologna. The two Projects show some common thematics inherent the shore protection. The collaboration previews an exchange of experiences and results. The web address of BEACHMED-e Operation is linkable from the MESSINA web site.

INTERREG IIIC PROJECT "DEDUCE" – Soustainable Development of European Coastal Zones

DEDUCE (Développement Durable des Zones Côtières Européennes) is a transnational Project concerning Integrated Coastal Zone Management (ICZM), cofinanced by the European Commission and the participating regions, in the framework of Interreg IIIC South. Its main objective is to evaluate the utility of indicators for optimal decision making on the coast, following the principles and criteria established by the UE Recommendation on ICZM. Nine partners representing all decision-making levels (European, national, regional and local) are carrying out the Project, which runs from October 2004 to June 2007 (**http://www.deduce.eu**).
The DEDUCE Project has been introduced by the coordinator Mr Xavier Marti Rague during the BEACHMED-e Conference of Bologna. Other official meetings have happened on February 2nd 2007 in Barcelona, and March 2nd during the technical workshop of Tarragona, where Ing. Paolo Lupino of Regione Lazio is taken part in order to emphasize that within ICZM-MED Subproject, it will come examined the possibility to apply the Coastal State Indicators N° 25, 26, 27 developed within the DEDUCE Project.

INTERREG IIIC "CosCo" - Regional cycle development through Coastal Co-operation - seagrass and algae focus

POSIDUNE Subproject activities have been illustrated by ICRAM during the final Workshop of the INTERREG IIIC Project CosCo "Regional cycle development through coastal co-operation - seagrass and algae focus", that took place in Dresden on 1st June 2007. The overall objective of the CosCo Project is to reduce the high costs of beach cleansing by recycling flotsam and using it in an economically meaningful way. On the other hand, one of the objectives of POSIDUNE Subproject is related to the experimentation of an alternative use of beached Mediterranean seagrass for coastal protection and dune restoration. The participation of POSIDUNE lead partner (ICRAM) to the CosCo final conference was an important opportunity to improve both projects and to actively exchange experiences about common topics, such as beach cleansing technology, flotsam treatment, product development, as well as ICZM (**http://www.life-seegras.de/cosco/english/index.htm**).

25-26 October 2007
Genova - Liguria

7th Steering Committee and
Advancement Conference phase C Component 4
Publication: Technical Book of Phase "A"
Italian version

29-30 November 2007
Montpellier - Hérault

8th Steering Committee and Advancement Conference
Phase C Component 3
Publication: Technical Book of phase "B"
French version

February 2008
Firenze - Toscana

9th Steering Committee and Advancement Conference
Phase C Component 2
Publication: Technical Book of Phase "B"
Italian version

May 2008
Roma - Lazio

Final Event
Publication: Technical Book of Phase "C"
Italian and French version

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Regione Lazio
Assessorato Ambiente e Cooperazione tra i Popoli