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# **CONSCIENCE**

## **Concepts and Science for Coastal Erosion Management**

### **Collection of published articles**

**Deliverable:** D21 – Collection of published articles  
**Project:** Concepts and Science for Coastal Erosion Management  
**EC Contract:** 044122



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## Introduction

The present document is intended to provide an in-depth view of the scientific findings of the FP6 project Concepts and Science for Coastal Erosion –CONSCIENCE. To this aim, all scientific articles published related to this project are listed comprising the title, authors, contact details, geographical scope, place of publication, abstract and full article (included as annex or web link).

This document is uploaded at the CONSCIENCE website ([www.conscience-eu.net](http://www.conscience-eu.net)) for a wide public reach. It will be advertised through EUCC newsletters and special alerts, as well as with the occasion of events where CONSCIENCE partners will attend, as described at the dissemination plan.



Presentation of the CONSCIENCE project by Marcel Marchand, ICCCM'10, Estoril, Portugal



## Collection of published articles

Title of the article

### The CONSCIENCE project: bridging the knowledge gap for sustainable coastline management

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Published at Proceedings of the 9th International Conference A changing coast: challenge for the environmental policies, LITTORAL 2008, 25-28 November 2008, Venice, Italy

Geographical scope General

Abstract All around Europe coastal managers are confronted with the problem of coastal erosion. One fifth of the enlarged EU's coastline is already severely affected, with coastlines retreating by 0.5 up to 2 m per year. The EU co-funded CONSCIENCE project aims to develop and test concepts, guidelines and tools for the sustainable management of erosion in order to support their effective implementation for the European coasts. The 3 year project is undertaken by a consortium of 8 partners from 7 European countries (Croatia, Ireland, Netherlands, Poland, Romania, Spain and the United Kingdom) and is now in its mid term.

Central to the project is the notion that coastal erosion is a result of a sediment imbalance occurring in a *coastal sediment cell*. Linked to this cell, the project analyses the use of three other key concepts, namely i) *coastal resilience* as a management objective, ii) a *favourable sediment status* as benchmark and iii) *strategic sediment reservoir* as a management instrument. CONSCIENCE aims at developing these concepts into measurable standards, which can be used and evaluated in practice for any field situation. Suitable Coastal State Indicators (CSI's) are developed that can link scientific knowledge, measurements and modelling results to these management concepts.

Full article [http://www.conscience-eu.net/documents/paper\\_littoral\\_2008.pdf](http://www.conscience-eu.net/documents/paper_littoral_2008.pdf) (this article is protected by editor/authorship rights)



Title of the article

**Concepts and Science for Coastal Erosion - the CONSCIENCE project**

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Published at

Proceedings of the *Ninth International Conference on the Mediterranean Coastal Environment, MEDCOAST 09*, 10-14 November 2009, Sochi, Russia

Geographical scope

General

Abstract

All around Europe coastal managers are confronted with the problem of coastal erosion which causes significant economic loss in two aspects: on the one hand, loss of property, infrastructure and beach width annually leads to millions of euros economic damage; on the other hand, measures to control erosion are also expensive. Therefore the consensus among coastal practitioners and scientists is increasing regarding the need to address the coastal erosion problem at its roots. However, even though sediment cells models and monitoring systems are becoming more sophisticated, it is difficult to put this scientific knowledge into practice due to a lack of appropriate coastal governance.

The EU-FP6 CONSCIENCE project has been launched in 2007 under the belief that something must be done to enhance the implementation of a scientifically based sustainable coastal erosion management in Europe. We have been testing the scientific concepts and tools in six pilot sites around Europe. This paper discusses the project choices to properly fill the gap between science and policy by producing and disseminating the scientific results to a wide but targeted audience.

Full article

Poster available at <http://www.conscience-eu.net/documents/posterA1-v2009.pdf>



Title of the article

**Setback lines for the Mediterranean and Europe: an integrated approach**

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Published at

*Journal of Coastal Conservation*, editor: Springer Netherlands

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DOI10.1007/s11852-009-0075-6

