

INTERREG IVA 2 Seas Project: 'Information System on the Eutrophication of our Coastal Areas' (ISECA)

DA1-0: Info Days and final conference.

Final report
Chiroutre E., NAUSICAA (2014)



Introduction:

The ISECA action 1 combines, in the frame of the eutrophication of our coastal waters, identification of the key actors, end users requirements for the observation, perception by different publics, socio economical aspects. In this context, it was crucial to organize communication events as a support to the action 1 activities. It was the case for the info days and for the final conference as related hereafter.

INTERREG IVA 2 Seas Project: ‘Information System on the Eutrophication of our Coastal Areas ‘(ISECA)

DA1-0: Info Days (info multipliers mobilisation). Final report.
Chiroutre E., NAUSICAA (2014)



Executive summary:

An important communication activity in the ISECA project was to organize Information Days (short: ID) on the theme of coastal water quality and eutrophication in the three countries: France, UK and Belgium. This deliverable sum-up these actions that were to achieve as part of the Work package 1.

The ISECA Info Days were a collaborative task led by NAUSICAA. Contributions of the ISECA partner institutes are listed below:

Institute	Person(s)	Contribution
Nausicaá	Elise Chiroutre, Anne Vernier, Candice Hilderley Manuel Cira	Leaders organized the French ID, co-organised the UK ID
PML	Steve Groom, Gavin Tilstone, Victor Martinez-Vicente	Co-organized the UK ID
VLIZ	Annelies Goffin, Carolien Knockaert	Attended the French ID organized the Belgian ID
VITO	Jean-Luc De Kok	Helped for the Belgian ID
ADRINORD	Richard Santer	Advisor

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1. Introduction

1.1 Definition and objectives

Within the ISECA project, the Info Days (ID) aimed at gathering different experts on the topic of water quality and coastal eutrophication and participants interested by the thematic (Citizens, stakeholders and info multipliers).

The main objectives are:

- To mobilize people interested in the thematic
- To deliver information and educate the participants on the phenomenon of eutrophication, its effects and issues at stake
- To present and promote the ISECA's project and its partners
- To answer the public's questions
- To encourage fruitful exchanges between the experts themselves and between experts-participants as well
- To think and discuss of possible solutions together
- To provide and disseminate communication tools on the theme (educational activities, questionnaires, videos, website...)

1.2 Targeted audiences

- Actors representing Research Institutions, Environmental Public Institutions, and SME concerned by the field of coastal water quality measurement.
- Representatives of institutes/agencies specialized in water quality control or taking an interest in learning remote sensing technique and modelling.
- Tourism and agriculture sectors for the output of the perception study on eutrophication.
- Media to know more about and highlight research and possible solutions.
- Information multipliers such as educators who can relay information and educate the public at large
- General public interested in understanding the causes and possible solutions of eutrophication of the coastal waters along the Channel/North Sea shore.

1.3 Presentation of the ISECA Info Days

Country	Date	Place
FRANCE	28 TH November 2012	Boulogne-Sur-Mer, Nausicaa
UNITED KINGDOM	3 rd to 5 th September 2013 + 10 th October 2013	Plymouth University Plymouth, PML
BELGIUM	19 th September 2013	Ostend

- Note that some of the pictures taken during these events are watchable on the WIS (Communication and Education section/ media gallery folder:
http://www.iseca.eu/en/index.php?option=com_photogallery&view=photogallery&layout=photogallery)

- IDs are presented in the different semestrial project reports as well
- IDs each times promoted in the ISECA newsletters

2. Info Day in France



2.1 Preparation phase

As it was the very first Info Day to be organized within the project, this phase was very important. It will inspire the organization of the others.

2.1.1 Main actions achieved

- Internal meetings to prepare the event (date, content, budget repartition, logistics...etc.)
- Invitations and program sent to recruit participants, ISECA partners and invited speakers (**Annexes A-ID-1; A-ID-2; A-ID-3**)
- A press release spread so that different media relay the coming event (**A-ID-4**)
- 1st ISECA Newsletter launched
- constant back and forth with the ISECA partners, invited speakers and Nausicaá in order to refine the content and process
- Gather or create communication tools and update them when needed.

2.1.2 Recruitment of the participants

The invitation was sent by email to the list of stakeholders involved. This list was built up by ISECA partners and constitutes the A1-1 database. It was reviewed by Nausicaá and classified according to five criteria: scientific, commercial actors, authorities / water policy, education and users. Actors in the Regional Coordination of the World Ocean Network have also been invited. Several phone calls were made to diversify the audience and get a representative sample. The ISECA partners were also invited, especially PML and VLIZ which were the partners involved in the next IDs organization in UK and Belgium.

2.1.3 Recruitment of the experts

From August 2012, we started collecting public perception through the first public survey (part of the A 1-3) in NAUSICAA. We realized that people had many questions concerning the topic of eutrophication. The selection of experts was made in order to answer them. Thus, the objective was to gather French experts from different fields of specialization around the table to get different perspectives on the subject. All invited experts responded positively to the call¹.

2.1.4 List of participants and speakers

¹ Except GABNOR (association for the development of organic agriculture) who was willing to attend but not available that day.

4 Experts

- 1 representative of the water sector: COCHE Didier, Director of Veolia Water (Boulogne sur mer)
- 1 industrial : Jean-Louis DESMEDT, ECOVER (Landacres)
- 1 scientist : Alain LEFEBVRE, IFREMER (Boulogne sur mer)
- 1 representative of agriculture : Bruno ROUSSEL, President of the union for SAGE Canche and Elected to the Chamber of Agriculture, Nord Pas-de-Calais

6 ISECA partners

- Anne VERNIER, head of Education department of NAUSICAA
- Elise CHIROUTRE, in charge of the ISECA project and activity leader in the Educational department of NAUSICAA
- Candice HIDERLEY, ISECA project assistant on communication at NAUSICAA for one year
- Manuel CIRA, head of the cultural service and international partnership of NAUSICAA
- Annelies GOFFIN, responsible for ISECA website and scientific assistant (data center division) VLIZ (Ostende, Belgique)
- Carolien KNOCKAERT, VLIZ, responsible for ISECA website and scientific assistant, VLIZ (Ostende, Belgique)

18 Participants:

BIGNOLAS	Anne	Head of education department of the Musée Portuaire	59140	DUNKERQUE
CALAIS	Thierry	Farmer - EARL Le Moulin	62340	PIHEN LES GUINES
DELECOUR	Bernard	President of the intercommunity syndicate for Waste Water disposal - Neufchâtel Hardelet Condette Nesles	62152	HARDELLOT
HEMBERGEER	Régine	Nature Guide on the local shore	62126	WIMILLE
HUS	Brigitte	Nature Guide on the local shore	62200	BOULOGNE SUR MER
LEFEBVRE	Claude	Biology teacher Collège St Etienne au Mont	62152	HARDELLOT
MALFOY	Valérie	Activity leader -Nausicaa	62200	BOULOGNE SUR MER
MARTIN	Rodolphe	Biology Teacher Lycée Mariette- Boulogne sur mer	62250	MANINGHEN-HENNE
MASSET	Katy	Activity leader- Nausicaa	62200	BOULOGNE SUR MER
POLLAERT	Ann	Activity leader at the Musée Portuaire	59140	DUNKERQUE
POUYTE	Anaïs	Project Officer- Syndicat Mixte SAGE de la Baie de Canche	62140	HESDIN
RICHEUX	Emmanuelle	Officer-in-charge DREAL Nord Pas-de-Calais	59019	LILLE
RIMBAULT	Benoît	Nature guide Classe d'éveil et de découverte du Mont de Couppe	62480	LE PORTEL
TARDY	Elise	Activity leader -Nausicaa	62200	BOULOGNE SUR MER
VANGHENT	Francine	Nature Guide (local seashore)	62132	FIENNES
DELAURE	Virginie	Trip advisor, Tourist Office- Boulogne s/mer	62220	BOULOGNE SUR MER
HENICHART	Jonathan	Educator -Association NATURE LIBRE	62930	Wimereux
DESMEDT	Sylvain	Citizen	62930	Wimereux

Total: 28 people.

2.2 Conduct of the event

2.2.1 Program

Wednesday 28th November 2012 from 9.30 am to 5.30 pm

Time	Duration	Sequence
9.30 / 10 am	30 min.	Welcoming Time Presentation – A. VERNIER (NAUSICAA) - participants and experts - program of the day - conditions of dialogues (speech rules)
10 / 10.30 am	30 min	Why does the sea foam? educational activity with a voting system to dive into the subject – K. MASSET (NAUSICAA)
10.30 / 11 am	30 min.	. Presentation of the ISECA's project and its partners . How this European project aim at better answer the public questionings concerning eutrophication of coastal waters - E. CHIROUTRE (NAUSICAA)
11 / 11.45 am	45 min.	Preparation of specific questions to ask to the experts (Work in groups)
11.45 / 12 am		Pause and welcome the experts
00 / 1 pm	1 h.	Exchanges with the experts (part 1): General Questions « Who are you and how do your actions improve water quality and limit coastal eutrophication? » - Alain LEFEBVRE, Ifremer - Didier COCHE, Véolia eau - Jean-Louis DESMEDT, Ecover - Bruno ROUSSEL, SAGE agriculture
1 / 2.15 pm	1 h. 15	Lunch: each group will share his meal with his expert-referent
2.15 / 3. 15 pm	1 h.	Exchanges with experts (part 2) : Answers to specific questions - Alain LEFEBVRE, Ifremer, - Didier COCHE, Véolia eau - Jean-Louis DESMEDT, Ecover - Bruno ROUSSEL, farmer
3.15 / 4 pm	45 mn.	Presentation and exchange on the existing and future ISECA educational and communication tools Presentation of the ISECA website and its resources. Test of the new survey created for the general public (questionnaire 2 of the WP 1-3)
4 / 5 pm	1 h	« World Goûter » around the question: « What are the key messages that you would like to pass on concerning the eutrophication of coastal waters' issues? »
5 pm		Evaluation of the day. Feedbacks
5.30 pm / 6.30 pm		Possibility to visit Nausicaà exhibition

2.2.2 Welcoming time

Different pictures in link with the sea were arranged in the meeting room. Each person presented her/himself by choosing one of these pictures that sounds familiar or particular to her/him. After saying why he/she made that choice and sometimes in combination with the theme of eutrophication, pictures were hung on the wall with a message written on a post-it above.

Ex: picture of whelks "what is the impact of eutrophication on consumption seafood?"

2.2.3 An introduction to the subject with the activity « Why does the sea foam? »

This activity allows the participants to dive easily into the subject while living a playful moment. The participants are asked to give their opinion on the phenomenon with individual keypads to vote. Then, explanations are given to the public. This activity was created by Nausicaa. It has been validated and enriched with the help of the project partners **(A-ID-5)**.

2.2.4 Presentation of the ISECA's project and its partners

Based on a few slides **(A-ID-6)**, the project and the role of each Iseca partners were presented. This presentation was made-up thanks to identity sheets submitted by partners and reworked by Adrinord and Nausicaa.

2.2.5 The experts' answers to a first common question

"How does your job take part in the improvement of water quality?"

Each expert played the game, a 15 minutes maximum answer, often tracing efforts and improvements implemented over the past 30 years in their field. Common observations:

- . there were errors made thirty years ago,
- . we see the effects on the sea today
- . however, efforts are being made and we are on the right track,
- . work is still considerable
- . we are all concerned.

2.2.6 Exchanges around the table

Participants shared a meal with one expert to deepen the topic they were first interested in. The experts often exposed the difficulties in their profession: efforts made by the agricultural sector not always sufficiently recognized, lack of accurate scientific and geo-localized data, individual sewage not always well connected to the treatment implements, difficulties for communities to set standards as it costs a lot etc.

2.2.7 Specific questions to the experts

Then, working in 4 small groups, the participants were asked to consider four specific questions they wanted to ask to one expert in particular.

The expert had 15 minutes to answer. Most of the time, answers were enriched with the opinions of the other experts. Their speech has been transcribed in a document on the ISECA website and available in **A-ID-7**.

2.2.8 Tools to deal with the topic

Several participants have a role in relaying information to the public: educators, nature guides, Tourist Officers, project officers ...

Consequently, some ISECA tools were presented:

- The educational activity "Why does the sea foam"
- The ISECA website www.iseca.eu gathering all information and communication tools² both for public at large and specialists (stakeholders, scientists etc.).
- A questionnaire to test: within ISECA, several investigations are to be conducted. One of them, led by NAUSICAA, consists into determining the public perception of the phenomenon. A first face to face survey had already been conducted and allowed to collect 300 responses (see deliverable A1-3). Another questionnaire was being created from the 2nd semester 2012, so NAUSICAA benefit from this Info Day to test it with the participants (**A-ID-8**). The results were very enlightening and pointed out that it needed to be reworked before being offered to the public.

2.2.9 What do we keep as key messages?

Around a "world goûter", the principle was to constitute 4 groups and discuss on the following question: "What are the key messages you would like to disseminate to your audiences? ", then write them on a paper tablecloth. Every 10 minutes the participants change table. Only one person stays to tell the content of the previous discussion to the newcomers. This technic allows the expression of rich and quick ideas. Finally, each participant had to choose 3 ideas that seem essential to keep among all proposals (by drawing a circle beside the chosen proposal). Key messages are annexed in **A-ID-9**.

2.2.10 Evaluation

The participants were unanimous: the exchanges with experts had the greatest interest. The next info days organized in Belgium and UK ought to take this result into account. Presentation of the Dutch website will be expected, scientific advances and also new education tools: posters, activity "Why does the sea foam?"...

2.2.11 Folder given to participants

Content:

- The program of the day

² Information, education and communication tools such as Wiki, media gallery, scientific products such as publications, modeling platform (WAS), posters.

- Iseca Newsletter (Fall 2012)
- The scenario of the activity "Why does the sea foam?"
- Sheets compiling all the activities led to study eutrophication within the ISECA project (atmospheric correction, earth and in-situ observations, socio-economic issues, modeling eutrophication and simulate scenarios... etc.). They are also available at: http://www.iseca.eu/en/index.php?option=com_content&view=article&id=136:gendoc&catid=11:uncategorised
- The new Iseca survey for the general public and developed by NAUSICAA
- The magazine "Contre-Courant" from the Artois-Picardie Water Agency



©Nausicaa- Participants and the invited speakers (2nd picture, from left to right): JL.Desmedt; D.Coche; A.Lefebvre; B.Roussel

3 Info Day in the United Kingdom



This event was split into two:

- The **EMSEA conferences**: from 3rd to 5th September 2013 at Plymouth University. Partners found it was an opportunity to promote the ISECA project towards infomultipliers. PML (V. Martinez-Vicente) and NAUSICAA (E. Chiroutre) hold a stand for ISECA during the 3 days. They also made a 20 min presentation together in one of the plenary sessions to present the educational activities created in the frame of ISECA.
- The **conference at PML**, Plymouth: on the 10th October 2013, open to everyone but mostly experts.

3.1 The EMSEA event

EMSEA (EUROPEAN MARINE SCIENCE EDUCATORS ASSOCIATION) is dedicated to facilitate the exchange of success stories and good practices in marine education, to provide a networking directory for marine educators and to co-organize annual conferences for educators throughout Europe. Europe has much to offer in terms of valuable marine education projects and materials, but the efforts are often poorly visible, and thus seldom used by others. To guarantee an effective educational transformation, teachers and educators need to feel equipped, and engaged, and supported.

3.1.1 The objectives

The aims of our presence in the EMSEA event were:

- present the ISECA project: its aims, its activities and partners
- inform participants on the eutrophication phenomenon (causes, consequences, challenges and ways to monitor it)
- link science with education by making a presentation together on the educational activities created in the frame of ISECA:
 - “Why does the sea foam?” activity: how to attract people on a difficult subject such as eutrophication, presented by E. Chiroutre (marine activity leader and ISECA officer at NAUSICAA).
 - “Satellites and Ocean colour” activity, presented by V. Martinez Vicente (scientist of the remote sensing group at PML). **A-ID-10**
- answer the public’s questions
- promote and provide communication tools on the theme

3.1.2 Participants

Around 80 persons attended, majority of marine educators but also scientists, journalists etc.

3.1.3 The ISECA communication tools used

- The ISECA stand-alone displays
- The project folders (1st dissemination of this tool), containing:
 - o PML’s poster concerning the ISECA project
 - o VITO’s poster on modeling earth observation in ISECA
 - o The 4 ISECA newsletters.
 - o The ISECA leaflet
 - o A sheet with a QR code to go directly on the website
 - o The scenario of our educational activity: “why does the sea foam?”
- The 1st launch of the ISECA video : “focus on eutrophication”

A portfolio and program of the whole event were also given to the participants. NAUSICAA created a 2 pager inserted in the portfolio (**A-ID-11**). It presents the ISECA project and PML and NAUSICAA’s roles in it. Besides, PML created the abstract for presentation session that was inserted in the program. (**A-ID-12**)

The PowerPoint created for the presentation is available on the EMSEA website and on the private part of ISECA website. (**A-ID-13**)

3.1.4 Results

- Many people coming to the stand during each breaks and lunch times.
- There were many discussions and questions. Real interest, real concern of the people noticed.
- Communication tools disseminated
- Educational tools highlighted
- Clear information on ISECA and eutrophication delivered

3.1.5 Some outcomes

- News articles published (**A-ID-14**)
- Participants visiting the ISECA website and fill the questionnaire
- Dissemination on the EMSEA website and network

3.2 The public event at PML

3.2.1 Topic and event content

The topic where the opportunities and use of satellites, including using ocean colour for monitoring water quality and why the sea foams, and the behavior of large marine vertebrates, such as basking sharks.

The event was directed to the Public at Large, and was timed to co-incide with the International Space Week.

The event had a 2 hour duration and took place at the Marine Matters Centre in PML on the 10th October 2013. It consisted of 4 talks and a Poster session with discussion after the talks.

3.2.2 Promotion of the event

PML promoted the event through a number of avenues including:

- PML's social media and website, **A-ID-15**
http://www.pml.ac.uk/media/news_highlights/pml_satellites_event.aspx
- distribution of a flyer through mailing lists around Plymouth,
- PML contacted a number of colleges in the area surrounding Plymouth
- and promoted in the Plymouth City Council Weekly digest.

3.3.3 The ISECA objectives

- present the ISECA project: its aims, its activities and partners
- inform participants on the eutrophication phenomenon (causes, consequences, challenges and ways to monitor it)
- answer the public's questions
- promote and provide communication tools on the theme

3.3.4 Number of participants

Feedback information was collected by the PML Marketing Department (Ms. T. Keiser and Mr.J. Johnson), through questionnaires after the event, as well as monitoring attendance through a registration database.

From these, it was found that:

- People who attended the event 65 + PML hosts 11 = 76 in total
- People who had registered beforehand did not show= 17
- Feedback forms received = 32 or which 1 has been excluded as not valid; 5 forms were filled in anonymously

3.3.5 ISECA Communication tools used

- The stand-alone displays

- The project folders (1st dissemination of this tool), containing:
 - o PML's poster concerning the ISECA project
 - o VITO's poster on modeling earth observation
 - o The 4 ISECA newsletters.
 - o The ISECA leaflet
 - o One presentation by V. Martinez-Vicente (**A-ID-16**)

3.3.6 Results

From the questionnaire collected by the Marketing Team, the following feedback was obtained:
Table 1: Feedback from the PML ISECA- UK –event in % of the total responses (N=32).

	Very poor	Poor	Average	Good	Excellent
Pre event information	0	6	42	35	16
Speakers	0	0	2	24	74
Venue	0	0	0	42	58
Catering	0	2	5	22	72

The quality of the speakers and the catering were best rated (75 and 72% of the attendance found it excellent), whereas the pre-event information was rated mostly average (42% of respondents).

Overall, it was found:

- Very positive feedback from the forms participants filled
- Communication tools developed through ISECA were used effectively

3.3.7 Outcomes

- Awareness of general public on the issue of eutrophication and what is possible to detect through remote sensing, which benefited ISECA
- Gather interest from general public on general marine scientific matters, which benefited the public at large.
- This was the first public dissemination event at PML, so no previous set up was in place. It allowed designing a mechanism to host other public events on marine subjects in the future, which benefited PML.



© PML- Picture 1: ISECA stand at EMSEA conference with E.Chiroutre, Plymouth University

Picture 2: 10th October event at PML- conference room

4 Info Day in Belgium



It was organized on 19/09/2013 in Ostend by the Flanders Marine Institute (VLIZ).

4.1 Targeted audience

The infoday in Belgium was not organized for a public of stakeholders, scientists, policy makers, public at large, as the French ID was, but focused specifically on information multipliers. We believed by informing guides we would benefit from their expertise as story tellers, animators, information multipliers to create awareness to the public at large on a topic like eutrophication.

4.2 Preparation phase

In January 2013, VLIZ contacted the team of “Zee Op De Korrel” to ask them if VLIZ could organize a session on eutrophication. Zee Op De Korrel is an educational course organized to educate information multipliers on specific marine topics. This course involved different sessions or lessons and a practical session on the beach.

VLIZ created an educational activity on eutrophication: “The Beach Lab Tool” (English version of the activity annexed in **A-ID-17**).

It is part of a mobile beach lab that is offered to guides, educators and schools to use on the beach all year round starting from summer 2013. It is also used on public events at the coast such as ‘Week van de zee’, Oostende voor anker, This beach lab was demonstrated on 26th of September on the beach in the practical session as part of the course.

VLIZ invited for the ISECA session the Laboratory of Protistology and Aquatic Ecology to give a presentation on the basic knowledge of the functioning of phytoplankton, the process of eutrophication, problems and solutions.

4.3 Conduct of the event

The infoday started with an informative session on eutrophication and ended with a demonstration of an educational kit to be used by the participants in specific events.

Prof Koen Sabbe could not attend, but an enthusiastic colleague Drs.Lander Blommaert was eager to teach and inform on this subject.

After the presentation of Drs Blommaert, VLIZ introduced the project ISECA. VLIZ focused on the importance of an interregional approach to tackle problems on eutrophication, invited people to have a look at the website and search for more information, to take part of the questionnaire and hand out leaflets to anyone that could be interested.

After the presentation and the introduction to the project ISECA, participants were introduced to the educational kit on eutrophication that VLIZ created in the frame of ISECA and were

invited to wonder about the beautiful diversity of life of phytoplankton using microscopic techniques.

Registration to the session was obliged. From the 47 registered participants, 45 participants attended the morning session on eutrophication (see sign-off sheet in **A-ID-18**).

4.4 Some results

- More unique visitors from Belgium on the website (see report on WIS)
- More input on questionnaires
- Info day organized within the frame of educational workshops for guides= efficient information distribution



After the session the educational kit on eutrophication was demonstrated. Drs Lander Blommaert (left) was invited to talk about phytoplankton and eutrophication.

5 General conclusions

Info Days were crucial events to communicate towards infomultipliers and stakeholders and disseminate ISECA tools.

In each country we adapted the event (content and format) and get very interesting and positive results. Besides, it nourished the creation of C&D tools (e.g., education activities). Note that these tools will remain available thanks to the ISECA website (WIS) www.iseca.eu.

Finally, it is also essential to mention that Info Days were the opportunity to work together and strengthen the ties between cross-border partners. They also inspired us for the Final event.

** Acknowledgments: this work described in this report has been co-funded by the INTERREGIVa 2Seas Program. Contract no 07-027-FR. <http://www.interreg4a-2mers.eu/fr>*

INTERREG IVA 2 Seas Project: 'Information System on the Eutrophication of our Coastal Areas '(ISECA)

DA1-5: Final Event - Final report Chiroutre E., NAUSICAA (2014)



Executive summary:

One of the most important communication activities within ISECA was to organize the final event of the project: an international meeting to share and promote its results. This deliverable sums-up this action that was to achieve as part of the Work package 1.

*The ISECA Final event was **a collaborative task** led by NAUSICAA. Although all partners were involved, specific contributions of the ISECA partner institutes are listed below:*

Institute	Person(s)	Contribution
NAUSICAA	Elise Chiroutre, Anne Vernier, Manuel Cira	Leaders, organizers Speakers
PML	Steve Groom, Gavin Tilstone	Help in experts recruitment Speakers
VLIZ	Annelies Goffin, Carolien Knockaert	Help in public recruitment Speakers
VITO	Jean-Luc De Kok	WAS workshop leader Speakers
ADRINORD	Richard Santer	Advisor Speaker
CEMARE	Premachandra Wattage	Speaker
UNIVERSITY OF GREENWICH	Koulis Pericleous, Georgi Djambazov	Speakers

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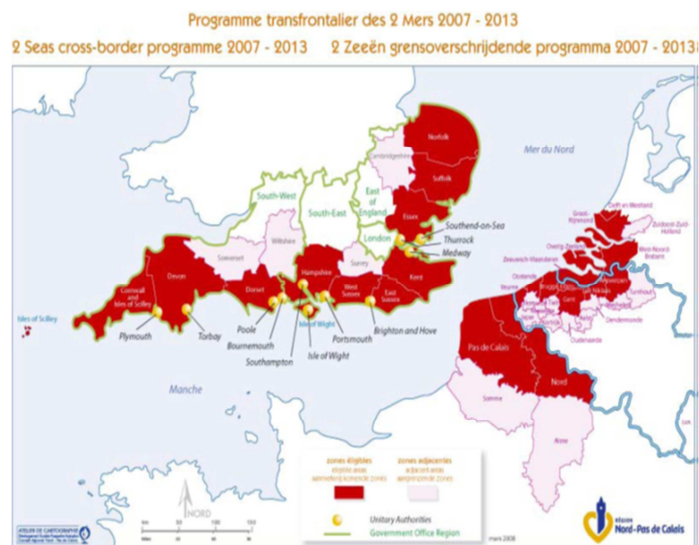
5. General conclusions

1. Introduction

1.1 Project summary

Before starting describing the Final event, let us recall what the ISECA project is.

The cross-border cooperation project ISECA, which is supported by the INTERREG IVa 2Seas Program (<http://www.interreg4a-2mers.eu/en>), is collaboration between Flemish, Dutch, French and British knowledge partners. The portal centralizes the knowledge and information about the eutrophication of our coasts. It is aimed at raising public awareness about the effects of eutrophication such as harmful algal blooms or socio-economic problems.



The research area of the 2Seas program

The objective of the ISECA project is to improve the exchange of data and scientific insights related to the eutrophication of coastal waters in the English Channel and the Southern North Sea (figure), aiming both at knowledge partners and the relevant authorities and general public. The project is coordinated by ADRINORD in France.

Eutrophication of coastal waters is still considered to be an important problem and has the continued attention of the European Community (www.ospar.org). The key objective is to demonstrate the added value of a flexible, web-based information system (WIS) for efficient water management in the broader sense. The information system will provide information concerning actors involved in water quality and eutrophication problem in general and easy access to quality data. Data products designed for broader public will be available on the WIS (Web-based Information System). Furthermore, the available in-situ and earth observation data will be combined with integrated simulation models to give insight in the causes and potential ecological and economic consequences of eutrophication and the effectiveness of management options.

This will be done by combining concepts from different scientific domains, taking into consideration the impacts on different sectors such as tourism, fisheries and aquaculture. Obviously the cross-border cooperation is very important due to the nature of the problem and the necessity to improve the harmonization of data protocols and indicators, as well as the exchange of experience related to the causes of eutrophication and potential solutions. The project consortium will also look for cooperation with similar European research programs such as GMES, MyOcean, COBIOS and DYMAPHY.

ISECA is not exclusively oriented towards a scientific or technical approach of eutrophication. An important task is to identify the key actors and target public via different communication channels (web, surveys, workshops and conferences). An international advisory committee will be appointed to monitor the progress of the project and to provide feedback from the end-user point of view on a regular basis. The interactive involvement of the end users is an essential aspect of the project, and will play a role in the design and improvement of the information system. The socio economic aspects will be covered by collecting the perception on the eutrophication, hereby evaluating the “willingness to pay” of the concerned population for remediation.

Monitoring the water quality and the eutrophication should result from in situ measurements. The Earth observation (EO) and particularly the “water colour” are powerful monitoring tools. From the EO, we will derive maps of eutrophication indicators.

Modeling the eutrophication is also a key issue to evaluate the impact of remediation measures or the impact of global change. Demonstration applications will be developed for a limited number of locations. Well-chosen examples can be expected to convince the potential users of the added value of the system, which will ensure the future use of the information platform. The models will be partially based on reusable model building components which allow for easier exchange of scientific knowledge between researchers, building on the outcomes of the European 6th Framework project SPICOSA (www.spicosa.eu).

A major communication effort will be conducted in order first to explain to the public at large what eutrophication is and what are considered the most important consequences. Second, the demonstration of the innovative tools (EO and modeling) should provide a step forward in the knowledge of the eutrophication. The ISECA portal will disseminate scientific documentation such as a description of in-situ measurements, the best practice protocols and quality control procedures together with EO databases.

1.2 The ISECA Final event: objectives

Within the ISECA project, the Final Event aimed at gathering different specialists on the topic of water quality and coastal eutrophication coming from different countries, next to participants

interested by the thematic. A special focus on the 2Seas area is put forward (English Channel and North Sea).

The main objectives were discussed during the semestrial project progress meeting 5 (Medway, UK, July 2013):

- To mobilize the following audiences: researchers, professionals and stakeholders, information multipliers, public at large interested in the thematic
- To deliver information on coastal water quality and eutrophication, its effects and issues at stake
- To present and promote the ISECA project and its partners: **underline its added value and present its results.**
- At a larger scale, to show the interests of projects in the fields of research
- To underline the importance of EO, in-situ, modelling, data collection and socio economics nowadays.
- To share and disseminate information on actors and data collections related to coastal water quality for the English Channel and the Southern North Sea.
- To encourage productive exchanges and gather different point of views
- To provide and disseminate communication tools on the theme (educational activities, questionnaires, videos, website...) to relay so as to educate citizens.
- To ensure a basis for follow-up and future use of the WIS and the WAS (Web-based Application Server).
- To think and discuss of possible solutions and future steps together

1.3 Targeted audiences

- Actors representing Research Institutions, Environmental Public Institutions, and SME concerned by the field of coastal water quality measurement.
- Representatives of institutes/agencies specialized in water quality control or taking an interest in learning remote sensing technique and modelling.
- Tourism and agriculture sectors for the output of the perception study on eutrophication.
- Media to know more about and highlight research and possible solutions.
- Information multipliers such as educators who can relay information and educate the public at large
- General public interested in understanding the causes and possible solutions of eutrophication of the coastal waters along the English Channel/North Sea shore.

1.4 Program

During the 2nd semester 2013, discussions with all partners came out to better define this major event: aims and type of public, participants/speakers (see 1.2 and 1.3 sections), type, format and content. It sets the mainlines:

- Format: 1, 5 days
 - One day stakeholder's conference, with 80 of the most interesting people from the 4 2Seas countries. Stakeholders would present the process of eutrophication.
 - More specialized workshops to try the WAS with 30 to 50 potential users and another one to promote the iseca education tools.
- Date and place: NAUSICAA, Boulogne-Sur-Mer, by the end of June or beginning of July 2014.
- Main content of the event:
 - ✓ Information on eutrophication, water quality, coastal zone pollution: legal framework, facts and figures, explanation of the phenomenon
 - ✓ What is the interest of combining Earth observation, in-situ measurements and modelling so as to monitor eutrophication?
 - ✓ What do we know of the public perception of eutrophication?
 - ✓ "Hands-on" presentation of the WAS for relevant environment managers
 - ✓ "Hands-on" education activities
 - ✓ Lessons learnt from the project: how can we use the project results in the future?

This formed the basis for NAUSICAA to set up a detailed program (**annex A-FE-1**). This program was an internal reference document which evolved all along the preparation phase (cf. section 2) and which also allowed, after speakers recruitment phase, to come to the official program:

- Day 1 : **Monday 30th June 2014**

Time	Day 1 program
9:00 - 11:00	Registration and coffee time
11:00 - 12:00	✓ Welcome in Nausicaá, Philippe Vallette (<i>Director of Nausicaá, France</i>) ✓ Presentation of the INTERREG IV A 2 Seas Programme, Edouard Gatineau (<i>JTS Interreg IV A 2 Seas Programme, France</i>) ✓ Presentation of the daily program and keynote speakers, David Lefort ✓ Presentation of the ISECA project, Richard Santer (<i>ADRINORD, France</i>) ✓ Interaction with the floor: ISECA video "focus" to introduce eutrophication, David Lefort and Alain Lefebvre (<i>Ifremer, France</i>)
12:00 - 13:00	Lunch Break (Buffet)
13:00 - 14:10	Session 1: Eutrophication, setting the scene ✓ Explanation of the eutrophication phenomenon and its impacts in the coastal zone, Christiane Lancelot (<i>ULB, Belgium</i>) ✓ Focus on eutrophication in the 2Seas Area, Jacco Kromkamp (<i>NIOZ, Netherlands</i>) ✓ Eutrophication in other seas : Example of the Baltic Sea, Andris Andrusaitis (<i>BONUS Programme, Finland</i>)

14:10 - 16:15	Session 2: To know more and better understand eutrophication How do researchers observe and measure the phenomenon? What are the interests of combining EO, in situ observations and models? ✓ In situ observations, Rodney Forster (CEFAS, UK) ✓ Earth Observations (EO), Francis Gohin (Ifremer, France) ✓ Atmospheric Observations, Koulis Pericleous (University of Greenwich, UK) ✓ EO tools developed in ISECA, Gavin Tilstone (PML, UK) ✓ The Web-based Application Server (WAS), Jean-Luc De Kok (VITO, Belgium) ✓ Another example of combining EO, in situ observation and models : AlgaRisk and web-visualization, Steve Groom (PML, UK)
15:00 – 15:30	Coffee Break
16:15 - 17:10	Session 3: Moving towards a better governance ✓ What is the existing legislation for a good water quality in Europe?, Stephen Malcolm (CEFAS, UK) ✓ What does that change for water quality?, Jean Prygiel (Artois Picardie Water Agency, France) ✓ What effects do the regulations have on different sectors? ISECA “3 questions to...” videos : interviews of experts (Industry and Water treatment sectors) then interaction led by David Lefort and Alain Lefebvre
17:10 - 17:45	Session 4: Public perception of eutrophication and willingness-to-pay ✓ Results of the ISECA surveys, Carolien Knockaert (VLIZ, Belgium) ✓ Socio-economic analysis, the Solent study, Premachandra Wattage (CEMARE, UK) ✓ How did we inform general public in the ISECA project?, Anne Vernier (Education Department of Nausicaá, France)
17:45 - 18:15	Session 5: Conclusions and future prospects ✓ Interaction with the floor : Future steps towards safe guarding water quality in our coastal zones ✓ Question time
18:15 - 19:30	Visit to Nausicaá's Aquarium
19:30	Reception in Nausicaa's Aquarium

• **Day 2 : Tuesday 1st July 2014**

Time	Day 2 program
9:00 - 09:10	Presentation of the two workshops at choice
09:10 - 11:40	Workshop Web-based Application Server (WAS) : EO tool to monitor eutrophication OR Workshop educational activities developed within ISECA coffee break included
11:40 - 12:25	Conclusions and outlook from the floor
12:30 - 14:00	Lunch
14:00 - 16:00	Field trips for workshop participants (at choice) ✓ Visit to the water treatment plant of Boulogne-Sur-Mer ✓ Visit to Ifremer laboratory and presentation of the "Marel Carnot measurement station" ✓ Further visit to Nausicaá's Aquarium
14:00 – 16:00	Semestrial progress meeting 7 for ISECA project partners, advisors and Interreg ONLY

2 Preparation phase

2.1 List of actions

The preparation phase was very intensive and lasted all semester long. The numerous actions performed during the semester are listed in **annex A-FE-2**. Here are the **main** ones:

- Define a date and create an official program thanks to the objectives and the targeted public (**A-FE-3**).
- Create and disseminate a save the date, press release, invitations (one for speakers, one for participants, then others personalized), registration form, practical info sheets, online platform dedicated to the event (**Annexes: A-FE-4; 5; 6 and 7**).
- Recruit professional convenors, interprets (for double translation English/French) and cabin technician, speakers (internal but also external to the ISECA project) and participants (stakeholders).
- Create a more detailed program as reference document for ISECA partners, professional convenors and interprets.
- Refine the content and process through constant back and forth with the ISECA partners, invited speakers and professional convenors.
- Gather communication tools and update them when needed.
- Finalize the French part of the ISECA website together with Vliz
- Manage organization points and meetings.
- Logistics and financial matters linked to such an event.
- Organize the plenary sessions, specialized workshops and field trips.

