



www.ecomanage.info

e-mail: coordination@ecomanage.info

3rd Reporting Period

December 1, 2006 - May 31, 2008

PERIODIC ACTIVITY REPORT

ecomanage
INTEGRATED ECOLOGICAL COASTAL
ZONE MANAGEMENT SYSTEM



Ramiro Neves, PhD.

MARETEC — Marine & Environment Technology Center

Instituto Superior Técnico

Secção de Ambiente e Energia — Dep. De Mecânica

Avenida Rovisco Pais

1049 - 001 Lisboa

PORTUGAL

Tel: (+351) 218 417 397

Fax: (+351) 218 419 423



DOCUMENTATION FORM		
DISSEMINATION LEVEL RE (Restricted to a group specified by the consortium and the Commission)	DISTRIBUTION Commission Services & Partners	OBSERVATIONS
TITLE 3 rd Reporting Period - December 1, 2007 – May 31, 2008 - PERIODIC ACTIVITY REPORT		
KEYWORDS PERIODIC ACTIVITY REPORT, ECOMANAGE		
ABSTRACT This report contains an overview of the activities carried out by the ECOMANAGE consortium during the 3 rd year of the project.		
TASK LEADER IST & HIDROMOD <div style="text-align: right;"> </div>		
Funding This project received research funding from European Commission's Six Framework Programme – Contract n° INCO-CT-2004-003715 (Dec2004-Nov2007) <div style="text-align: right;"> </div>		
AUTHOR(S) Marcos Mateus, Ramiro Neves & José Chambel		
VERIFICATION		
DATE 22-Set-2008	NUMBER OF PAGES 15	REFERENCE NUMBER ---



Table of Contents

1	INTRODUCTION.....	5
2	SECTION 1 – PROJECT OBJECTIVES AND MAJOR ACHIEVEMENTS DURING THE REPORTING PERIOD	6
2.1	GENERAL PROJECT OBJECTIVES	6
2.2	RECOMMENDATIONS FROM PREVIOUS REVIEWS.....	6
2.3	SUMMARY OF THE WORK UNDERTAKEN	6
2.4	PROBLEMS AND CORRECTIVE ACTIONS	7
3	SECTION 2 – WORKPACKAGE PROGRESS OF THE PERIOD	8
3.1	WP 1 – DATA MANAGEMENT	8
3.2	WP 2–IMPLEMENTATION, IMPROVEMENT & VALIDATION OF PHES-SYSTEM	8
3.3	WP 3 – DATA CAMPAIGNS.....	9
3.4	WP 4–COASTAL ZONE MANAGEMENT.....	9
3.5	WP 5–KNOWLEDGE DISSEMINATION	10
4	SECTION 3 – CONSORTIUM MANAGEMENT	11
4.1	PROJECT WORKSHOPS.....	11
4.2	KNOWLEDGE/EXPERIENCE EXCHANGE BETWEEN PARTNERS.....	11
4.3	CHANGES AND IMPACT ON THE PLANNED MILESTONES	12
4.4	GENERAL EVALUATION OF THE PROJECT (PROJECT STATUS).....	13
4.4.1	Milestones	13
4.4.2	Deliverables.....	13



List of Acronyms

Acronyms	ECOMANAGE Partners
CEA	Centro de Ecología Aplicada Ltda.
HIDROMOD	HIDROMOD, Modelação em Engenharia, Lda.
IADO	Instituto Argentino de Oceanografía
IO-USP	Instituto Oceanográfico da Universidade de São Paulo
IST	Instituto Superior Técnico
LNEC	Laboratório Nacional de Engenharia Civil
NOCTILUCA	Noctiluca Marien-Wetenschappelijk Adviesbureau
UCHILE	Universidad de Chile
UNISANTA	Instituto Superior de Educação Santa Cecília – Universidade Santa Cecília
UNITS	University of Trieste



1 Introduction

This report presents an overview of the activities carried out by the ECOMANAGE consortium during the 3rd period of the project (1 December 2006 – 5 May 2008). This report summarizes the progress toward the objectives of the project, using its milestones and deliverables as a reference. The report covers a period of 18 months instead of the standard 1-year activity period because the Commission has attended the Consortium request to extend the last period of the project for 6 months.