Geographical scope

Mediterranean region

Abstract

Coastal development along the Mediterranean coast needs to be tackled with an integrated approach, in order to safeguard people and properties from extreme events, maintain environmental flows and ecosystems functions, protect coastal landscapes and ensure public accessibility to the shore. The complexity of the Mediterranean countries legal and administrative framework and its morphological heterogeneity make the implementation of new the Protocol on ICZM provisions on coastal setbacks,—claiming for a 100 m wide buffer zone where construction is not allowed— a challenge for the success of the initiative. European countries and the European Commission are party to the protocol but the European legal framework lacks of specific provisions addressing the definition of coastal setbacks. Moreover, climate change, in terms of sea level rise and maritime climate, could play a major role in the future position of setback lines. While arbitrary setbacks should be put in place to halt short-term unwise coastal development, science can improve the identification of coastal setbacks by providing integrated methodologies to be implemented at the local level. The objective of this paper is to review concepts and practices in the use of coastal setbacks, in the context of the provisions of the ICZM protocol and taking into account new challenges posed by climate change. A stepwise route map is proposed as a base to identify coastal setbacks, applicable to the Mediterranean region and elsewhere, to be used as a base to improve arbitrary setback approaches.

Full article

<http://www.springerlink.com/content/b873078n4w21wl29/> (this article is protected by editor/authorship rights)



Title of the article

**Beach erosion and storm parameters. Uncertainties for the Spanish Mediterranean**

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Published at

*Proc. 31st International Coastal Engineering Conference*, ASCE, Hamburg, 2352-2362

Geographical scope

Spanish Mediterranean coast

Abstract

Beach erosion occurs at a number of time scales and is commonly studied either in plan or profile shape. The present state of the art has not paid enough attention to the effects of storm shapes on the resulting erosion. Issues such as the resulting erosion or profile shape as a function of wave storm shape, storm growth rate or decay rate, storm duration and storm direction have not been adequately solved. The aim of this paper is to examine the uncertainties in assessing beach erosion for the main wave storm features. This has included the definition of what is a wave storm, the calculation of statistical parameters from an inevitably limited storm sample and the dispersion in correlations between "main" variables such a storm duration and peak significant wave height during the storm. The performed morphodynamic calculations show a non-negligible sensitivity of eroded volumes and shoreline recession to wave and surge drivers, consistent with the present state of art.

Full article  
(annex or link)





Title of the article

**Dealing with erosion along the Danube Delta coast. The CONSCIENCE experience towards a sustainable coastline management**

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Published at

Geographical scope

Danube Delta coast



#### Abstract

Coastal erosion, worldwide phenomena, is negatively affecting not only the densely inhabited areas, but also relatively pristine environments such as Danube Delta. The most severe shoreline retreat (over 20 m/year) is recorded in the coastal stretch confined by the Sulina branch (north) and Sahalin spit island (south). This erosive trend is caused by the natural evolution of Danube Delta, but strongly enhanced by the human activities causing the dramatic decrease of sediments quantity reaching the coast and disruption of the natural sediment circulation in the coastal area. The main objectives of this study are the application and testing of the CONSCIENCE framework for the identification of the main threats for littoral cell Sulina – Sahalin and providing solutions for coastal managers to deal these threats. In order to reach the objectives, this study makes use of the four concepts developed in the EUROSION Framework: *coastal sediment cell*, *coastal resilience*, *favourable sediment status* and *strategic sediment reservoir*. The sediment budget, computed in previous studies, as well as the field observations indicates a lack of sediments for the littoral cell (unfavourable sediment status). In order to assess the vulnerability of the coast to extreme events (especially storms) simulations of water level changes were performed and calibrated with the field observations. The main proposed solution for dealing the problems arising from a sediment-starved coast, vulnerable to the extreme events, is artificial nourishment. Two strategic sediment reservoirs were identified, both in the northern part of the cell: the sediments dredged periodically from Sulina mouth and the sediments accumulated in Musura Bay, just north of Sulina jetties. The transfer of sediments to the central part of the littoral cell Sulina – Sahalin would decrease the erosion rates to a natural level and restore the natural coast resilience. The methodology developed in CONSCIENCE Framework and applied to Danube Delta coastal zone provides good results when problems and solutions for the coastal zone were to be identified and tested. This methodology and the results can be applied by the local coastal managers to Sulina – Sahalin littoral cell, but this experience can be extended to other similar environments facing the same problems.