All documents were to elaborate in English and French.

Besides, note that Info Days and the inventory of the key actors are elements that helped us for the Final event (program and invitation of relevant people)

2.2 A great collaborative work

Key player and leader in organization and communication is NAUSICAA but all partners were involved especially VLIZ and PML.

2.2.1 Building up of the program

All project partners were involved in the preparation of the detailed program (**A-FE-1**). They first gave their remarks on the draft program suggested by NAUSICAA in December 2013: time, content, objectives, targeted public, process...

A meeting with VLIZ at NAUSICAA occurred in January 2014 to discuss the Final Event as a whole. Then, there were many back and forth all semester long, especially with G.

Tilstone from PML. Each time the program was reviewed or reshaped; speakers and ISECA partners were informed and could give their opinion.

Besides, ISECA partners who were designed as speakers also prepared their presentation which they sent before the event to NAUSICAA so that they can go deeper into the contents with the professional convenors.

2.2.2 Recruitment of speakers

During and after SM6 in Portsmouth, NAUSICAA asked all partners to recommend scientific experts (external to the ISECA project) that would be most appropriate to give a talk according to the program content.

Invitations were personalized and sent to each potential speaker by email by NAUSICAA and PML. NAUSICAA contacted each confirmed expert so as to refine and discuss the content of it and try to set a good repartition of speeches (in order to avoid repetitions and give a boost to the sessions). Long and intense phase.

2.2.3 Recruitment of participants

From the end of March till the end of May, invitations were sent in English by email through the ISECA A1.1 contact list (2 times) by VLIZ. NAUSICAA sent French invitations to the French contact A1.1 list.

NAUSICAA also invited each project partners to solicit their networks and to promote the event (e.g., VLIZINE, Grote Rede, World Ocean Network, IDs participants, EMSEA network, NAUSICAA News, ISECA newsletter).

From the beginning of June, in order to achieve more participants, other detailed contact lists were made and confirmed speakers were added to the invitation form. All month long, NAUSICAA also contacted stakeholders one by one (phone and email). The aim was both to attract more people but also to get participants from each category of stakeholders listed below:

- Policy: at different levels (state, regional , local)
- Commercial : fishing, aquaculture, industry, farming...
- Education: formation (e.g. universities), environmental sensitizing
- Research/science: applied science, water quality, ecology, environment (atmosphere, water...), remote sensing, ...
- Public “users”: tourism, sports, association...

2.2.4 Information on the ISECA website

A close collaboration between NAUSICAA and VLIZ occurred to put the appropriate

information on the WIS: save the date, program, registration form, practical information (venue, hotels suggestion etc.), a confirmed speakers' list and accompanying curriculum vitae.

2.2.5 Budget: Repartition of T&S expenses for invitees (Travel and Subsistence)

It had been decided in Portsmouth (SM6) that the "shared costs"- to which each partners initially contributed- were reshaped and will support the T&S expenses both for the invited speakers to the final conference and our advisors for the SM7. The general rule put forward by ADRINORD is: for UK partners (PML, University of Greenwich and CEMARE) to finance T&S for UK invitees; VITO and VLIZ for Belgian and Dutch invitees and NAUSICAA for French and people coming from outside the 2Seas region. The respective contribution corresponds to 3 percent of each partners' total budget.

E. Chiroutre from NAUSICAA handled this action. After all PP were solicited, here is the repartition:

Project Partner	Invitees taken in charge
NAUSICAA	A. Andrusaitis (Finland, BONUS Programme); F. Gohin and A. Lefebvre (France, IFREMER); E. Gatineau and F. Ramdane (Interreg); J. Prygiel (France, Artois-Picardie Water Agency)
VLIZ	J. Kromkamp (Netherlands, NIOZ), C. Lancelot (Belgium, ULB)
PML	S. Malcolm and R. Forster (UK, CEFAS)

2.2.6 Interreg/Nausicaa Exchanges

E. Chiroutre had several exchanges with the Interreg officer M. Gatineau for advises and respect of the good process (correct use of logos, budget matters, out of the 2Seas areas invitees, invitations and program). Each time, information was then relayed to all project partners.

2.3 Numbers of registered participants and repartition

At the end, 74 different people registered (*ISECA partners, invited speakers, Nausicaa staff and others stakeholders*) and inscribed as follow:

Date	Number of registered people
30 June (Day1)	72
1 st July (Day2)	62

For the specialized workshops and field trips (Day 2):

1 st July session	Number of registered participants
Education workshop	16
WAS workshop (Full)	33
Visit of IFREMER laboratory and presentation of Marel-Carnot station (Full)	11
Visit of Nausicaa exhibition	6
Visit of Séliane, water treatment plant	7

More details are available in A-FE-8 (participant's names, structure, function etc.)

2.4 Deviations from the original plan and complexities

- Difficulty to have participants from certain categories: policy makers, journalists and educators. Educators were too busy at this period of time (peak season with the schoolchildren) to attend although some of them were interested in the subject.
- Complexity to build a program and agree on it. The program was not common and didn't look like a pure scientific conference. To build it, NAUSICAA first pointed out what we want to put forward in terms of content and then tried to find appropriate speakers. The aim of the event was to gather not only scientists specialized in eutrophication but also stakeholders from other fields (as listed in 2.2.3). It was also a very intense and interesting task as communicators to work together with scientists: understand and take into account each other's' point of view, go on all together finding compromises bearing in mind the common will for the event's success and the objectives set.
- To boost the event, NAUSICAA decided to have facilitators: D. Lefort (French journalist) and Alain Lefebvre (IFREMER) who helped at some other occasions during the ISECA project. This was a very big success because they were a very good tandem. Their task was to summarize the different steps and talks, ease and raise the discourse.

3. Process: conduct of the event

3.1 Organization tasks

The main actions performed during the event are listed in **A-FE-9**.

3.2 Speakers presentations

Invited speakers' curriculum vitae (**annex A-FE-10**) are available on the ISECA website at: <http://www.iseca.eu/en/home-en/11-uncategorised/204-Speakers>

Likewise, speakers' presentations (PowerPoints) and abstracts are downloadable at:

- ✓ **Presentation of the ISECA project**, Richard Santer (ADRINORD, France)
- ✓ **Cultural eutrophication in the Greater North Sea**, Christiane Lancelot (ULB, Belgium)
- ✓ **Focus on eutrophication in the 2Seas Area**, Jacco Kromkamp (NIOZ, Netherlands)
- ✓ **Eutrophication in other seas : Example of the Baltic Sea**, Andris Andrusaitis (BONUS Programme, Finland)
- ✓ **Eutrophication monitoring from In situ observations**, Rodney Forster (CEFAS, UK)
- ✓ **Eutrophication monitoring from Earth Observations (EO)**, Francis Gohin (Ifremer, France)
- ✓ **Atmospheric Transport contribution to coastal eutrophication**, Koulis Pericleous (University of Greenwich, UK)
- ✓ **ISECA EO products for monitoring eutrophication in European coastal waters**, Gavin Tilstone (PML, UK)
- ✓ **The Web-based Application Server (WAS)**, Jean-Luc De Kok (VITO, Belgium)
- ✓ **Marine management: what is the existing legislation for a good water quality in Europe**, Stephen Malcolm (CEFAS, UK)
- ✓ **Eutrophication des cours d'eau et son évolution dans le bassin Artois-Picardie**, Jean Prygiel (Artois Picardie Water Agency, France)
- ✓ **Another example of combining EO, in situ observation and models : AlgaRisk and web-visualization**, Steve Groom (PML, UK)
- ✓ **Results of the ISECA surveys: public perception on eutrophication**, Carolien Knockaert (VLIZ, Belgium)
- ✓ **Socio-economic analysis in ISECA, case study: the river Solent**, Premachandra Wattage (CEMARE, UK)
- ✓ **How did we inform the public in the ISECA project?**, Anne Vernier (Education Department of Nausicaá, France)
- ✓ **Introduction to the WAS workshop: in situ and Satellite data in the Web Application Server (WAS)**, Gavin Tilstone (PML, UK)



Pic. 1: ISECA project presentation / Pic. 2: conference room

3.3 Interviews

The NAUSICAA team also benefited from the experts' presence to interview some of them so as to enrich the initial series of videos entitled "3 questions to..." in the frame of ISECA. The principle is simple: 3 questions are asked to experts from different fields in link with eutrophication and eventually they can pass on a personal message on that issue. During the project, 4 specialists had already been interviewed: Didier COCHE (Director, responsible for contracts with local authorities, VEOLIA EAU), Frédéric COUSIN (Head of Laboratory,

NAUSICAA), Alain LEFEBVRE (Researcher and Director of the Environment & Resources Laboratory, IFREMER), Jean-Louis DESMEDT (Responsible for External Relations and Training).

During the final conference, we chose to interview 3 ISECA partners:

- Jacco KROMKAMP, Senior Scientist, Department of Marine Microbiology from the Royal Netherlands Institute for Sea Research (NIOZ, Netherlands)
- Carolien KNOCKAERT, Junior Scientific assistant from the Vlaams Instituut voor de Zee- (VLIZ, Belgium)
- Gavin TILSTONE, Senior Scientific Officer, Bio-optical Oceanographer, Remote Sensing & Optics Group from the Plymouth Marine Laboratory (PML, UK)

Here are the type of questions asked:

- What is eutrophication? Is it a natural phenomenon?
- Why/How can it become a threat for the marine environment?
- What actions have been taken to learn more about eutrophication?
- What further progress can be made (especially in your sector)?
- In your area of specialization, which actions have been taken to inform on the eutrophication of coastal waters?
- What is your personal message for the public?

These interviews will be finalized and launched on the WIS last semester 2014.

Apart from these, the whole final event was filmed and pictures were taken.

3.4 Deviations from the original plan

- Edouard GATINEAU (Interreg project Officer) and Fayçal RAMDANE (project assistant) couldn't attend the event due to transport strike in Belgium. Fortunately, Séverine ERNEST came to the event as a participant and agreed to present the INTERREG IV A 2 Seas Programme to the audience and also give a talk concerning the future INTERREG V A 2 Seas (November 2014 to 2020).
- Time respect: day 1 being particularly rich in terms of contents and interactions, it was hard to stick to the pre-defined timing. The conference ended around 19:15 so the visit of the aquarium had to be shortened.

3.5 Disseminated documents:

- The ISECA project folder (available in both language) was given to each participant and speaker and contained the following:
 - The 5 ISECA Newsletters
 - The program of the day

- ISECA project leaflet
- Sheets compiling all the activities led to study eutrophication within the ISECA project (atmospheric correction, earth and in-situ observations, socio-economic issues, modeling eutrophication and simulate scenarios... etc.). They are available on the WIS at: http://www.iseca.eu/en/index.php?option=com_content&view=article&id=136:gendoc&catid=11:uncategorised
- Other documents linked to coastal waters and eutrophication were put at disposal, free to pick up. Here are some examples:
 - Documentation from the Artois-Picardie Water Agency such as the magazine "Contre-Courant"
 - IFREMER documentation on *Phaeocystis* blooms, semi-automated techniques for phytoplankton studies, nutrients loads etc.
 - The WAS manual (automatically given to the WAS workshop participants and at disposal for the others)
 - The 3 ISECA scientific posters created during the project
 - The DYMAPHY project leaflet and newsletters
 - Documentation from organic agriculture in link with water quality
- Others, more specifically linked else to Education, else to modelling and data collection, were left at disposal in the workshops' rooms on Day 2.



Pic.1: WAS workshop / Pic.2: Education workshop

4. Results and outcomes

4.1 Evaluation

In general partners evaluated the event as was successful for the plenary sessions as well as for workshops and field trips. Objectives were fulfilled. Here are some elements:

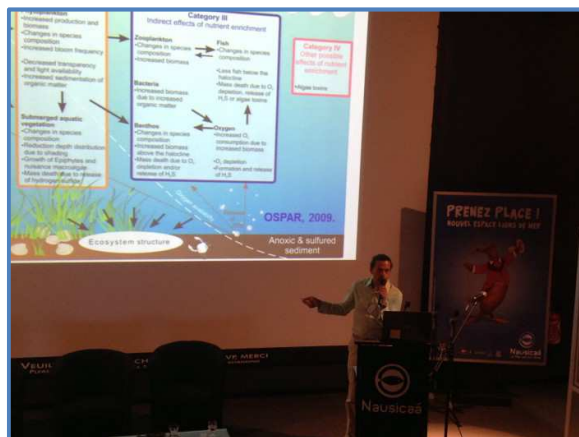
- Clear information on ISECA and eutrophication delivered

- Many discussions and questions. Real interest, real concern of the people noticed
- Communication tools disseminated
- Educational tools highlighted and interest of the people noticed
- Eminent scientists' speakers that played the game of "simplifying" communication towards stakeholders thanks to the help of the convenors. They perfectly adapted to the audience

At the end, 64 people participated in the ISECA final event (**A-FE-11**).



Pic.1: Eutrophication in Baltic Sea presentation / Pic.2 (from left to right) question time and round-the-table with D.Lefort; A.Lefebvre; A. Andrusaitis; J. Krompkamp; C. Lancelot



Pic.1: G. Tilstone presentation on EO products / Pic.2: questions from the audience

4.2 Thanks and feedbacks

- NAUSICAA sent emails to particularly thank:
 - the speakers as well as all ISECA partners
 - D. Lefort and A. Lefebvre
 - the interpreters and cabin technician
 - the participants
- (**A-FE-12**)

- To go further, as decided during the ISECA semestrial meeting, E.Chiroutre also sent emails to the WAS workshop participants to get their feedback on the WAS tool through a questionnaire made up by VITO (**A-FE-13**).
- Likewise, an email to all final event participants was addressed to promote a survey created in the frame of the ISECA project and aiming at stakeholders (**A-FE-14**). This survey is designed to evaluate the adequacy of the ocean-colour products and their usefulness to user community (specially monitoring agencies, policy advisors, policy makers).
Getting the opinion of the final event participants will allow us to either confirm the choices made in ISECA or to reflect new needs in future projects.

All these actions allowed us to get feedbacks. All were positive. We particularly get enthusiastic and very positive opinions from the speakers not only in terms of content and exchanges but also in terms of organization, venue and welcoming.

4.3 Actions after the event

We are willing to highlight the ISECA project results in various ways during the last semester 2014. Here are some examples:

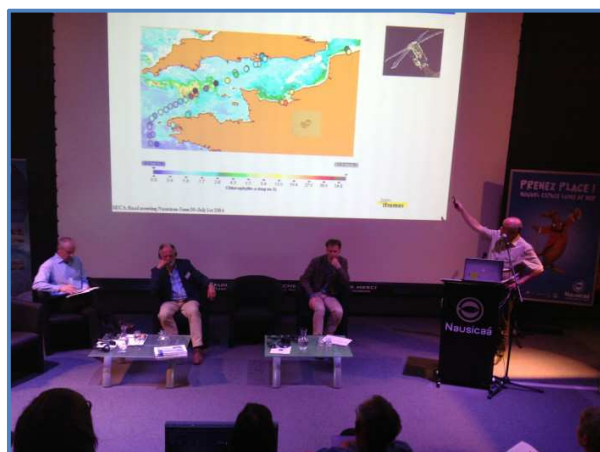
- An entire section has been created on the ISECA website, devoted to the Final event:
http://www.iseca.eu/en/index.php?option=com_content&view=article&id=195:%20iseca-final-event&catid=11:uncategorized
There you will find pictures, program, speakers CV, list of participants and speakers powerpoint presentations. This work was a collaboration between NAUSICAA and VLIZ
- The event is presented in ISECA semestrial project reports to INTERREG as well as in this deliverable.
- Evaluation of feedbacks from the WAS and A1-2 questionnaires (by VITO and PML).
Here are the main conclusions concerning the WAS tool :
 - The WAS can be useful, but the user interface is not suitable yet for non-experts who need to be provided with more summarized information such as an Harmful Algal Bloom Risk Map.
 - The tool works very intuitively, and is easy to use. Some problems remain with the screen resolution and windows which do not appear. It does not work on iPads.
 - Documentation should be improved and made more transparent
 - Data uploading is open to anyone: there is a need for quality control. For the time being the Data Policy Statement is sufficient, particularly because downloading of datasets is not possible

for more information, see **A-FE-15** (+ deliverable on WAS and A1-2 results)

- ISECA Newsletter 6
- To offer the possibility to Nausicaa's visitors to get information on this thematic, two tools are being created:
 - a final ISECA video going further than the others created that far. It will gather the main topics discussed during the conference. It will be on the ISECA website but also in Nausicaa's exhibition. A referent document is annexed to get an idea of this tool (**A-FE-16**).
 - a smartphone application "track game: from the source to the sea" dealing with water quality
- A mass mailing to info multipliers in the North of France (schools, institutes etc.): around 800 postal envelops that will contain the ISECA leaflet and the ISECA Educational Kit (CD Rom) "All World Ocean Citizens"

4 General conclusions

The Final event is of great importance in such a project. We put real efforts into achieving the good process of it and make it successful.



A.Lefebvre; K. Pericleous; R. Forster and F. Gohin



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** pictures copyrights: Nausicaa*

Objet: Invitation à la Journée d'information sur la communication autour du thème de la qualité de l'eau de la source à la mer.

Madame, Monsieur,

La qualité de l'eau est un sujet qui nous concerne tous quels que soient notre métier, nos habitudes de vie et de consommation. Avez-vous déjà vu cette mousse en bord de mer, phénomène qui s'amplifie dans le temps et l'espace ? L'eutrophisation est un des signes de la dégradation des eaux côtières et ses enjeux sont multiples.

Afin d'échanger vos expériences et connaissances mais aussi de répondre à vos interrogations sur le sujet, Nausicaá a le plaisir de vous inviter à la journée d'information qui se tiendra en ses locaux, le **mercredi 28 Novembre 2012 de 9 h 30 à 17 h**, à Boulogne-sur-Mer. Cet événement sera aussi l'occasion de découvrir des activités éducatives et des outils d'information autour de cette thématique, comme par exemple l'animation créée par Nausicaá : « Quand la mer mousse ».

Voici les pistes de travail que nous envisageons :

1. Discussions entre participants sur leurs perceptions de l'eutrophisation, de ses enjeux et les questions qui en découlent.
2. Echanges avec des experts (scientifiques, agriculteurs, industriels, gestionnaires)
3. Présentations d'activités et d'outils éducatifs sur la thématique, pouvant par la suite être utilisés par les participants pour en informer d'autres publics.
4. Temps de synthèse et de perspectives

Cet événement est mis en place dans le cadre d'un projet européen ISECA [1]. Il est destiné aux partenaires du projet ISECA, aux experts, aux relais d'information et autres parties prenantes liés à la qualité des eaux côtières.

Nous vous invitons, si cet événement vous intéresse, à renvoyer le bulletin d'inscription en pièce jointe dûment complété au service éducatif de Nausicaá (education@nausicaa.fr) **avant le 15 novembre 2012**. Un dossier plus complet vous sera alors transmis.

Nous vous remercions pour l'attention que vous porterez à cette proposition, et nous vous prions de croire, Madame, Monsieur, en l'assurance de notre considération distinguée.

Anne VERNIER et Elise CHIROUTRE

Service Educatif de Nausicaá

03.21.30.99.83

education@nausicaa.fr

[1] Information System on the Eutrophication of our Coastal Areas, lancé en 2011 par 8 partenaires de l'Euro-région « Manche-Mer du Nord » » grâce au programme de coopération transfrontalière INTERREG des 2 Mers. L'objectif du projet est de définir les risques de l'eutrophisation, les publics concernés et prévoit aussi la mise à disposition des acteurs (gestionnaires de l'eau, communes...) les informations utiles sur le sujet. Il vise également à faire progresser la connaissance scientifique et la diffuser. www.iseca.eu



Annex A-ID-2
French ID- Invitation ISECA partners



Invest in our future

Dear ISECA partners,

As agreed during our last meeting in Plymouth, Nausicaá organizes the first **Info Day** as part of ISECA's project. We are pleased to invite you to this event which will be held in our sea center at **Boulogne-sur-mer on the 28th of November 2012 from 9.30am to 5pm.**

Many french information multipliers but also different stakeholders interested by the coastal water quality will participate to this information day.

This event is the opportunity for you to exchange your knowledge and answer their questions. It is also the occasion for you to attend the new educational activity created by Nausicaá: « When the sea foams » and to think about its integration within a disposal to make the public aware of the subject in your country.

You are also invited to present your information tools that could be useful to information multipliers (notices, posters, videos, educational activities ...) in relation with the phenomenon of eutrophication.

Please let us know if you will join us for this occasion by filling in the form enclosed before the **12th of November 2012.**

Dear partners, we look forward to hearing from you,
Yours sincerely

Elise CHIROUTRE and Anne VERNIER

03.21.30.99.83

education@nausicaa.fr

NB: For VLIZ and PML in particular, participating to this day will give you leads concerning the organization of an Info-Day in your country.

Déroulement INFO-DAY ISECA

Mercredi 28 novembre de 9 h 30 à 17 h 30

Horaires	Durée	Séquence
9 h 30 / 10 h.	30 min.	Accueil Présentation : - des participants - précisions sur le programme de la journée - des conditions du dialogue
10 h / 10 h 30	30 min	9 h 45 : Pourquoi la mer mousse ? Activité avec les boîtiers pour se plonger dans le sujet.
10 h 30 / 11 h	30 min.	Présentation du projet ISECA et des partenaires. En quoi ce projet européen permettra de mieux répondre aux questions de l'eutrophisation des eaux côtières
11 h / 11 h. 45	45 min.	Préparation des questions spécifiques pour les experts Travail en groupes
11 h 45 / 12 h		Pause et accueil des experts
12 h / 13 h	1 h.	Echanges avec les experts (partie 1) : Questions générales « Qui êtes-vous et en quoi vos actions améliorent la qualité de l'eau et limite l'eutrophisation des eaux côtières » Les experts présents : - Alain LEFEBVRE, Ifremer, - Didier COCHE, Véolia eau - Jean-Louis DESMEDT, Ecover - Bruno ROUSSEL, agriculteur et président du Sage de la Canche
13 h / 14 h 15.	1 h. 15	Déjeuner : chaque groupe partagera son repas avec son expert référent
14 h 15 / 15 h 15	1 h.	Echanges avec les experts (partie 2) : Questions spécifiques Les experts présents : - Alain LEFEBVRE, Ifremer, - Didier COCHE, Véolia eau - Jean-Louis DESMEDT, Ecover - Bruno ROUSSEL, agriculteur et président du Sage de la Canche
15 h 15 / 16 h	45 mn.	Présentation et échange sur les outils d'animation existants, le lien avec le Kit pédagogique. Présentation du site internet et des ressources du site. Test de la nouvelle enquête citoyenne.
16 h / 17 h	1 h	World Goûter avec la question « Quels sont les messages principaux que vous avez envie de transmettre sur les questions d'eutrophisation des eaux côtières ? » Est-ce qu'il y a des ajouts à prévoir dans les outils pédagogiques ?
17 h		Evaluation de la journée
17 h 30 / 18 h 30		Possibilité de visiter Nausicaà jusqu'à l'heure de fermeture

Annex A-ID-4
French ID - Press Release



Projet européen ISECA sur l'eutrophisation des eaux côtières
Journée d'information à NAUSICAA
Mercredi 28 novembre 2012



Illustration du phénomène d'eutrophisation sur la Côte d'Opale

Mercredi 28 novembre 2012, NAUSICAA, le Centre National de la Mer à Boulogne sur Mer, organise en son Centre la première journée d'information du projet européen ISECA.

Le projet européen ISECA "Information System on the Eutrophication of our Coastal Areas" a été lancé en juillet 2011 par 8 partenaires français, anglais, belges et néerlandais de l'euro-région « Manche – Mer du Nord » dans le cadre du programme Interreg IV des 2 MERS. Ce projet a notamment pour but de définir les risques d'eutrophisation des eaux côtières, les publics concernés et les questions qui préoccupent ces publics.

L'eutrophisation des eaux côtières est due à un enrichissement de l'eau de mer devenu trop important en matières nutritives (phosphates, nitrates...). Les causes sont dues aux activités humaines telles que les rejets domestiques et industriels, les eaux chargées en engrais chimiques provenant des zones rurales, etc.

L'eutrophisation se traduit par le développement anarchique de macro-algues (marées vertes) ou de micro-algues (blooms planctoniques et mer qui mousse).

Le projet ISECA prévoit par ailleurs la mise à disposition des acteurs (gestionnaires de l'eau, communes...) d'informations utiles sur le sujet.

Cette journée d'information réunit les experts et partenaires intéressés et concernés par le phénomène d'eutrophisation des eaux côtières, qu'ils fassent partie de collectivités, de l'enseignement ou d'entreprises privées ; l'objectif étant d'échanger sur les moyens qui permettront de limiter ce phénomène, qui prend la forme de mousse visible à la surface de la mer sur nos côtes.

Première journée d'information à NAUSICAA

En juillet 2011, le projet européen ISECA "Information System on the Eutrophication of our Coastal Areas" a été lancé par 8 partenaires de l'euro-région « Manche - Mer du Nord » (Nord-ouest de la France, Angleterre, Belgique) grâce au programme de coopération transfrontalière INTERREG IV des 2 Mers.

NAUSICAA, en tant que partenaire du projet ISECA, organise mercredi 28 novembre 2012 la première journée d'information. Les acteurs qui se sentent concernés par ce sujet, qu'ils soient animateurs, enseignants, collectivités, entreprises privées dont l'activité peut avoir un impact sur ce phénomène, pourront à cette occasion échanger avec des scientifiques et obtenir des informations et des outils sur ce sujet.

Comprendre pour agir et sensibiliser

Des scientifiques ont étudié ce phénomène et répondront aux questions des participants lors de cette journée d'information. Ils expliqueront les causes de l'eutrophisation et son impact sur la faune et la flore marines.

A partir de questionnaires, NAUSICAA a pu récemment recueillir des éléments d'informations qui permettent de savoir si ce phénomène est connu du grand public. On constate ainsi que 61% des personnes interrogées ont eu connaissance de ce phénomène de mousse. Ils supposent à 55 % qu'il s'agit d'un phénomène naturel mais qu'il est amplifié par les activités humaines (à 78 %).

Cette journée sera par ailleurs l'occasion pour NAUSICAA de présenter des kits pédagogiques et outils d'animation qui permettront aux participants de relayer le message de sensibilisation auprès de leurs publics.

D'autres journées d'information auront lieu en Belgique et en Grande-Bretagne courant 2013.

Pourquoi la mer mousse ? Le phénomène d'eutrophisation

L'eutrophisation est un phénomène qui, selon le milieu (baie calme ou mer agitée) et le type d'algue (macroscopique ou microscopique), peut être visible en bord de mer sous forme de marée verte ou de mousse sur la plage (cf. photo page précédente).

Les algues se développent en mer en se nourrissant des ressources minérales dans l'eau. Lorsqu'il y a beaucoup de nutriments (nitrates et phosphates), elles croissent rapidement. Une petite augmentation de la biomasse des algues n'a pas d'effet négatif sur l'écosystème et peut même provoquer un accroissement de certaines populations de poissons. Par contre, lorsqu'il y a trop de matières nutritives dans l'eau, une stimulation trop forte de la croissance des algues peut troubler l'eau et ainsi gêner le passage de la lumière. En effet, quand l'algue meurt, celle-ci est décomposée par de nombreuses bactéries qui utilisent l'oxygène de l'eau pour respirer ; l'eau peut-être temporairement appauvrie en oxygène ce qui menace la survie des autres êtres vivants. Ce phénomène est appelé l'eutrophisation.

On parle d'eutrophisation lorsque les causes sont dues aux activités humaines telles que les rejets domestiques et industriels, les eaux chargées en engrais chimiques provenant des zones rurales,.... Ces rejets sont tellement importants qu'ils accélèrent le processus. Ce phénomène d'eutrophisation touche non seulement la vie aquatique mais peut aussi nuire aux activités économiques du bord de mer (pêche, tourisme, loisirs...).

Plus d'informations sur www.iseca.eu/fr/

Story-board « When the sea foams »

Technical tools needed:

- 1 computer
- Tools to vote (if you don't have the keypads and PowerVote software you can use numbered cards that participants raise in the air to give their opinion or...find your own way to make a voting system)
- Microscope (optional): study of phytoplankton species in a seawater sample

SEQUENCE 1: Welcome/Introduction

Slide 1: Introduction: watch some videos of foam, for instance:

- Foam in the Streets of Audresselles (North of France), 31th March 2010
www.youtube.com/watch?v=BqNu1pv40Hc or
- Video on the ISECA to be found in the bonus section.

Scientists would like to have more information on what you know and think about the foam phenomenon (public perception). Please help us by collecting all answers of your public today and send them to carolien.knockaert@vliz.be by using the form below.

When the sea foams activity						
Date activity:						
Type of audience:						
Number of participants:						
Question number	YES (#)	NO (#)	No idea (#)	(#a) For Q10 and Q12	(#b) For Q10 and Q12	(#c) For Q10 and Q12
Q1						
Q2						
Q3						
Q4						
Q5						
Q6						
Q7						
Q8						
Q9						
Q10						
Q11						
Q12						

Slide 2:

Q1: Have you ever come across this phenomenon on the beach?

- a. Yes
- b. No

Slides 3-4-5-6:

Can you tell us what you think about this foam? To you:

Q2: Could it smell?

Q3: Does it look dirty?

Q4: Do you think it looks beautiful?

Q5: Could it pollute the water we swim in?

- a. Yes
- b. No
- c. No idea

Slide 7:

Scum and foam, what is the difference?

Maybe you've already seen some scum coming from the sea: it is deposited on the beach when the sea is rough. The scum disappears immediately. But this isn't the case with the foam we're talking about, which can remain on the beach for several hours and even become green and then brown.

What is this foam phenomenon? What is its origin?

SEQUENCE 2: How can we explain this phenomenon?
--

First hypothesis: Slide 8

Q6: Could this be a natural phenomenon?

- a. Yes
- b. No
- c. No idea

Second hypothesis: Slide 9

The foam on the beach may remind us of the foam we can observe when using products such as lye soap. So:

Q7: Do you think it is caused by detergents?

- a. Yes
- b. No
- c. No idea

Third hypothesis: Slide 10

Climate change is often responsible for unexpected environmental effects.

Q8: Is this phenomenon due to climate change?

- a. Yes
- b. No
- c. No idea

Fourth hypothesis: Slide 11

Q9: Is this phenomenon due to the overuse of fertilizers we use?

- a. Yes
- b. No
- c. No idea

In order for us to understand this phenomenon, scientists explain where it comes from:

Slide 12:

Minerals are naturally present in seawater and are brought there by streams and rivers which carry away whatever comes from the land. There are many different mineral salts which contain important elements such as phosphorus, nitrogen and silica. These mineral salts (often called **nutrients**) are used for growth of different organisms such as plants but also macroscopic and microscopic algae. Microscopic algae (or short microalgae) are called **phytoplankton**. They are agents for **primary production**, a process that sustains the aquatic food web : besides the inorganic nutrients they need carbon dioxide and light from which simple sugars are made during a process called **photosynthesis**. In autumn and winter, when it frequently rains, rivers carry the mineral salts to the sea but during these months, less daylight is available so algal growth is limited. Correspondingly, the consumption of mineral salts is lower, leading to higher concentrations of these nutrients in the water.

Slide 13:

In spring, days are longer and there is more light available for photosynthesis. The concentration of phytoplankton increases greatly (the phytoplankton starts to “**bloom**”) but the concentration of the mineral salts in the water decreases during their consumption.

When we look at a drop of seawater through the microscope, we can see many different kinds of phytoplankton species.

There are nearly one hundred phytoplankton groups; they all differ in shape and function, for example:

- diatoms (cell wall made of silica);
- flagellates covered by calcareous plates (Coccolithophorids);
- flagellates forming colonies in an organic matrix: **Phaeocystis** species

But how can these organisms be responsible for the foam on the beach? Let's take a closer look at the planktonic algae, Phaeocystis...

Slide 14:

Phaeocystis

According to several scientific studies, *Phaeocystis globosa* is responsible for the foam.

The algae has several stages of development according its environment. Initially solitary, it proliferates and forms small to larger colonies (often linked to a nutrient-rich environment). Each colony is enveloped in a membrane and secretes mucus to protect themselves from grazing by other species. When *Phaeocystis* microalgae die (end of life cycle, often linked with the fact that nutrients aren't available anymore), the viscous film gets damaged and the colonies rip apart (lysis). When this is combined with big waves (windy or stormy conditions = rough sea surface) it can emulsify (like egg whites in “floating islands”) and the remnants of the dying cells are whipped up forming the foam. At the stage of seeing the foam, *Phaeocystis* cells are already dead and the phytoplankton bloom is over...

SEQUENCE 3: Foam: a phenomenon increasing in both time and space

Slide 15:

Q10: The *Phaeocystis* bloom or the foam is a phenomenon observed during the month of ...?

- January ?
- May ?
- June ?

Slide 16:

Scientists who have been observing the foam for years tell us that it is increasing in both time and space. On occasions, the depth of the foam has reached even more than two meters! On the shores of the Eastern English Channel and the North Sea these phenomena are more common from March to June following the phytoplankton bloom.

Although it is a natural phenomenon, human activities may amplify the phenomenon: but which ones?

FIRST HYPOTHESIS

Slide 17:

Is the foam in any way due to the **detergents** we use?

Detergents contain phosphates which are used as water softeners in washing powders.

Because phosphates are highly soluble, it's difficult to extract them from dirty water. It seems ironically, but when our wastewater is treated in purification plants, the hardest things to remove are the products that we use to clean (washing powder, washing-up liquid, shampoos,...). The purified water is discharged into rivers and streams and through these rivers eventually transported to the sea.

Slide 18:

For many years now, reducing the quantity of phosphates in our washing powders is a topic of interest in research. New purification plants were constructed using physico-chemical treatments, reducing the amount of phosphates by 80 to 85%. As a result phosphate percentages in the sea dropped (around 50% fewer in the North Sea). We need to continue this work and improve our methods of purification. Even general public can contribute to a better water quality by using phosphate free washing powders and cleaning products.

SECOND HYPOTHESIS

Slide 19:

Global warming is the increase in average temperature observed on Earth. Since the beginning of the 20th century, the average temperature has risen by about 0.74°C. According to the IPCC (Intergovernmental Panel on Climate Change) it is very likely that this rising temperature is a result of climate change due to human activities (burning fossil fuels, deforestation, industrial and agricultural activity) leading to an increased concentration of greenhouse gases in the Earth's atmosphere.

Scientists monitoring the state of the sea (temperature, salinity,..) also measure an increase in the sea water temperature. Possible consequences are:

- Animals such as copepods (small zooplankton shrimp which feed on phytoplankton) move to new environments with a similar temperature compared to their own habitat. As a result the phytoplankton concentration increases at the original location and decreases in the new one. As a result some species may also develop more or less due to this zooplankton shift.
- When winter has been warm copepods may develop earlier. However the availability of light is lower than in spring resulting in low phytoplankton growth rates. Less food becomes available for the copepods which are in return food for bigger animals such as small fish, etc...
- It is also possible that the early development of the small zooplankton prevents the bloom of diatoms by eating them. As a result more nutrients become available for *Phaeocystis*, which escape from being grazed when living in colonies. Depending on the amount of nutrients, large *Phaeocystis* blooms appear and the bloom can be transported by winds and currents to other regions.