The Consortium has edited a book compiling the main achievements of the project (available at <http://www.ecomanage.info/final.htm#book>) that complements the deliverables listed in the contractual commitment. That book (Reference R Neves, J Baretta & M Mateus (eds.), 2008, **Perspectives on Integrated Coastal Zone Management in South America**, IST Press, Lisbon, Portugal, +600p. (ISBN: 978-972-8469-74-0) contains detailed information about the project results for each study site, giving an integrated view of the achievements of the project and replaces the *Section 2 – Workpackage progress of the period* of this progress report



2 Section 1 – Project objectives and major achievements during the reporting period

2.1 General project objectives

ECOMANAGE project aimed to push the capacity of assisting managers to join horizontally knowledge from ecological and socio-economic disciplines. The three key aspects of ECOMANAGE are (1) the consideration that a coastal zone depends on local pressures, but also on pressures originated in the drainage basin, transported mostly by rivers and by groundwater, (2) that socio-economic activities are the driving forces of those pressures and that their impacts on the ecosystem have feedback on socio-economics and (3) the impacts depend on physical characteristics of the ecosystem that together with the loads determine its ecological state.

The contractual deliverables of the project are described in the Annex 1.

2.2 Recommendations from previous reviews

Difficulties related with data gathering were highlighted in the 2nd Year Activity Report. This, in turn, was delaying other activities, noticed in the holdup of some Deliverables. The corrective actions taken still in the course of the second period and maintained during the third lead to the resolution of this problem. Also, communication between partners was reported to be impaired because of technical difficulties. This was particular critical for the completion of tasks involving the exchange of large volumes of information between partners working at different locations. All recommendations expressed in the 2nd Year Activity Report to solve this shortcomings were followed and both problems have solved in due time and without compromising the final outcome of the project.

2.3 Summary of the work undertaken

The conclusion of all tasks and production of all Deliverables were the main objectives for the last year of the project. Developing the interaction with stakeholders was also a major concern for this period. All planned actions and goals have been met and the work plan was fulfilled with minor changes.



Activities performed in the 3rd period which lead to consistent progress toward the objectives of the project were:

- Improvement of data sets for the Santos Estuary with additional campaigns lead by UNISANTA.
- Simulation of management scenarios in the three sites. This task involved the work and expertise of several partners: IST, HIDROMOD, NOCTILUCA, UNISANTA, USP, UCHILE and IADO.
- Quantification of the contribution of ground water for the total estuary loads provided by LNEC, UNISANTA, IADO and UCHILE.
- Active cooperation between partners in all the domains of the project.
- Active involvement and participation of stakeholders in the project.
- Development of the SDSS according to each site specification headed by UNITS in collaboration with UNISANTA.
- Editing of a book featuring the most relevant results of the project.
- Dissemination of the results of the project at national-level putting into evidence the importance of the results for the management of each study site.

2.4 Problems and corrective actions

During this period the Consortium realized that it would be impossible to meet the deadlines imposed by the work program. As such, the project Coordinator contacted the Commission through the official means to request an extension of 6 months to final date and explaining the reasons for the delay in the conclusion of the work program. The request was accepted and the program changed accordingly. Apart from this, no other problems were encountered during this period.



3 Section 2 – Workpackage progress of the period

3.1 WP 1 – Data Management

The objectives of this WP where:

- To gather, analyse and disseminate among partners the relevant data on the marine and land (drainage basin) areas of the three PHES-Systems: Santos, Bahía Blanca and Fiord Aisén.
- To analyse the land use and land cover patterns of the study sites catchments aiming to identify the main sources of pollution and to evaluate the role of the coastal vegetation in the conservation of water resources, soil and plant diversity.

Most of the WP1 tasks have been concluded prior to the 3rd project period, according to the project calendar. However, during this final period, Santos data set was complemented with extra socioeconomic data used for a improving the model loads. This work was carried out by UNISANTA.

Deliverables (D1.1 to D1.13) were concluded and published at the project's ftp site.