#### Full article



Title of the article

**Implementation of coastal erosion management in the Netherlands**

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Published at

Geographical scope

The Netherlands

Abstract

The Netherlands is a low-lying country, in which 9 million people are living below sea level and 70% of the gross domestic product is being earned in areas below sea level. Therefore, protection against flooding is traditionally the primary focus of coastal policy in the Netherlands. Analysis shows that characteristics of Dutch coastal management very well comply with the recommendations and key concepts to support sustainable coastal management as issued by the EU in 2004 (EUROSION). Sediment management represents the core of erosion management in the Netherlands; key concepts like resilience, coastal sediment cells, favorable sediment status and strategic sediment reservoirs, are important building stones. Development and implementation of coastal erosion management in the Netherlands, has implicitly been guided by a systematic Frame-of-Reference. Characteristics of this approach are the definition of clear objectives at different levels (i.e. strategic, tactical and operational) and an operational decision recipe related to policy development and -implementation. Application of the Frame-of-Reference to current problems and challenges in Dutch coastal management indicates its ability to reveal shortcomings of the existing approach, and to explore potential solutions. Where EUROSION offers important concepts to define coastal erosion management, the Frame-of-Reference offers a tool to discern different objectives and responsibilities. The combination of both strongly supports implementation of coastal erosion management.

Full article



Title of the article

**Prediction of dune erosion due to storms**

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Published at Coastal Engineering 56 (2009) 441–457  
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Geographical scope General

Abstract This paper presents results of experimental and mathematical modelling of beach and dune erosion under storm events. Re-analysis of the experimental results on dune erosion in small-scale and large-scale flumes shows that the dune erosion for extreme conditions is somewhat smaller than that based on earlier analysis results.

Dune erosion caused by wave impact has been modelled by a cross-shore profile model (CROSMOR-model), which is based on a 'wave by wave' modelling approach solving the wave energy equation for each individual wave. The model has been applied to the recent Deltaflume experiments on dune erosion. The three main processes affecting dune erosion have been taken into account: the generation of low-frequency effects, the production of extra turbulence due to wave breaking and wave collision and the sliding of the dune face due to wave impact. The calibrated model can very well simulate the observed dune erosion above the storm surge level during storm events in small-scale facilities, large-scale facilities and in the prototype (1953 storm in The Netherlands) using the same model settings. The mathematical model results have been used to develop a new simplified dune erosion rule.

Full article [http://www.elsevier.com/wps/find/journaldescription.cws\\_home/503325/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/503325/description#description)



Title of the article

**The management of Pevensey shingle barrier**

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Published at

Submitted to Special Issue of Ocean and Coastal Management

Geographical scope

Pevensey, UK

Abstract

The shingle (gravel) barrier beach at Pevensey Bay (East Sussex, UK) protects rare habitat, properties, trunk roads and other assets from flooding and erosion. The beach is managed in an adaptive manner by a private consortium, based on a 25 year contract. The practices developed at Pevensey are shown to fit into the frame of reference approach, adapted for the English policy and management framework. The barrier beach is managed to retain a favourable sediment status, although the concept has no official recognition, thereby ensuring that the barrier is sufficiently resilient to maintain its functions between interventions. The concept of favourable sediment status is considered a potentially useful way of summarising the status of the beach at Pevensey that integrates both processes (through coastal state indicators) and availability of supply into a single metric. The concept of the coastal sediment cell is important, but not sufficient, for identifying policy units at Pevensey as smaller-scale processes are also important. Two offshore dredging areas constitute the strategic sediment reservoir for Pevensey, although the term has no official recognition and there is no guarantee of supply.

Full article

Under review



Title of the article

**A scientifically-driven approach for the management of coastal erosion (along the Hel Peninsula)**

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Published at To be published in special issue of Ocean and Coastal Management

Geographical scope Hel Peninsula, Poland

The Hel Peninsula is an example of the area with several mutually related coastal zone management problems in Poland. Erosion has become a serious problem since the construction of a harbour westwards of the Peninsula in 1936-1937. The site has been subject to a number of theoretical and field investigations, especially in the last two decades. Although some progress has been made, knowledge on sediment processes along the Hel Peninsula is still very limited.

Abstract In this study a scientifically-driven approach is applied to investigate and evaluate processes responsible for the erosion problems along the coast and to support the management of coastal erosion. According to the approach, the Hel Peninsula site is treated as a coastal sediment cell. The coastal erosion is a result of a sediment imbalance in the cell induced by the sediment transport processes. Based on available measurements the key concepts of the approach including coastal resilience as a strategic objective, a favourable sediment status as an operational objective, and a strategic sediment reservoir as a management goal, are applied to understand the specific character of the processes undergoing along the Hel Peninsula and to suggest solutions for local end users responsible for the management of the coastal zone.