Conclusion: A link with climate change?

Life in the sea is in a state of equilibrium. Any change in sea surface temperature can have an impact on the circulation of the marine currents. Certain species are unable to withstand this current (e.g. phyto- and zooplankton species which float along by the current in the water) and migrate to other regions. This has an impact on higher species that feed on the phyto- and zooplankton. The overall result is an imbalance in the existing food web.

Global warming brings changes in the geographical distribution of a number of living creatures, with tropical species migrating to normally temperate regions and temperate species tending to migrate to normally cold regions. Eventually some species may even disappear...

Tackling climate change

For several years now the European Union has been committed to tackling climate change by taking action to curb greenhouse gas emissions in all its areas of activity trying to bid the following objectives: consuming less-polluting energy more efficiently, creating cleaner and more balanced transport options, making companies more

environmentally responsible without compromising their competitiveness, ensuring environmentally friendly land-use planning and agriculture and creating conditions conducive to research and innovation.

THIRD HYPOTHESIS

Slide 20:

We use **fertilizers** to enhance plant growth (gardening, farming, etc...) but when we use too much of them plants cannot fully absorb it all. The excess of fertilizers, composed of different elements such as nitrates and phosphates, are washed away from the soil and end up in the sea via the groundwater and the rivers.

Slide 21:

Phosphorus and nitrogen are essential for plant growth. The amount of phosphates is already reduced due to the lower use of them in agriculture and by efficient removal in detergents, but studies still have found an imbalance of nutrient discharge in the sea: there are too many nitrates in the water relative to the phosphates. This can lead to phytoplankton blooms and the development of harmful algal species (HAB). One of the solutions to this problem is to encourage environmentally friendly farming and reduce the amount of fertilizers (which contain nitrates) in our fields and gardens.

An excess of nutrients (such as nitrates and phosphates) is called eutrophication.

SEQUENCE 4: Is the foam a problem?

Slide 22:

Q11: Is the foam a problem?

- a. Yes
- b. No
- c. No idea

Slide 23:

When *Phaeocystis* concentrations exceed critical levels, it can cause sudden major changes:

. The viscous *Phaeocystis* mucus accumulates in the gills of molluscs and fish, and prevents them in filtering the sea water and gives difficulties in breathing. Sometimes it can even kill them. Fortunately the foam is not toxic for humans.

. The *Phaeocystis* colonies are poorly eaten by zooplankton, and this disrupt that part of the food chain which ends up in fish, but stimulates that part of the food chain which is dominated by microbial activity. Hence, the development of *Phaeocystis* colonies can have a negative impact on fisheries.

. The proliferation of algae decreases the amount of light from penetrating the water and therefore upsets the growth of different plants living in the same habitat. This problem is more seen in lakes than in seas.

This has an impact on the food chain and eventually affects the entire ecosystem.

. Impact on economic activities such as fishing (the algae can clog fine-meshed nets and can even damage boat engines), shellfish farming, tourism and numerous other sectors...

SEQUENCE 5: You can do something about it!

Slide 24:

Q12: With everything that we've learned, which action(s) would you take? (more than one choice possible)

- a. Reduce your use of detergents.
- b. Eat products grown with less fertilizer.
- c. Reduce your consumption of fossil energies.

Slide 25:

The preservation and the improvement of water quality in the marine environment is a highly motivating challenge. We must act now! Many of us are ready to do something to reduce our impact on the sea.

Remember: ***all our activities on the land have an impact on the sea!***

Slide 26:

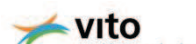
ISECA is a european project on the topic of eutrophication of coastal waters in the North sea and the English Channel.

For decades, scientists from various institutions and research disciplines had been observing the algae development on the coastline individually with their own scientific tools.

Thanks to ISECA, their knowledge is now brought together in a single database in order to anticipate the phenomenon evolution and to inform the authorities and the stakeholders so they can take appropriate measures.

Educational activity created by Nausicaá as part of INTERREG IV A 2MERS 'ISECA' PROJECT
Information System on the Eutrophication of our Coastal Areas

More information: www.ISECA.eu/en/



Annex A-ID-6 French Info Day- Powerpoint presentation

Info Day



28-11-2012

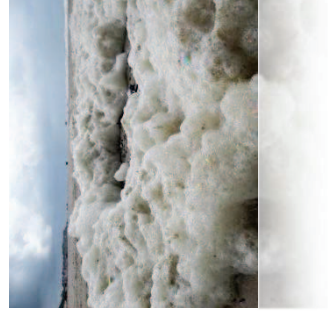
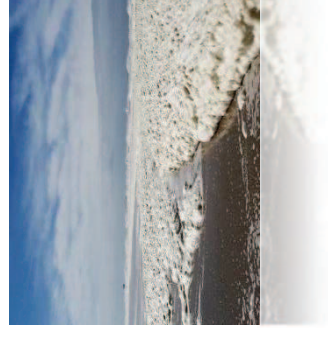
Nausicaá

E.Chiroutre



Invest in our future

A cross discipline and cross bordure integrated project on eutrophication offering information, education and science to stakeholders and the public at large in the Interreg 2 Seas Zone (Belgium, England, France and the Netherlands).



➤ Qu'est-ce que l'eutrophisation ?

Un phénomène naturel...

Les algues se développent en mer en se nourrissant des ressources minérales dans l'eau.

Lorsqu'il y a beaucoup de nutriments (nitrates et phosphates), elles croissent rapidement.

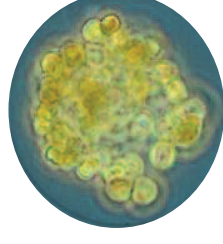
... amplifié par l'homme

Avec les nutriments que l'homme rejette en grande quantité dans l'eau, la prolifération des algues est trop intense. Les répercussions sur le milieu marin sont importantes.

Conséquences

Quand l'algue meurt, celle-ci est décomposée par de nombreuses bactéries qui utilisent l'oxygène de l'eau pour respirer ; l'eau est alors appauvrie en oxygène (hypoxie), la lumière ne passe plus, **la survie des autres êtres vivants est menacée.**

L'eutrophisation est la cause majeure de la dégradation de la qualité des eaux côtières.



Phaeocystis
(Micro-algue)



➤ Les différentes formes d'eutrophisation

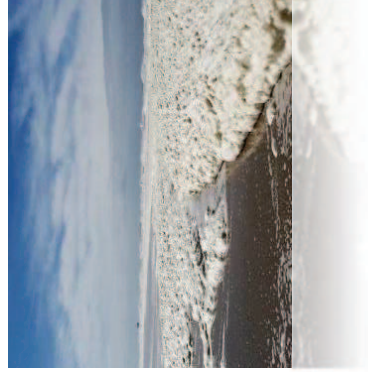
Selon le milieu (baie calme ou mer agitée) et le type d'algue (macroscopiques ou microscopiques), elle s'observe sous différentes formes :

Marée verte



Ou

Mousse sur la plage.



➤ Le projet ISECA

Information System on the Eutrophication of our Coastal Areas



Cadre du projet : Programme Européen de coopération transfrontalière INTERREG des 2 Mers.

Zone géographique : la région des deux Mers, c'est-à-dire les régions qui bordent la Manche et le sud de la Mer du Nord.



Durée du projet : 2011 à fin 2014

Partenaires impliqués : 8 partenaires européens concernés par la qualité des eaux côtières



➤ Objectifs scientifiques

- Définir les risques de l'eutrophisation des eaux côtières
- Faire progresser la connaissance scientifique et la diffuser
- Anticiper l'évolution du phénomène et en informer les autorités et les parties prenantes (usagers, agriculteurs, industriels, acteurs touristiques...)

Méthode : Regrouper les connaissances scientifiques des différents partenaires sur une plateforme disponible sur Internet. Cela améliorera les outils actuels de suivi et de gestion de la qualité des eaux côtières.

➤ Quelles sont les données scientifiques existantes ?

- Observation de la couleur de la mer par satellite
<http://www.spicosa.eu/setnet/index.htm>

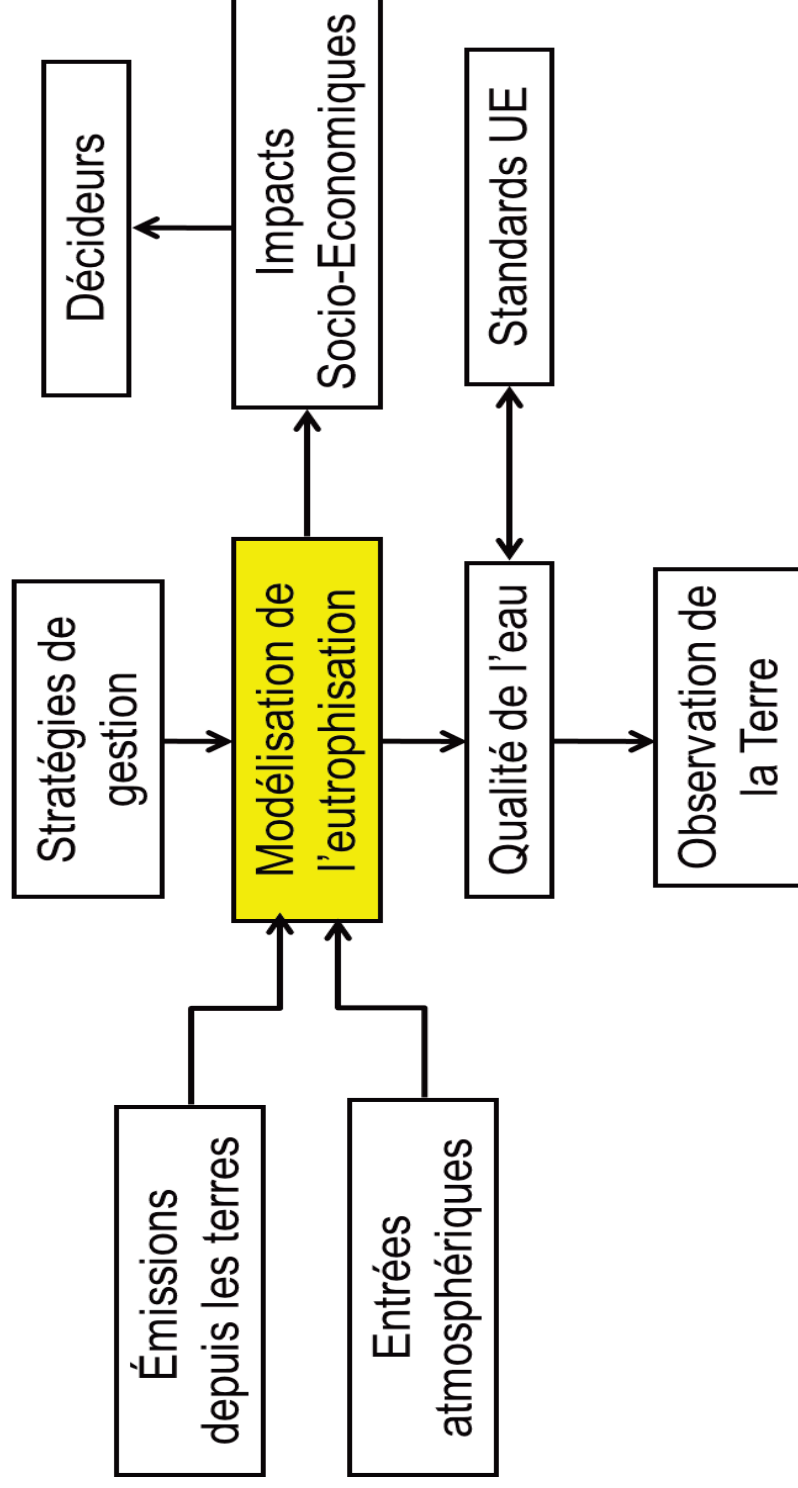
- Correction des images satellitaires

- Observations et analyses de la qualité de l'eau in situ (en mer et sur terre)

➤ Qu'apporte ISECA ?

- Compilation des données sur une plateforme internet
- Simulations de scénarios pour déterminer les impacts et informer les autorités

➤ Modélisation de l'eutrophisation marine et côtière

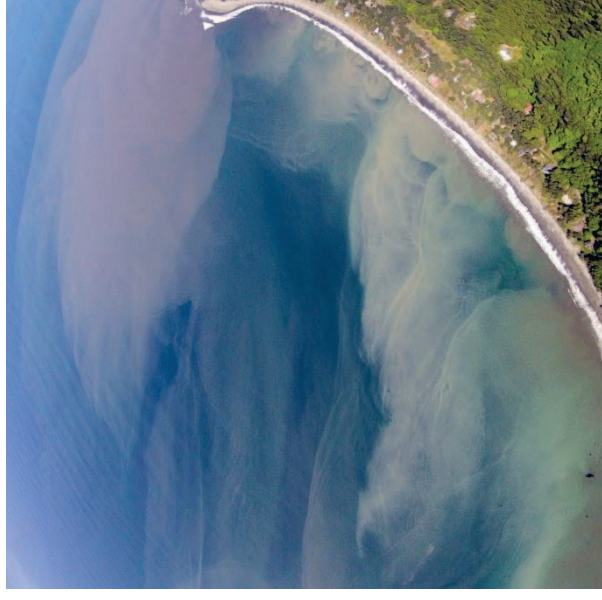


Implantation : Plymouth en Angleterre

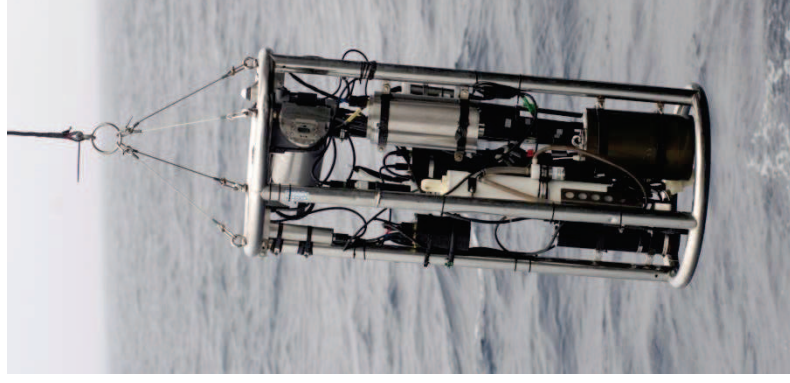
Présentation de l'organisme : PML est engagé dans la recherche internationale océanographique.

Ses objectifs sont :

- Accroître la connaissance et la compréhension de l'environnement marin
- Concevoir et offrir des outils d'observation, de modélisation, de compréhension et de prévision des écosystèmes marins.



Contribution à ISECA : PML effectue des mesures en mer afin de certifier les données spatiales. Il collecte chaque semaine, au large de Plymouth, des échantillons et mesure la couleur de l'eau depuis des navires océanographiques.





*Nederlands Instituut voor Ecologie
(NIOO/NIOZ)*



Implantation: Yerseke (Zeeland) en Hollande

Présentation de l'organisme : Le rôle de NIOZ est d'obtenir et de communiquer les connaissances scientifiques sur les mers et les océans pour une meilleure compréhension et durabilité de notre planète.

Contribution à ISECA :

- 1) Surveillance du phytoplancton et des mesures de production primaire dans les estuaires néerlandais et la mer des Wadden
- 2) Enquête sur la relation entre l'absorption de lumière, les premières étapes de la photosynthèse
- 3) Étudie la composition algues, leur taux de croissance
- 4) Étudie la performance photosynthétique des cyanobactéries dans les formes différentes de développement des stromatolithes.
- 5) Étudie l'effet de la limitation en nutriments sur la croissance des algues



« Association pour le Développement de la Recherche et de l'Innovation dans le NORD PAS DE CALAIS »



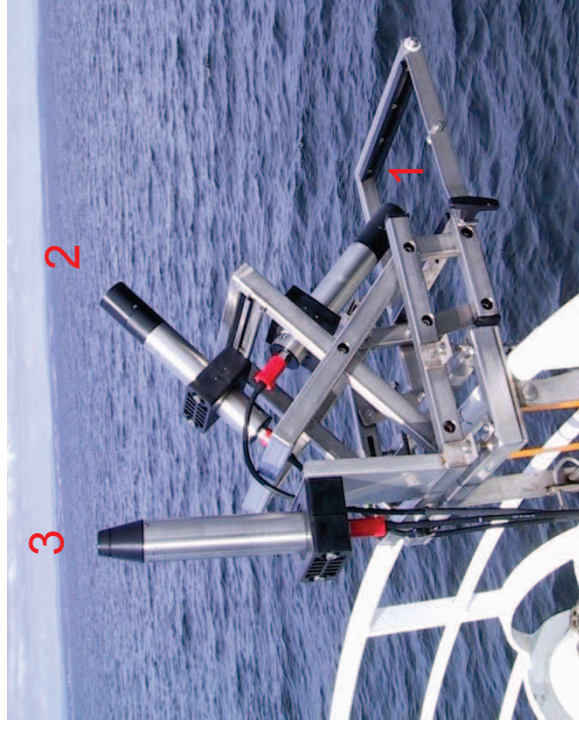
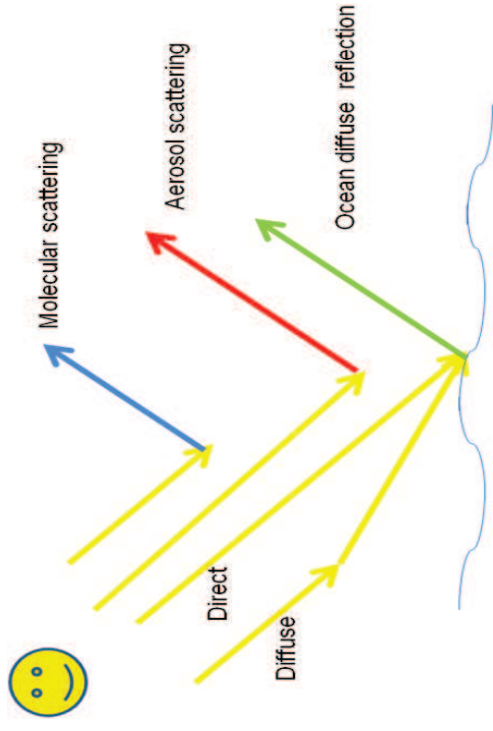
Implantation: Lille en France

Présentation de l'organisme: développe les coopérations entre les entreprises et la recherche publique afin de promouvoir les transferts technologiques dans la région NORD PAS DE CALAIS. C'est un gestionnaire et un réalisateur de projets.



Contribution à ISECA:

- Coordinateur du projet, il s'assure de son bon déroulement tant financier que technique.
- ADRINORD est en charge de développer des corrections atmosphériques pour affiner les observations de l'océan transmises par les satellites.

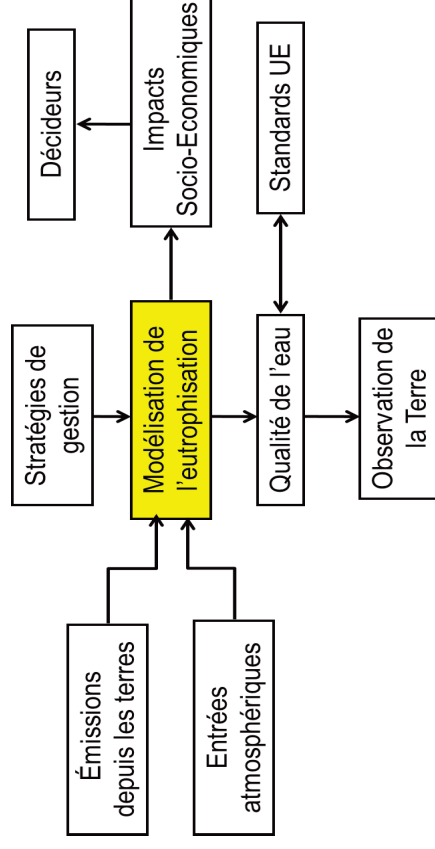


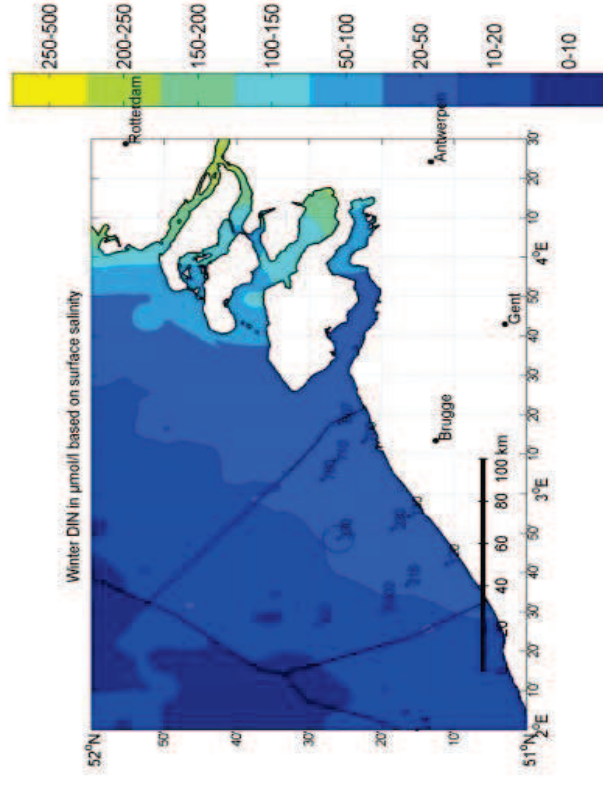
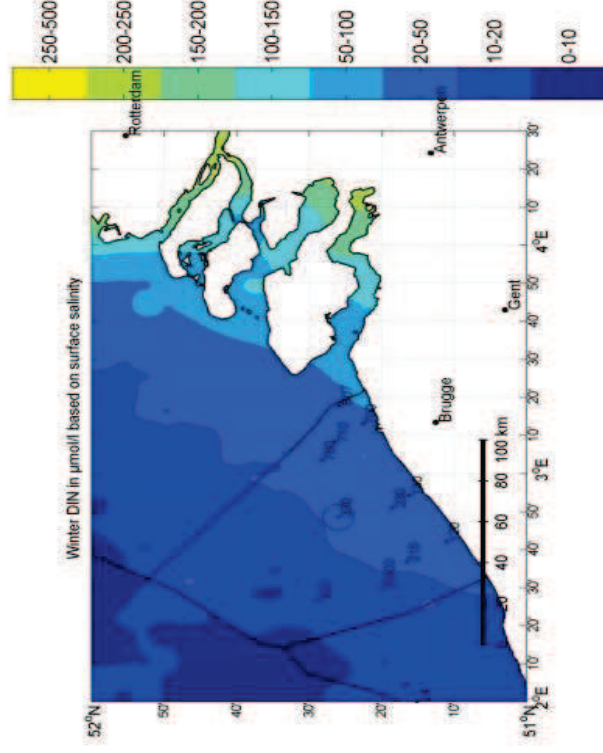
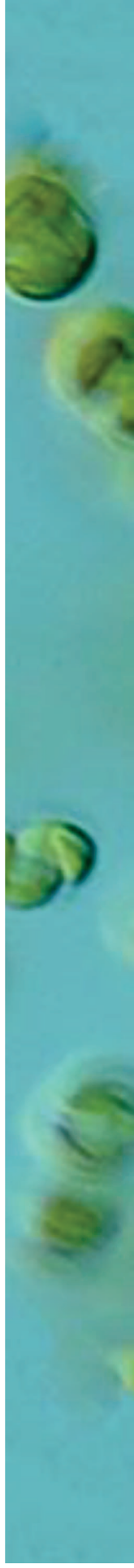
Le capteur 1 mesure le signal au dessus de l'eau. Le capteur 2 mesure le signal atmosphérique. Les lois de la réflexion sont appliquées sur la mesure 2 pour soustraire à la mesure 1 la réflexion du ciel.
Le capteur 3 mesure le rayonnement solaire descendant (direct et diffus)

Implantation: Mol en Belgique

Présentation de l'organisme: VITO est un organisme de recherche indépendant orienté vers le client qui fournit des solutions technologiques innovantes. Il développe des produits et des procédés dans les domaines de l'énergie, de l'environnement et des matériaux. Au centre de tous les projets se trouve la protection de l'environnement et l'incitation à utiliser des énergies et des matières premières durables.

Contribution à ISECA: VITO modélise l'impact des apports continentaux et des dépôts atmosphériques pour mieux prévoir les impacts de l'eutrophisation et concevoir des stratégies d'amélioration de la qualité de l'eau





Simulation sur la côte belge des valeurs moyennes hivernales du nitrogène organique dissous, un indicateur d'eutrophication, sans (gauche) et avec (droite) 70% de réduction de l'apport continental (Zone côtière depuis www.ngdc.noaa.gov; emplacement des villes grâce à www.geonames.org, et domaines marins depuis <http://www.vliz.be/vmdata/marbound>).



« Université de Greenwich »



Implantation : Greenwich en Angleterre

Contribution à ISECA : Greenwich, à l'aide de modèles numériques, étudie dans le détail les rejets atmosphériques. En effet, une partie des matières nutritives responsables de la prolifération d'algues en eaux côtières est due aux polluants atmosphériques émis dans les villes, dans les campagnes et par l'industrie et le transport maritime. Transportés par le vent, ils se déposent en mer entraînés par la pluie.

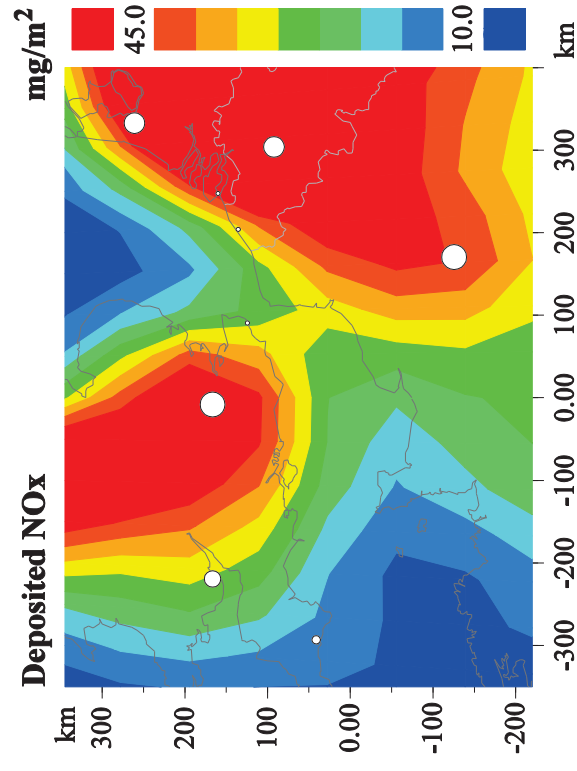
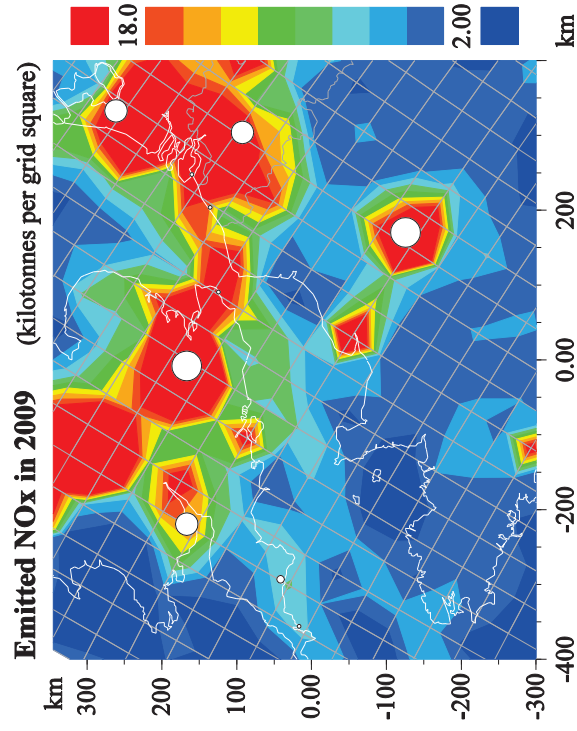


Figure 1: Emissions d'azote, d'après EMEP: www.ceip.at

Niveaux en couleur des dépôts d'azote dans la région des 2Mers. Les cercles représentent les grandes agglomérations.



« CEMARE, Centre pour l'Economie et la
Gestion des Ressources Aquatiques »



Implantation : à Portsmouth, Angleterre

Présentation de l'organisme: CEMARE est un centre international de recherche spécialisé au sein de l'université de PORTSMOUTH chargé de promouvoir la recherche multidisciplinaire sur les ressources aquatiques .

Contribution à ISECA: CEMARE est en charge de l'analyse socio-économique du phénomène. La dégradation de la qualité des eaux côtières affecte potentiellement des secteurs économiques (pêche, tourisme balnéaire,...) ou le milieu naturel (appauvrissement de la biodiversité).

La puissance publique dispose de différentes options pour améliorer la qualité des eaux. Ces options sont proposées par CEMARE au public sous forme de questionnaire. Les résultats de l'enquête doivent aider les autorités à prendre de bonnes décisions.

➤ Objectifs de communication

- Définir les publics concernés et les questions qui préoccupent ces publics
- Mettre à disposition des parties prenantes les informations utiles sur le sujet.
- Valoriser le travail des scientifiques en le rendant accessible à tous

Outils principaux :

- Newsletters
- Site Internet www.ISECA.eu
- Débats publics
- Activités éducatives
- Vidéoconférences sur le plateau Nausicaà



www.iseca.eu

A cross discipline and cross bordure integrated project on eutrophication offering information, education and science to stakeholders and the public at large in the Interreg 2 Seas Zone (Belgium, England, France and the Netherlands).

Edito

De la mousse en abondance sur nos côtes ?

Vous vous êtes certainement déjà posés les questions suivantes au vu d'une telle quantité de mousse sur la plage : pourquoi y'a-t-il de la mousse en abondance aujourd'hui et quelle est cette odeur nauséabonde qui se dégage de la mer ? Comment expliquer cette grande quantité d'algues vertes qui entrent dans mes filets de pêche ? Pourquoi parle-t-on de « zones mortes » en mer et comment apparaissent-elles ? Comment se fait-il que certaines moules d'élevage soient impropres à la consommation ? Est-ce que je peux faire quelque chose pour réduire ou stopper la présence de cette mousse ?

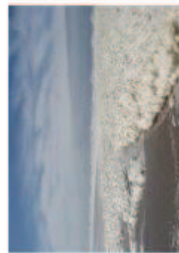
La mission d'ISECA

Pour répondre à ces questions, des partenariats scientifiques de part et d'autres de la Manche se sont associés dans le cadre d'un programme européen appelé ISECA (Information System for Eutrophication of the Coastal Areas). Ceux-ci observent depuis de nombreuses années le développement anarchique d'algues sur le littoral, chacun avec ses propres outils scientifiques. Leurs connaissances regroupées dans une base de données unique permettront d'anticiper l'évolution du phénomène et de prévenir les autorités et les parties prenantes (agriculteurs, industriels, acteurs touristiques...), de manière à ce qu'elles puissent prendre des mesures adaptées.

Comment le public perçoit le phénomène ?

Une étude menée auprès de 300 personnes de nationalité belge et française a révélé les informations suivantes :

- La présence de mousse en bordure de rivage est familière à la plupart (81%)
- Elles supposent que c'est un phénomène naturel (55%) mais pensent qu'il est amplifié par les activités humaines (78%)
- Elles ne connaissent pas bien l'origine du phénomène
- 85% est incommode par cette mousse
- 54% ne sait pas si elle est dangereuse (81% en Belgique)
- 84% ne connaît pas le phénomène d'eutrophication.



Science

Qu'est-ce que l'eutrophisation ?

Les algues se développent en mer en se nourrissant des ressources minérales dans l'eau. Lorsqu'il y a beaucoup de nutriments (nitrates et phosphates), elles croissent rapidement. Une petite augmentation de la biomasse des algues n'a pas d'effet négatif sur l'écosystème et peut même provoquer un accroissement de certaines populations de poissons. Par contre, lorsqu'il y a trop de nutriments dans l'eau, une stimulation trop forte de la croissance des algues peut en fin de compte nuire à l'écosystème. En effet, quand l'algue meurt, celle-ci est décomposée par de nombreuses bactéries qui utilisent l'oxygène de l'eau pour respirer : l'eau peut-être temporairement appauvrie en oxygène (hypoxie) ce qui menace la survie des autres êtres vivants.

Ce phénomène est appelé l'eutrophisation. Selon le milieu (baie calme ou mer agitée) et le type d'algue (macroscopiques ou microscopiques), il s'observe sous différentes formes : marée verte ou mousse sur la plage.

L'eutrophisation est l'une des causes de la détérioration de la qualité de l'eau. Dans la Mer du Nord et la Manche, ce phénomène est principalement lié aux activités humaines.

De tels problèmes environnementaux touchent non seulement la vie aquatique mais peuvent également nuire aux activités économiques du bord de mer (pêche, tourisme, loisirs...).

Zoom

ADRINORD, coordinateur, s'assure d'abord du bon déroulement tant financier que technique du projet. Cette coordination technique met en relation les aspects divers du projet et donne du liant aux interventions multidisciplinaires des partenaires : comment répondre aux questions du grand public identifiées par un questionnaire ; quelles sont les besoins des autorités en charge de la gestion de la qualité de l'eau en dehors des aspects réglementaires ; quelles réponses scientifiques et techniques ISECA peut-il apporter ?

Un des outils de surveillance du milieu marin est le satellite. La couleur de l'eau vue depuis l'espace permet de quantifier des paramètres clés de l'eutrophication comme la quantité de pigment chlorophyllien et la pénétration de la lumière dans l'eau. Mais l'atmosphère masque de manière importante les images satellitaires. Il est nécessaire de corriger certains effets atmosphériques afin de mieux utiliser la couleur de l'eau. C'est la contribution d'ADRINORD qui, à partir de principes d'optique connus, développe des corrections atmosphériques adaptées à notre région et les applique à une bibliothèque d'images satellitaires.



Agenda

Info Day 28-11-2012

Afin que différentes parties prenantes du projet puissent échanger leurs expériences et connaissances sur l'eutrophisation, Nausicaá organise une journée d'information qui se tiendra en ses locaux le mercredi 28 Novembre 2012 à Boulogne-sur-Mer. Cette journée est destinée aux partenaires du projet ISECA, aux experts, aux relais d'information et aux autres acteurs liés à la qualité des eaux côtières.

Lors de cet événement, des débats entre participants seront organisés sur leur perception de l'eutrophication, de ses enjeux et sur d'autres sujets qui en découleront. Ils pourront également échanger avec des experts spécialistes du sujet (scientifiques, chercheurs, industriels, gestionnaires...).

À cette occasion, des activités éducatives et des outils sur le thème de l'eutrophication seront présentés aux participants.

Deux autres journées seront organisées par la suite, l'une en Belgique et l'autre en Grande Bretagne.

Avec la participation de :





Vlaams Instituut voor de Zee

« Institut Maritime des Flandres »



Implantation : Ostende en Belgique

Présentation de l'organisme : VLIZ est la plate-forme de coordination et d'information pour la recherche scientifique marine dans les Flandres. C'est un organisme clef pour la recherche marine et côtière qui sert de point de contact international.

Contribution à ISECA : Il met en place et gère le site Internet d'ISECA et participe ainsi à la communication.



