2015

ANNUAL REPORT

VLIZ

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Established in 1999, the Flanders Marine Institute (VLIZ) has evolved into the central coordination and information platform for marine scientific research in Flanders.
VLIZ is a centre for marine and coastal research; it also promotes and supports the international image of Flemish marine scientific research and international marine education as a partner in various projects and networks.

Vlaanderen
verbeelding werkt

RICHTING MORGEN

west-vlaanderen
de gedreven provincie

The 2015 VLIZ annual report

Ostend, March 2016.

Annexes

Only available in digital format. Downloadable from the VLIZ website www.vliz.be/en/vliz-annual-report

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Dear reader,

2015 was a year of reflection. We were asked to draw up a self-evaluation report within the scope of an institutional review in preparation of a new covenant with the Flemish government. This primarily included looking back on the 2010-2015 period. The list of highlights and achievements of the past five years is impressive. This calls for reflection on the continuous commitment of all VLIZ employees who make sure that we can realise these highlights. This threatens to eclipse our continuous activities – which would be a shame! Take, for instance, the efforts with regard to human resources and financial management, IT support, developments by IT specialists, the deployment of RV Simon Stevin, the input of library acquisitions, the maintenance of websites, the handling of requests for information and data, etc. Behind the scenes, the VLIZ staff perform a large volume of high-quality work on a daily basis, and in the process they try to maintain and, where possible, improve the provision of excellent professional services to all target groups, ranging from marine scientists, policymakers and educators to interested citizens. They constitute a solid basis on which VLIZ can build and develop into the institute providing support to Flemish marine scientists. With its 67 employees, VLIZ is still a small organisation, yet its impact is ever increasing both locally, nationally and internationally.

The fact that the activities of VLIZ have received international recognition is partly due to the synergy with the international organisations present at the InnovOcean site. In 2015 we celebrated the 10th anniversary of the prestigious and effective 'UNESCO/IOC Project Office for IODE'. Together with the presence of other European institutions such as the European Marine Board and the EMODnet secretariat, this ensures Ostend is on the world map as an oceanographic centre.

The prominent place occupied by marine organisations in Ostend of course has to do with the proximity of the sea. For this reason, governor of West Flanders Carl Decaluwé, who is also chairman of the Board of Directors of VLIZ, dedicated his annual speech entirely to the sea. Entitled 'A Sea of Opportunities; Our North Sea', his speech explored the potential of the Belgian part of the North Sea, which forms the western border of the province of West Flanders. He emphasised the economic importance and the necessity of scientific knowledge about the ocean's resources, and advocated a better understanding of the way we can make sustainable use of the sea.

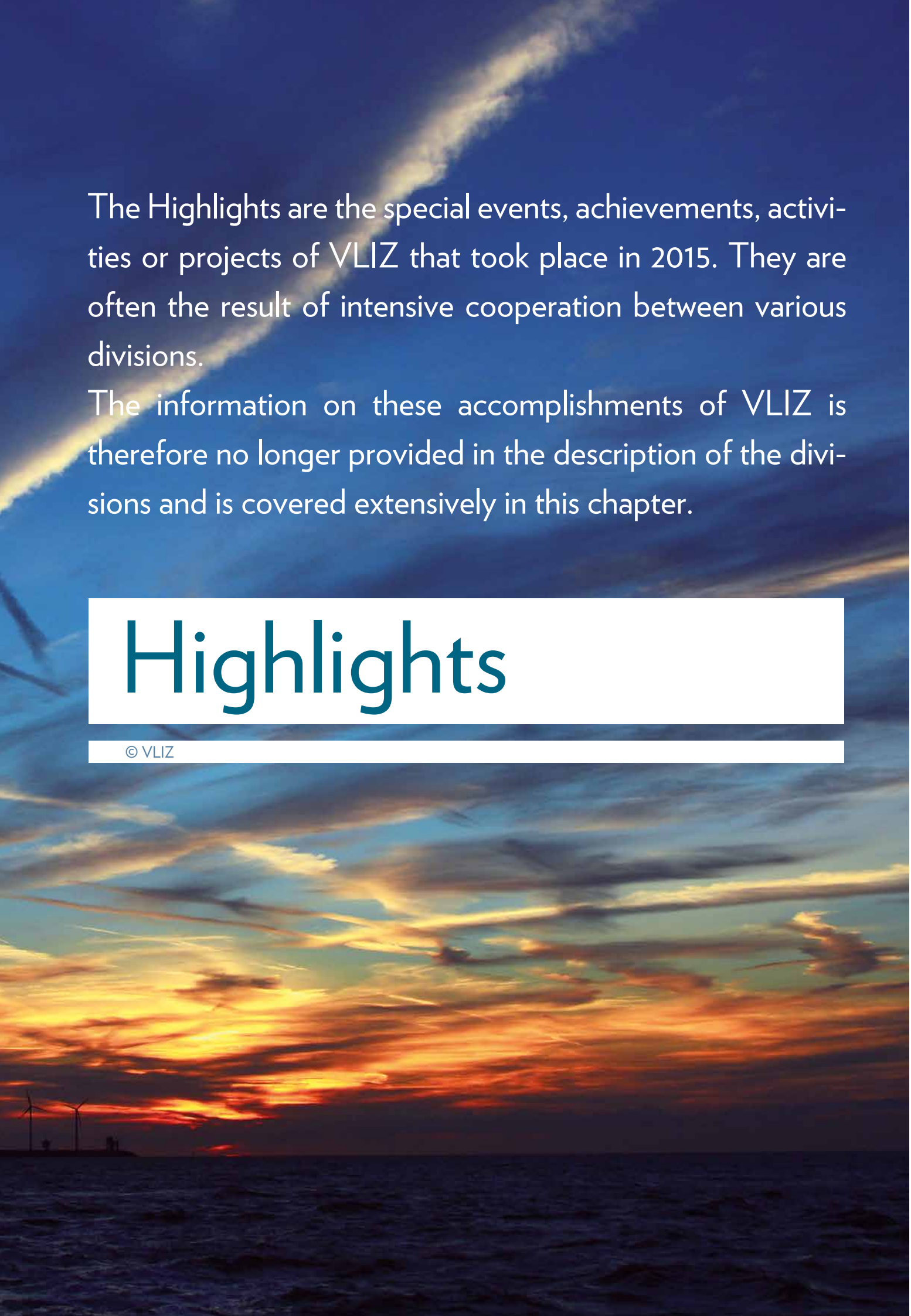
We hope you enjoy reading this annual report!

Jan Mees
General Director of VLIZ

The Highlights are the special events, achievements, activities or projects of VLIZ that took place in 2015. They are often the result of intensive cooperation between various divisions.

The information on these accomplishments of VLIZ is therefore no longer provided in the description of the divisions and is covered extensively in this chapter.

Highlights



Second edition of the Compendium for Coast and Sea officially launched

THE SECOND EDITION OF THE COMPENDIUM FOR COAST AND SEA was officially launched together with the derivative publications in the Flemish Parliament on 24 November 2015.

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The second edition of the Compendium for Coast and Sea was officially launched at the Flemish Parliament on 24 November 2015 in the presence of representatives of the cabinet of Flemish Minister for Work, