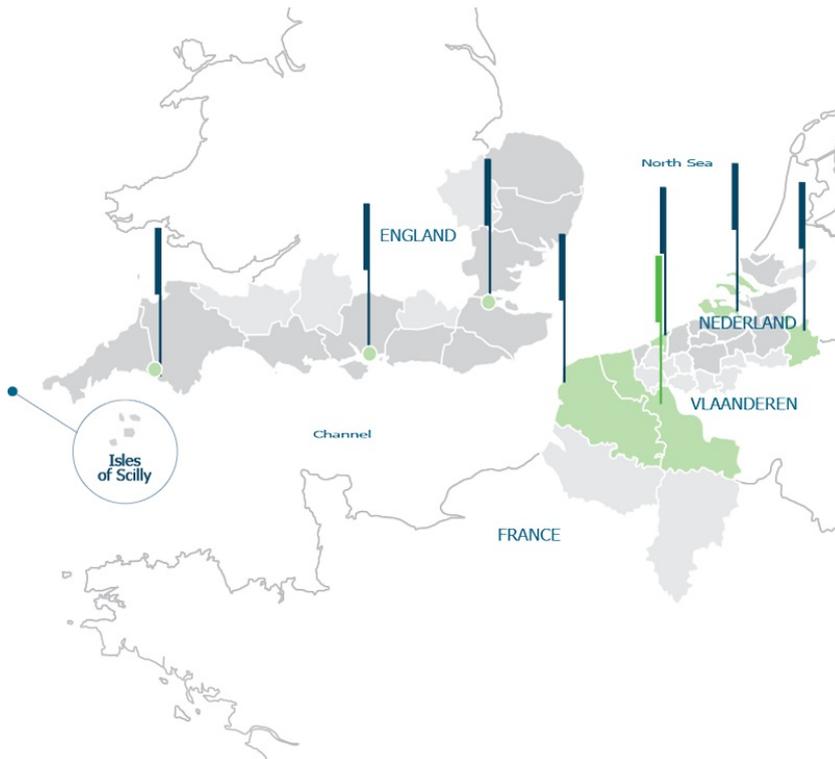


ISECA

Information System on the Eutrophication of our Coastal Areas



■ Project summary



The ISECA project's aim is to advance scientific knowledge related to eutrophication (i.e. algal blooms), which is a major cause of the decreasing quality of coastal waters in the 2 Seas area. This more targeted and intelligent information will then be disseminated amongst the relevant authorities, environmental agencies and the general public. A technologically advanced information system will be developed thanks to cross-border exchange of expertise and usage of satellite Earth Observation data, with simulation models. This web-based system will significantly enhance the current capacity to monitor and manage coastal waters

and to propose potential mitigation strategies to eutrophication. Comparing regions with different levels of eutrophication will help demonstrate its effect on maritime and coastal socio-economic activities, such as fisheries and recreation.

■ Activities

What was the project trying to achieve?

ISECA aims to improve the quality of coastal waters through the development of tools and actions of potential interest for policy makers and institutes that are responsible for environmental protection of the coastal zone. The general objective of ISECA is to develop and promote two web-based tools to improve the evaluation of the coastal water quality and analyze eutrophication in the 2Seas areas. The WIS will educate the general public, familiarize them with the subject of coastal eutrophication, its causes and potential solutions, and demonstrate how science and in particular Earth Observation (EO) can help monitor, analyze and combat coastal eutrophication. Outreach activities will inform and mobilise the public as info days and conference will mobilise professionals and stakeholders. The WIS also will be a

repository where the public, the information multipliers and the stakeholders will find information, facts and tools that will help their understanding of eutrophication. In line with the project objectives a monitoring tool and a model library will be developed and demonstrated to make the models and data related to eutrophication available to stakeholders and scientists who take an interest in the topic. The other ISECA objective was to develop a monitoring and modeling system: the WAS uses a combination of in-situ measurements, satellite images, and a model base for simulating and analyzing eutrophication at a strategic level. The aims are to: (i) monitor coastal eutrophication in the 2Seas area at a lower cost and more accessible and efficiently; (ii) to predict causes and effects; (iii) to also take into account the effect of atmospheric pollutants (integrated models improve understanding and relationship of eutrophication with the different coastal and land-based activities); (iv) to propose effective mitigation strategies; (v) to collect feedback from end users to develop specific products or the indicators and models.