« NAUSICAA, Centre national de la mer »



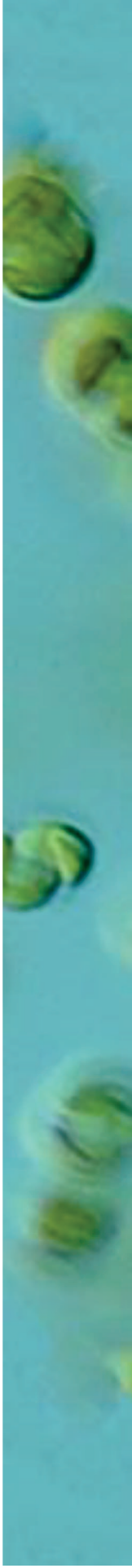
Implantation : Boulogne-sur-Mer en France

Présentation de l'organisme : NAUSICAA, Centre national de la mer a pour objectif de faire agir pour la mer, source de vie et de richesse pour aujourd'hui et pour demain.

Contribution à ISECA : NAUSICAA coordonne la partie communication du projet ISECA.

Pour répondre aux interrogations du public il l'a questionné sur sa perception du phénomène.

D'autre part en aidant à déterminer quels sont les personnes ou organismes concernés par le sujet, NAUSICAA souhaite sensibiliser un public plus large au phénomène d'eutrophisation des eaux côtières.



Nous vous remercions de votre attention.



Annex A-ID-7-
French ID- experts' answers



Paroles d'experts
INFO DAY à Nausicaá
28 Novembre 2012



Echanges avec les experts (partie 1) : Questions générales

« Qui êtes-vous et en quoi vos actions améliorent la qualité de l'eau et limitent l'eutrophisation des eaux côtières ? »

Les experts présents :

- Alain LEFEBVRE, Ifremer
- Didier COCHE, Veolia eau
- Bruno ROUSSEL, agriculteur et président du Sage de la Canche
- Jean-Louis DESMEDT, Ecover

Alain LEFEBVRE, Ifremer

Ifremer étudie les impacts de la montée en puissance des activités humaines et du réchauffement climatique sur l'environnement marin. Il est amené à interagir avec les instances de décision en amont et essaie également de sensibiliser le grand public en aval. Son métier est basé sur l'observation et la surveillance du milieu marin. IFREMER est passée par plusieurs approches : l'approche conventionnelle de la surveillance du milieu marin consiste à prélever des échantillons depuis des bateaux puis à les analyser en laboratoire. Des missions scientifiques « coup de poing » sur 3 jours étaient courantes, cela semble insuffisant quand on sait que l'océan représente 71 % de la surface de la planète.

Avec les évolutions technologiques récentes, on utilise maintenant des sondes in situ pour capter l'information en temps réel (concentration de l'eau, salinité, biomasse...). D'autres évolutions existent : la modélisation, l'observation satellite et des méthodes alternatives. Grâce à Internet qui permet d'être informé en temps réel, il est possible de donner l'alerte rapidement. Par exemple on surveille l'évolution du vert de mai en temps réel. Malgré ces avancées technologiques, les prélèvements in situ restent toujours nécessaires. Les mesures en mer et mesures sur terre sont également très liées et il est important de les croiser. Nous sommes aujourd'hui arrivés à une approche multi-compétences et multi-outils.

Avec tous ces outils, Ifremer essaie de définir des leviers pour améliorer la stratégie de gestion de l'eau : par exemple pour l'eutrophisation il s'agit des nitrates et phosphates.

Ifremer est impliqué dans des projets de recherche à différentes échelles (locale, nationale, internationale).

Didier COCHE, Veolia eau

Autrefois les eaux usées étaient rejetées dans la nature sans traitement. Les premières stations d'épuration pour dépolluer l'eau étaient sommaires et utilisaient uniquement des procédés physiques pour enlever les matières en suspension. On touchait un peu à la pollution dissoute moins visible : la pollution carbonée (organique). Les techniques ont ensuite évolué : la 2ème génération de stations s'est attachée à éliminer l'azote. Aujourd'hui, on s'intéresse de plus en plus au phosphore dans un contexte réglementaire qui se renforce avec l'Union Européenne.

Veolia doit vérifier le bon fonctionnement de ses installations par un processus de contrôle interne.

On estime que 95 à 99% de la pollution de l'eau traitée par Veolia, est retenue par la station d'épuration avant de repartir dans le milieu naturel.

En milieu littoral, le rejet de l'eau de ces stations dans la nature est plus complexe à cause de contraintes bactériologiques des eaux de baignade. Cela représente un enjeu majeur pour l'économie, la société, et le tourisme littoral.

Une partie des eaux usées est encore rejetée dans la nature sans traitement préalable. L'obsolescence des réseaux d'assainissement est l'une des raisons. Le particulier est aussi responsable lorsqu'il inverse le tuyau des eaux pluviales avec celui des eaux usées. En cas de pluie forte et soudaine, ponctuellement l'eau peut être rejetée volontairement dans la nature pour éviter aux égouts de déborder. Enfin, en milieu rural, il existe des zones non assainies : il y a obligation pour les communes de créer un service public d'assainissement et de faire des enquêtes chez les particuliers ; cela est très rare dans la réalité. Des subventions étaient versées à hauteur de 60% mais aujourd'hui elles sont passées à 20%.

Des investissements très lourds sont nécessaires pour améliorer la situation. Le coût pour les communes rurales est un frein important : il faut donc prioriser les zones d'intervention.

Bruno ROUSSEL, agriculteur et président du Sage de la Canche (Schéma d'Aménagement et de Gestion des Eaux de la Canche)

Monsieur ROUSSEL est éleveur, élu à la chambre d'agriculture et élu d'une communauté de communes.

Il travaille à l'élaboration du SAGE de la Canche (schéma d'aménagement de la gestion de l'eau) et veille à l'application de la Directive de l'eau sur les différents bassins hydrographiques (13 SAGE sur le bassin Artois Picardie).

Sur le plan agricole, le système est aujourd'hui moins conflictuel qu'il y a 15 ans : les industriels ont appris à mieux maîtriser leurs rejets. Sur le bassin Artois Picardie les discussions avec les agriculteurs restent difficiles car il y a 2 interlocuteurs à l'Agence de l'eau qui parlent au nom de 18 000 agriculteurs.

Les réglementations et directives sont de plus en plus compliquées et difficiles à mettre en place pour les agriculteurs (ex : pour les nitrates), d'autant plus que certaines semblent inutiles à leurs yeux. Cette tendance s'est intensifiée dans les années 60 puis dans les années 80.

Au niveau des rejets en nitrates, la situation du bassin Artois Picardie s'améliore nettement. Elle est bien différente de celle de la Bretagne où le niveau de nitrates est beaucoup plus élevé.

Pour les exploitations BIO, la gestion des nitrates est plus compliquée à cause de la fertilisation des champs et du soin aux cultures qui est uniquement organique.

Il faut par ailleurs garder en tête que l'agriculture n'est pas la seule responsable : plus il y a d'habitants dans une zone, plus il y a de nitrates. Il y a un décalage important entre le monde agricole et le monde scientifique. Les agriculteurs dénoncent le fait que les scientifiques ne soient pas capables de définir qui rejette des nitrates en mer et dans quelles proportions.

Jean-Louis DESMEDT, Ecover

Ecover est implantée sur la zone de Landacres, on y fabrique des détergents. L'entreprise est vite accusée dès qu'il y a de la mousse sur la côte.

Ecover recherche une alternative aux produits à base de phosphates. C'est ainsi qu'elle a créé la première lessive sans phosphates à base d'argile blanche, puis d'autres produits du même type.

L'entreprise a poursuivi son développement grâce à la prise de conscience de la population des enjeux environnementaux, elle a désormais davantage confiance en ces produits.

La législation oblige les industriels à se conformer à un taux de dégradation pour les tensioactifs : ils sont présents dans de nombreux produits de la maison et favorisent la mortalité des écosystèmes.

Les agents de blanchiment sont également des polluants lourds. Actuellement les phosphates sont interdits dans la lessive mais pas dans les produits vaisselle : la réglementation est encore imparfaite. En effet, les produits doivent être biodégradables à 60% au niveau des tensioactifs, pour les autres composants il n'existe pas d'obligation de biodégradabilité. Les produits Ecover sont biodégradables à 99% et bientôt 100%.

Dans les années 80, la pollution des eaux était liée à 70% aux détergents et 30% à l'agriculture, aujourd'hui la tendance est inversée. Tous les phénomènes de pollution liés aux détergents ne sont pas visibles : en dehors de l'effet moussant, les molécules d'enzymes ne sont pas visibles et s'accumulent. Le monde industriel sait réduire leur impact toxicologique il suffit encore de mettre les moyens en place qui sont parfois coûteux.

La nature a une capacité limitée à supporter les polluants.

Echanges avec les experts (partie 2) : Questions spécifiques

GROUPE SCIENTIFIQUE

1 / A partir de quand a-t-on commencé à observer ce phénomène ? A-t-on des archives ? Y-a-t-il un seuil critique ?

2 / Combien de temps va mettre le milieu pour digérer les pratiques anciennes et dans combien de temps va-t-il prendre en compte nos pratiques d'aujourd'hui ?

3 / Est-ce que la surpêche a un impact sur la prolifération de phytoplancton ?

4 / Peut-on quantifier le taux de pollution impactant sur ce phénomène naturel ? Y-a-il un impact sur la santé ?

Premières apparitions de l'eutrophisation

Les premières descriptions du phénomène remontent aux années 60 en France et 50 en Belgique mais nous n'avons aucune information quantitative de cette époque. Le phénomène étant récent, nous ne disposons pas d'assez de recul. A l'échelle humaine, 20 ans représentent un recul, mais à l'échelle écologique, ce n'est rien.

Mesures et seuil critique d'eutrophisation

Les chercheurs considèrent qu'au-delà d'un million de cellules phaeocystis par litre (convention OSPAR), l'eutrophisation est critique : le milieu est alors dominé par phaeocystis. Celui-ci ne peut pas être mangé par le zooplancton, il n'a pas de prédateur, nous assistons alors à un déséquilibre entre espèces. A Boulogne, nous avons régulièrement des niveaux de l'ordre de 25 millions

par litre d'eau, à Dunkerque et en Baie de Somme le niveau atteint 60 millions. En Belgique, le seuil est plus élevé mais il faut tenir compte de l'environnement marin qui répond différemment (brassage de l'eau, dilution).

Via la modélisation nous sommes capables de définir quels ont été les apports de nitrates et phosphates qui ont créé ce bloom.

Il y a toujours des problèmes transfrontaliers : par exemple, si la France fait des efforts mais pas la Belgique : la pollution persistera. La coopération internationale est nécessaire.

Eutrophisation et impact sur la vie en mer

Ces micro-algues peuvent irriter les branchies des poissons jusqu'à causer leur mortalité. Les coquillages ou autres organismes vivants dans le fond peuvent être privés d'oxygène. En effet, lorsque *Phaeocystis* meurt et se dépose sur le fond, cela génère une concentration de bactéries qui s'en nourrissent et qui, pour respirer, absorbent une grande quantité d'oxygène de l'eau.

Eutrophisation et pêche

Phaeocystis obstrue les filets de pêche et bloque le système de refroidissement des bateaux.

A la centrale de Gravelines, d'autres d'organismes du même type (zooplancton gélatineux), prolifèrent en masse et peuvent être dangereux pour le système de refroidissement de la centrale.

La pêche des gros prédateurs marins déséquilibre également les petits maillons. La surpêche peut donc encourager le développement de gros plancton tel que les méduses.

GROUPE EAU-ASSAINISSEMENT

1 / Pour les stations d'épuration et les assainissements privés, quelles sont les normes de rejets suivants : phosphate, nitrate ? Que fait-on des résidus, des boues ?

2 / Quelles sont les mesures prises pour les rejets directs ou les assainissements non collectifs et/ou pas aux normes ? Quelles sont les mesures prises en attendant le raccordement ? Et quels sont les risques ?

3 / Innovations à faire et progrès : de quel ordre sont-ils ? : Réseau (fuite, rejets directs) ? Qualité du traitement (la technique) ? Qualité de la surveillance ? Travail à faire sur les eaux usées en amont (usagers : consommateurs, industriels ?)

4 / Question de la quantité : Comment est calculé le dimensionnement et la technologie des stations d'épurations ? Dans ce calcul, les industries sont-elles prises en compte ? Et que se passe-t-il en cas de débordement ?

Normes de rejet pour les stations d'épuration

Chaque station a ses propres normes car la sensibilité du milieu naturel dans lequel on rejette l'eau est prise en compte. Par exemple, en rejet marin les normes sont plus sévères.

Les boues rejetées par les stations d'épuration

La dépollution de l'eau génère des boues. Ces boues, selon la station d'épuration, vont être déshydratées et utilisées pour faire du compost à étendre dans les champs.

A Boulogne on incinère les boues car le transport de ces boues en milieu urbain est difficile. En effet le débit est de 50 tonnes par jour.

On ne récupère pas encore la chaleur du four à combustion des boues mais il s'agit d'un projet avec la ville de Boulogne sur mer.

Le risque avec ces boues est qu'elles amènent des parasites dans les champs, ce qui est déjà arrivé dans certains pays.

Axes de progrès

Actuellement l'enjeu est d'avantage l'optimisation du fonctionnement que la création de procédés révolutionnaires.

Il reste des progrès à faire au niveau du comportement du consommateur.

La Police de l'eau qui effectue des contrôles, doit surveiller également les réseaux et pas seulement les stations d'épuration. Les contrôles concerneront donc l'ensemble du système d'assainissement.

Un industriel n'est pas comme un particulier qui se branche sur le réseau, la démarche est différente.

Il a fallu reconstruire une nouvelle station pour l'équivalent du traitement des eaux de 200 000 habitants. C'est la plus importante du Pas de Calais (et non 120 000 habitants comme cela devrait être si seuls les particuliers étaient pris en compte). C'est la collectivité publique qui a pris ce choix de traiter aussi la pollution industrielle. Les industries ont dû pour beaucoup d'entre elles mettre en place une unité de prétraitement dans leur site. L'usine VALEO à Etaples, par exemple, a sa propre unité de traitement.

GROUPE AGRICULTURE

1/ Au niveau des lois : quelles sont les réglementations/normes quant aux rejets de nutriments ? Quels sont les moyens de contrôle ? Est-ce bien respecté ?

2/ Quelles sont les solutions envisageables ? (faire évoluer les lois ? revenir en arrière au niveau des cultures et techniques ? ou autre ...)

- 3/ Pour les agriculteurs qui adhèrent à une agriculture répondant aux normes, combien sont-ils en France ? Est-ce contraignant pour eux ? Techniquement et financièrement ? Y a-t-il des aides ?**
- 4/ Quel impact sur la qualité de l'eau peut-on envisager ? L'impact est-il positivement significatif ?**

Réglementations/normes quant aux rejets de nutriments

La réglementation est la même pour les industriels que pour les éleveurs.

Entre 2000 et 2010, un plan d'aide pour maîtriser les pollutions agricoles a été mis en place avec un investissement de 300 000 millions d'Euros.

Concernant l'épandage d'engrais, les agriculteurs sont limités. De nombreuses autres contraintes leur sont imposées, le monde agricole a souvent du mal à en percevoir l'utilité. Il est nécessaire de mesurer l'efficacité de ce qui est fait. Les agriculteurs n'arrivent pas à percevoir le résultat de leurs efforts.

L'impact de l'agriculture sur la qualité de l'eau

Nous payons aujourd'hui le prix des erreurs faites il y a 20 ans. L'impact de nos activités reste plus longtemps dans le sol que dans l'eau de ruissellement qui a la capacité de digérer plus vite les substances.

Nous sommes dans une phase de restauration et de rééquilibrage mais malgré tout, des phénomènes de toxicité persistent. Par exemple le phytoplancton toxique pose des problèmes de baignade et de consommation de produits de la mer.

Sur les nappes souterraines, le cycle des nitrates est assez rapide : la moindre erreur commise se voit tout de suite, inversement le moindre effort réalisé se voit aussi.

La communication entre les différentes masses d'eau pose également des problèmes : par exemple, les apports de la Seine perturbent beaucoup la vie aquatique. Les apports transfrontaliers sont également problématiques.

Les techniques de l'agriculture continuent de s'améliorer via les directives européennes. Pour continuer à progresser, l'incitation est nécessaire, les agriculteurs ont besoin de financement.

GROUPE INDUSTRIELS

- 1 / Quelle crédibilité accorder à la notion de biodégradabilité ?**
- 2 / Quelles sont les contraintes réglementaires et est-ce économiquement et technologiquement faisable ?**
- 3 / Peut-on incriminer une partie de la pollution chimique aux entreprises ?**
- 4 / La part des industriels est-elle aussi importante que celle des habitants du littoral ?**

Industrie et biodégradabilité

Ecover a conçu une analyse du cycle de vie d'un détergent. Le volume critique de dilution est un point important : il permet de déterminer dans quelle quantité d'eau un volume de détergent ne nuit pas à l'environnement marin. Au niveau européen, des tests de biodégradabilité existent mais ils ne sont pas obligatoires : Ecover les effectue. Contrairement à ce que l'on pourrait penser, les plastiques biodégradables ne sont pas ceux qui ont le moins d'impact sur l'environnement.

Contraintes réglementaires en termes de traitement des eaux usées

Un industriel gère ses eaux usées de manière plus cadrée qu'un particulier. Il a une convention de rejet avec des spécificités techniques sur les limites des rejets en termes de matières en suspension.

Les industriels de Capécure rejetant une quantité significative d'eaux usées ont signé cette convention. Pour répondre aux besoins de cette zone d'activité en termes de traitement des eaux usées, la plus grande station d'épuration du Pas de Calais a été mise en place dans le secteur. Elle est conçue pour accueillir les rejets de 200 000 habitants alors que Boulogne sur mer en compte 120 000. Il s'agissait d'un investissement indispensable. Certaines grandes entreprises de la région disposent de leur propre station d'épuration, par exemple Valeo.

Ecover a été soumis lors de son ouverture à un cahier des charges rigoureux de la DREAL. L'entreprise est autorisée à rejeter un nombre de polluants limité en fonction de son activité.

Ecover travaille en partenariat avec Veolia qui réalise les mesures au niveau des eaux de rejet (sels, métaux lourds ...).

L'entreprise a beaucoup d'autres contraintes réglementaires dues à la certification 14 001 (certification non obligatoire mais sollicitée par Ecover).

Les produits Ecover : un prix significatif pour le consommateur

Les détergents écologiques représentent 5% du marché. Cela explique que les produits Ecover soient plus chers que les détergents classiques. En effet, il est difficile de réaliser des économies d'échelles, les volumes sont limités tout comme le nombre de consommateurs. Par ailleurs, les contraintes liées aux nettoyages de machines et de production représentent également un coût supplémentaire.

L'objectif de cette enquête est de déterminer la perception du public face à la qualité de l'eau et son effet par rapport à l'usage que le public en a. Elle consiste aussi à mieux définir la volonté du public à contribuer à des améliorations.

1. Fréquentez-vous les plages ?

- ☐ Quotidiennement ☐ Une fois par mois
☐ Plusieurs fois par semaine ☐ Plusieurs fois dans l'année
☐ Une fois par semaine ☐ Jamais

2. Dans quel but y allez-vous ? Pour quelles activités ?

- ☐ Marcher ☐ Travailler
☐ Courir ☐ Pêcher
☐ Nager ☐ Autre :



Maintenant, observez ces photos :

3. Avez-vous déjà vu ce phénomène de mousse sur la plage ?

- ☐ Oui ☐ Non

Si « oui », combien de fois : / par semaine / par mois / par année

4. Connaissez-vous le phénomène d'eutrophisation des eaux côtières ?

- ☐ Pas du tout ☐ Un peu ☐ Très bien

EXPLICATION DU PHENOMENE (cf document joint)

Dans ce qui suit, nous vous présentons différentes options. A vous de choisir celle qui vous convient le mieux, mais auparavant n'oubliez pas de lire la légende sur le côté. En effet, chaque option repose sur 3 critères : niveau de la qualité de l'épuration de l'eau, nombre de fermes aux normes et choix de la taxe à payer.

5. Dans le tableau, choisissez et cochez votre option préférée

Degrés d'amélioration des installations de traitement des eaux usées :

 Maintien des **niveaux actuels** de traitement des eaux usées

 Amélioration moyenne du traitement de l'eau pour une **eau de bonne qualité**

 Amélioration significative du traitement de l'eau pour une **eau d'excellente qualité**

Degrés de réduction des apports de nutriments provenant de l'agriculture : les exploitations agricoles doivent se conformer aux exigences des normes nitrates zones vulnérables (NVZ) :

 Maintien du **même nombre qu'aujourd'hui** d'exploitations conformes aux exigences des zones vulnérables.

 Baisse de moitié le nombre d'exploitations non conformes

 Imposer que **toutes les fermes soient conformes**

Les coûts de gestion et de contrôle : ils correspondent à une taxe qui serait une contribution fiscale supplémentaire par an et par personne.

Traitement des eaux usées	Apports de nutriments agricoles	Coûts de gestion et de contrôle	Mon option préférée
		0€	1 ☐
		25€	2 ☐
		10€	3 ☐
		10€	4 ☐
		0€	5 ☐
		25€	6 ☐
		25€	7 ☐
		10€	8 ☐
		0€	9 ☐

5. Si vous ne souhaitez pas payer de taxe, pourquoi avez-vous fait ce choix ? (cochez la réponse la plus significative)

- ☐ Je paie déjà trop de taxes
- ☐ Je n'ai pas les moyens de payer
- ☐ Je ne vais pas à la plage
- ☐ Je ne suis pas intéressé par la qualité de l'eau
- ☐ Le gouvernement devrait payer avec des budgets déjà existants
- ☐ C'est aux grands pollueurs de payer
- ☐ Je préférerais participer au financement de fonds communs pour la préservation de l'environnement
- ☐ Autre raison :

6. Cochez la case qui correspond le mieux à votre avis :

	 Pas du tout d'accord	Pas d'accord	 Sans opinion	D'accord	 Tout à fait d'accord
Je me sens concerné par l'environnement marin					
Le gouvernement devrait agir en matière de qualité de l'eau					
Les autorités locales sont responsables de la protection de l'environnement marin					
Je serais prêt à payer un peu plus d'impôts pour améliorer la qualité de l'eau					
Les compagnies d'eau pourraient faire plus pour améliorer la qualité de l'eau de mer					
Avant de répondre à cette enquête, je n'avais pas conscience du problème d'eutrophication en bord de mer					
Je suis prêt à payer mes légumes plus chers pour encourager une agriculture « durable »					
La qualité de l'eau devrait être prioritaire car cela améliore la qualité de l'environnement marin pour les activités récréatives					
La qualité de l'eau devrait être préservée pour le bénéfice de mes enfants et générations futures					
Les pratiques agricoles devraient réduire les rejets de nutriments dans les rivières et estuaires					
Le gouvernement devrait faire davantage pour protéger le littoral					
Améliorer le traitement de l'eau est le seul moyen de réduire les nutriments dans l'eau					

QUI ETES-VOUS ?

Ces informations resteront confidentielles

1. Etes-vous ?

- ☐ Un homme ☐ Une femme

2. Avez-vous des enfants ?

- ☐ Oui ☐ Non

3. Quel est votre niveau d'études ?

- ☐ Bac + 4 et plus ☐ CAP/BEP
☐ Bac+ 1 à 3 ☐ Sans diplôme/Brevet des collèges
☐ Bac ☐ Autre (_____)

4. Dans quel pays résidez-vous ?

5. Quel âge avez-vous ?

- ☐ 18-25 ans ☐ 26-40 ans
☐ 41-60 ans ☐ 60 ans et +

6. Quel est votre secteur professionnel ?

- ☐ Employé ☐ Retraité
☐ Enseignant ☐ Sans emploi
☐ Indépendant ☐ Homme ou femme au foyer
☐ Autre :

7. Quel est le montant du revenu annuel de votre foyer ?

- ☐ Moins de 12 000 € ☐ Entre 12 000 et 24 000 €
☐ Entre 24 000 et 52 000 € ☐ Entre 52 000 et 142 000 €
☐ Entre 142 000 et 300 000 € ☐ Plus de 300 000 €

8. Etes-vous membre d'une association ou d'une organisation environnementale ? ☐ Oui ☐ Non

9. Est-ce que vous, ou un membre de votre famille, travaille dans un des organismes où l'on traite la qualité de l'eau ?

- ☐ Oui ☐ Non

NAUSICAA, E. Chiroutre et C. Hilderley

Enquête menée dans le cadre du projet INTERREG IV A 2MERS 'ISECA'
Information System on the Eutrophication of our Coastal Areas

EXPLICATION DU PHENOMENE

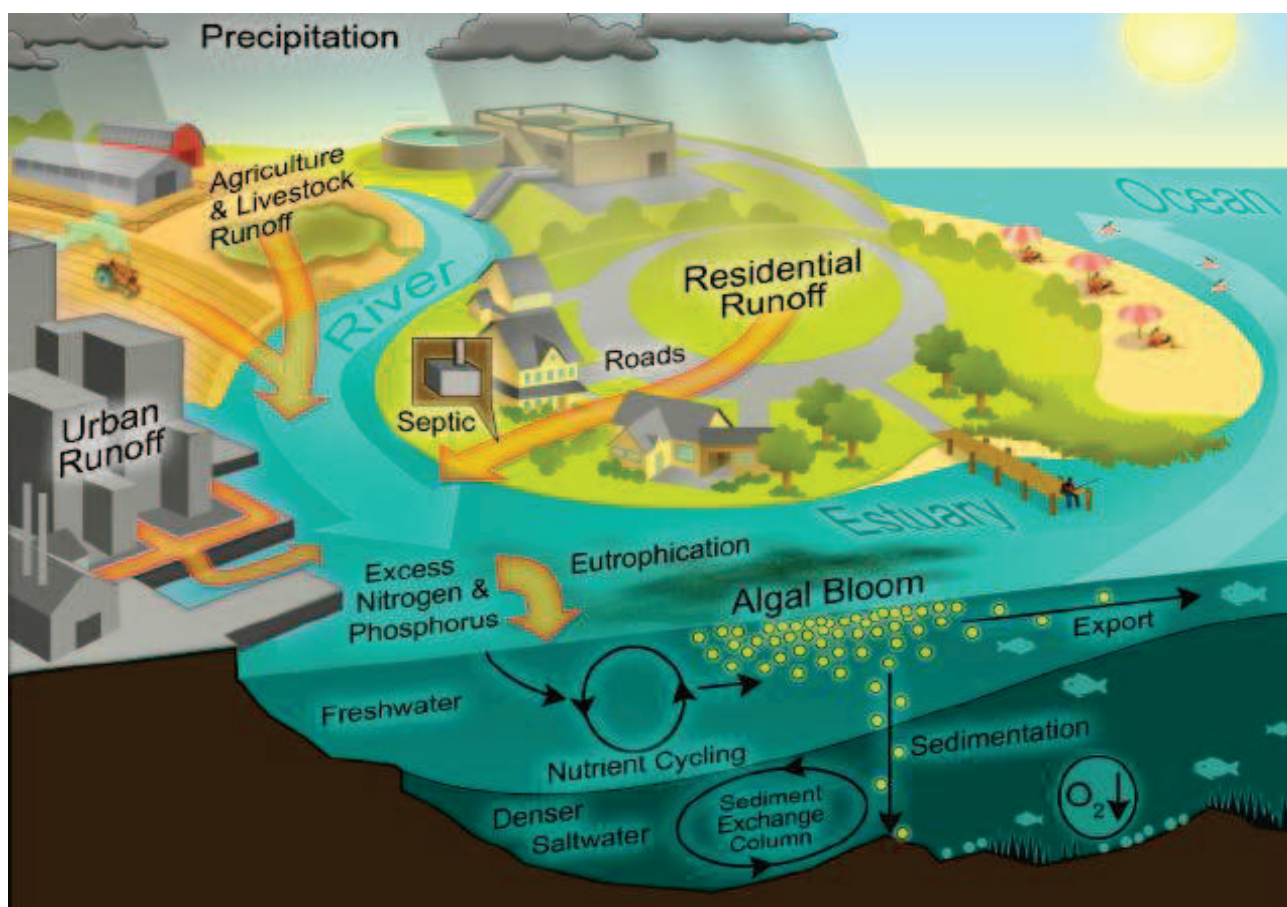


Figure 1. Diagramme représentant le processus d'eutrophisation.

http://www.tokresource.org/tok_classes/enviro/syllabus_content/5.4_eutrophication/index.htm

Les algues se développent en mer en se nourrissant des ressources minérales qu'elles trouvent dans l'eau. C'est un phénomène naturel. Lorsqu'il y a beaucoup de nutriments (nitrates et phosphates), elles croissent et se reproduisent rapidement. Cependant, lorsqu'il y a **trop de nutriments** dans l'eau, une stimulation trop forte de la croissance des algues peut *in fine* troubler l'eau. Ce phénomène est appelé l'eutrophisation. Selon le milieu (baie calme ou mer agitée) et le type d'algue (macroscopiques ou microscopiques), il s'observe sous différentes formes : **marée verte ou mousse sur la plage**.

L'eutrophisation est l'une des causes de la détérioration de la qualité de l'eau. Dans la Mer du Nord et la Manche, ce phénomène est principalement lié aux activités humaines : rejets des eaux usées (domestiques ou industrielles), écoulement des nutriments venus des terres agricoles...

De tels problèmes environnementaux touchent non seulement la vie aquatique mais peuvent également nuire aux activités économiques du bord de mer (pêche, tourisme, loisirs...).

Depuis ces 20 dernières années, toutes ces questions ont été étudiées de manière approfondie. Le problème a été pris en compte au sein de la Directive-Cadre sur l'Eau de l'Union Européenne et au sein de la convention OSPAR en 1992. Ces deux conventions ont pour objectif d'instaurer une bonne gestion de nos rivières et de nos eaux côtières. Pour atteindre ces objectifs, les paramètres de qualité de l'eau doivent être régulièrement contrôlés et publiés.

La Commission Européenne (CE) a établi des directives : elle exige que les zones de terres qui se déversent directement dans les eaux polluées d'être désignées zones vulnérables aux nitrates (NVZ) et pour les agriculteurs de suivre les règles obligatoires concernant les rejets de nitrates provenant de l'agriculture.

Enquête menée dans le cadre du projet INTERREG IV A 2MERS 'ISECA'
Information System on the Eutrophication of our Coastal Areas

Analyse des messages émis lors du World goûter



Invest in our future

MESSAGES PRINCIPAUX RETENUS

- . Tout va à la mer, faisons en sorte qu'il y ait moins de pollution à la source ♦ ♦ ♦ ♦ ♦
- . L'eutrophisation est un phénomène naturel amplifié par les activités humaines ♦ ♦ ♦ ♦ ♦ ♦ ♦
- . Les activités humaines responsables sont multiples. Par exemple, assainissement, agriculture, industrie, changement climatique et consommateurs particuliers. ♦ ♦
- . Chacun d'entre nous peut participer à réduire le phénomène d'eutrophisation par ses comportements. Chacun de nos gestes compte. ♦ ♦ ♦
- . Quelles sont les initiatives individuelles ?
 - être bien raccordé au réseau
 - réduire notre conso en eau
 - faire plus attention à l'usage et à la composition des produits que l'on utilise
- . Eco responsabilité oui mais « Schizophrénie » : il faudrait « ralentir » alors qu'on est sollicité pour « toujours plus » ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦

BESOIN D'EDUCATION

- . Prendre conscience de notre responsabilité individuelle et collective (collectivité, entreprises) ! ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦
- . Eveiller les consciences ? ♦ ♦ Ou réveiller ? Ou sonner les consciences !
- . Phénomène peu connu à expliquer, travail de pédagogie auprès du grand public. ♦ ♦ ♦ ♦ ♦
- . Créer des liens ♦ pour comprendre pourquoi agir → de l'observation à l'action
- . Pour les promeneurs sur la plage la mousse est due au rejet d'eaux usées ??

ET SI L'ON PROPOSAIT DES SOLUTIONS :

- . Recréer une économie locale ! ♦ ♦ ♦ → Problème du coût, de l'efficacité d'autres produits alternatifs...
- . Transformer *phaeocystis* en détergeant ♦ ou en crème pour la peau ? ou du bio-carburant ? ♦
- . Consommer différemment pour un développement durable. ♦ Agir sur les prix ♦ ♦
- . Comment faire évoluer les mentalités afin d'utiliser des produits de manière plus raisonnée ?
- . Pas de détergents chez soi, est-ce hygiénique ?

ENCORE DES QUESTIONS :

- . **sur le phénomène :**
Pourquoi un phénomène récent ? Lié à quoi ? Réchauffement ? Population ? → Agriculture industrie
- . **sur la qualité de l'eau**
 - . Quelle valeur à l'eau ?
 - . Eau consommable ???? ♦
 - . Quelle eau/ avenir on va laisser aux générations futures ?
 - . Eutrophisation des étangs et rivières (+concentré)
- . **sur ce qui doit être fait**
 - . Comment « nettoyer » l'eau des pollutions « passées » (au-delà de la nettoyer quand on l'utilise) ?
 - . Comment « nettoyer » l'eau déjà « sale » ? (celle de nos parents et grands-parents) = Avec des détergents
 - . La police de l'eau n'est pas ou peu appliquée par les maires. Que font les élus ??
 - . Revenir aux sources ! A la bougie ? et l'eau claire ? . Il n'y avait pas de « mousse » il y a 15 ans. (Si récent !) Pourquoi aujourd'hui ?



Annex A-ID-10 Satellites and Ocean Colour Activity



Satellites and Ocean Colour

Problem statement:

What is remote sensing?

Why do we use remote sensing?

Can you imagine how satellite images could be used?

What is Ocean Colour?

Method: Observation

Skills: Research skills

Target group: Junior UK school 7-11 yrs

Theoretical part:

In the world of science, remote sensing means observing the Earth with sensors from high above its surface. They are like cameras except that they use not only visible light but also other bands of the electromagnetic spectrum such as infrared, radar and ultraviolet. Because they are so high up, these sensors can make images of a very large area, sometimes a whole country. Today, remote sensing, also known as Earth Observation (EO), is often done from space using satellites. Many countries have them. Hundreds of images are sent every day from the satellites to receiving stations on Earth. The Earth's entire surface is imaged every week. Remote sensing of ocean colour is an important tool in Earth Observation. The "colour" of the ocean is determined by the impact of light with the water and any coloured particles or dissolved chemicals in the water. Colour is the light reflected by the water and the substances present in it. When light hits a water molecule or a coloured substance in it, the different colours (or wavelengths) can be absorbed or scattered in differing intensities. The colour we see results from the colours that are reflected. The substances in seawater which most affect the water colour are: phytoplankton, inorganic particles (or sediments), dissolved organic chemicals, and the water molecules themselves. Phytoplankton contains chlorophyll (a coloured algal pigment), which absorbs red and blue light and reflects green light. The chlorophyll concentrations can be derived from satellite data by calculating the ratio blue / green of the ocean. When blue is more absorbed, green is more reflected which indicates a higher concentration of phytoplankton in the water and vice versa. Remote sensing can thus provide a wide visual picture and allows us to create more insight into the eutrophication processes.