Full article



Title of the article

**Application of a scientifically-driven approach for the management of coastal erosion along the Hel Peninsula**

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Geographical scope Hel Peninsula, Poland

The Hel Peninsula is an example of the area with several mutually related coastal zone management problems in Poland. Erosion has become a serious problem since the construction of a harbour westwards of the Peninsula in 1936 – 1937. The site has been subject to a number of theoretical and field investigations, especially in the last two decades. Although some progress has been made, knowledge on sediment processes along the Hel Peninsula is still very limited.

Abstract In this study a scientifically-driven approach is applied to investigate and evaluate processes responsible for the erosion problems along the coast and to support the management of coastal erosion. According to the approach, the Hel Peninsula site is treated as a coastal sediment cell. The coastal erosion is a result of a sediment imbalance in the cell induced by sediment transport processes. Based on available measurements the key concepts of the approach including coastal resilience as a strategic objective, a favourable sediment status as an operational objective, and a strategic sediment reservoir as a management goal, are applied to understand the specific character of the processes undergoing along the Hel Peninsula and to suggest solutions for local end users responsible for the management of the coastal zone.

Full article



Title of the article

**Spit island formation and development**

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Geographical scope

Danube Delta, Romania

Abstract

The main objective of this work is to investigate the formation of a spit island at a river mouth. In order to analyze the evolution of this morphologic feature we employed a quantitative approach. A stateoftheart numerical model DELFT3D was used to simulate the wave climate and the sediment transport in the study region. The results were first compared with previous computations and then used as input for the construction of a sediment budget. Based on the natural evolution of a spit island, the sediment budget and the findings of other authors we propose a semiquantitative evolution model of a spit island at a river mouth. The model takes into account not only the gradients in the alongshore transport, but other processes such as overwash and filling up of the bay formed between the spit island and the mainland.

Full article





Title of the article

**The role of episodic water level variations for the dynamics of Danube Delta coastal zone**

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Published at Submitted to Journal of Coastal Conservation

Geographical scope Danube Delta, Romania

Abstract The storm-induced water level variations have a major impact on deltaic coasts causing shoreline retreat and possible flooding of the areas situated just inland of the active beach. A typical case of low-lying coast vulnerable to the water level variations is the Danube Delta coast, already affected by coastal erosion. The wind and wave regimes are dominated by northern and north-eastern directions causing episodic water level variations (up to 1 m) especially in the wintertime. The objective of the present study is to identify the most vulnerable beach sectors to the water level variations induced by wind and waves providing important information for the managers of the Danube Delta coast. Using the state-of-the art numerical model Delft-3D, the water level variations were simulated for ten representative storm scenarios (wind direction and speed). Further on, ten beach profiles measured three consecutive years and situated in representative locations along the study zone were selected to investigate the effect of the water level variations on the active aerial beach. The results indicate as the most vulnerable area the central part of Sulina – Sf. Gheorghe coast where the storm-induced water level variations (especially from north-eastern directions) generate flooding of the large parts of the aerial beach. The breaching of the dune system could be caused by wind from northeast at 40 m/s and the possible effects are related with the local ecosystems, the infrastructure and economic activities.

Full article Under preparation



Title of the article

**Coastal protection issues in bayed beaches. The importance of shoreline tilting**

Author(s)

Gracia,V, Valdemoro, H.I., Mendoza, E.T., Sánchez-Arcilla, A. and Jiménez, J.A.

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Published at

Proceedings of the Conference Littoral 2008, Venice

Geographical scope

Spanish Mediterranean coast

Abstract

Bayed beaches are usually treated as stable coastal units at the long term scale with a plane shape defined by the dominant wave climate. However, at shorter scales they experience important reorientations due to the impact of storms. Deviations from the "ideal" state need to be analyzed in order to properly manage the beach. Implications of such changes are studied in the bayed beach of Lloret de Mar (Spanish Mediterranean Coast). Results show that shoreline fluctuations within the bay with respect to the mean configuration control both protection under storms and recreational use.

Full article



Title of the article

**Managing erosion-induced problems in NW Mediterranean urban beaches**

Author(s) Jiménez, J.A., Gracia, V., Valdemoro, H.I., Mendoza, E.T. and Sánchez-Arcilla, A.