What were the activities implemented?

In action 1, we firstly identified the key actors in water quality management (A1-1) and secondly collated their requirements (A1-2). A 3-language questionnaire was elaborated and used in a face to face survey. For A1-4, we used the above questionnaire with additional questions focusing on the social economical aspects. A1-0 and A1-5 were dedicated to Indo Days and Final Event. A2 was devoted to the observation of eutrophication starting with A2-1 and in-situ measurements selected after a user consultation. A database of parameters routinely measured at the 2Seas sites was collated. Additional data were collected during ISECA at the PML station to continue the long term time series and to add to a growing in-situ database. A2-2 was a quality check on in-situ data realized after review and publication of new measurement protocol. A cross-border satellite data base of “ocean colour” was produced. In A2-4, we defined regional ocean colour algorithms both new water and atmospheric products, including the correction of the adjacency effects. In A2-5, we performed an inter-comparison and validation of EO products in order to select the most appropriate products to detect eutrophication. The first activity with the WAS was in A3-1 the Architecture design/Implementation. A3-2 was the system test of the EO web server based on test cases and the verification that it meets the functionalities as defined by the stakeholders in A1. For the modelling, A3-3, we made an inventory of eutrophication models available for the 2Seas. A3-4 involved the identification of the coastal functions affected by eutrophication. The development of ‘generic model components’ resulted in a set of reusable model-building components for the integrated analysis of coastal eutrophication at a strategic level. A3-6 was the development of example applications to demonstrate the potential for simulation eutrophication at a scale level and with options that are compliant with the stakeholder requirements.

■ Results

What were the key results of the project?

Each action and sub-action had a deliverable associated with a report and sometimes, with additional technical notes. All of this is available at <http://www.iseca.eu/en/results/deliverables>. The main results from the project, are documented as the WIS which is available at

<http://www.iseca.eu/> and the WAS which is available at <http://www.iseca.eu/en/results/web-based-application-server-was>. Action 1 led to the delivery of - A database of the actors and institutions concerned with coastal eutrophication available online. - A report describing the end users requirements. - An analysis on the perception of eutrophication by different target groups. - A report on the social-economic cost of eutrophication. Action 2 is a regional expertise on remote sensing of eutrophication. The remote sensing allows mapping the eutrophication through ecological indicators. The production of regional indicators was greatly improved by sharing the scientific expertise of the R&D consortium involved in ISECA. The outputs delivered are: - An inventory of all the existing databases existing over the 2Seas area. - Combination of existing and new in-situ measurements and existing and new EO products. - Sharing of existing information by harmonizing the data and the metrology protocols. - Improvement and validation at a regional scale of Earth Observation (EO) products. Action 3 main output is a web platform which combined remote sensing and modelling. It is a demonstration platform accessible by any interested stakeholders aiming to promote the use of remote sensing for the modellisation of eutrophication. It is a free access platform to be used by any concerned organisation in a given territory to evaluate the impact of a remediation initiative. A multi module of models allows simulating scenarios of remediation

Did all partners and territories benefit from the results?

The major benefit for the partners resulted from their collaboration through the sharing of their specific and complementary skills. Within the framework of INTERREG, it is important to build regional networks in different domains and countries. We achieved this goal through cross-disciplinary collaboration and thus forged stronger links between Northern France, Southern England, Belgium and the Netherlands. This trans-border expertise can be a support for any regional organisation in charge of the maritime domain in it environmental issue when a specific environment occurs (i.e. toxic algae blooms). WAS is a free access platform to be used by any concerned organisation in a given territory to evaluate the impact of a remediation initiative. The socio economical ISECA expertise can be solicited to evaluate the coast benefit of any remediation. The key actor's data base in the WIS is maintained as an open source for anyone willing to contact the right person or organisation. Complementary to the scientific expertise, ISECA had strong communication activities which two key partners in France (Nausicaà) and Belgium (VLIZ) with PML (UK) willing to participate to this activity. All the ISECA communication material can be re-used in order to feed future events dealing with coastal water quality. As mentioned above, the WIS will be maintained ant it contains all the possible information on eutrophication as well as all the ISECA deliverables. The nature of ISECA is trans-border, which benefitted from 2Seas cross territory development both through regional expertise and through the communication institutes. ISECA reached different publics: the public at large mostly through the communication activities; the policy makers and their technical supports through the A1 and A2 deliverables; the scientific community through the ISECA scientific reports and publications and the possible use of the WAS.