3.2 WP 2–Implementation, improvement & validation of PHES-system

The objectives of this WP where:

- Implementation of the PHES-System for the three sites.
- Improvement of the modelling system in whatever way it is needed to better describe the PHES-Systems under study.
- Integration in the modelling system of all the stakeholders' views gathered during the first year of the project.
- Comparison of the modelling results with the data obtained in WP1 and WP3 (calibration and validation)

All tasks of WP2 were successfully executed. Model applications were prepared by the consortium with the participation of stakeholders. The models were then used in the study of



development scenarios for each site (WP4). The modelling tools have been made available for local actors and scientists.

WP2 Deliverables (D2.1 to D2.16) have been concluded and published in the project's ftp site. Some Deliverables have been merged to avoid redundancy.

3.3 WP 3 – Data Campaigns

WP3 objectives were:

- Realization of two campaigns in the aquatic environment to complement the historic data obtained for each site.
- Confirm the understanding of the ecosystems and clarify the main doubts still remaining.
- Complementary fieldwork to land cover/land use description and to groundwater resources

WP3 Deliverables (D3.1 to D3.6) have been concluded and are available at the project's ftp site. In Santos field activities aiming to improve knowledge on mangrove, *Spartina sp*, bathymetry, fecal contamination and shore line definition were undertaken for filling gaps on existing data sets. These data was essential for simulating the management scenarios in this estuary.

In Bahia Blanca a monitoring program is going on and no ECOMANAGE specific work was required. The same happened in the Aysén system but here due to the abundance of historical data.

3.4 WP 4–Coastal zone management

These WP objectives were the:

- Development of the analytical approach for ecosystem assessment.
- Development of a Spatial Decision Support System (SDSS) that will materialize the results obtained with analytical approach for ecosystem assessment including: spatial databases, model results, scenarios simulations for the PHES-System, indexes able to describe the carrying capacity of the systems in face of increasing anthropogenic pressure.



During the third period of the project, UNISANTA was involved mainly in modelling future scenarios of housing and sewage discharge in the estuary using the great data bank researched during the first two years in straight relationship with HIDROMOD and IST. UNISANTA was involved as well on the development of the DSS building the bridge to local actors and stakeholders. UNISANTA developed several corporative meetings and three DSS formal meetings, joining all information provided by the stakeholders involved in the scenarios design in order to build the decision Support System Matrices of effects and alternatives for future scenarios. A similar effort was undertaken for the two other systems.

The development scenarios projected during the 2nd year of the project have been tested using the modeling tools prepared in WP2. The main results have been compiled in the project book.

WP4 Deliverables (D4.1 to D4.17) are available at the project's ftp site.

3.5 WP 5–Knowledge dissemination

WP 5 objectives were:

- To disseminate the knowledge of the project within the stakeholders and the local society promoting line training courses, meetings with case studies and Internet dissemination.
- To translate advanced knowledge into basic and intermediate knowledge that can be disseminated to citizens with different level of education.

During this last period an intense effort was made to disseminate the knowledge gathered during the project. Most of the work developed under this topic is reported in WP5 Deliverables (D5.1 to D5.6), also available at the project's ftp site.

The final project workshop in Brazil included one session in Santos oriented towards the local actors and a more scientific oriented session in the Universe of S. Paulo. These Sessions were attended by more than one hundred people, including the Authorities responsible for the management of the estuary. After these sessions (11th of September) a technical meeting was organized at CETESB, the institution in charge of controlling the environmental quality in the State of S. Paulo also attended by the Technical staff of SABESP, the Water Utilities of S. Paulo State. Both institutions are looking forward for using the results of the project, including the mathematical model for studying scenarios.



4 Section 3 – Consortium management

4.1 Project Workshops

The following meetings/workshops were held, during the third period:

- Steering Committee meeting held in Lisbon, Portugal (September 2007): The aim was to evaluate the progress of the project according to the proposed work plan and to set guidelines for the remaining period. In this meeting it was decided to apply to the Commission for a six months extension of the projects and to edit a book with the compilation of the most relevant results of the project. This book should be added to the deliverables of the project.
- Official closing meetings in Santos and S. Paulo (Brazil) held at UNISANTA and USP. The meetings were open to the public and the major project achievements and impacts on the study sites were presented, together with the project products (including the book draft distributed in a memory stick).

4.2 Knowledge/experience exchange between partners

Knowledge/experience exchange between partners was a major objective of ECOMANAGE. It was present when the consortium was established and was present in all the project actions. The strategy for exchanging knowledge and experience included (i) the project general meetings, (ii) the preparation of collaborative products and deliverables (iii) technical visits for discussion of methods and (iv) training periods/courses on specific tools. The decisions of spending resources on travelling were taken case by case as a function of the work progress.