Materials:

- Seawater sample
- Coffee filter
- Glass test tubes or glass jars
- Microscope
- Pipettes
- Green food colouring
- Brown food colouring or coffee
- Flour or very fine beach sand
- PC or laptop with internet connection (optional)

Note: the food colouring and flour can be found in your local supermarket

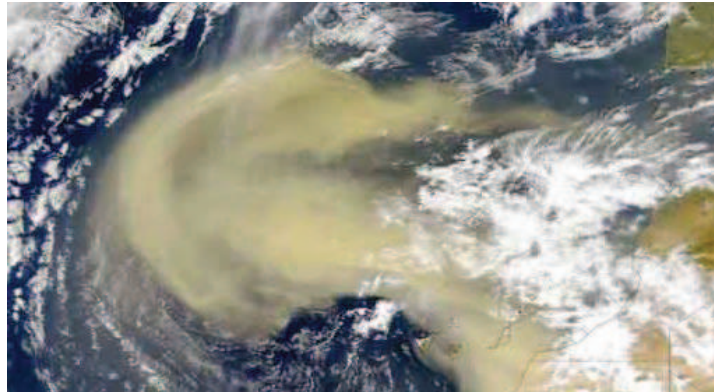
Practical part

Phytoplankton

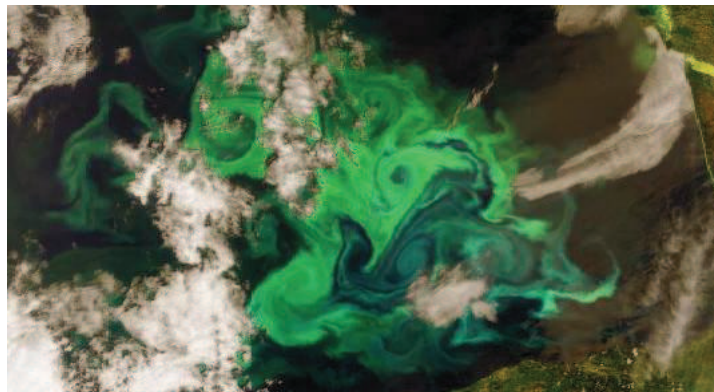
Analyze a seawater sample with the microscope to see if some species of phytoplankton are present.

Satellite images

Have a look at the satellite images below and try to match them to the pre-printed titles e.g. sand storm, phytoplankton bloom, hurricane, suspended sediments, etc...(You can easily expand this selection with satellite images of other phenomena!). Watch the video clip showing satellite images (ESA): [http://spaceinvideos.esa.int/Videos/2011/09/ESA -
Space to Relax Our Colourful Planet](http://spaceinvideos.esa.int/Videos/2011/09/ESA-_Space_to_Relax_Our_Colourful_Planet).



Satellite image1 ©NASA



Satellite image2 ©ESA



Satellite image3 ©NASA

Ocean colour in a test tube

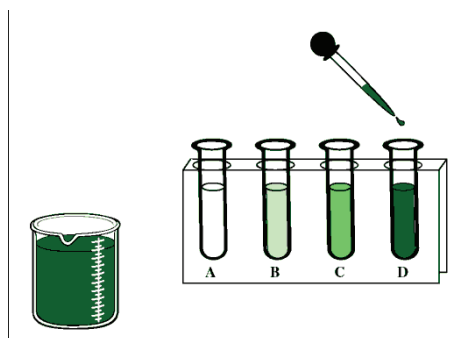
This is an experiment to demonstrate how changing concentrations of phytoplankton / dissolved organic matter (DOM) / suspended particles (SPM) can influence the colour of the ocean.

Use filtered seawater to demonstrate that pure water is perfectly clear (take a sample of seawater and filter it using a simple coffee filter).

To mimic the effect of phytoplankton on ocean colour you can use a green food colouring. To mimic the effect of organic matter (DOM) on ocean colour you can use a brown food colouring. To mimic the effect of suspended particles (SPM) on ocean colour you can use flour. We will do the test three times (to explore the effect of phytoplankton, DOM or SPM on ocean colour).

Protocol

1. Fill each of the test tubes with the same amount of water using the measuring cup. Leave the first test tube (A) untouched as this will serve as your version of clear ocean water.
2. Fill the eye dropper with the green food coloring and carefully add **one drop** to the second test tube. Carefully shake the test tube so that the substance is evenly distributed throughout the water. The water should have turned a very pale green colour.
3. Now place **two drops** in the third test tube and repeat the procedure. You will notice that the colour is much darker than the second tube. That is because the concentration of the green food colouring (phytoplankton) in this test tube is twice as high as in the previous one.
4. In the last tube, add about **four drops** of the food colouring and see how much darker it is.
5. If we assume that there are about one thousand drops of water in each of the test tubes, then we can calculate the actual concentration of phytoplankton (or food colouring) in each of the test tubes and relate that concentration to the colour that we see. The higher the concentration of phytoplankton, the greener the water. Have someone take another test tube and secretly add some food colouring to it. See if you can estimate the number of drops added based on the colour that you see by holding the unknown sample next to the ones whose concentration you have measured.
6. Now create your own phytoplankton bloom by squirting a whole bunch of food colouring into the last tube and see what happens.
7. Clean the test tubes and repeat the protocol with the brown food colouring (the water should have turned a very pale brown colour) and the flour (the water should have turned a pale white colour).



Results and Comments:

Satellite images

Image 1: Hurricane / sand storm

Image 2: Phytoplankton bloom

Image 3: Suspended sediments (SPM)

Ocean colour in a test tube

The basic principle behind the remote sensing of ocean colour from space is: the more phytoplankton in the water, the greener it is and the less phytoplankton, the bluer or more transparent it is.

References and thanks to:

- http://oceancolor.gsfc.nasa.gov/SeaWiFS/TEACHERS/sanctuary_3.html
- <http://www.iseca.eu/images/deliverables/A2.1%20What%20is%20ocean%20colour.pdf>

Education links space agencies

- <http://www.esa.int/esaKIDSen/>
- <http://www.nasa.gov/audience/forkids/kidsclub/flash/#.UpRuzeJV8yo>

This educational tool has been developed by PML (Plymouth Marine Laboratory, UK) for the ISECA project.

More information: www.ISECA.eu



Annex A-ID-11

ISECA UK Infoday abstract EMSEA event

WHY DOES THE SEA FOAM?

Elise Chiroutre¹, Victor Martinez Vicente², Thecla Keizer²

Why is there so much foam on the beach and what is that stinking smell? How do these large amounts of green algae end up in my fishnets? Why do we speak about 'Death Zones' in the sea and how do they arise? Why are certain cultured mussels not suitable for consumption? Why is this happening now?

To answer all these questions, scientist from various institutions and research disciplines are united in a European project called ISECA (Information System on Eutrophication of our Coastal Areas).

Eutrophication is one of the main causes of the deterioration of water quality. In the North Sea and the English Channel, this phenomenon is related to two major activities: agriculture and industry. Such environmental problems not only have an effect on life in the water but also on the coastal zone and its economic activities (i.e. tourism, recreation, and environment). The eutrophication problem has been extensively discussed in the EU Water Framework Directive and the OSPAR Convention of 1992. Both Conventions aim to introduce a good management of our rivers and coastal waters. In order to achieve the environmental objectives set by the legislation, coastal water quality must be monitored. There are already several monitoring programs that cover small portions of the European coastal areas. ISECA wants to extend this monitoring through use of Earth Observation, and become an important tool to inform authorities and stakeholders (agriculture, industry, tourism), so that action can be taken in near future.

Therefore, a large focus of the project is to explain to the public at large what eutrophication is, its consequences and the scientific basis of the monitoring techniques. The presentation will provide an overview of the project, the innovative educational and scientific tools developed including here in Plymouth, and future challenges.

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WWW.ISECA.EU

A cross discipline and cross border integrated project on eutrophication offering information, education and science to stakeholders and the public at large in the Interreg 2 Seas Zone (Belgium, England, France and the Netherlands).

What is the ISECA project?

Scientists from various institutions and research disciplines are united in a European project called ISECA (Information System on Eutrophication of our Coastal Areas).

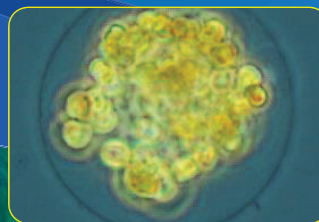
For decades, they observed the algae development on the coastline individually with their own scientific tools. Thanks to ISECA, their knowledge is now being brought together in a single database in order to better forecast the phenomenon evolution and to inform the authorities and the stakeholders so they can take appropriate measures.

What is eutrophication?

Algae grow in the sea sustained by nutrients and light. But, when there are too much nutrients in the water (nitrates and phosphates), the algae overgrow and disturbs the marine environment.

This enhanced growth of algae phenomenon is called eutrophication. Depending on the environment (quiet bay or rough seas) and the type of algae, it can be observed in different forms: green algae or foam on the beach.

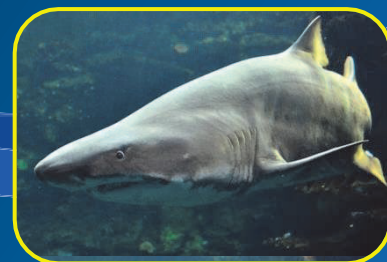
Eutrophication causes a deterioration in water quality. The phenomenon is spreading in space and time in the North Sea and the English Channel. The nutrients responsible are mainly due to human activities.



THE ISECA PARTNERS ATTENDING THE EMSEA CONFERENCE:



www.nausicaa.fr



Nausicaá is a National Sea Experience Centre located at Boulogne-sur-mer in the north of France. Its mission is to raise awareness, educate and encourage the public on new behaviours regarding the ocean with a better management of resources in favour of the preservation of Mankind's future.

As partner in ISECA's project, Nausicaá is in charge of the communication. They ask scientists on their work progress, organize and create communication tools and events such as Information Days towards concerned audiences, debates and directs on the Nausicaá's TV set.

Nausicaá also determines the targeted publics and questions the people on their perception of eutrophication and their willingness to act.

Moreover, they create workshops on eutrophication such as "When the sea foams" using an innovative material inviting people give their opinion with voting remote.



www.pml.ac.uk



PML, the Plymouth Marine Laboratory, provides capability for observing, modelling, understanding and forecasting marine ecosystems, to underpin evidence-based environmental solutions to societal challenges. PML do so by applying world-leading, integrated, scientific understanding, focused on the interactions between the marine environment and society, in estuarine, coastal and shelf waters, as well as the upper layers of the global ocean.

As partner of the ISECA project, PML collects in-situ optical data to validate ocean colour images that can be used to identify and monitor eutrophication in coastal waters.

Within ISECA, the laboratory carries out research on marine optics, focusing on the relationships between optical properties of organisms and particles and their abundance and composition.

It studies oceanic and coastal waters with a view to obtain high quality in-situ datasets that will be used to parameterize and validate satellite images of the colour of the sea.

© SeaWiFS Project, NASA/Goddard Space Flight Center, and ORBIMAGE, B. Andersen and D. J. Patterson, D. Shale, Nioz, Claire Bachimont, Ella Darlington – Education through Expeditions, AMT 2010.



AID-13 UK Infoday EMSEA presentation

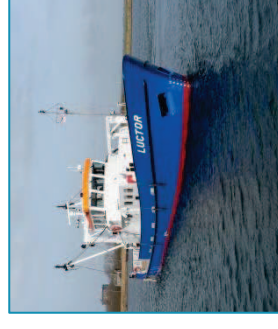
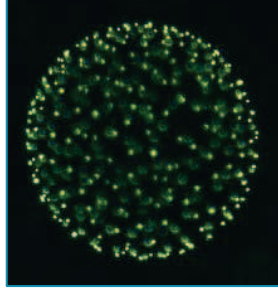
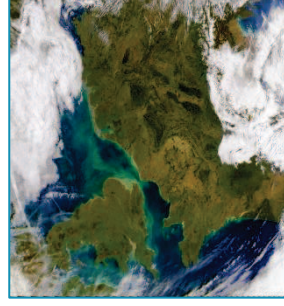
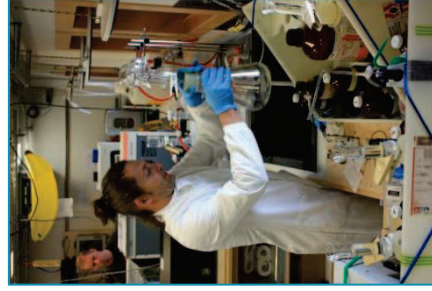
Linking scientists with Marine Education

Nausicaa (E. Chiroutre), PML (V. Martinez-Vicente)



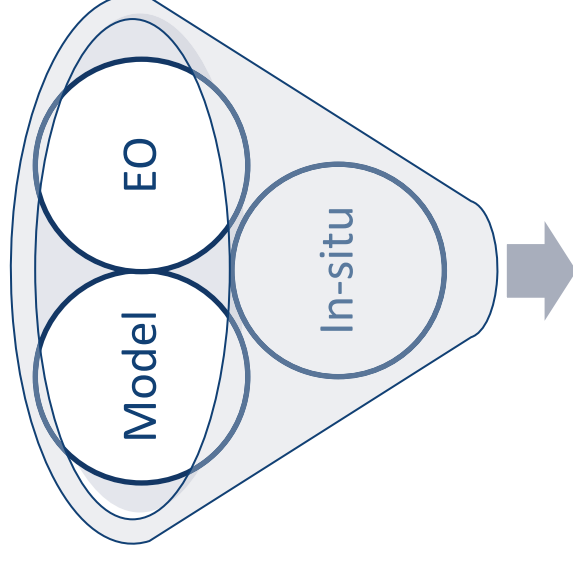
Invest in our future

A cross discipline and cross border integrated project on eutrophication offering information, education and science to stakeholders and the public at large in the Interreg 2 Seas Zone (Belgium, England, France and the Netherlands).



ISECA IN A FEW WORDS

- An Interreg-2 seas European project with 8 partners from 4 countries. (2011-2014)
- Topic: coastal eutrophication in the English Channel and the North sea areas
- Main objectives :
 - * Scientific: to combine Model, Earth Observation (EO) and In-situ data.
 - * Dissemination:
 - To raise awareness on eutrophication
 - To promote the use of Earth Observation to detect eutrophication
- Target audiences:
 - Stakeholders, Infomultipliers, General public



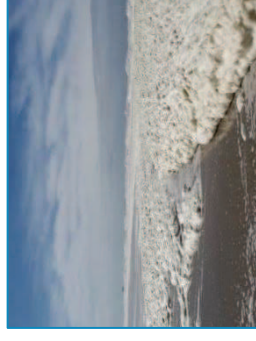
Web information system



Dissemination through Education: Focus on Eutrophication



- What kind of messages need to be delivered to the public?
 - What is eutrophication?
 - Why it happens?
 - What are the human causes?
- How to build a simple and attractive communication, to the public at large, about a difficult subject to explain?
- How to explain the work of scientists when it is complex, rather specialized and not very visible?



Dissemination through Education: Focus on Eutrophication (II)



- First approach: **Paper Questionnaire**
 - » creation of a face-to-face questionnaire (300 persons in France and Belgium) and analysis of the collected results.
 - » The majority are aware of the foam's phenomenon but they don't know the specific reasons of this foam.
 - » The majority feels some concern. Therefore, 84% don't know eutrophication.
- It enabled us to **better define the public's questionings and the information they are looking for.**
- Helped to find a **better method for dissemination**



Dissemination through Education: Focus on Eutrophication (II)



- Creation of the educational activity « **WHY DOES THE SEA FOAM?** »
with PowerVote
- Important point: to find a **motivating approach** so as to educate the people on eutrophication.
- We continue to collect people's representations and opinions whilst at the same time delivering correct and simple information.
- In that purpose we use an interactive computer tool: the software PowerVote, a voting system with individual keypads.

»» **Let's try it!**



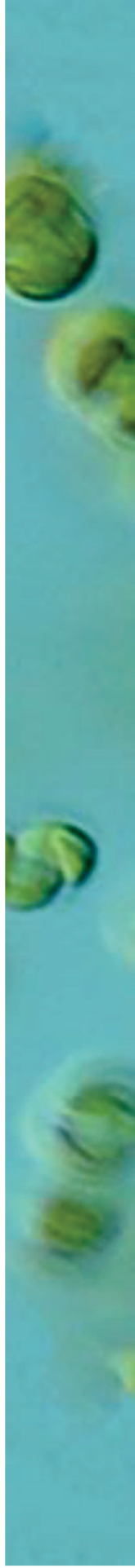
Dissemination through Education:

Focus on use of Earth Observation



- Designed an activity for NSEW-2013 and run it at the Plymouth Museum.
- This year activity was *Nature's Inventions*. We used this theme to explain what can be detected from Earth observation (EO).
- Elements:
 - Model of an ESA Sentinel-3 satellite (1:3 of the size)
 - Questions on EO images
 - Colour experiments
 - ESA video

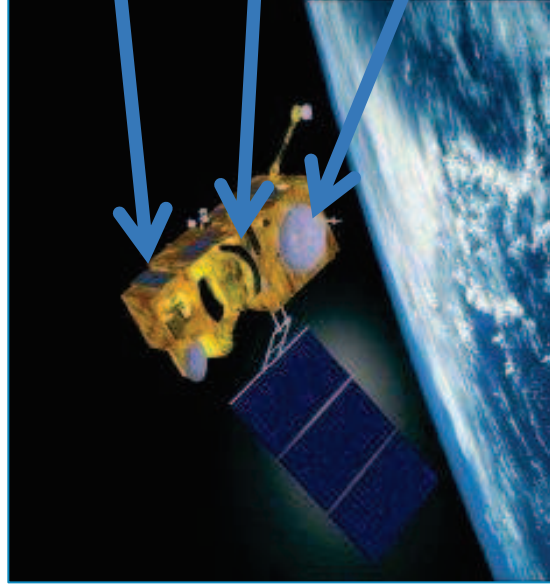




ESA's Sentinel 3

"Our" Sentinel 3

Sensors



Colour

Temperature

Microwaves



Colour experiments:

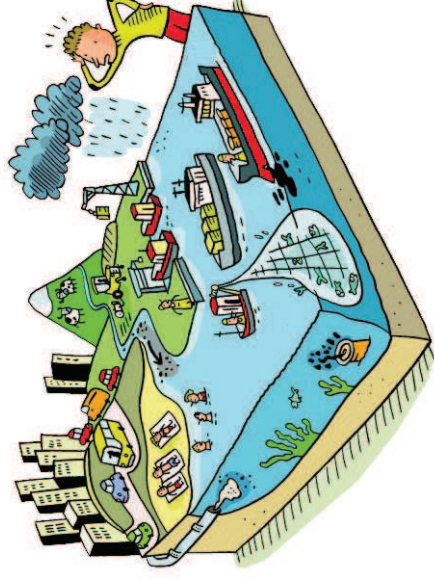
- Why does water changes colour?
- Components that colour :
 - *Phytoplankton
 - *Yellow substance
 - *Sediments

CONCLUSIONS AND OUTLOOK

- We tried to do Dissemination through education of the public at large activities
- Tried paper based questionnaire, but found it limitations (number of people, data analysis, interaction)
- Plan to use resulting data in conjunction with a parallel socio-economic study
- Prepare a Package and Looking to prepare new/refined activities for the next Science week.
- ISECA educational kit available in 2014 (free download)
- Any comments or suggestions are welcomed



What is eutrophication?
New survey online now!

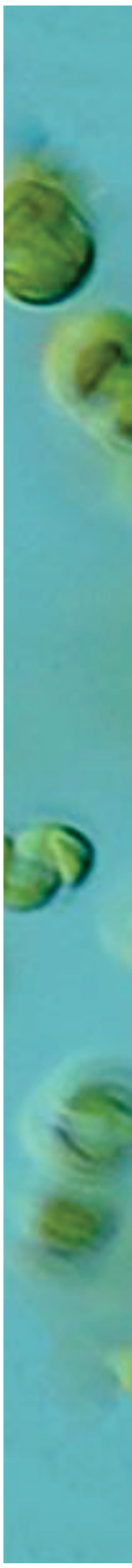


ACKNOWLEDGEMENTS



<http://www.iseca.eu>

Disclaimer: The document reflects the author's views. The INTERREG IVA 2 Seas Programme Authorities are not liable for any use that may be made of the information contained therein.



**We thank you
for your attention
And hope to see you
at our stand**

Elise Chiroutre : education@nausicaa.fr
Victor Martinez-Vicente: vmv@pml.ac.uk

A-ID-14- UK Info Day- Press article EMSEA conference

Marine Science and Education: European Marine Science Educators Association (EMSEA) conference in Plymouth.



What made you choose Marine Science as a career? Was it a logical and reasoned decision? Did you take into account the “*salary return for your investment*” in time and effort on study? Or was it an irrational choice? What event in your life made you decide to dedicate your life to the study of the sea? What inspired you: A movie? An experience? A teacher?

These questions were addressed by **European Marine Science Educators Association (EMSEA)** (<http://www.emsea.eu>) during its 2nd Conference held in Plymouth (3-5 September). The aim was to instigate a discussion on how the scientific community (us!) could influence future generations of marine scientists. During the two day conference we discussed and heard different ways to present Marine Sciences to school children and to promote the inclusion of Marine Sciences in the curriculum of compulsory education both in EU countries and US.

Dr Victor Martinez Vicente became involved in the EMSEA conference through his participation in the Interreg project ISECA (Information System on Eutrophication of our Coastal Areas, <http://www.iseca.eu>). ISECA deals mainly with combining Earth Observation (EO) with modelling and *in-situ* data to assess coastal eutrophication, providing tools to stakeholders and raising the awareness of the public at large.

As a part of the outreach component of PML’s activities within ISECA, PML’s Victor gave a talk with Ms. Elise Chiroutre (Nausicaá Aquarium, France) at the conference focusing on the outreach activities in the project and the use of EO to monitor the marine environment.

PML also had a stand with Nausicaá where a short video was shown briefly explaining the cause and effects of eutrophication (find the video at site <http://www.iseca.eu/en/results/news-and-multimedia?album=3700>). The talk and stand received good feedback and interest. PML is now looking at hosting a public event on the use and opportunities of Earth Observation during the upcoming World Space Week 2013 in October; this event would also have a link to the ISECA project.

“With the help of the Marketing Team at PML, we fulfilled ISECA’s deliverables, enhancing PML’s presence in the Marine European Education context and increasing awareness of the potential of Earth Observation to monitor the Marine environment. Personally, I found the experience very rewarding as it brought to focus the wider implications of my day-to-day activities at PML, and reminded me why I chose Marine Science.” Dr Victor Martinez Vicente.

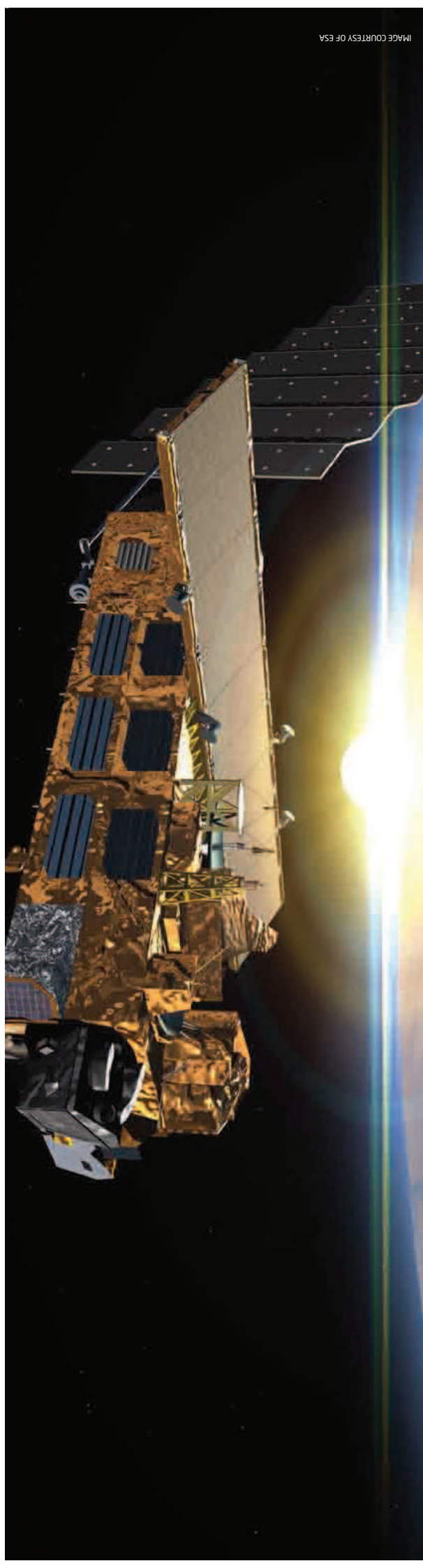


IMAGE COURTESY OF ESA

From outer to inner space - using satellites to monitor the seas around us

Free-of-charge, informative event brought to you by experts - 10 October, 6.45-9pm at Plymouth Marine Laboratory

To register contact: forinfo@pml.ac.uk

Doors open at 6.45, talks start at 7pm

Talks followed by refreshments and further discussion with the experts

Closing of the event at 9pm

Parking available



The focus, during this World Space Week, will be on the opportunities and use of satellites, including using ocean colour for monitoring water quality and why the sea foams, and the behaviour of large marine vertebrates, such as basking sharks.

The opening talk will be given by Kelvin Boot, Science Communicator and BBC Radio 4 Presenter.

Working with colleagues in the UK and across the world Plymouth Marine Laboratory has increased its reputation and influence to become a global leader in the use of Satellite Earth Observation.

This event is supported by the EU ISECA project (www.iseca.eu).

PML

Plymouth Marine
Laboratory



iseca
EUROPEAN SPACE
AGENCY

www.pml.ac.uk

Algal blooms: dangerous, annoying, beautiful



So Far ...

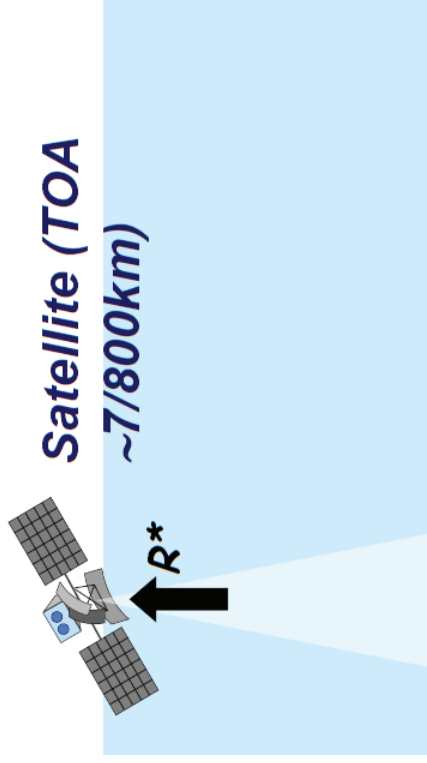
- Different satellites “see” different properties of the ocean (e.g. Temperature, Height, Colour)
- Ocean colour is related to components

And now ...

- Why is Ocean Colour important?
- What does an Ocean Colour satellite “see”?
- How do we interpret it?
- Applications to Climate Change research and to coastal monitoring

What does an ocean colour sensor

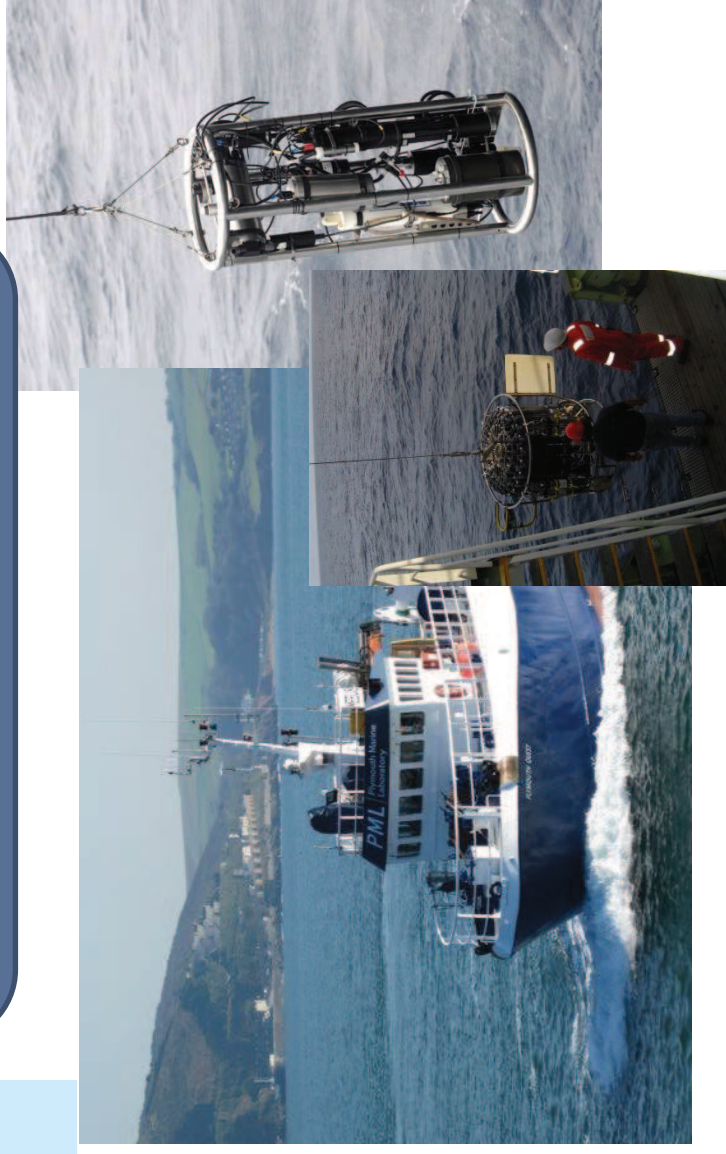
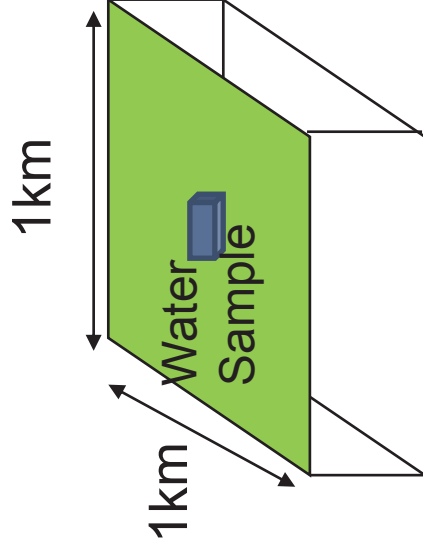
“see”?



SATELLITES FACTS

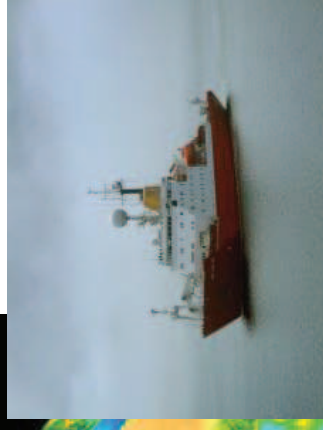
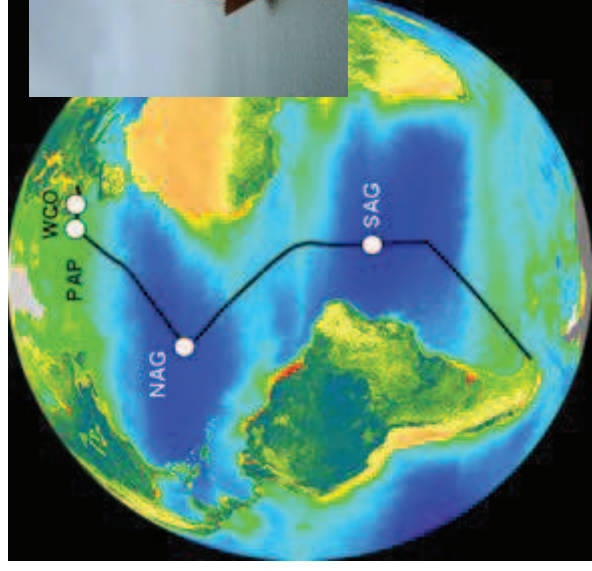
Temporal ~ 1 image per day
 Spatial max~300m, typical 1Km
 Spectral ~ 10 bands at ~10nm
 Radiometric better than 2%

Satellite Pixel



How do we interpret the colour images?

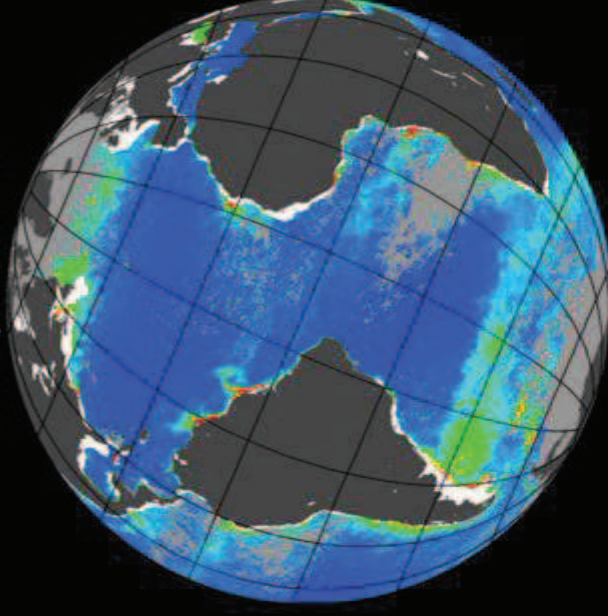
- Algorithms correct the effect of the atmosphere
- Algorithms quantify the amount of Chlorophyll from space
- Phytoplankton types detection:
 - Global Open Ocean (*Brewin*)
 - Harmful algae blooms (*D. Knappett*)
 - Foam in water (what is it? can we detect it from space?)