What were the effects / outcomes for the territories involved?

Both the WIS and the WAS, the satellite products developed and the modelling studies conducted will ultimately benefit all the cross-border territories. To be more specific: (i) In France, Nausicaà realized thanks to ISECA many communication material and Eutrophication is now a strong ingredient of the Nausicaà communication strategy for public at large; the strong

participation of IFREMER in Boulogne sur Mer is also a plus for the R&D skill; (ii) In Belgium, VLIZ in Oostende offered the same services than Nausicaà. VITO was deeply involved in the R&D activities but also in a socio economical study which covers the Belgium Coast. VLIZ and VITO are Flemish official organizations and therefore they impact all the Flemish territory. For the UK, PLM is widely solicited for its well recognized expertise in Marine Science by different UK institutions. PML organized an info day and was deeply involved in communication activities. University of Plymouth conducted a socio economical study in the Solent area. The expertise of the University of Greenwich helps to introduce a quite innovative input through the evaluation of the nutrient atmospheric deposit. It can be relevant for some territories to evaluate the impact on the eutrophication of the strong urban emission in South West of England and by the Flemish agriculture. ISECA offered and still offer through the present availability of the WIS and the WAS (i) a better knowledge of the eutrophication both for citizens and for experts; (ii) the basements to conduct socio economical analysis; (iii) better tools to characterize the level of eutrophication using remote sensing techniques; (iv) a web platform for modelling the eutrophication and evaluate the impact of remediation measures.

■ Distinctiveness

What was the real added-value of doing this cross-border project?

Cross-border collaboration as in ISECA has several advantages. The problem of coastal and offshore eutrophication and Harmful Algal Blooms should be considered in an international context for multiple reasons. First, the transport of nutrients is not limited to international boundaries and pollution originating from one country can easily increase the potential for eutrophication hundreds of kilometers away. A similar situation exists for the deposition of atmospheric inputs resulting from, e.g., industry and shipping. Second, there is a need for exchanging Earth observations and in-situ data, in order to improve the level of information, and calibrate models. Third, both the scientific community and public benefit from cross-border collaboration supporting scientific exchanges and information on the European context of environmental problems. Web-based information platforms such as the WIS and the WAS can only add to this.

Have any synergies been developed with other projects or networks?

A clear correspondence and complementarities exist with the InterReg DYMPAHY (www.dymaphy.eu) (2010- 2013) which examined the quality of marine waters using phytoplankton as an indicator. The focus was on databases. Several exchanges with ISECA partners took place. In addition there were several exchanges with the MUMM modelling institute in Belgium and the department of Ecology of Aquatic Systems (ESA) at ULB to discuss the modelling of eutrophication and potential use and application of the WAS. The ISECA project builds on the work done in the EU-FP6 project SPICOSA (www.spicosa.eu) on generic libraries of model components, which can facilitate the modelling process. This work is being continued in the EU-FP7 project OCEAN-CERTAIN (www.oceancertain.eu) which examines the role of the ocean food web on the global carbon cycle. There have also been exchanges with partners involved in the Era-Net project EMOSEM.

What are the key messages , key lessons learned you would like to share?



It is very positive to encourage the realization of programs and the networking of experts at a regional scale. In the domain of the Environment, the regional organizations in charge of the environmental policy should be more involved in the realization of an INTERREG project. It cannot stop after the evaluation of the proposal but instead the public organizations in charge of the maritime environment should be the evaluators of the realization of the project objectives. The introduction of an external first level control allows to promptly receive the money you claim but this first level control has a substantial cost and does not contribute to the technical realization of the project. Therefore, it should be fully support by the INTERREG funds.

■ Project Information

Title	Information System on the Eutrophication of our Coastal Areas
Total project budget	€ 2 391 755
ERDF	€ 1 195 877
Priority & objective	Priority 2 a. Promote and improve the development of activities linked to integrated management of coastal zones, maritime resource and estuaries
Timeframe	2009-08-01 - 2014-09-30
Lead partner	ADRINORD
Project Coordinator	Dominique MERIAUX(dmeriaux@adrinord.asso.fr)