As a general rule general project meetings were held in the South America on a regular basis and meetings dedicated to training on specific subjects were held in Europe (Lisbon and Trieste). Job Baretta from NOCTILUCA (The Netherlands) attended the meetings involving ecological issues.

In regular meetings held in South America all partners learned about the skills and experiences of the local partner, including about the methods used for interacting with the local actors. In the 3rd period of the project a meeting was held in Chile in early December 2006 and the final meeting was held in Santos in May 2008.



During the 3rd period two training periods were held, one in Lisbon dedicated to GroundWater and another in Trieste dedicated to landcover/landuse and especially to the implementation of the SDSS system. These training periods complemented others held in Lisbon in previous years dedicated to surface water modeling and to catchment modeling.

- Fabio Giordano and Aureo Pasqualeto visited Trieste and worked with Mauro Simone and Alfredo Atobeli (UNITS). A two days course on land use and land cover was held during that visit.

LNEC organized a working period on the Santos case study area attended by Dr. Malva Mancuso. During that period dedicated to groundwater numerical modeling, partner IST was also involved on that activity, coupling it to the Santos estuary modeling activity. Collaboration was also established with the Universidad del Sur Geology Department, namely Dr. Guillermo Bonorino, Dr. René Albouy, Dr. Jorge Carrica and Dr. Claudio Lexow. This collaboration contributed for a better integration of ECOMANAGE project locally and contributed for the improvement of the project results, especially those described in Deliverables 2.6, 2.7 and 2.8.

4.3 Changes and impact on the planned milestones

The lack of correspondence between the holiday seasons in European countries and Latin America countries has impaired the collaborative effort between partners, creating two low-season periods in July/August and middle December/middle February, decreasing significantly the potential of developing synergies to finish in due time project tasks scheduled for those periods. As such, the Consortium requested the Commission a 6-month extension to the original contract. This request has been accepted and the extension granted.

Considering that Article 6 and Article 7 of the Contract are set in generic terms with respect to the reporting periods, no change was needed. The only amendment to the Contract should be in Article II.4.2, where the duration of the project is changed from 36 months to 42 months. The work plan was adjusted to fit to the new timeline by extending the period dedicated to the production of the project. To avoid unnecessary changes to the scheduling of the project (in Annex I in the Contract), the deadlines for the Deliverables and Milestones that would end at month 36 were postponed for 6 months.



4.4 General evaluation of the project (Project status)

All planned actions were carried out and all goals achieved. The models were developed and made available for actors and all Deliverables completed. All contractual obligations were fulfilled and an additional product was added to the project in the form of a book.

The management tools developed in the project are being used for answering to management questions in all the sites and contributed for approaching managers and local research teams and for approaching local and European research teams. The reputation of the project extended beyond the communities involved on the sites addressed in the project and activities are planned for other regions in Brazil (States of Rio de Janeiro and Ceará) and for Equator. A course organized after the terminus of the project in S. Paulo was attended by researchers from 5 States in Brazil from Santa Catarina in the South up to Ceará in the Northeast.

The project was based on the DPSIR - Driver, Pressure, State, Impact and Response – assessment. The study of the estuary/lagoon/fjord was the key aspect of the project. However, the drainage basins were also studied for assessing the drivers and the pressures and for understanding the socio-economic impact of the responses. The need for this integrated approach is clear, but it is not common. The novelty approach of the project proved to be very useful for building the bridge between researchers and managers, but also for stimulating the collaboration between teams that had never worked together.

The edition of the book was very well applauded by end-users and most local actors and is a very useful product for disseminating the results of the project in the whole region. The book was also a means for giving visibility to research teams not formally involved in the project, but that participated in its implementation, providing data and knowledge and that at the end of the project also contributed with text for the book.

4.4.1 Milestones

All Milestones have been successfully accomplished until the end of the project.

4.4.2 Deliverables

All the Deliverables were produced, either in the report format, compiled data sets or model applications.