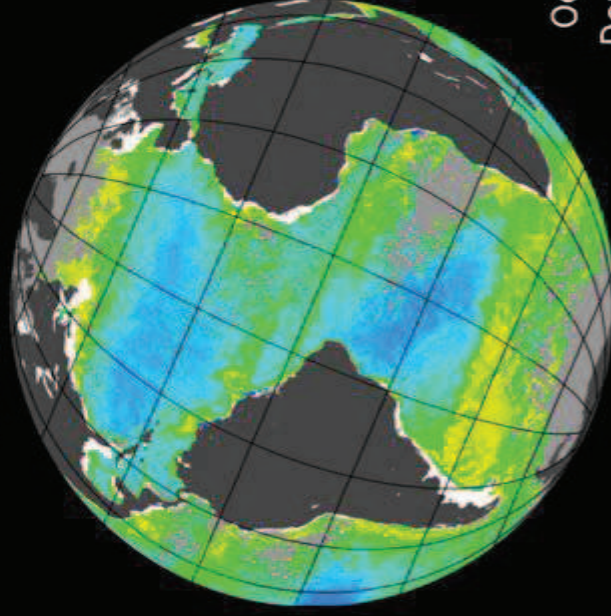
Chlorophyll-a [mg m^{-3}]



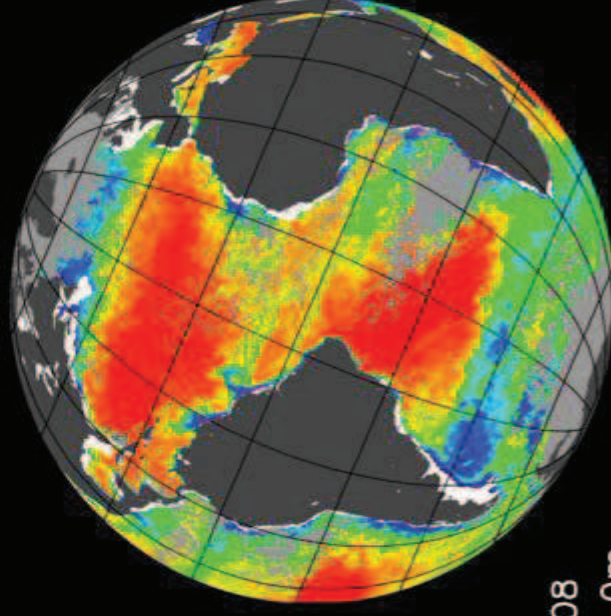
Microplankton %



Nanoplankton %

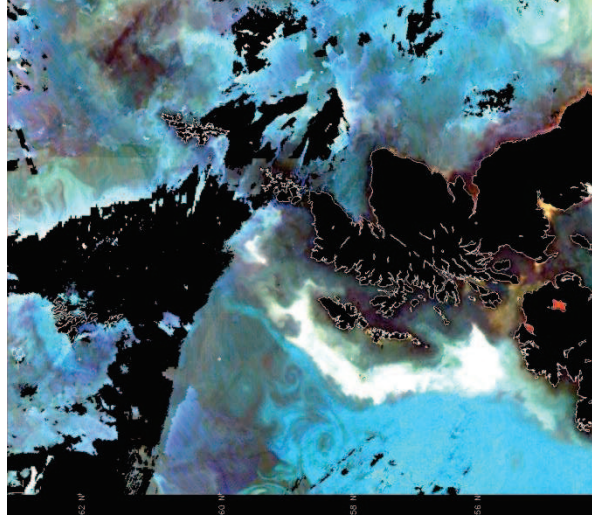
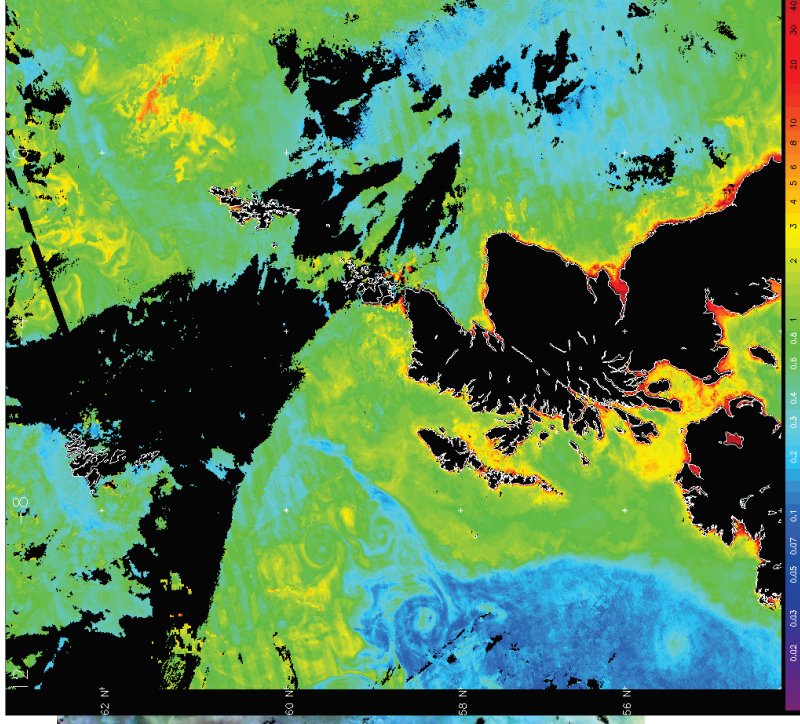
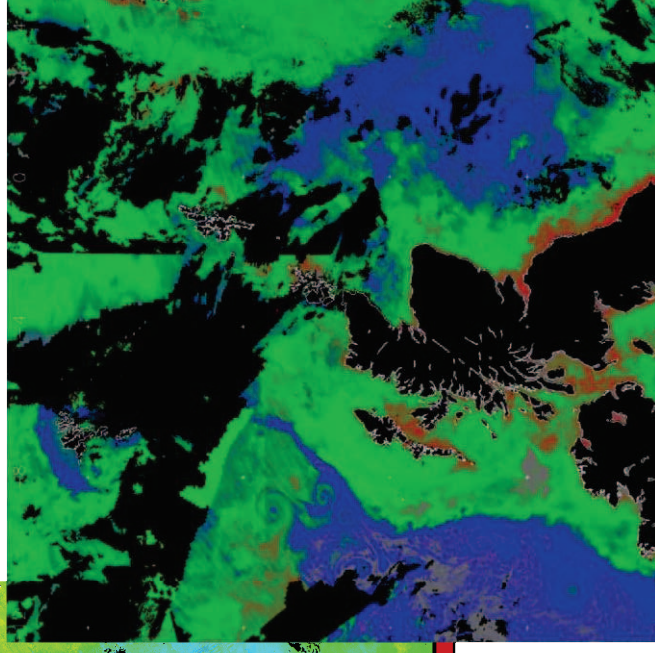
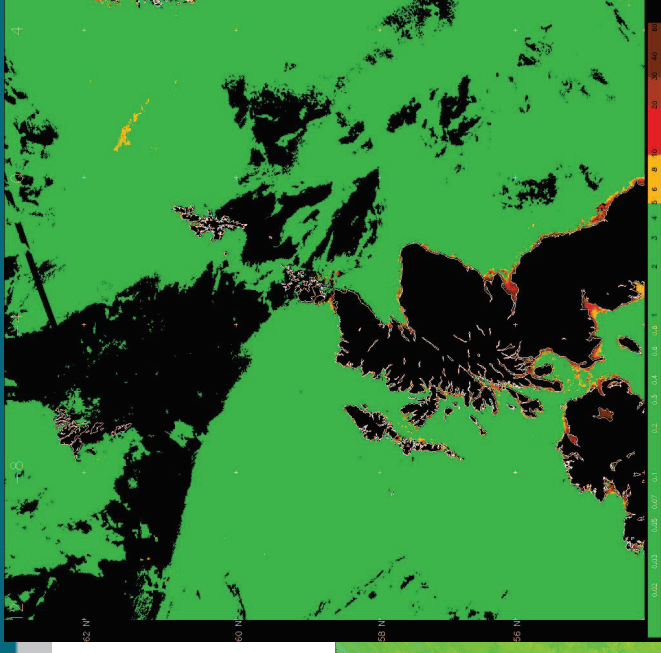


Picoplankton %



Oct 2008
Depth= 0m

5-11 Jun 2013: Harmful Algal bloom



Foam - Phaeocystis

- Not enough spatial & spectral resolution...
- yet
- Complications in algorithms
- Potential causes



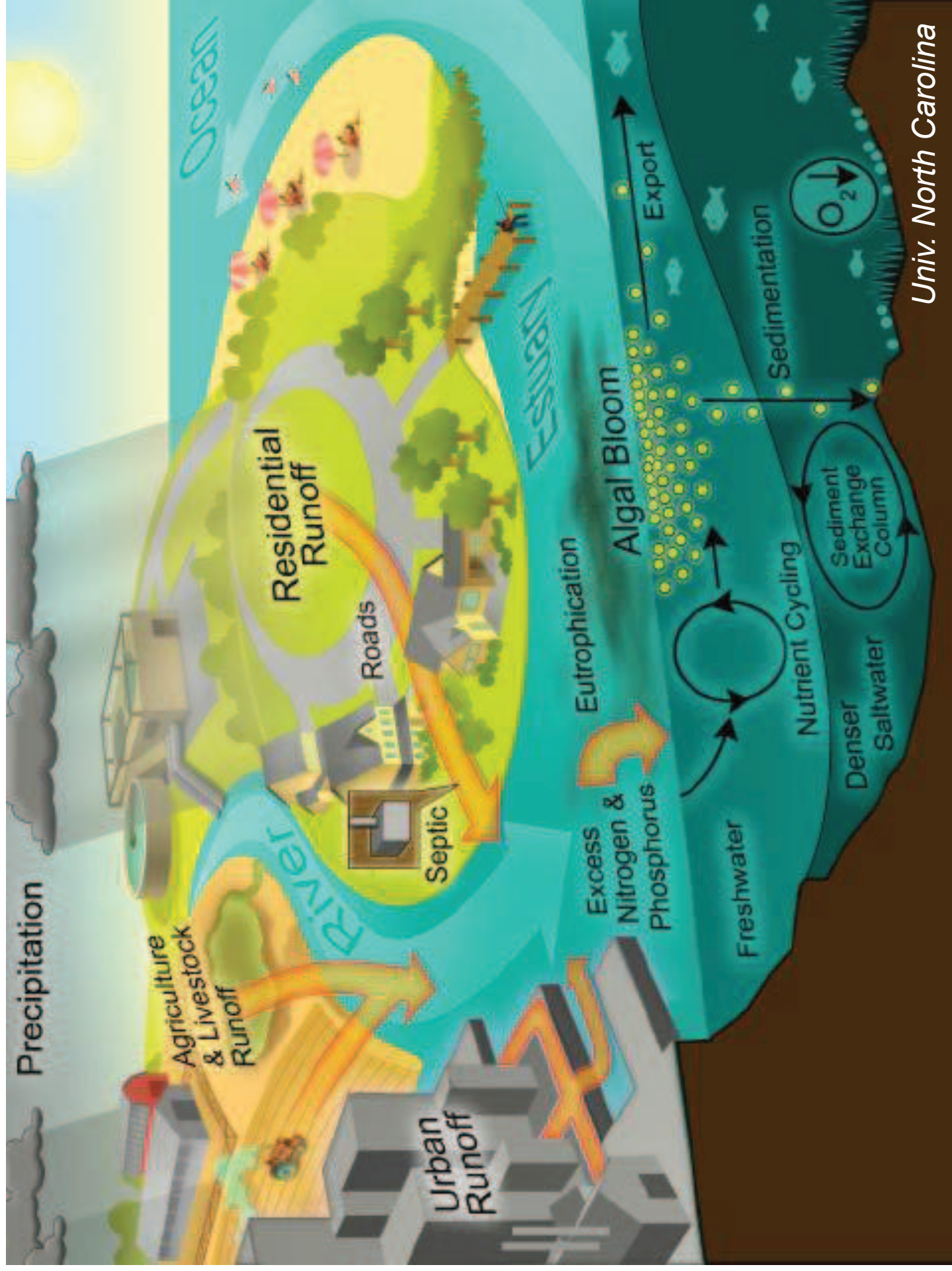
▶ Foam-covered dog walk in Footdee

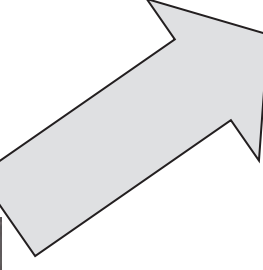
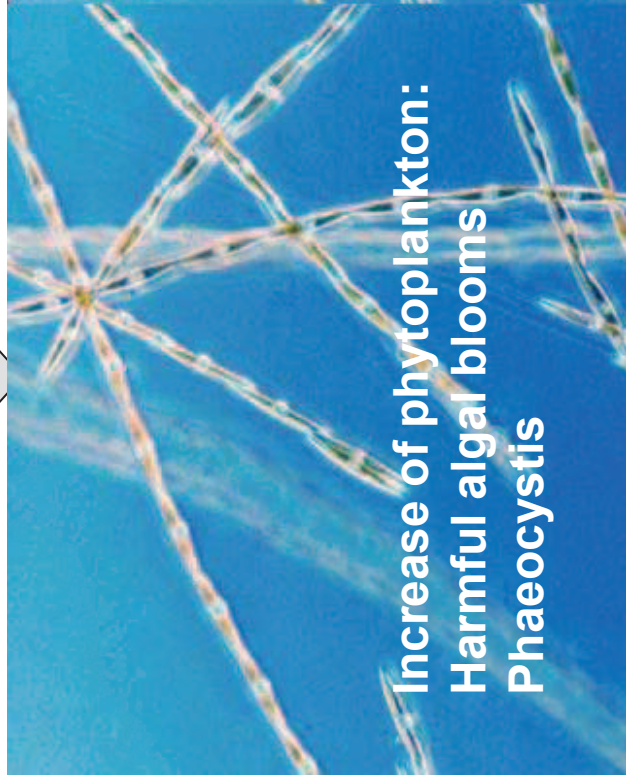
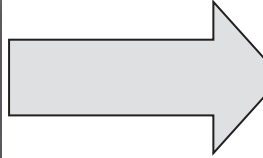
Footdee foam 'an

afternoon.

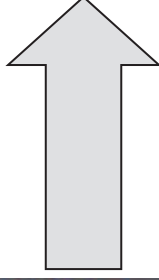
Farm seedlines have been considerably disrupted and falling trees have





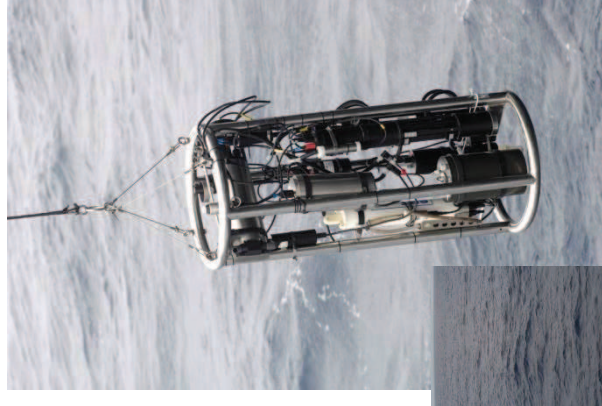
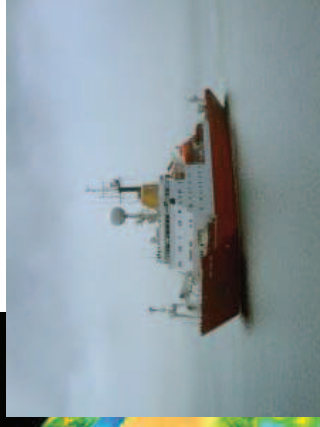
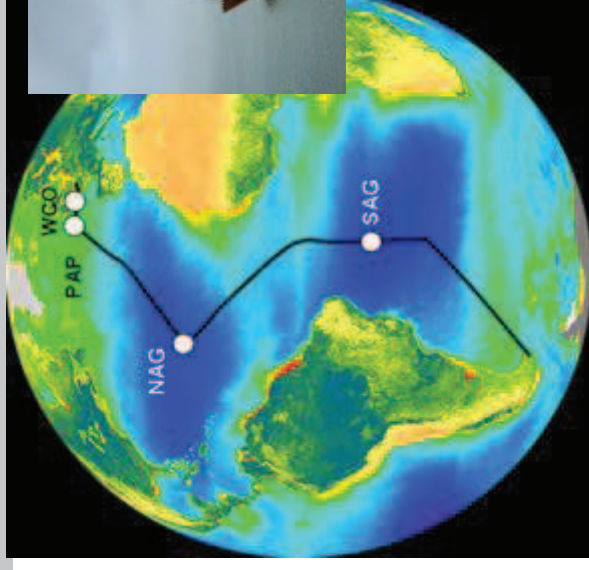


Wikipedia



Take home with you tonight!

- ✓ Yes, we can see the amount of Chlorophyll from space
- ✓ Global Open Ocean : Climate Change studies
- ✓ Harmful algae blooms : Operational Monitoring
- ✓ Foam ~ Phaeocystis – Eutrophication near shore future
- ✓ Need better satellites and more observations in-situ





Learn more

- <http://rsg.pml.ac.uk>
- <http://www.iseca.eu>
- <http://www.bbc.co.uk/programmes/p00mss80>
- <http://www.seos-project.eu/modules/>



<http://www.barnorama.com/cappuccino-coast-in-scotland/>

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Eutrophication: from nutrients to algae

Problem statement:

Which nutrients are important for algal growth?

Have you ever seen 'foam' on the beach and wondered what it is and where it came from?

Method: Chemical analysis

Skills: Research skills

Target group: Secondary school (14-18 yr.)

Theoretical part:

Foam

In spring time the light increases in duration and intensity so that microscopic particles in seawater -so called phytoplankton – start to develop strongly. For their growth they need **nutrients** such as **nitrites** (NO_3^-) and **phosphates** (PO_4^{3-}). Many of the nutrients enter the sea through our rivers and estuaries and an excess of these nutrients is called **eutrophication** ('eu' = true or well; 'trophy' = food). These nutrients allow algae to multiply very quickly resulting in an algal bloom. The main effects of eutrophication are lack of oxygen, changes in the ecosystem, deterioration of water quality (bad smell and taste of the water) and development of algal species that can produce toxins potentially harmful to humans and animals.

The algal bloom occurring in spring in the North Sea is reflected in the formation of foam on the beach (figure 1). The foam is caused by remnants of decaying and dead algae (scientific name: *Phaeocystis*, figure 2) that are stirred up by the waves and the wind.

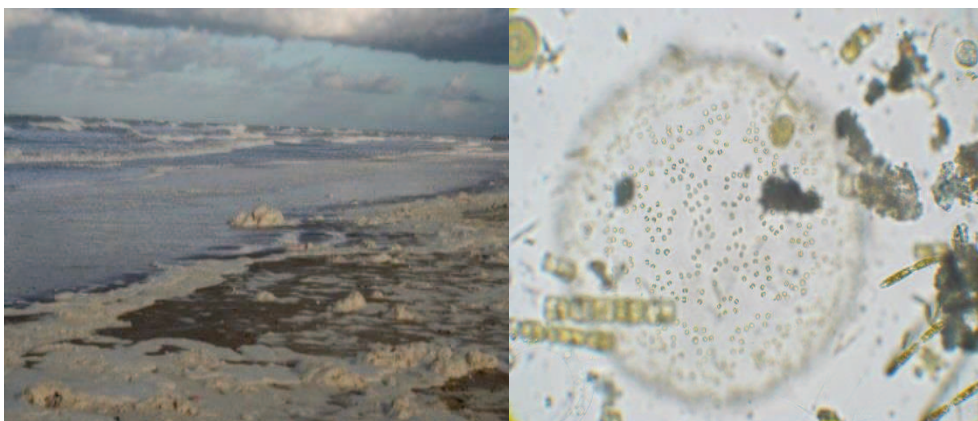


Figure 1: "Foam" algae (*Phaeocystis*) on the beach
©VLIZ Fotogalerij Onze Kust / Copejans, Evy, 2007

Figure 2: Microscopic image of *Phaeocystis* cells
Source: PAE Ugent

Phaeocystis are unicellular algae species (figure 3) and the size of an individual cell varies from 3 to 7 micrometer in diameter.



Figure 3: Microscopic image of individual *Phaeocystis* cells
©Bob Andersen and D. J. Patterson – Courtesy of NCMA

How can such small algae form so much foam? This is because the cells organize themselves into large spherical **colonies** (figures 4 and 5) when nutrients are abundant. If you fill a bucket with seawater when the sea starts foaming, you can easily see the colonies.

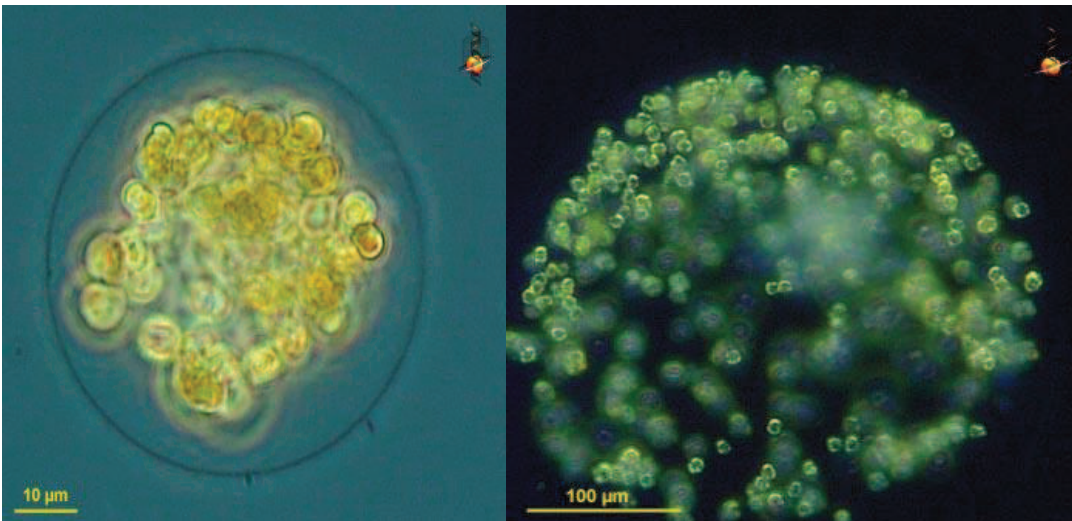


Figure 4 and 5: *Phaeocystis* cells forming gelatinous colonies when nutrients are abundant
©Bob Andersen and D. J. Patterson – Courtesy of NCMA

These colonies can grow very fast, causing large 'blooms'. Most of the cells are actually arranged at the periphery of the colony, which is a mucus-like watery ball (gelatinous). This layer of mucus protects the algae from grazing and is also used as a storage for nutrients so that these algae can continue to grow even at night. Because the colonies are so large, they are hardly eaten by 'grazers' like copepods (small crustaceans) and unicellular grazers ('microzooplankton' – zooplankton 20-200 µm). When they have depleted the nutrients in the water, the colonies deform and start to disintegrate. A part sinks to the bottom and another part is attacked by special viruses, causing the cells to fall apart (lysis). During this decaying phase, the foam is released and when the wind conditions are right, it can form huge quantities on the beach. Although foam is a natural phenomenon and not a direct result of pollution there is still a link between the amount of foam on the beach and eutrophication. These algae can grow far better when more nutrients are present in the water resulting in more foam. Fortunately the foam is not toxic but fishermen do not like *Phaeocystis* as colonies can clog their nets. As mentioned above, *Phaeocystis* is hardly eaten by copepods, which is preferred food for small fish, which are in themselves good food for larger fish. For this reason *Phaeocystis* does not contribute much to the fisheries industry. In very severe causes they can settle on mussel beds, causing anoxia and killing the mussels.

Materials:

- Microscope
- SERA tests for phosphate and nitrate (you can buy them in any aquarium shop)
- Seawater sample
- Sieve
- (Coffee)filters
- Funnel
- Sampling jars
- Mixer
- Egg
- Copper bowl (for whisking your egg)
- Fertilizer (Roses: 12 % N, 5 % P) and spoon
- Stopwatch

Practical part

1. Collect a sample of seawater and observe with the microscope: can you see some species of phytoplankton and / or zooplankton?
2. Prepare 2 samples:
 - Sample 1: Collect a seawater sample and use a filter to make sure that there is no sand in your sample. You should have about 100 mL filtrate.
 - Sample 2: Collect 200 mL of seawater in a jar and add 4 spoons of fertilizer. Shake a few minutes so that the fertilizer can dissolve. Wait a few minutes. Now pour the content over the (coffee)filter until you have a 100 mL filtrate.
 - Measure the concentrations of nitrate and phosphate with the test kit (see protocol).

Note: Sometimes it is difficult to determine the exact color of your (especially for phosphate, look and compare the difference in color between sample 1 and sample 2).

	Seawater (blanco)	Seawater (+ fertilizer)
NO_3^- (mg/L)		
PO_4^{3-} (mg/L)		
Colour		

Measuring

Phosphate

Protocol SERA test for phosphate

- Rinse the measurement vial several times with the (sea)water to be tested, then fill to the 10 mL mark. Dry the vial on the outside.
- Add **6 drops of reagent 1** into the vial and shake the vial until the liquid is evenly distributed.
- Add **6 drops of reagent 2** into the vial and shake the same manner.
- Add one heaping measurement spoon (white) of **reagent 3**. Close vial with cover and shake. Then, remove the cover.
- Wait **10 minutes**.
- Compare the colors with the color chart (from a position above at natural daylight, avoid direct sunlight).
- If the water is dark blue : repeat the test with a diluted sample (5 mL sample + 5 mL distilled water or 2 mL sample + 8 mL distilled water). Do not forget to read the value in the correct line. If the result does not show any blue color the water is extremely low in phosphate or phosphate-free.
- Clean vial and cover thoroughly with tap water before and after each test.

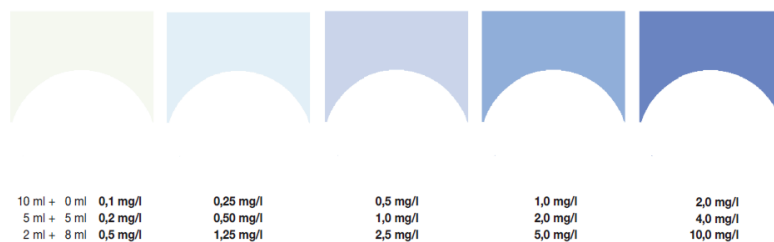


Photo credit: Sera®GmbH

Nitrate

Protocol SERA test for nitrate

- Rinse the measurement vial several times with the (sea)water to be tested, then fill to the 10 mL mark. Dry the vial on the outside.
- Add **6 drops reagent 1** into the vial and shake the vial until the liquid is evenly distributed.
- Add **6 drops reagent 2** into the vial and shake the same manner.
- Add one **measurement spoon (red) reagent 3** into the vial.
- Close with the cover and shake vigorously for precisely **15 seconds**.
- Open the vial and add **6 drops reagent 4**. Shake the vial until the liquid is evenly distributed.
- Compare the colors after **10 minutes** with the color chart (from a position above at natural daylight, avoid direct sunlight).
- Clean vial and cover thoroughly with tap water before and after each test.

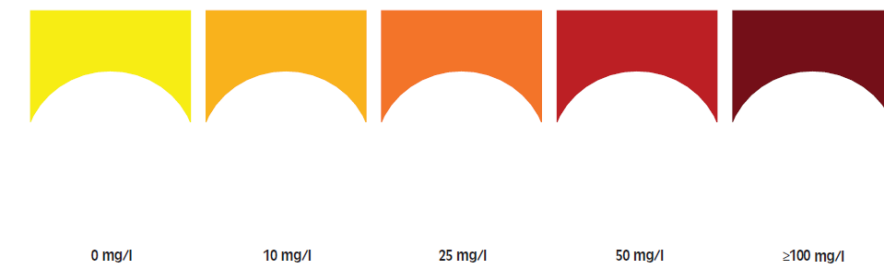


Photo credit: Sera®GmbH

3. It is not always easy to collect natural samples of *Phaeocystis* (due to the seasonal appearance of the foam phenomenon). That is why we will mimic the foam by using an egg. First we have to separate the egg into yolk and the egg white. Add some water to the egg white and whisk. **Tip:** If you are able to collect a sample (sea or harbor mouth) during a bloom (usually in spring – May / June – at the Belgian coast) you can have a try and maybe successfully create foam.

Results and comments:

Measurement of nitrates and phosphates

The main causes of eutrophication in the North sea include the use of fertilizers (agriculture) that contain nitrates. Not all parts of the fertilizer are taken up by plants so that the rest is transported via groundwater to the sea and estuaries. An excess of nitrate allows algae to grow faster and better. The use of nitrates in organic and chemical fertilizers for agriculture is a major source of water pollution in Europe. A decline in the use of mineral fertilizers was first recorded in the early nineties. In general agriculture remains responsible for more than 50 % of the total nitrogen emissions into surface water. Phosphates are also present in fertilizers. Phosphorus stimulates the development of plants and an excess of phosphates also leads to an excessive growth of algae. Phosphates are used as water softeners in washing powders (they make the washing more easier by making the water less hard).

The use of phosphates was reduced since the beginning of the 2000s because they are an important contributor to water pollution and eutrophication. Nowadays the most important phosphate source that ends up in our waterways are derived from households, industry and intensive agriculture (fertilizers and animal feed (livestock)). Several companies such as ECOVER are working to create environmentally friendly washing powders free from phosphates by replacing them by alternative softeners. Unfortunately phosphate is also added to some dishwasher tablets due to the lower cost as softeners.

Simulating foam

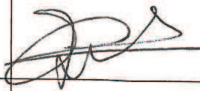
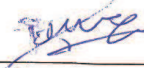
After an intensive and hard work of whisking you finally managed to create the foam phenomenon! We have whipped the proteins into foam just as the waves whip the *Phaeocystis* proteins in the mucus layer. The foam is produced in a mixing process between air (oxygen) and the proteins.

Sources:

- http://www.vliz.be/docs/groterede/GR04_schuim.pdf
- **The life cycle of *Phaeocystis*: state of knowledge and presumptive role in ecology**
Rousseau, V.; Chrétiennot-Dinet, M.-J.; Jacobsen, A.; Verity, P.; Whipple, S. (2007)
in: Van Leeuwe, M.A. et al. (Ed.) (2007). *Phaeocystis, major link in the biogeochemical cycling of climate-relevant elements. Biogeochemistry*, 83(1-3): pp. 29-47.
- **Current understanding of *Phaeocystis* ecology and biogeochemistry, and perspectives for future research**
Verity, P.G.; Brussaard, C.P.D.; Nejstgaard, J.C.; Van Leeuwe, M.A.; Lancelot, C.; Medlin, L.K. (2007)
Biogeochemistry 83(1-3): 311-330.
- www.iseca.eu
- Sera®GmbH: user manuals Phosphate (PO_4^{3-}) Test and Nitrate (NO_3^-) test
http://www.sera.de/en/products/in_category/single-water-test-312/product/sera-po4-test-phosphate-test.html
http://www.sera.de/en/products/in_category/single-water-test-312/product/sera-nitrate-test.html

This educational tool has been developed by VLIZ (Vlaams Instituut voor de Zee, BE) for the ISECA project.

More information: www.ISECA.eu

NAAM	VOORNAAM	Oostende, 19 september 2013
Simons	Raymond	1
Sterkens	Ludo	 1
Teket	Evelyn	 1
van den Braak	Esther	 1
van der Niet	Ellen	 1
Vanlandschoot	Willy	 1
Vanwallegghem	Daniel	 1
Verbeke	Dominique	 1
Versteete	Ann	1
Willaert	Claude	 1
		47

Verhaeghe	Lise	
Coringa	Bram	
Hamaulle	Sebastiaan	
Joemiere	Frank	

A-FE-1 Intern detailed program- referent document

ISECA FINAL EVENT PROGRAM: Monday 30th June and Tuesday 1st July 2014

Reference Documents for ISECA team, invited speakers, professional convenors and interprets

David LEFORT and Alain Lefebvre will be the professional convenors to facilitate the session



Monday 30th June 2014	SESSIONS	What do we want to present?	What tools do we plan to use?	Speakers	Time
Starting from 9h	Registration and coffee time				
11 h "Océan Atlantique" room	Welcome in Nausicaá.			Philippe VALLETTE, manager of Nausicaá	5'
		Presentation of the Interreg Iva 2 seas programme	PPT presentation	Edouard GATINEAU, project officer InterregIva 2 seas.	10'
11 h 15	Introduction to the conference	. Presentation of Alain LEFEBVRE (his role in the event as scientific facilitator) . Presentation of the <u>invited keynote speakers</u> and the program	Speakers stand up when they hear their names in link with the program	David LEFORT and Alain LEFEBVRE	10'
11 h 25	What are the aims of the Iseca project?	Several partners use their scientific expertise to optimize the monitoring strategies/methodologies about the observation of coastal eutrophication in the 2 seas area. Why? To help decision makers. -The 4th activities are briefly explained. NB: Focus on the scientific efforts made rather than the end-product. + Collaborative work.	PPT presentation	. Richard SANTER, Coordinator of the project (ADRINORD, France)	15'
11 h 40	Interaction with the floor.	What does the public present here today know about eutrophication? Who are we in that room? . Presentation of the ISECA partners who stand up to show themselves . Then identify the public attending: Who is	. One slide with the ISECA partners . Short video to briefly explain the phenomenon (3')	David LEFORT	15'

		scientist? Who is specialized in water quality? who knows eutrophication? etc				
12 h NAUSICAA restaurant	Meal : BUFFET	Exchanges during the meal	Videos and documentation in the room			
1. Eutrophication, setting the scene.						
13 h 00 "Océan Atlantique" room		Recall of the program		D.LEFORT * <i>Jacco and Andris come and sit in the chairs while Christiane gets prepared</i>	2'	
13 h 00 "Océan Atlantique" room	A. Information on eutrophication, water quality, coastal zone pollution in the North Sea (at a big scale): explanation of the phenomenon, facts and figures.	More generic information: what is eutrophication, its signs (foam, green algae) the outlining history of eutrophication in the North Sea, causes and ecological consequences. What are the different parameters influencing eutrophication? - Coming from the land to the sea? - Coming from the atmosphere?	. PPT with graphs and statistics.	Christiane LANCELOT (ULB, Belgium)	20'	
13 h 20 "Océan Atlantique" room	B. Focus on eutrophication in the 2Seas Area (B,FR,UK,NL)	Case studies on eutrophication in 2Seas area (zone d'étude du projet ISECA): English channel and North Sea "Is it a problem in these regions? Why? What measures do you take? What is the impact? Some facts and figures."	. PPT presentation	Jacco KROMKAMP (NIOZ, Netherlands)	15'	
13 h 35	Eutrophication in others seas	The example of Baltic Sea. A highly eutrophic zone	. PPT presentation	. Andris ANDRUSAITIS (BONUS programme, Finlande)	15'	
13 h 50	What are your questions?	Question time: interaction with the floor	"round the table": the 3 previous speakers stay on scene to answer questions .	D. LEFORT and A. LEFEBVRE + C. LANCELOT, J. KROMKAMP, A. ANDRUSAITIS.	15'	
14 h 05 "Océan	What are the solutions? Introduction	Transition and presentation of the next steps of the conference:	transition	D.LEFORT + A.LEFEBVRE * <i>Francis and Koullis come and sit in</i>	2'	

Atlantique” room	to the 2nd part.			<i>the chairs while Rodney gets prepared to present</i>	
2. To know more about and better understand eutrophication					
14 h 10 Océan Atlantique	A. How do researchers observe and measure the phenomenon?	. What can we learn? How can we measure and observe the phenomenon? . What are different types of monitoring existing? - Earth observation - In situ observation (automatic or specific campaign) - Atmospheric observation	PPT presentations with pictures and illustrations	. <u>Monitoring in situ observation</u>, Rodney FORSTER (CEFAS, UK) . <u>Monitoring earth observation</u>, Francis GOHIN (Ifremer, FR) . <u>Atmospheric observation</u>, Koullis PERICLEOUS (University of Greenwich, UK)	10’ 10’ 10’
14 h 50		Question time: interaction with the floor	Summary made by Alain and then question time	D.LEFORT and A.LEFEBVRE + Rodney, Francis and Koullis	10’
15h NAUSICAA restaurant	Break		VIDEO		
15 h 30 Océan Atlantique	B. What are the interests of combining Earth observation, in-situ measurements and modeling so as to monitor eutrophication?	a. What is the added value of ISECA? What are the interests of combining Earth observation, in-situ measurements and modeling? Inter-regional exchange on methods and tools, complementary function of EO data, in-situ and modelling in single web platform (WIS + WAS). b. WAS. Thanks to ISECA, the scientific knowledge is now brought together in a single database in order to anticipate the phenomenon evolution and to inform the authorities and the stakeholders so they can take appropriate measures. c. Another example of combining EO, in situ and modelling (but for another purpose)	. PPT presentations	<u>EO tools developed within ISECA</u>, Gavin TILSTONE (PML, UK) . <u>The WAS</u>, Jean-Luc DE KOK (VITO, Be) <u>AlgaRisk /web-visualization</u>, Steve GROOM (PML, UK).	15’ 15’ 10’

16h 10		Brief question time and then move to the 3 rd part	Presentation of the WAS workshop (Day2) and transition to the 3 rd part	David LEFORT	5'
3. Moving toward better governance.					
16 h 15 "Océan Atlantique" room	A. What are the existing rules for a better water quality in Europe? What are the relevant rules in each country if they are different?	If we want a good water quality, we need regulations. They are regularly adapted. What is the state of art in Europe? In each country? Are those rules efficient? Introduction of EU water framework directive. Introduction of OSPAR regulation.	. PowerPoint.	Stephen MALCOLM (CEFAS, UK)	15'
16 h 30	What does that change for quality water?	Illustration of how nutrient loads have reduced since EU Water Framework Directive. The example of the rivers in Artois Picardie (last 15 years).	PowerPoint with statistics of nutrient loads.	Jean PRYGIEL (Artois Picardie water agency, Fr)	10'
16 h 40	What effects do the regulations have on the different sectors?	Each stakeholder has to adapt (agriculture, industry etc.) What are the benefits of the rules since 30 years? What is your opinion?	Videos Séliane + Ecover question time toward agriculture and then with the floor in general	D. LEFORT + Alain LEFEBVRE	15'
16 h 55 hall	Rapid Break				
17 h10 "Océan Atlantique" room	B. What do we know about the public perception on water quality? Who is willing to pay to change water quality?	1) What do we know about the perception of the professionals (fishermen etc)? 2) What do we know about public perception? (study performed within the ISECA project) 3) The socio-economic criteria integration within the project. 4) Questions time	PPT presentation for VLIZ and CEMARE Round-the-table" + Interaction with the floor	1) Alain LEFEBVRE 2) <u>Public perception through questionnaires analysis</u> , Carolien KNOCKAERT (VLIZ, Belgium) 3) <u>The Solent study</u> , Prem WATTAGE (CEMARE, UK)	3' 15' 10'