Contact details

Published at Article presented at the ICCCM'10, Estoril. *To be published*

Geographical scope Catalan coast

Abstract

The recently signed Protocol on ICZM in the Mediterranean specifies that the Parties, with a view to preventing and mitigating the negative impact of coastal erosion will undertake to adopt the necessary measures to maintain or restore the natural capacity of the coast to adapt to changes. Within this context the EU funded EuroSION project recommended some elements to define a policy to combat coastal erosion being the increase of coastal resilience the most technical one. However, no formal framework to apply it has been proposed neither its applicability has been validated. In this work we formalize and apply this concept to a typical Mediterranean environment: urban beaches. These are the most frequently used and exploited coasts and they can be represented by relatively narrow beaches backed by waterfronts which are intensively used during the summer. Thus, they play two main functions: protection and recreation.

Coastal resilience can be defined as the inherent ability of the coast to accommodate changes whilst maintaining its functions in the longer term. To apply it, we have to define what "the inherent ability to accommodate changes" is and, to evaluate which conditions are required to maintain functions. We can approach (i) by measuring the ability of the beach to recover after erosion or, (ii) by measuring the ability of the beach to withstand changes induced by erosion. In the first case, resilience should depend on wave climate and beach characteristics which will control the magnitude of recovery processes. The way to act on the beach making use of this resilience is indirect and it should consist in diminishing the erosion intensity. The efficiency of promoting this resilience is not instantaneous because there will be a time lag between the erosion and the recovery of the beach.

In the second case, resilience should depend on beach characteristics which will control beach dimensions remaining after erosion. Thus, the wider the beach is, the larger the resilience will be. To make use of this resilience we should increase its width (by advancing the shoreline and/or by receding the landward limit). In this case, the efficiency is instantaneous because erosion will verify on a beach wide enough to accommodate changes.

To analyze the operative beach conditions we shall define a "favourable sediment status" for each beach type and function to be supported. This can be defined as the "situation" of sediments within the beach (volume and spatial distribution) that permit meeting such functions. To apply it to manage erosion in the analyzed beaches, the type of sediment cell as a function of the sediment budget needs to be considered. Here we analyze the case of open



beaches suffering chronic erosion and pocket beaches experiencing local sediment starvation events due to extreme shoreline reorientations. The final paper will present the developed approach and its application to two beaches in the Catalan coast (Spain, NW Mediterranean).

[Full article](#)



Title of the article

**Wave-induced morphodynamic risks. Characterization of extremes**

Author(s) Sánchez-Arcilla, A., Jiménez, J.A., Peña, C.

Contact details

Published at Article presented at Coastal Dynamics 2009, Tokyo.

Geographical scope Catalan coast

Abstract

A methodology to estimate storm-induced morphodynamic risks is presented. The storm-induced coastal response is separately assessed in terms of inundation, beach profile and transport potential. Inundation is calculated by means of the run-up  $Ru_{2\%}$  at the peak of the storm. Erosion is characterized by the eroded volume from a beach profile and, overall sediment transport is parameterized in function of the integrated wave power during the storm impact. These three parameters are used to calculate the resulting risk by estimating their probabilities of occurrence using the event and response methods. In the first one, the probability of occurrence is assigned from the extreme wave distribution (events) which is used to calculate the corresponding morphodynamic processes. In the response approach, storm wave data are used to build a data set of storm-induced responses which are later fitted to an extreme distribution. These two methods have been applied to characterize storm wave-induced morphodynamic risks at Costa Brava (NE Spanish Mediterranean coast). Results show that for this case, the use of the event approach significantly under-predicts the morphodynamic response for any probability of occurrence and, in consequence, its use will under-predict storm risks.

Full article



Title of the article

**Tormentas y extremos. Un riesgo morfodinámico**

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Geographical scope Catalan coast

Abstract

En los últimos meses hemos visto los daños producidos en playas e infraestructuras costeras por temporales “intensos” y calificados en algunos medios como excepcionales. Debido a la no linealidad del transporte de sedimentos en función de la velocidad del agua, la mayor parte de los cambios morfológicos en la costa ocurren bajo sucesos energéticos tales como las tormentas que nos han afectado recientemente. En este artículo abordaremos como caracterizar de una manera probabilística la respuesta costera a partir de la variabilidad natural de los factores que modelan la costa tales como el oleaje y el nivel medio del mar. Esta respuesta costera, caracterizada en términos probabilísticos, es de interés directo para la toma de decisiones en la costa pero ha recibido comparativamente mucha menor atención que los factores impulsores como por ejemplo la altura de ola. En el artículo nos centraremos en caracterizar la respuesta costera a partir del volumen erosionado en perfil y de la inundación experimentada por la playa seca. La erosión se caracterizará a partir de una aproximación paramétrica desarrollada en Mendoza y Jiménez (2006) mientras que la inundación se evaluará a partir de la magnitud de la elevación del nivel del mar y el remonte del oleaje en la playa (en el pico de la tormenta) evaluado a partir de la formulación de Stockdon et al (2006).