ANNEX 1 - List of Deliverables

	Deliverable Name	WP
D1.1	Data sets with the data already being used in models applied previously - All sites	1
D1.2	Data sets of physical parameters to complete information in hydrodynamic and sediment transport models - All sites	1
D1.3	Data sets of all gathered data - All sites	1
D1.4	Maps of land use and vegetation cover - All sites	1
D1.5	Maps of landscape descriptions according to different parameters (fractality, connectance, edge diversity etc.) - All sites	1
D1.6	Vegetation data tables and graphical description of the vegetation structure along transects (profile diagrams) - All sites	1
D1.7	Mangroves in Santos – Characterization of the vegetation’s structure and floristic composition and main types of human disturbance	1
D1.8	Description of the vegetation in different stages of secondary succession according to parameters of structure (high, diameter, density etc) and floristic composition and main types of human disturbance – All sites	1
D1.9	Socio-economic data sets and reports to characterize each site	1
D1.10	Socio-economic prospective data to characterize each site’s development strategies	1
D1.11	Database Structure	1
D1.12	Aquatic component of database - All sites	1
D1.13	Land component of database - All sites	1
D2.1	Preliminary hydrodynamic model application - All sites	2
D2.2	Preliminary sediment transport model application - All sites	2
D2.3	Calibration of the hydrodynamic model application - All sites	2
D2.4	Calibration of the sediment transport model application - All sites	2
D2.5	Hydrodynamic & sediment transport model - All sites	2
D2.6	SIG mapping of hydrogeologic parameters, including groundwater recharge assessment and groundwater vulnerability to pollution – All sites	2
D2.7	Diagnosis of the Reference Situation and the Definition a Target Situation related to Groundwater – All sites	2
D2.8	Groundwater flow and transport components of the global estuary model – All sites	2
D2.9	Preliminary ecological model - All sites	2
D2.10	Calibration of ecological model - All sites	2
D2.11	Validation of ecological model - All sites	2
D2.12	Preliminary basin model - All sites	2
D2.13	Calibration of basin model - All sites	2
D2.14	Validation of basin model - All sites	2
D2.15	Human-ecosystem interaction – report on methodologies and modelling approach	2
D2.16	Human-ecosystem interaction – modelling for All sites	2
D3.1	Results of the 1 st data campaign in Santos	3
D3.2	Results of the data campaigns in Santos	3
D3.3	Results of the 1 st data campaign in Bahia Blanca	3
D3.4	Results of the data campaigns in Bahia Blanca	3
D3.5	Results of the 1 st data campaign in Fiordo Aysén	3



D3.6	Results of the data campaigns in Fiordo Aysén	3
D4.1	Results of the meeting with stakeholders of Santos	4
D4.2	Results of the meeting with stakeholders of Bahia Blanca	4
D4.3	Results of the meeting with stakeholders of Fiordo Aysén	4
D4.4	Proposal of development/restoration scenarios to test the PHES modelling conceptual framework - All sites	4
D4.5	Conclusions of the final meetings with stakeholders of all sites	4
D4.6	Preliminary report on: Data exchange criteria; spatial harmonization of modelling work; data formats.	4
D4.7	Final report on: Data exchange criteria; spatial harmonization of modelling work; data formats	4
D4.8	First report on index assessment strategy	4
D4.9	Criteria for index application in the scenarios to study	4
D4.10	Final report on index assessment in coastal system	4
D4.11	Results obtained with the modelling framework for the scenarios in Santos	4
D4.12	Results obtained with the modelling framework for the scenarios in Bahia Blanca	4
D4.13	Results obtained with the modelling framework for the scenarios in Fiordo Aysén	4
D4.14	Definition of SDSS design after meeting with all partners	4
D.4.15	A comprehensive system software tool accessible on line to the participants of the project for SDSS that integrates: Image Processing, GIS, multi-criteria analysis, Cost benefit assessment etc	4
D4.16	Maps of simulated scenarios and corresponding data tables	4
D4.17	Manual describing the SDSS structure and its use for on line training courses	4
D5.1	Definition of line training courses for scenario simulation using the SDSS (Proposal to stakeholders)	5
D5.2	Material for the line training courses	5
D5.3	Report on meetings in each site	5
D5.4	Internet knowledge base structuring	5
D5.5	Internet knowledge base deployment – experimental phase	5
D5.6	Internet knowledge base	5