17 h 30	How to inform the stakeholders and the public?	How did we translate the scientific subjects of the project for it to be understood by the general public?	PPT presentation	The communication in the ISECA project, Anne Vernier (NAUSICAA, Fr)	15'
17 h 45	Questions at the end of this day			. David LEFORT + A. LEFEBVRE	10'
17 h 55	Future steps, ideas from the Iseca partners	Lessons learnt from the conference: How can we use the project results in the future? . Ideas from the Iseca Partners and the other scientists . Reactions of Interreg		. David LEFORT + A. LEFEBVRE . Project partners . Jean PRYGIEL (Agence de l'eau). Edouard GATINEAU (INTERREG) . others	15'
18 h 10	Presentation of Day 2	End of the work		. David LEFORT	5'
18 h 15- 19h30		Visit of Nausicaá, National Sea Center			
19 h 30		Reception in Nausicaá exhibition, at the "bistrot du port" côté plage			
Tuesday 1st July 2014 9 h 00 Hall	Repartition of participants in the workshops				
9 h 05 "Océan Indien" room	Workshop on the WAS use and functionalities (coffee + time break included)	. Presentation of the WAS tool but also of the scientific basements which support the WAS. . Real tests with computer and internet connection individually or in groups of two persons (depending on nr of participants) . Test the opinion of different stakeholders. Is it a tool they can use in their activity? If yes, how? If no, why?	Computers, internet access.	Jean-Luc DEKOK (VITO) to lead the session + PML/U of Greenwich /Adrinord/Nausicaa/Vliz MAX 30 participants	
9 h 05 "Océan Atlantique" room	Workshop on educational activities to deal with eutrophication of the coastal zone (coffee	. How does the public perceive the phenomenon? What are the misconceptions and how to answer their questionings? . Presentation of the different educational tools	ISECA educational tools : "When the sea foams", "The Beach lab", "Satellites and Ocean color"	NAUSICAA VLIZ PML (Vliz to represent them. Elise	

	+time break included)	created during the Iseca project. . Test the opinion of different stakeholders. Are those tools easy to use in their activity? If yes, how? If no, why? For what kind of public?		Chiroutre will show how and prepare)	
11 h 40 "Océan Atlantique" room	CONCLUSIONS	. Summary of the workshops	Ask questions to some participants	D.LEFORT + A.LEFEBVRE	15'
11 h 55		Reactions from different experts present for example: DREAL Water agency Manuel CIRA		D.LEFORT + A.LEFEBVRE	20'
12 h 15-12h 25		. Reactions in the room . Thanks		D.LEFORT + A.LEFEBVRE Philippe VALLETTE	10'
12 h 30	Lunch at Nausicaá				
14 h - 16 h	For participants and invited speakers only : Field trips	3 choices: 1. Visit of the Water treatment plant of Boulogne 2. Ifremer laboratory with a presentation of the "Marek Carnot station" (high frequency instrumented station), Boulogne-Sur-Mer. 3. Further visit of Nausicaá exhibition			

Anne VERNIER, Elise CHIROUTRE – Last update, 27.06.14

Website: www.iseca.eu

ISECA FINAL EVENT

30th June and 1st July 2014

At NAUSICAA

Qui (interne)	Qui (externe)	Echéance
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AVANT (phase de préparation)

COORDINATION GENERALE

	AV		
Suivi des mails/communication	EC		En cours
Centralisation inscriptions	CB		en cours
Définir les personnes qui interviennent en interne	AV		OK
Site web	EC	CK	en cours
Traductions GB/FR - FR/GB	EC		en cours
Budget ISECA	JV		en cours
Réunions avec les services de Nausicaa impliqués, D. Lefort et A. Lefebvre	AV/EC		en cours
Faire une note de service	AV		OK

RECRUTEMENT ET SUIVI DES INSCRIPTIONS DES PARTICIPANTS

Rédiger un "save the date"	EC	CK	Mars OK
Diffuser le "save the date"	tous	CK	Mars OK
Réaliser une invitation + formulaire d'inscription : version GB et Fr	CB/EC/AV		Mars OK
Personnaliser les invitations lorsque nécessaire	EC/AV	tous	OK
Envoyer l'invitation (fichier CRROM, ISECA + fichiers partenaires)	EC/CB	Vliz	Mars OK
Revoir les fichiers en contactant une par une les personnes	EC		Mars OK
Relance inscriptions	EC/ET	tous	Avril OK Mai OK Juin
Transmettre les inscriptions à CB et vérifier le tableau les centralisant	EC		Mars à Juin en cours
Tableau d'inscription	CB		Mars à Juin en cours
Feuille d'émargement X 3 : Lundi, Mardi (2 groupes)	CB		Juin
Horaires et tarifs bateau ou shuttle pour comparaison	CB/EC		OK
Préparer les dossiers d'inscription +Pack info transport, plan, hôtels disponibles	CB/EC		OK
Relancer en interne de façon à ce que les personnes de Nausicaà qui participent remplissent une fiche d'inscription (ET, KM, VM, FC, MC...)	EC		OK

ACCOMODATION FOR EXPERTS

Manage organisation points for experts (train, meals, hotel...)	CB/EC		OK
Transmettre les infos à Carine et vérifier que tout le monde a été pris en charge	EC		OK
Confirmer la réservation	CB		OK

REPAS

Demander les devis pour les collations et repas	CB		Mars OK
. Lundi matin (café salle des banquet restaurant de Nausicaà) . Lundi midi (buffet salle des banquet restaurant de Nausicaà) . Lundi après-midi (café salle des banquet restaurant de Nausicaà) . Lundi soir (buffet au bar bassin tactile) 50 personnes . Mardi matin café en salle (O. Indien <u>ou</u> Mer du Nord et O. Atlantique)			

. Mardi midi (repas au restaurant de Nausicaà)			
Préparer des tickets restaurant pour mardi midi	CB		

SALLES,ATELIERS, SORTIES DE TERRAIN

Organisation de la réunion semestrielle interne au projet ISECA du mardi aprem	EC	RS	
Réserver les salles à Nausicaà	EC		OK (février)
Organisation de l'atelier éducatif	AV		en cours
Organisation des sorties de terrain	EC		En cours
Organisation atelier WAS	EC		En cours

Installation des salles pour lundi

. Salle banquet dimanche 29 fin d'après-midi : 3 tables nappées de bleu (2 pour les inscriptions, 1 pour la doc) + écran plat + lecteur vidéo. Une table avec un ordi et accès internet pour les consultation des mails (voir avec Dany si possible). Prises universelles + rallonges. Kakémonos ISECA pour la déco. A désinstaller en fin de journée.	SLS + SP + DB		
. Salle Océan Atlantique : Vendredi soir Déco : kakémono Dimanche soir pour lundi matin : Installation cabine traducteur, 5 fauteuils + 2 tables basses + carafes d'eau + verres +1 pupitre avec micro fil, 3 micros sans fil, un pointeur, un ordinateur avec les présentations, un paperboard	ET et KM SLS + SP		
. A l'entrée de la salle Océan Atlantique en haut de l'escalier : une table nappée de bleu pour les casques de traduction	SLS		

Installation des salles pour mardi

. Salle Océan Indien (atelier WAS) : réaliser un schéma pour la disposition de la salle + adaptateurs prises GB, WIFI, vidéo projecteur, ordinateurs, un paperboard + feutres, une ramette de papier blanc. Garder une table pour déposer le café et la doc	EC, JV, DB, SLS		OK
Envoi mail aux participants de l'atelier WAS pour les pré-requis techniques (venir avec son ordinateur, sa prise universelle, son chargeur, vérifier son récepteur wifi, avoir internet explo/safari pour mac ou firefox...)	EC		Juin OK
. Salle Mer du nord (atelier Outils éducatifs et de communication). Prendre les Top image de la salle banquet. Garder une place pour le café. Réserver les casques de l'accueil pour la traduction.	EC, KM, ET, LS		
. Salle Océan Atlantique mardi matin à partir de 11 h 30 jusqu'à 12h30 cabine traducteur, 5 fauteuils +1 pupitre avec micro fil, 3 micros sans fil, un pointeur, un ordinateur avec les présentations.	SP + ET		
. A l'entrée de la salle Océan Atlantique en haut de l'escalier : une table nappée de bleu pour les casques de traduction	SLS + ET		

ACCUEIL

Badges	CB		en cours
Dossier d'accueil : Lister ce que l'on met dedans	EC/AV		OK
. Préparer les fichiers à imprimer dans l'ordinateur	EC		OK
. Faire les dossiers d'accueil	VM/EC		OK
Cadeau : voir carnet et crayon en boutique	AV/EC/CD		OK

INTERPRETARIAT (conférence en traduction simultanée FR/GB)

Devis	EC		Mars OK
Confirmer la commande	AV/EC		Mai OK
Envoyer infos sur ISECA + le contenu du programme et les présentations powerpoint en amont	EC		En cours

Prendre rendez-vous avec le technicien pour l'installation de la cabine	EC avec SP		OK
Installer la cabine au cinéma (dimanche 29 juin fin d'après-midi)	technicien + SLS +SP		OK
Communication avec les personnes liées à la prestation	EC		en cours
Prévoir 12 petites bouteilles d'eau	ET / YW		OK

COMMUNICATION

Solliciter les partenaires ISECA pour enrichir les visuels	EC		OK
Vérifier le site web Iseca	EC		En cours
Prévoir un photographe pendant l'événement ou réserver l'appareil photo	KM		OK
Enregistrer la conférence	Jack		OK
Rédiger un Communiqué de presse	IP/AV/EC		Mai OK
Envoi du communiqué de presse aux journalistes	IP		Juin OK
Vidéos "3 questions à..." (travail contenu, recrutement interviewés, création, montage, sous-titres...)	ACK/EC	Néographic	OK
Vérifier les documents de com (logos, charte ISECA conformes), les revoir si nécessaire	EC/MQ		en cours
Créer un mémo des téléphones pour contacter les personnes de Nausicaa impliquées le jour J en cas de besoin	EC/MQ		OK
Rédiger la Newsletter 5 d'ISECA (FR/GB) et transmettre au Vliz pour diffusion	EC		Juin OK

PROGRAMME DE LA CONFERENCE

Préparer un programme et le transmettre aux partenaires pour avis	AV/EC/MC		OK
Affiner le programme lors d'une réunion avec Vliz	AV	Vliz	OK
Définir qui intervient et quand ?	AV/EC	Vliz, PML	OK
Affiner le contenu de la session en plénière, le timing et les interactions pour la dynamiser	AV/EC	DL, AL	En cours
Rédiger et finaliser un programme détaillé (grille) et le transmettre aux intervenants, aux partenaires ISECA, à l'animateur, à la régie technique, aux interprètes, à Phillippe VALLETTE, au cadre et hôte de permanence, Aline CK, animateurs de Nausicaà	EC/AV		en cours
Mettre en page et élaguer le programme pour sa diffusion FR/GB	CB/EC		OK

RECRUTEMENT DES INTERVENANTS

Research FR experts of the different subjects	AV/EC/MC		OK
Research BE experts of the different subjects	EC	Annelies	OK
Research UK experts of the different subjects	EC	Gavin	OK
Recherches aidant au recrutement adéquat (Emosem, Mumm, Ospar...)	EC		OK
Préparer une invitation informelle par mail	EC		OK
Contact them to prepare their intervention by phone	EC/AV		En cours
Préparer une invitation plus formelle écrite	AV/EC/SD		OK
Demander le contenu de leur présentation (powerpoint), les remercier et relancer les retardataires	EC		OK
Pour les partenaires ISECA: leur envoyer un modèle de présentation charte graphique ISECA	EC		OK
Réceptionner les powerpoints et contacter tous les intervenants pour les ajustements de prises de paroles (éviter les redondances)	EC/AV		En cours

Envoyer un message aux intervenants concernant les présentations Mac ou PC	EC		OK
Répondre à leurs interrogations	EC/CB		En cours
Demander un résumé de leur intervention pour le compte-rendu	EC		en cours

PRESENTATIONS

Préparer le diaporama avec le nom des intervenants	ET/EC/AV		OK
Préparer le mot d'accueil pour PV	AV		OK
Préparer la présentation powerpoint de la partie com du projet ISECA pour le lundi	AV/EC	Vliz	OK
Préparer la répartition des rôles pour l'atelier "outil pédago"	AV/ET	Vliz	OK
Présenter l'outil internet		Vliz	
Préparer et présenter l'animation courte	ET		OK
Préparer et animer "Pourquoi la mer mousse" powervote	KM		OK
Préparer la présentation du Beach lab	EC	Vliz	OK
Préparer la présentation de l'animation PML	EC	Vliz	OK
Présenter l'animation PML		Vliz	OK
Présenter le kit "tous riverains de l'océan"	LS		OK
Préparer et accompagner l'atelier WAS de la deuxième journée	EC		OK
Se tenir à disposition en cas de souci informatique dans l'atelier WAS	DB		OK
Présenter l'atelier WAS de la deuxième journée		JLK/RS/ Gavin	OK

KIT OCEAN MONDIAL

Assurer le suivi de la création du kit virtuel/relecture/lien avec l'entreprise	LS/AV/EC		OK
Télécharger la nouvelle application et la graver sur deux CD-rom (PC/MAC)	LS		OK 1e partie
Mettre en ligne le kit virtuel	LS/EC	Vliz	OK (idem)

ASPECT ADMINISTRATIF en lien avec le BUDGET ISECA

Donner la liste à Carine des partenaires ISECA et la liste des experts à prendre en charge	EC		OK (février)
Travel and subsistence costs : se renseigner auprès d'Interreg et Adrinord puis s'entendre avec les partenaires sur la procédure et la répartition des frais invités/speakers	EC		OK
Demander devis restaurant	CB		
Confirmation commande et signature devis	AV		à faire
Demander devis traducteur	EC		OK
Confirmation commande et signature devis	AV		à faire
Demander devis Yannig	CB		OK
Confirmation commande et signature devis	AV		à faire
Demander devis animateur	ACK		OK
Confirmation commande et signature devis	AV		OK
Devis Cadeau aux participants	AV/EC		
Devis badge	CB/SD		
Devis vidéos	ACK		OK
Signature devis	AV		OK
Devis soirée incentive à Nausicaa	AV/OP/EC		OK

Anne VERNIER (AV) et Elise CHIROUTRE (EC), NAUSICAA- 29/07/2014



ISECA PROJECT FINAL EVENT Program from 30th June to 1st July, 2014



Monday 30th June 2014

From 9:00 - "Restaurant de Nausicaá"

Registration and coffee time

11:00 - "Océan Atlantique" room

Welcome in Nausicaá

- ✓ Presentation of the program and keynote speakers
- ✓ Presentation of the Iseca project

12:00 - "Restaurant de Nausicaá"

Buffet

13:00 - "Océan Atlantique" room

- ✓ Explanation of the eutrophication phenomenon and its impacts in the coastal zone
- ✓ Focus on eutrophication in the 2 Seas Area
- ✓ Eutrophication in other seas : the example of the Baltic sea
- ✓ How do researchers observe and measure eutrophication?

15:00 - "Restaurant de Nausicaá"

Break

15:30 - "Océan Atlantique" room

- ✓ What are the interests of combining Earth Observation, in-situ measurements and modelling?
- ✓ What is the existing legislation for a good water quality in Europe? Does this legislation vary between member states?
- ✓ What is the impact of water quality legislation? What effects do the regulations have on the different sectors?

17:10 - "Océan Atlantique" room

- ✓ What do we know about the public perception on water quality? Who is willing to pay to change water quality? What are the best ways to inform the stakeholders and the public about water quality?
- ✓ Question time?
- ✓ Future steps towards safe guarding water quality in our coastal seas.

18:00 - Nausicaá's permanent exhibition

Visit to Nausicaá Aquarium

19:30 - Nausicaá's permanent exhibition

Reception in Nausicaá's Aquarium



ISECA PROJECT FINAL EVENT Program from 30th June to 1st July, 2014



Tuesday 1st July 2014

9:00 - "Océan Atlantique" room

Presentation of the two workshops

9:10	« Mer du Nord » room		"Océan Atlantique" room
	Workshop Web-based Application Server (WAS) , a tool to monitor eutrophication	or	Workshop on educational activities on eutrophication in our coastal seas
Coffee break included			

11:40 - "Océan Atlantique" room

Conclusions and outlook from the floor

12:30 - "Restaurant de Nausicaá"

Lunch (*on reservation*)

14:00 to 16:00 - Field trips at the choice of participants

- ✓ Visit of the water treatment plant of Boulogne-Sur-Mer
- ✓ Visit to Ifremer laboratory and presentation of the "Marel Carnot high-frequency measurement station"
- ✓ Further visit to Nausicaá's Aquarium

- This program is liable to slight modifications
- For more information on the ISECA project, please consult www.iseca.eu
- For more information on the ISECA final event, do not hesitate to contact us at iseca@nausicaa.fr
- Access to the WAS (Web-based Application Server) is given on request on the ISECA website



**A NAUSICAA, lundi 30 juin 2014
Boulogne-sur-Mer
Conférence finale du projet européen ISECA**



© Adrien DELATER - Julien LEGRAND

Lundi 30 juin 2014 aura lieu à NAUSICAA, le Centre National de la Mer à Boulogne-sur-Mer, la conférence finale du projet européen ISECA. L'objectif de ce projet est d'encourager l'échange de données et d'analyses scientifiques sur l'eutrophisation des eaux côtières au niveau de la Manche et du sud de la Mer du Nord. C'est ce fameux phénomène de mer qui « mousse » et de marées vertes que l'on peut voir en Bretagne. Ces données sont destinées à la fois, aux partenaires, aux autorités compétentes mais aussi au grand public.

La conférence finale ISECA permettra de faire le bilan du projet en présence des parties prenantes et des partenaires de sept pays européens, qui partageront leurs réalisations.

De la source à la mer, tous impliqués

Huit partenaires européens (flamands, hollandais, français et britanniques) ont coopéré sur le projet ISECA afin de mettre en commun leurs études, leurs outils, leurs résultats et ainsi mieux comprendre le phénomène d'eutrophisation, qui peut être visible sous forme de mer qui mousse ou de marée verte sur la plage.

La surveillance de la qualité de l'eau, les résultats des mesures in situ de l'eutrophisation, combinés à l'observation de la Terre (OT) et en particulier de la «couleur de l'eau», alliés ont permis de croiser les données.

Cette conférence permettra de mettre en lumière la base *Web Application System* créée à partir des données collectées (qui permettent d'anticiper des scénarios sur la qualité de l'eau). Le site internet ISECA alimenté en trois langues met à disposition des informations sur le projet ainsi que des outils pédagogiques, permettant de continuer à sensibiliser le plus grand nombre sur ce phénomène.

NAUSICAA, partenaire actif du projet

NAUSICAA, largement impliqué dans le projet en France, a réalisé de nombreuses actions afin de sensibiliser le public à ce phénomène. Par exemple, une animation préparée par le service éducatif a été proposée aux visiteurs du Centre afin de recueillir leurs avis et leurs connaissances sur cette étrange mousse. Chacun pouvait alors observer au microscope le contenu d'une pêche à pied et notamment les micro-algues indicatrices de la qualité de l'eau.

En 2012, une journée d'information a été organisée avec les relais éducatifs afin de les informer et leur proposer des outils pédagogiques leur permettant de relayer à leur tour l'information.

Une soirée-débat organisée en mars dernier a permis au grand public d'échanger avec des experts sur le sujet.

Les visiteurs de NAUSICAA continueront à être sensibilisés à travers une vidéo intitulée « Pourquoi la mer mousse ? », régulièrement diffusée sur le plateau TV de NAUSICAA.

Le projet Européen ISECA

ISECA est un projet européen s'intéressant au phénomène d'eutrophisation des eaux côtières de part et d'autre de la Manche et de la mer du Nord.

Depuis de nombreuses années, des scientifiques d'institutions diverses et de disciplines de recherche différentes observaient individuellement le développement d'algues sur le littoral, chacun avec ses propres outils scientifiques (observations satellitaires et in situ).

Grâce à ISECA, leurs connaissances sont regroupées dans une base de données unique. Celle-ci permettra d'anticiper l'évolution du phénomène et d'en informer les organismes de contrôle, les décideurs et le grand public pour qu'ils puissent agir en conséquence.

Pourquoi la mer mousse ? Le phénomène d'eutrophisation des eaux côtières

L'eutrophisation est un phénomène qui, selon le milieu (baie calme ou mer agitée) et le type d'algue (macroscopique ou microscopique), peut être visible en bord de mer sous forme de marée verte ou de mousse sur la plage.

Les algues se développent en mer en se nourrissant des ressources minérales dans l'eau. Lorsqu'il y a beaucoup de nutriments (nitrates et phosphates), elles croissent rapidement. Une petite augmentation de la biomasse des algues n'a pas d'effet négatif sur l'écosystème et peut même provoquer un accroissement de certaines populations de poissons. Par contre, lorsqu'il y a trop de matières nutritives dans l'eau, une stimulation trop forte de la croissance des algues peut troubler l'eau et ainsi gêner le passage de la lumière. En effet, quand l'algue meurt, celle-ci est décomposée par de nombreuses bactéries qui utilisent l'oxygène de l'eau pour respirer ; l'eau peut-être temporairement appauvrie en oxygène ce qui menace la survie des autres êtres vivants. Ce phénomène est appelé l'eutrophisation.

On parle d'eutrophisation des eaux côtières lorsque les causes sont dues aux activités humaines telles que les rejets domestiques et industriels, les eaux chargées en engrais chimiques provenant des zones rurales puis apportées par les cours d'eau.... Ces rejets sont tellement importants qu'ils accélèrent le processus. Nous sommes tous concernés car même si nous habitons loin de la mer, tous nos gestes à terre ont un impact en mer. Le phénomène d'eutrophisation des eaux côtières touche non seulement la vie aquatique mais peut aussi nuire aux activités économiques du bord de mer (pêche, tourisme, loisirs...).

Plus d'informations sur www.iseca.eu/fr/



Invitation to the ISECA project final event.

Information System on Eutrophication of our Coastal Areas: for a better understanding and governance of water quality in the North Sea/English Channel.

Madam WEYLAND-AMMEUX,

From **30th June to 1st July 2014**, the European project 'Information System on the Eutrophication of our Coastal Areas (ISECA)', will be hosting an outreach conference at Nausicaá, Boulogne-sur-Mer, France to showcase the results and tools developed during the project to monitor eutrophication in the North Sea and English Channel.

The conference will cover current legislation on eutrophication, the impacts of and public perception of water quality in the coastal zone and will highlight ISECA project results on Earth Observation, in-situ and modelling research to monitor eutrophication. There will be workshops on the Web-based Application Server and on outreach and educational activities developed and conducted within the project. These will be complemented by field trips to a Water Treatment Plant, IFREMER scientific laboratories and to the NAUSICAA aquarium. The conference is aimed at stakeholders such as policy makers, water quality managers, scientists and environment educators.

There will be talks from partners in the project at ADRINORD-Fr, VITO-Be, PML-UK, University of Greenwich-UK, VLIZ-Be, NAUSICAA-Fr, University of Portsmouth-UK & NIOOZ-NL. To complement these presentations, we would like to invite you as **Director of the Interreg 4a-2seas program, on Monday 30th June 2014. We would be honored if you also accept to give a talk from 17h to 17h10 on the added value of the ISECA project for Interreg and the 2seas area.**

Please will find attached, a draft of the Conference program.

We look forward to hearing from you,
Yours Sincerely,

Elise CHIROUTRE
On behalf of Anne VERNIER
Head of the Education Department
Nausicaá, Centre National de la Mer, Boulevard Ste Beuve
BP189- 62203 BOULOGNE SUR MER
(0033)3 21 30 99 83 / iseca@nausicaa.fr



* **Information System on the Eutrophication of our Coastal Areas**, was launched in 2011 by 8 partners of the Euro-region « North Sea - English Channel » thanks to a cross border cooperation program called INTERREG 2Seas. The main objectives of the project are to define the risks of eutrophication, to improve scientific knowledge and spread it, to identify the different publics and bring useful information on the subject to different actors such as water agencies, collectivities... For more information, consult www.iseca.eu



A-FE-6 Save the date ISECA Final Event

Réservez votre date!!!

30 Juin - 01 Juillet 2014: Conférence finale du projet ISECA

Nausicaá accueille l'événement final du projet européen ISECA 'Information System on the Eutrophication of our Coastal Areas', qui aura lieu les lundi 30 Juin et mardi 1er Juillet 2014 à Boulogne-sur-Mer, en France.

La conférence portera sur la qualité des eaux côtières en lien avec l'eutrophisation et présentera les résultats du projet ISECA. Seront notamment délivrées des informations sur l'eutrophisation: définition, causes, conséquences, moyens de détection et de surveillance, législation en vigueur, perception du public, solutions et perspectives. Un regard particulier sera porté sur la situation en Manche/Mer du Nord. Des ateliers seront organisés à la suite de la conférence: l'un concernera le serveur d'application (WAS) développé par les partenaires du projet ISECA, l'autre les activités d'information et d'éducation mises en place pour sensibiliser le public. Des visites sur le terrain clôtureront cette rencontre. L'événement s'adresse aux décideurs politiques, aux responsables de la qualité de l'eau, aux scientifiques ainsi qu'au grand public.

***Pour plus d'informations
(localisation, inscription, programme de la conférence) veuillez
cliquer ici***

Conférence finale du projet ISECA : informations pratiques

Dates : lundi 30 Juin et mardi 1er Juillet 2014

Lieu :

Nausicaá, Centre National de la mer
Boulevard Ste Beuve BP189-62203
Boulogne-Sur-Mer (France)
[Comment se rendre à Nausicaá?](#)

Inscription :

Cliquez [ici](#) afin de télécharger le formulaire d'inscription.
Veuillez nous le remplir et le renvoyer par:
Email: iseca@nausicaa.fr
Fax: 0033 (3) 21 30 93 94
Note: Cette conférence sera en français et en anglais!

Programme :

Jour 1: 30 Juin 2014

Jour 2: 01er Juillet 2014

Téléchargez le programme (version provisoire: PDF)[ici](#)

Liste des intervenants dont la présence est confirmée

Coordination et informations :

Nausicaá, Centre National de la mer
Boulevard Ste Beuve BP189-62203
Boulogne-Sur-Mer (France)
Tel: 033 (3) 21 30 99 93
Email: iseca@nausicaa.fr

Save the date!!!

30th June - 01st July 2014: ISECA Final Conference

From **30th June to 1st July 2014**, the European project ISECA 'Information System on the Eutrophication of our Coastal Areas', will be hosting an outreach conference at Nausicaá, Boulogne-sur-Mer (France) to showcase the results and tools developed during the project to monitor eutrophication in the North Sea and English Channel.

The conference will cover current legislation on eutrophication, the impacts of and public perception of water quality in the coastal zone and will highlight ISECA project results on Earth Observation, in-situ and modelling research to monitor eutrophication. There will be workshops on the Web-based Application Server (WAS) and on outreach and educational activities developed and conducted within the project. These will be complemented by field trips at choice (for example: visit of a water treatment plant, IFREMER laboratory or Nausicaá's Aquarium)! The conference is aimed at policy makers, water quality managers, scientists and the general public.

Click [here](#) for more detailed information
(location, registration, program)

ISECA Final Conference : practical information

Date : 30th June / 01st July 2014

Venue :

Nausicaá, National Sea Centre
Boulevard Ste Beuve BP189-62203
Boulogne-Sur-Mer (France)
[How to find Nausicaá?](#)

Registration :

Click [here](#) to download the registration form.

Please send your attendance by:

Email: iseca@nausicaa.fr

Fax: 0033 (3) 21 30 93 94

Note: Official languages of the conference will be English and French

Program :

Day 1: 30th June 2014

Day 2: 01st July 2014

Download program (draft version: PDF) [here](#)

[List of confirmed speakers](#)

Coordination and more information :

[Nausicaá, National Sea Centre](#)
Boulevard Ste Beuve BP189-62203
Boulogne-Sur-Mer (France)
Tel: 033 (3) 21 30 99 93
Email: iseca@nausicaa.fr



Invitation to the ISECA project final event

Information System on Eutrophication of our Coastal Areas: for a better understanding and governance of water quality in the North Sea/English Channel

Sir / Madam,

Water quality is a topic that concerns everyone. Irrespective of our profession, lifestyle and interests, we are all dependent on water quality.

Research and education institutes from countries that border the English Channel and the North Sea (Belgium, France, the Netherlands & UK) for the past three years have been developing tools to monitor eutrophication in these coastal waters through a European project called ISECA [1]. These tools are useful to scientists, stakeholders and policy makers alike. The project also carried out a survey with the general public to evaluate our perception of water quality in the region. From this survey, educational activities were created to raise public awareness.

From **30th June to 1st July 2014**, the project will run a conference to showcase these tools. We therefore cordially invite you to this event which will be held in Nausicaá, National Sea Center, Boulogne-sur-Mer, France.

Please find attached a draft program of the event which provides further details of the content. The conference is free. If you would like to attend, please complete and return the attached registration form to iseca@nausicaa.fr

We are looking forward to hearing from you,

Philippe VALLETTE,
Co-président du Réseau Océan Mondial,
Directeur Général de Nausicaá
Nausicaá, Centre National de la Mer
Boulevard Ste Beuve
BP189- 62203 BOULOGNE SUR MER
03 21 30 99 99 / iseca@nausicaa.fr



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ICAA	BOULOGNE SUR MER	France	aquariology@nausicaa.fr				
ish inst.for I Resaerch)	MOL	Belgium	jeanluc.dekok@vito.be	00 32 14 33 67 39	dimanche 29 juin	Lundi 1er juillet	
O	MOL	Belgium	Lieve.decorste@vito.be	32 14 33 67 05	lundi 30 juin	Lundi 1er juillet	arrive en fin de journée le lundi
ENTIFIQUE NTAL Nord Pas lais	TARDINGHEM	France	delattremarie@voila.fr	06 59 89 93 95			NE VIENT QUE LE 30 JUIN
OUPE FEP 3 IRES	ETAPLES	France	adam62630@gmail.com	06 35 29 36 75			
VER	HESDIN L'ABBÉ	France	desmedt.jean-louis@ecover.com				
ITEIT BRUSSEL B)	GENT	Belgium					
= GREENWICH	LONDON	UK	G.Djambazov@gre.ac.uk	00 44 208 331 9589	dimanche 29 juin après midi	Lundi 1er juillet - 15h30	
SMCO	WIMILLE	France	ernest.severine@cq62.fr	03 21 91 06 04			AC
INE INSTITUTE (Z)	OOSTENDE	Belgium	Nancy.Fockedey@vliz.be	32 473 51 72 58			NE VIENT QUE LE 30 JUIN
ND LAKES	BRUSSELS	Belgium	elena.fontan.alende@gmail.com	04 85 53 93 76			AC
AS	LOWESTOFT	UK	rodney.forster@cefascos.co.uk	07 76 6988 11	dimanche 29 juin	Lundi 1er juillet	
al des pêches Pas de Calais	BOULOGNE SUR MER	France	crpm.nord@wanadoo.fr	06 07 83 93 99			
ICAA	BOULOGNE SUR MER	France	education@nausicaa.fr				AC
V A 2-SEAS AMME	THEE	France	e.gatineau@interseg4a-2mers.eu	03 20 21 84 87			ne vient pas le 30 juin
INE INSTITUTE IZ	OOSTENDE	Belgium	annelies.goffin@vliz.be	00 32 59 34 01 80	dimanche 29 juin après midi	Lundi 1er juillet - 17h	
MER	PLOUZANÉ	France	Francis.Gohin@ifremer.fr	06 47 16 82 85	dimanche 29 juin - 19h53	Lundi 1er juillet - 17h12	
I MARINE ATORY	PLYMOUTH	UK	sbg@pml.ac.uk	17 52 63 34 06	dimanche 29 juin	Mardi 2 juillet	
RBAIN ARRAS	ARRAS	France	clementine.hu@orange.fr	06-79-48-15-01			reste le 1er uniquement
ICAA	BOULOGNE SUR MER	France	budgetofficer@nausicaa.fr	03 21 30 99 93			

GREENWICH	GREENWICH LONDON	UK	k.pericleous@gre.ac.uk	00 44 2083 318 732	dimanche 29 soirée	mardi 1er tôt dans l'après midi	hotel La Matelote	
EAU ARTOIS RDIE	DOUAI	France	j.prygiel@eau-artois-picardie.fr	03 27 99 90 15				
2 SEAS	COURCELLES LENS	France	f.ramdane@interseg4a-2mers.eu	06 18 21 14 28			ne vient pas le 30 juin	
AS DE CALAIS	LILLE CEDEX	France	manuelle.richeux@developpement-durable.gouv.fr	03 20 46 55 45				
ICAA	BOULOGNE SUR MER	France	paulineroches@mail.com	07 60 56 06 80				
ISM	LILLE	France	georges.roelants@free.fr	06 12 37 46 84				
IVERSITY	GHENT	Belgium	Koen.Sabbe@ugent.be	32 9 264 85 11			reste le 30 uniquement	
Littoral de la Opale/ORD	DUNKERQUE	France	santer.richard@yahoo.fr ; santer@univ-littoral.fr	05 17 33 51 88			650,00 env de trajet voiture A/R. Loge chez lui à Hardelot	Co-d
marin des is et de la mer ale	BOULOGNE SUR MER	France	peggy.sargian@aires-marines.fr	03.91.18.11.03			ne vient que le 30 juin	
PM	SAINT VENANT	France	daniel.secq@orange.fr	03 21 27 52 45				AC
ICAA	BOULOGNE SUR MER	France	education@nausicaa.fr					AC
NAUTÉ ATION DU NNAIS	BOULOGNE SUR MER	France	msicard@agoraboulonnais.fr	03 21 16 98 58				
ICAA	BOULOGNE SUR MER	France	education@nausicaa.fr					AC
I MARINE ATORY	PLYMOUTH	UK	GHTI@pml.ac.uk	01 75 26 33 406	dimanche 29 juin	Mardi 2 juillet		
i Paysanne - QOR	WAILLY-BEAUCAMPS	France	mdtrolle@gmail.com	06 28 25 01 59			NE VIENT QUE LE 30 JUIN	
ICAA	BOULOGNE SUR MER	France	generalmanager@nausicaa.fr	03 21 30 99 99				
AM	APEN	France	mariette.vannegasthe@gmail.com					
ING KUST	OOSTENDE	Belgium	miran.vanwonterghem@mow.vlaanderen.be	00 32 48 68 06 388				
Y BRUSSELS								

ISECA FINAL EVENT

30th June and 1st July 2014
At NAUSICAA

ACTIONS PENDANT L'EVENEMENT

	Qui (interne)	Qui (externe)
COORDINATION GENERALE	AV	
Suivi des mails/communication	EC	
Centralisation inscriptions	CB	
Définir les personnes qui interviennent en interne	AV	
Site web	EC	CK
Traductions GB/FR - FR/GB	EC	
Budget ISECA	JV	
Réunions avec les services de Nausicaa impliqués, D. Lefort et A. Lefebvre	AV/EC	
Faire une note de service	AV	

SALLES, ATELIERS, SORTIES DE TERRAIN

Organisation de la réunion semestrielle interne au projet ISECA du mardi aprem	EC	RS
Réserver les salles à Nausicaà	EC	
Organisation de l'atelier éducatif	AV	
Organisation des sorties de terrain	EC	
Organisation atelier WAS	EC	

Dimanche soir et lundi matin

. Accueil et suivi des intervenants

Accueillir et accompagner les intervenants dès dimanche soir et lundi matin	EC/AV	DL
Se rendre à l'hôtel Opal'Innn pour vérifier que tout se passe bien	EC	
Ouvrir les portes dès 9 h le lundi avec quelqu'un qui dirige les personnes dans la salle de banquet	Accueil/KM	
Monter les dossiers en salle banquet	EC/ET	
Mettre en place une signalétique dans le hall (format A4)	CB	
Accueil inscription dans la salle de banquet	CB	
Vérifier l'installation du café au resto	KM	
Récupérer le powerpoint final des intervenants et le mettre sur l'ordi de la salle Océan Atlantique	EC/AV	
Proposer la visite de Nausicaà en attendant le début de la séance	CB/EC/accueil	
Remercier les intervenants au moment de leur départ	EC/AV/MC	
Maître du temps, de l'eau et des verres	ET	
Renouveler l'eau des carafes aux pauses	SLS	
Technicien en régie et un dans la salle	SP, Cindy	

. Accueil et suivi des traducteurs

Accueillir le technicien le dimanche après-midi	SP/AV/EC	
Accueil des traducteurs le lundi matin	ET	
Répondre à leurs interrogations sur le déroulé et le contenu	EC/AV	

. Accueil et suivi des participants

Accueil, information et remise des dossiers d'inscription lundi 30 à 9h, salle de banquet du Resto	CB + Pauline/EC	
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Proposer la visite de Nausicaà en attendant le début de la séance / personnes badgées	CB /EC/ Accueil	
Rangement des valises dans 2 bacs bleus qui seront rangés à la fermeture de la salle banquet dans le local des bacs bleus	KM/CB/Accueil	
Donner les casques de traduction aux participants		

Mardi

. Accueil et suivi des participants

Ouvrir les portes dès 8 h 45	Accueil/CB	
Orienter le public vers les ateliers le matin, 9h.	EC	
Renvoyer auprès d'ET et A.Lefebvre pour le départ des visites de terrain et amener les partenaires iseca en réunion semestrielle l'après-midi. Veiller au respect du timing.	EC/AV	
Rangement des valises dans 2 bacs bleus (un affiché 13 h et l'autre 16 h) qui seront rangés dans le local des bacs bleus	CB/Accueil	
Traducteur en salle Mer du nord avec une valise de l'accueil	ET	
Mettre une feuille d'émargement dans chaque salle et des dossiers pour les personnes qui n'en ont pas eu la veille	CB	
Vérifier l'installation du café dans les deux salles		
Conduire les retardataires en salle mer du nord	CB	
Remettre les casques		
Remercier, raccompagner et dire au revoir aux intervenants et partenaires ISECA	EC/AV	
Remettre le kakemono à Jean-Luc DeKok avant qu'il quitte Nausicaa	EC	
Reserver un taxi aux intervenants s'ils en ont besoin	EC	

. Interventions Nausicaà

Lundi matin : Mot d'accueil par PV	PV	
Lundi après-midi : Présentation des outils de com WP4	AV	
Mardi matin : Présentation des outils de com WP4	AV/KM/ET/LS	CK Vliz
Mardi matin : Présenter l'outil WAS		VITO, RS, PML
Mardi matin: veiller au bon déroulement de l'atelier WAS et aider à la manipulation du logiciel	EC	
Mardi matin : Participer à l'atelier WAS	FC	
Mardi midi : Conclusions	PV	D. Lefort et A. Lefebvre
Mardi AM : Visite Ifremer		AL
Mardi AM : Visite Séliane	ET	
Mardi AM : Réunion semestrielle fin de projet ISECA	EC/AV/MC/FJ	tous

. Prise de note et compte-rendus

Prises de notes	ET/EC	
Filmer et enregistrer les présentations dans la salle	SP	

. Soirée incentive au bistrot côté plage jusque 21 H

Voir l'organisation avec Olivier P	AV/CB/OP/YW	
Prévenir les participants qu'ils ne doivent pas tenir compte du message sonnant invitant les visiteurs à sortir de l'exposition à 18 h 30	DL	

Invited speakers- curriculum vitae



Dr. Andris Andrusaitis (Finland)

Programme Manager, BONUS The Joint Baltic Sea Research and Development Programme

Andris is a marine biologist by education (degree by Shirshov Institute of Oceanology in Moscow, 1987). From 1995 to 2003, while continuing his research in plankton functioning in the brackish water systems, he served as the director of Latvian Institute of Aquatic Ecology. In 2003-2007 he worked as the Assistant Coordinator of the Baltic Sea Regional Project funded by the World Bank and the Global Environment Facility, and implemented jointly by HELCOM and ICES. In 2006-2009 Andris coordinated Latvian national research programme on impact of climate change on aquatic systems (KALME). Until 2013 Andris combined his administrative and scientific work with teaching of biological oceanography and functioning of aquatic ecosystems at University of Latvia. Having been involved in the development of the Joint Baltic Sea Research and Development Programme BONUS since its ERA-NET phase, Andris joined the BONUS Secretariat staff in 2008. As the Programme Manager, he is responsible for the scientific coordination of the Programme including development of the strategic research agenda, implementation of the Steering Committees decisions related to the Programme management, organisation of the Programmes scientific workshops and conferences, monitoring and following up of the projects, and organising Programmes specific reporting to the EU and national funding agencies.