Esta metodología será aplicada utilizando una serie temporal de 49 años de oleaje y nivel medio del mar, generados a partir de valores medidos en la costa mediterránea española y valores simulados numéricamente. A partir de la serie de términos impulsores así generada hemos calculado una serie temporal de volúmenes erosionados para un conjunto de perfiles típicos de la costa catalana. A partir de aquí es posible estimar la distribución extremal de la respuesta erosiva en la que se obtienen los volúmenes erosionados por tormentas asociadas a un determinado periodo de retorno. Estos volúmenes erosionados asociados a un periodo de retorno dado varían apreciablemente con el método de cálculo, sobretodo al aumentar el periodo de retorno. En particular el cálculo basado en la distribución obtenida a partir de los volúmenes predice una erosión más alta debido a la no linealidad de las formulaciones de transporte sedimentario.

Este mismo enfoque, de comparar las distribuciones probabilísticas i) calculadas a partir de la serie temporal de la respuesta con ii) las asociadas a temporales con un periodo de retorno dado, se efectuará también para el remonte.

De ambos cálculos extraeremos conclusiones prácticas sobre como debe



evaluarse y caracterizarse la respuesta de una playa ante un temporal de oleaje determinado. El análisis realizado, aunque ilustrado con datos de la costa catalana, también es aplicable a otras playas donde el oleaje sea el principal factor modelador de la respuesta costera.

[Full article](#)



Title of the article

**Managing evolution in a more sustainable manner. The Conscience approach**

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Geographical scope General

Abstract

The concepts of coastal cells (from a management or geomorphic perspectives) and associated sedimentary budget have been considered from a number of standpoints in recent literature. They can provide an objective way to quantify coastal hazards and resiliencies. Linking these concepts at a conceptual level through a framework developed in the Conscience EU-funded project favours a scientific based approach to managing erosion with limited information, as it is always the case for coastal problems and in particular for the 6 field sites we have considered in this research work.

The selected pilot sites cover a variety of coastal stretches, complimentary from physical (only waves, large tides, ...), economic (high tourist pressure as e.g. in the Mediterranean or less "squeezed" cases such as those from the Danube Delta). The legal, administrative and economic settings for the 6 pilot sites are also varied, going from Latin-type to northern European type administrations.

The paper will introduce the various pilot sites and why they were selected. This will be followed by a characterization of all sites, with emphasis on commonalities and differences. From here we shall assess which are the main bottlenecks in using the Conscience framework for each pilot site, in terms of data, models, end users and even monetary funds to support the coastal actions.

The paper will end with a physically based approximation to evaluating coastal hazards and resiliencies for the beach protection and leisure functions. This evaluation will clearly indicate the time and space scales for which the performed analysis is valid, which will illustrate one of the main pitfalls in coastal zone management.

The paper will end with some conclusions on how this approach and concepts can support managing erosion in a more sustainable manner and, in particular, can help selecting the most sustainable coastal action from the perspective of erosion. The emphasis of conclusions will be given to the applicability of the developed approach to any coastal area.

Full article





Title of the article

**The CONSCIENCE project, results and outcomes**

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Geographical  
scope

General

Abstract

Full article

*Powerpoint presentation at [http://www.conscience-eu.net/final\\_event/conscience-introduction-mm.pps](http://www.conscience-eu.net/final_event/conscience-introduction-mm.pps)*



Title of the article

**The role of coastal erosion science for management of dynamic coastlines**

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Published at Presented at CONSCIENCE final event at ICCCM'10, Estoril

Geographical scope General

Abstract

Full article *Powerpoint presentation at [http://www.conscience-eu.net/final\\_event/conscience-lvr.pps](http://www.conscience-eu.net/final_event/conscience-lvr.pps)*



Title of the article

**Applying management frameworks: experiences from CONSCIENCE sites across Europe**

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Published at Presented at CONSCIENCE final event at ICCCM'10, Estoril

Geographical scope The six CONSCIENCE pilot sites

Abstract

Full article *Powerpoint presentation at [http://www.conscience-eu.net/final\\_event/conscience-ciirc.pps](http://www.conscience-eu.net/final_event/conscience-ciirc.pps)*



Title of the article

**Data, information and tools for effective coastal erosion management**

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Published at Presented at CONSCIENCE final event at ICCCM'10, Estoril

Geographical scope General

Abstract Review of methods of monitoring, numerical modelling, managing & displaying data and of tools for coastal erosion management. Also describes the use of coastal state indicators for coastal erosion management and briefly summarises monitoring guidance.