Dr. Rodney Forster (UK)

Marine Ecologist, CEFAS

Dr. Rodney Forster (PB6) leads the Pelagic Sciences team at CEFAS where his role is to integrate marine ecosystem data from different sources (ship, satellite, in situ) in order to better understand the ecology and productivity of shelf seas. He has worked on primary production of phytoplankton, macroalgae and microphytobenthos for over 20 years and has extensive experience in the use of in situ techniques and remote sensing of the marine environment. He has been involved in several EU-funded projects, including HIGHROC, PROTOOL, MYOCEAN and DEVOTES (FP7 programme studying the impact of human activities and variations due to climate change on marine biodiversity, using long-term pelagic and benthic data sets). Dr Forster has published over 30 articles in international, peer-reviewed journals.



Mr. Edouard Gatineau (France)

Project Officer, 2 Seas INTERREG IV A Joint Technical Secretariat

As Project Officer in the Joint Technical Secretariat, Edouard Gatineau is in charge of the smooth monitoring of the projects supported by the INTERREG IV A 2 Seas Programme. With an academic background of European Spatial and Environmental Planning, his portfolio of projects comprises mainly environmental and research oriented projects. In this framework, he has been following ISECA from the very beginning of its implementation.



Dr. Francis Gohin (France)

Researcher, Ifremer

As a biologist graduated in mathematics, Francis Gohin has been applying remote-sensing techniques to the monitoring of the coastal environment. His experience mainly deals with the quantitative assessment of the water quality parameters (sea surface temperature, chlorophyll, turbidity, suspended particulate matters) in the spirit of the program Copernicus/GMES (Global Monitoring for Environment and Security) of the European Union. To that purpose, he is involved in the GMES/MyOcean project (within the OceanColour TAC) providing chlorophyll and mineral suspended matter maps processed by specific algorithms dedicated to the coastal waters

of Western Europe. He is also involved in several national and European projects aimed at developing the application of earth observation data to the environmental surveillance (Water Framework Directive, European, Marine Strategy Directive). He was also leading the Remote Sensing Work Package of the ECOOP project (European COastal sea OPerational observing and forecasting System).



Dr. Jacco Kromkamp (Netherlands)
Senior Researcher, NIOZ

Dr. Kromkamp is a Senior Researcher at the Royal Netherlands Institute for Sea Research (NIOZ) in the Netherlands and member of the department Marine Microbiology. His field focuses mainly on primary production of phytoplankton and benthic microalgae in estuaries and coastal marine systems.

His laboratory work investigates how unicellular algae photoacclimate to different environmental conditions using a variety of techniques. Dr. Kromkamp also works on optical properties of water and intertidal sediments in order to develop bio-optical models and techniques for estimating algal biomass and production and use of remote sensing to obtain these variables on the scale of an entire mudflat or estuary.



Prof. Dr. Christiane Lancelot (Belgium)
Professor, ULB-ESA

Christiane Lancelot is Professor in aquatic ecology, ecological modelling and environmental management and is head of the laboratory 'Ecologie des Systèmes Aquatiques' (ESA) at the 'Université Libre de Bruxelles' (ULB). She has expertise in plankton eco-physiology and ecological modelling focusing her activity in the study and modelling of the structure and function of marine ecosystems and the related biogeochemical C, N, P, Si and Fe cycles, in response to global (natural and human-induced) changes. In this scope, she has published >100 peer-reviewed papers in international journals and she is member of the international Scientific Committee of the International Geosphere Biosphere Program (IGBP).

Between 1987 and 2007 she was active in polar research and has developed in collaboration with UCL a coupled sea-ice-ocean biogeochemical model to describe phytoplankton blooms in the iron-limited Southern Ocean. As international recognition of her work in this field she was elected in 1997 to sit in the scientific committee of the Gordon Conference on Polar Marine Science and chaired the conference in 2003.

Since 1971 she has a sustained interest in land-ocean interactions, especially the link between human activity and coastal eutrophication. In this scope, she recently coordinated two large interdisciplinary 'eutrophication' networks funded by the Belgian Federal Science Policy: the 1997-2010 AMORE (Advanced MOdelling and Research on Eutrophication) projects on the study and modelling of eutrophication in Southern North Sea and the 2007-2012 TIMOTHY (Tracing and Integrated MOdelling of natural and anThropogenic effects on HYdrocosystems: the Scheldt River basin and adjacent coastal Nort Sea) project.



Dr. Alain Lefebvre (France)
Researcher, Ifremer

Alain Lefebvre received the PhD degree from LILLE 1 university - Science and Technology, France, in 1999. His research interests include the dynamic of phytoplankton blooms, development and implementation of automated and high resolutions systems to support monitoring and research. He has been head of the Coastal Environment & Shellfish Resources laboratory from IFREMER (French Research Institute for Exploitation of the Sea) since 2005. He is the coordinator of biological monitoring networks such as the

SRN (dedicated to the study of the eutrophication in the eastern English Channel) and was the coordinator of the environmental and fishery monitoring of the Gravelines nuclear power plant (2001-2007). He is the scientific coordinator of the MAREL Carnot system (automated system for high frequency, multi-parameter data collection in the marine environment). He is the French delegate in the OSPAR Eutrophication Committee, support for the French Ministry of Environment and Sustainable Development (since 2003). He is involved in the implementation of the European Marine Strategy Framework Directive for the Eutrophication issues.



Dr. Stephen Malcolm (UK)
Chief Adviser Marine Environment, CEFAS

Dr. Stephen Malcolm is a Chief Advisor at Cefas focussing on the marine environment and has particular experience in the science, policy and management of eutrophication developed over 20 years. He provides advice to, and represents, the UK Government on marine eutrophication in OSPAR and in EC and other international committees. His experience started when he led several major UK research initiatives on marine eutrophication in the 1990's and has now worked at all levels on the implementation of all the relevant EU Directives (including the Urban Waste Water Directive, the Nitrates Directive, the Water Framework Directive and the Marine Strategy Framework Directive). He is the lead UK technical expert on MSFD Descriptor 5 Eutrophication and, on behalf of Defra, coordinates the technical support for the implementation of the Directive.

Dr. Malcolm also takes a leading role in the development of monitoring and assessment programmes playing key roles nationally and in OSPAR. He chaired the steering group, and was lead editor, for UK Charting Progress 2 report (2010) which forms the basis for the UK Initial Assessment for the MSFD, he was joint lead author of the Marine Chapter of the UK National Ecosystem Assessment (2011) and helped to steer and draft Scotland's Seas Atlas (2011). He has also published, with colleagues, papers on marine eutrophication.



Dr. Jean Prygiel (FR)
Head of Knowledge and Expertise, Natural Aquatic Environments Department, Water Agency Artois-Picardie

Jean Prygiel joined the Water Agency Artois-Picardie in 1988 and is Head of Knowledge and Expertise from the Natural Aquatic Environments Department (based in Douai). The department is responsible for the chemical, physico-chemical and biological monitoring of inland surface waters and groundwaters. They also work with Ifremer for the monitoring of coastal waters and ensure the implementation of two mobile laboratories and an automatic measurement buoy for specific studies conducted within the department. Mr. Prygiel has a PhD in biology and animal physiology and habilitation within the the Natural Sciences Department of Lille 1. He is also associated with the Geosystems laboratory of Lille 1 where he has been professor since 2006 and works on topics related with high frequency measurement and exchange of contaminants between sediments, water and biota and their impact on the chemical and ecological status.

	PRENOM	TITRE	
AITIS	Andris	Programme Manager	BONUS - Science
RAS	Felipe	Teacher & researcher	MREN UL
ET	Frédérique	SAGE Boulonnais Officer	
UX	Carine	Cultural Department & International partnership	
E	Paul	Interpreter	CO
EZE	Evelyn	PHD Student	G
UTRE	Elise	ISECA officer & Educational Facilitator	
A	Manuel	Head of Cultural Department & International Partnerships	
IN	Frédéric	Head of Laboratory & Aquariology Deputy	
DK	Jean Luc	Researcher	VITO (Flemish
RTE	Lieve	Functional Analyst	
TRE	Jean-Marie	Member	CONSEIL SCIE P
MPs	Frédérique	Officer	ADDAM -
EDT	Jean Louis	Head of Communication	
IA	Alex	Student	VRIJE
AZOV	Georgi	Researcher	UNIV
ST	Séverine	Interreg 2Seas facilitator	
DEY	Nancy	Senior Scientific Assistant Communication	FLANDERS
AN	Elena	Student	O
TER	Rodney	Senior Marine Ecologist	
MASSET	Katy	Educational Facilitator	
IN	ANNELIES	Senior Scientific Assistant	FLANDERS
IN	Francis	Director of Research	
OM	STEVE	Head of Remote Sensing	PLYMOU
	Clémentine	Environment Technician & Facilitator	COMMU
AU	Fabien	Budget Officer	
AERT	CAROLIEN	Junior Scientific Assistant	FLANDERS
AMP	Jacco	Researcher	
LOT	Christiane	Professor and head of ESA	Univ

NAME	PRENOM	TITRE	ORGANISATION
ANDRE	Fabrice	Teacher & researcher	LOGIC
BOULM	Stephen	Chief Advisor	
BOULE	Nicolas	PRAG Teacher	
BOUYA	Silvana	Earth Observation Data Analyst	PLYMOUTH
BRUNOS	Aina	Student	VRIJE UNIVERSITEIT
CHET	Claudie	Trainee	
CHESKI	Pauline	Facilitator Contrat Baie de Somme	
CHESINE	Gérard	member	Comité régional de la mer
CHENTYN	Annabelle	Responsible for Intervention	AGENCE DE L'ENVIRONNEMENT
CHIE	Anja	Scientific Assistant	VLAAMS INST
CHOUSS	Koulis	Principal Scientist	UNIVERSITY OF
CHUTEL	Jean	Head of Department	AGENCE D'AMENAGEMENT
CHUES	Pauline	Trainee	
CHUNTS	Georges	Deputy president Coreg 59 62	
CHUE	Koen	Lecturer	Ghent University
CHUER	RICHARD	ISECA Project Manager	UNIVERSITEIT
CHUAN	Peggy	Water Quality & industrial use in sea Officer	Parc naturel marin
CHUQ	Daniel		
CHUY	Elise	Educational Facilitator	
CHUDNE	GAVIN	Bio-Optical Oceanographer	PLYMOUTH
CHULÉ	Daniel	Organic Farmer	Confédération
CHUTTE	Philippe	General Manager	
CHUGGHE	Mariette	President	
CHURGHEM	Miran	Project Engineer	MIRAN
CHULÉ	Katrien	Coordination (Ad Interim) Msc in Marine and Lacustrine Science and Management	FREE UNIVERSITY
CHUER	Anne	Head of Educational Department	
CHUMAN	Wim	Professor	

De: ISECA
Envoyé: jeudi 3 juillet 2014 17:43
À: 'Richard Santer'; De Kok Jean-Luc; 'lancelot@ulb.ac.be'; 'jacco.kromkamp'; 'stephen.malcolm'; 'rodney.forster';
k.pericleous; Steve Groom ; 'j.prygiel; Premachandra Wattage; 'Carolien Knockaert'; 'Francis.Gohin';
G.Djambazov; 'Annelies Goffin'; 'david.'; 'Alain LEFEBVRE'; 'Gavin Tilstone '; 'andris.andrusaitis'
Cc: 'Edouard GATINEAU'; 'Manuel Cira'
Objet: **ISECA: thanks for your participation**

Catégories: tous

Dear all,

We would like to deeply thank you for your involvement in the ISECA final event and hoped you enjoyed these two days!
We were really pleased by your talks, the way you adapted to the audience and the interactions we had all together.

Concerning your PowerPoints, as discussed during the meeting, would you mind telling us if you agree we make them public on the ISECA website?

Besides, would it be possible for you to also produce an abstract of your presentation (just a few lines) and send it to us? It will help us in our final reports.

Thanks in advance.

Best wishes,

Elise CHIROUTRE

On behalf of the whole ISECA team

De: ISECA
Envoyé: mercredi 2 juillet 2014 13:01
Objet: **ISECA: we value your opinion (WAS workshop)**

Dear All,

First of all we (ISECA team) thank you for your participation at the ISECA final meeting and hope you enjoyed it.

We would appreciate if you could give use some feedback on the WAS tool. This will only take you a few minutes.

To do so, please, click on this link and complete the digital survey: <https://nl.surveymonkey.com/s/N2Z6B3L>

Thanks in advance,
All the best,

Elise Chiroutre
Activity Leader and ISECA Project officer
Educational department
Nausicaá, National Sea Center
Boulevard Ste Beuve BP189
62203 BOULOGNE SUR MER
0033 3 21 30 99 83



More information at www.iseca.eu

De : ISECA
Envoyé : vendredi 27 juin 2014 11:30
Cc : Dany Billet; 'Decorte Lieve'; Richard Santer; De Kok Jean-Luc
Objet : **ISECA final event: information to the WAS participants**
Importance : Haute

Sir, Madam,

We are very glad to welcome you at the ISECA final conference. On the second day (Tuesday 1st July), you have registered to the WAS* workshop.

Mind that there are a few requirements needed for the good process of this workshop:

1. Bring your laptop (PC or MAC)
2. Check if you have one of these browsers: Firefox or Google Chrome, if not, please, install one of them (installations available on the internet). For MAC Safari browser is also fine.
3. Check if the wifi on your laptop runs well because we will have to access the internet to manipulate the WAS
4. Please, for people coming from foreign countries, take a universal plug

Do not hesitate to contact us. We remain at disposal.
Looking forward to seeing you,

Elise Chiroutre
Activity Leader and ISECA Project officer
Educational department
Nausicaá, National Sea Center
Boulevard Ste Beuve BP189
62203 BOULOGNE SUR MER
0033 3 21 30 99 83



More information at www.iseca.eu



INVITATION TO PARTICIPATE IN THE SURVEY *ISECA Project*

Sir, Madam,

On the 30th June and 1st July 2014, you participated in the final event of the [ISECA](#) project (Information System on the Eutrophication of our Coastal Areas).

In 2012, in the frame of ISECA, PML (Plymouth Marine Laboratory) conducted a survey aiming at stakeholders.

This survey is designed to evaluate the adequacy of the ocean-colour products and their usefulness to user community (specially monitoring agencies, policy advisors, policy makers).

We value your opinion because it will allow us to either confirm the choices made in ISECA or to reflect new needs in future projects.

To participate, please, click [here](#). This will only take you a few minutes. The deadline for responding is on **September 30th, 2014**.

We (ISECA Team) thank you in advance.

Yours sincerely,

Elise Chiroutre
Activity Leader and ISECA Project officer
Educational department
Nausicaá, National Sea Center
Boulevard Ste Beuve BP189
62203 BOULOGNE SUR MER
0033 3 21 30 99 83



Attached file: Invitation Letter (see below)



Cross-border cooperation programme 2007-2013 part financed by ERDF



Dear User,

Ocean Colour (OC) is the variable for the monitoring of eutrophication in coastal waters accessible to remote sensing. Access to reliable OC data is crucial to increase spatial coverage and frequency of observations in order to match requirements of the EU Water Framework Directive and the upcoming Marine Strategy Framework Directive, without large economic cost.

OC from coastal waters has been studied under the umbrella of the 'Information System on the Eutrophication of our Coastal Areas' (ISECA, <http://www.iseca.eu>) of INTERREG IVA 2 Seas. The ISECA project intended to improve the ocean-colour products in general, and European Space Agency (ESA) - MERIS satellite products in particular, to a standard useful for monitoring coastal eutrophication. Over a three-year period, the ISECA project scientists and collaborators were working on the development, validation and selection of algorithms for processing ocean-colour images in coastal waters and make them accessible to monitoring agencies and policy makers.

It was also the goal of the project to improve the interactions between the ocean-colour specialists and the user community, especially monitoring agencies, policy advisors and policy makers. As part of this process, we were carrying out a survey to evaluate how well ocean-colour products meet the needs of eutrophication monitoring agencies currently, and to establish what the priorities are to enhance user engagement.

We hope you will be able to spend some 10 minutes to complete the online survey:

<https://docs.google.com/spreadsheet/viewform?fromEmail=true&formkey=dF9CeTdRUTdYa1Azb1p6Xy1KVTVRVFE6MA>

By the 30th September 2014.

Whenever possible, please provide justification for your answers in a few words. You only need to answer questions you are comfortable answering. Your response is important: you can help shape ocean-colour research and applications for eutrophication studies. We appreciate your co-operation.

Thanking you,

Yours sincerely,

Victor Martinez Vicente on behalf of the ISECA team.
PML (Plymouth Marine Laboratory)

The questionnaire was officially closed in September 2012. However, stakeholders are welcomed to express their views, which will be taken into account in the final version of the project report in order to validate the choices we did in ISECA or to propose new recommendations for future projects.

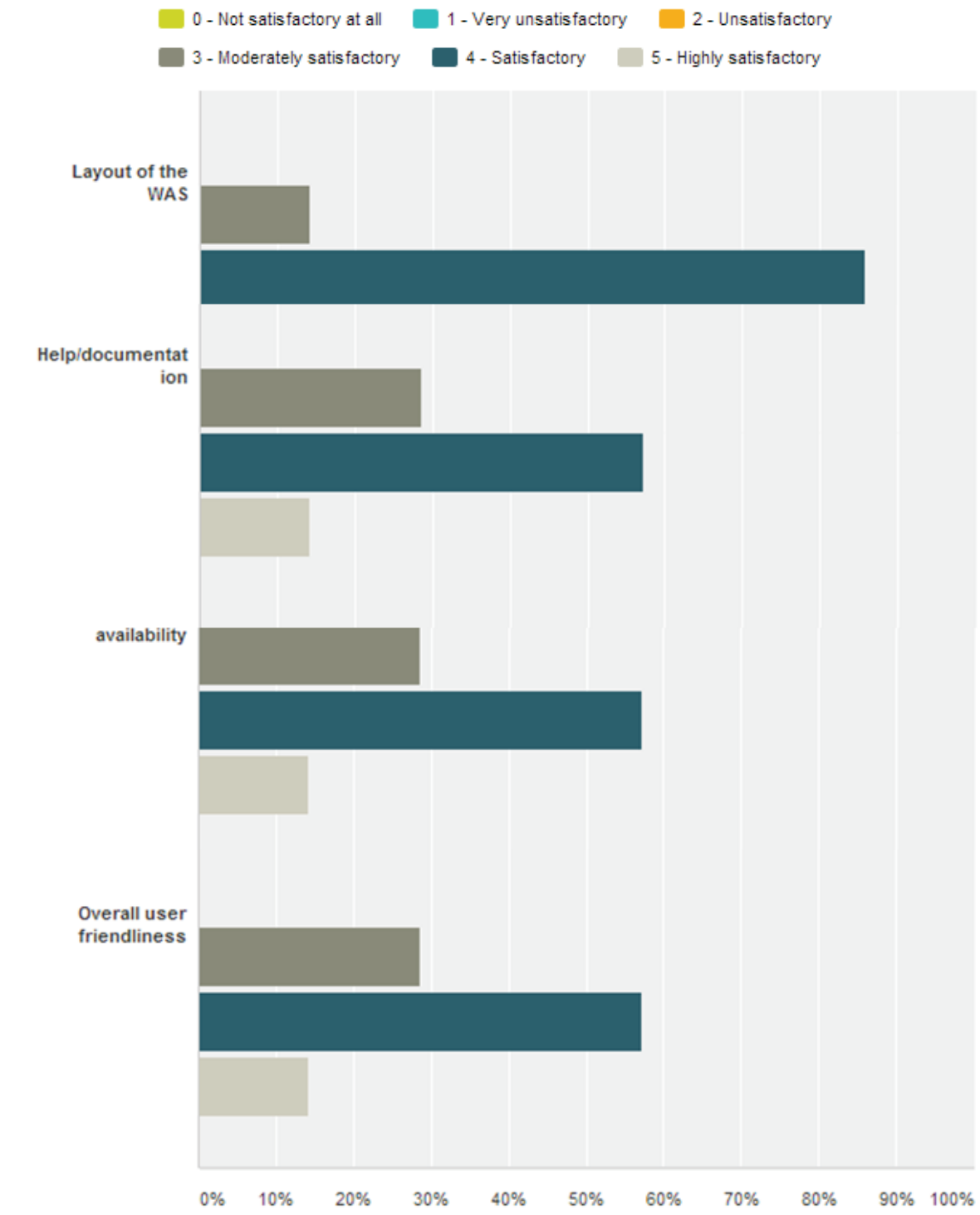


Cross-border cooperation programme 2007-2013 part financed by ERDF

Questionnaire WAS

Overview

On a scale from 0 to 5, how much do you rate following items?



	0 - Not satisfactory at all	1 - Very unsatisfactory	2 - Unsatisfactory	3 - Moderately satisfactory	4 - Satisfactory	5 - Highly satisfactory	Totaal
Layout of the WAS	0,00% 0	0,00% 0	0,00% 0	14,29% 1	85,71% 6	0,00% 0	7
Help/documentation	0,00% 0	0,00% 0	0,00% 0	28,57% 2	57,14% 4	14,29% 1	7
Data availability	0,00% 0	0,00% 0	0,00% 0	28,57% 2	57,14% 4	14,29% 1	7
Overall user friendliness	0,00% 0	0,00% 0	0,00% 0	28,57% 2	57,14% 4	14,29% 1	7

Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe

- Highlight values when moving the mouse on the map
- Add title on the map to avoid confusion about the real activated information layer
- Add a documentation as a video
- Add a min. of metadata in a panel (name institutes, contact point, sensors, ...)
- Resolution issue
- Improve the display of the units of the displayed variables in the vertical label in the legend window
- Improve the documentation: include the origin of the in situ data, give information on the data providers, indicate a link to get information on the EO products

Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

- It would be interesting to read numeric values on the satellite map
- Provide a computation of the differences (in % or concentration) between different scenario of the different models to well understand the impact of the nutrients changes
- Values below the selected min and above the selected max are both shown in black – two different colours could be used so the user can easily see which is which

Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

A toolbar could be added in the WAS with: 1- a set of simple functionalities, such as, + the display of a pixel value from a channel (or source) selected by the operator in the EO product or in-situ measurements; + the display of a plot with the correlation between 2 selected variables (e.g., in-situ-Chl and EO-Chl, or EO-marine reflectance vs EO-Chl; etc.), + the display of statistics (mean, rms) on a given parameter (e.g., chl) computed for pixels included in a simple geometric drawing (e.g., square or rectangular window) defined by the operator on the scene (image) displayed on the screen; 2- a set of few more sophisticated functionalities, such as, + a list of simple operations (difference, relative difference) between in-situ and/or EO parameters when available: e.g., $100 \times (\text{in-situ} - \text{EO}) / \text{EO}$ for the chlorophyll content; + a linear combination between different parameters

Date: 7/7/2014

wih a temporary saving of the result in a new band (or channel) in the product that could be selected by the operator to be displayed.

For the different scenarios on the modelling, the WAS provide maps of P90Chla for each of them. It will be useful to have maps of the difference between the "business as usual" and other scenarios. Demonstration maps of TSM from EO are welcome

Do you have other suggestions? If yes, please describe.

I know that data properties is a big issue, but some basic data (temperature, salinity, turbidity, chlorophyll-a concentration or fluorescence at least) should be available to allow the user to calculate some statistic summary on a fixed point or along a transect.

Detail

V2: On a scale from 0 to 5, how much do you rate following items?	
Layout of the WAS	4 - Satisfactory
Help/documentation	4 - Satisfactory
Data availability	4 - Satisfactory
Overall user friendliness	4 - Satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

-add the possibility to highlight values when moving the mouse on the map,
- add a title on the map to avoid confusion about the real activated information layer,
- add a documentation as a video (record of the main steps useful to begin with the WAS),
- add a minimum of metadata in a panel (name of the institut and of the monitoring programme, contact point, sensors or devices, Lat/Long, Time) to allow the user to really be inform about data he want to use.

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V6: Do you have other suggestions? If yes, please describe.

I know that data properties is a big issue, but some basic data (temperature, salinity, turbidity, chlorophyll-a concentration or fluorescence at least) should be available to allow the user to calculate some statistic summary on a fixed point or along a transect.

V2: On a scale from 0 to 5, how much do you rate following items?

Layout of the WAS	4 - Satisfactory
Help/documentation	3 - Moderately satisfactory
Data availability	4 - Satisfactory
Overall user friendliness	3 - Moderately satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

is it possible to adapt to a smaller screen: often some navigation windows disappear, and after pressing F5 you have to get them back again.
Also a more accurate description of some of the parameters is necessary.
But in general I did found it easy to work with

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

A template to feed data in might be nice: one for a fixed station, and one for cruise legs (e.g. ferrybox dataset). It might be that I have missed it.

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

see 4.

V6: Do you have other suggestions? If yes, please describe.

not at the moment, need to use it more.

V2: On a scale from 0 to 5, how much do you rate following items?

Layout of the WAS	4 - Satisfactory
Help/documentation	3 - Moderately satisfactory
Data availability	4 - Satisfactory
Overall user friendliness	5 - Highly satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

The layout of WAS could be improved for a correct display of all the items on a notebook. While the session of the WAS demonstration, all the functionalities do not appear on my small screen (width of 10 inches).

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

No

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

A toolbar could be added in the WAS with:

1- a set of simple functionalities, such as,

- + the display of a pixel value from a channel (or source) selected by the operator in the EO product or in-situ measurements;
- + the display of a plot with the correlation between 2 selected variables (e.g., in-situ-Chl and EO-Chl, or EO-marine reflectance vs EO-Chl; etc.),
- + the display of statistics (mean, rms) on a given parameter (e.g., chl) computed for pixels included in a simple geometric drawing (e.g., square or rectangular window) defined by the operator on the scene (image) displayed on the screen;

2- a set of few more sophisticated functionalities, such as,

- + a list of simple operations (difference, relative difference) between in-situ and/or EO parameters when available: e.g., $100 \times (\text{in-situ} - \text{EO}) / \text{EO}$ for the chlorophyll content;
- + a linear combination between different parameters with a temporary saving of the result in a new band (or channel) in the product that could be selected by the operator to be displayed.

V6: Do you have other suggestions? If yes, please describe.

No

V2: On a scale from 0 to 5, how much do you rate following items?

Layout of the WAS	4 - Satisfactory
Help/documentation	4 - Satisfactory
Data availability	3 - Moderately satisfactory
Overall user friendliness	3 - Moderately satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

Too many windows (data listing) in the same part of the screen : it very difficult to use with a laptop. The listing of the satellite data base is not very clear. It is also necessary to explain that it is not necessary to upload satellite and in situ data in the same time, because (if I have well understood) it is not necessary to study the different model results. I don't know if reference of the biological model to realize the different simulation are reported in the documentation, but it is necessary to make some citations in scientific report if we need.

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

It would be interesting to read numeric values on the satellite map or time series when you point the cursor on it and to have a computation of the differences (in % or concentration) between different scenario of the different models to well understand the impact of the nutrients changes.

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

See previous remarks.

V6: Do you have other suggestions? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V2: On a scale from 0 to 5, how much do you rate following items?

Layout of the WAS	4 - Satisfactory
Help/documentation	5 - Highly satisfactory
Data availability	5 - Highly satisfactory
Overall user friendliness	4 - Satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

The units of the displayed variables only appear in the vertical label in the Legend window - when the name of a variable is longer, the units are not displayed - this can be corrected if more than 1 vertical or horizontal lines are used.

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

Values below the selected Min and above the selected Max are both shown in black - two different colours could be used so the users can easily see which is which.

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V6: Do you have other suggestions? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V2: On a scale from 0 to 5, how much do you rate following items?

Layout of the WAS	3 - Moderately satisfactory
Help/documentation	4 - Satisfactory
Data availability	4 - Satisfactory
Overall user friendliness	4 - Satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

The windows "EO layers" and "in situ" would need more space.

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

Is there a possibility to export the visualized data as an image file?

V6: Do you have other suggestions? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V2: On a scale from 0 to 5, how much do you rate following items?

Layout of the WAS	4 - Satisfactory
Help/documentation	4 - Satisfactory
Data availability	3 - Moderately satisfactory
Overall user friendliness	4 - Satisfactory

V3: Do you have specific remarks to improve the layout, the documentation, the data availability or the user friendliness of the WAS? Please describe.

documentation should:
(i) include the origin of the in situ data, give information on the data providers
(ii) indicate a link to get information on the EO products

V4: Do you have specific remarks related to the technical part to improve the WAS? If yes, please describe.

Respondent heeft deze vraag overgeslagen

V5: Do you have specific suggestions to improve the content of the WAS? If yes, please describe.

For the different scenarios on the modelling, the WAS provide maps of P90Chla for each of them. It will be useful to have maps of the difference between the "business as usual" and other scenarios.
Demonstration maps of TSM from EO are welcome

V6: Do you have other suggestions? If yes, please describe.

Respondent heeft deze vraag overgeslagen

FILM - Projet ISECA- eutrophisation

Film à réaliser dans le cadre du projet Interreg IV A 2mers ISECA (Information System on the Eutrophication of our Coastal Areas).

Durée du support proposée : 6 minutes environ

Thèmes :

- le phénomène de l'eutrophisation, plus particulièrement **en eaux côtières**
- le projet ISECA

Public visé : le grand public (à partir de 14ans)

Lieux de diffusion potentiels :

- Au Plateau TV de NAUSICAA
- Dans l'exposition de NAUSICAA
- Lors d'événements internes ou externes à NAUSICAA en lien avec cette thématique.
- Lors d'animations pédagogiques en lien avec ce thème (pour un public à partir de fin collège)
- Sur le site internet NAUSICAA
- Sur le site www.iseca.eu

Objectifs (qui peuvent aider à construire le déroulé):

- interpellé
- informer le public sur ce qu'est ce phénomène :
 - . Définition
 - . Ses manifestations
 - . Ses causes
 - . Les paramètres l'influençant et les différentes sources de pollution
 - . Ses conséquences
- montrer comment limiter l'eutrophisation :
 - . Importance de la recherche et du développement : il faut tout d'abord étudier le phénomène pour le comprendre, l'observer, le mesurer, le surveiller (observation satellitaire et in-situ) l'anticiper (outils de modélisation) pour alerter. Innover, améliorer les techniques.
 - . Fixer des règles (DSCMM, DCE etc.), des stratégies, organiser des groupes de travail (par ex, OSPAR...). La réglementation porte essentiellement sur les rejets d'assainissement des collectivités et des industries et sur les émissions agricoles.
 - . Informer
 - . Agir / soigner : ce qui a été fait sur les 30 dernières années ... et demain ?
- Souligner l'importance de travailler ensemble pour comprendre et agir efficacement : impliquer tous les acteurs concernés (scientifiques, secteur agricole et industriel, technicien de l'eau, décideurs, politiques à différents niveaux, etc.)
- Donner l'exemple du projet ISECA