Full article *Powerpoint presentation at [http://www.conscience-eu.net/final\\_event/conscience-hrw.pps](http://www.conscience-eu.net/final_event/conscience-hrw.pps)*



Title of the article

**Guidelines for implementing coastal erosion management strategies at national, regional and local level**

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Geographical scope General

Abstract

Full article *Powerpoint presentation at:* [http://www.conscience-eu.net/final\\_event/conscience-guidelines.pps](http://www.conscience-eu.net/final_event/conscience-guidelines.pps)



Title of the article

**How science can contribute to coastal erosion management: an end-users perspective**

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Published at Presented at CONSCIENCE final event at ICCCM'10, Estoril

Geographical scope Tuscany Region, Italy

Abstract

Full article *Powerpoint presentation at:* [http://www.conscience-eu.net/final\\_event/conscience-tuscany-lc.pps](http://www.conscience-eu.net/final_event/conscience-tuscany-lc.pps)



Title of the article

**The role of Public Private Partnership in effective coastal erosion management**

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Published at Presented at CONSCIENCE final event at ICCCM'10, Estoril

Geographical scope Pevensey coast, UK

Abstract

Full article Powerpoint presentation at: [http://www.conscience-eu.net/final\\_event/conscience-pevensey-it.pps](http://www.conscience-eu.net/final_event/conscience-pevensey-it.pps)



Title of the article

**Experiences from an Irish coastal manager**

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Geographical scope Kerry County, Ireland

Abstract

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Title of the article

**Towards 'Best Practice' in Management of Mixed Shingle Barrier Beaches.**

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Published at	Presented at ICCCM'10, Estoril
Geographical scope	Pevensey Bay, UK
Abstract	<p>The coastal evolution of the English Channel is no different to that in many other parts of the world – rising sea levels and increased storminess mean that coastal defences are becoming more difficult to maintain. However, at Pevensey Bay in East Sussex the problem is being addressed in a unique way. The 9km shingle embankment stretching between Eastbourne and Bexhill-on-Sea is the site of the world's first Public Private Partnership flood defence scheme. A major consideration for the client, the Environment Agency, was the development of a sustainable management policy that was economically justifiable, environmentally acceptable and taking due regard of natural coastal processes. The PPP contract meets all these criteria. Now in its 10th year the scheme has evolved from that which was envisaged at tender stage and it is not clear that it is helping to redefine 'best practice' in provision of sea defence services through developing partnerships, innovating, sustaining the solution and intervening little and often. The 'little and often' approach requires an ongoing flexible budget and would work best if applied on a broader scale. Operationally, work needs to be done to define defence standards and trigger levels.</p>
Full article	<i>Powerpoint presentation at:</i> <a href="http://www.conscience-eu.net/final_event/towards_best_practice.pps">http://www.conscience-eu.net/final_event/towards_best_practice.pps</a>



Title of the article

**Making knowledge useful for sustainable coastline management**

Author(s) Marcel Marchand, Agustin Sanchez-Arcilla, Jeremy Gault, James Sutherland, Jan Mulder, Leo van Rijn, Wojciech Sulisz, Adrian Stanica, Jose Jimenez, ...

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Published at Presented at ICCCM'10, Estoril

Geographical scope General

Abstract

Full article *Powerpoint presentation at:* [http://www.conscience-eu.net/final\\_event/making\\_knowledge\\_useful.pps](http://www.conscience-eu.net/final_event/making_knowledge_useful.pps)



Title of the article

**Coastal State Indicators for Coastal Erosion**

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Published at Presented at ICCCM'10, Estoril

Geographical scope General

Abstract

Full article *Powerpoint presentation at:* [http://www.conscience-eu.net/final\\_event/coastal\\_state\\_indicators-hrw.pps](http://www.conscience-eu.net/final_event/coastal_state_indicators-hrw.pps)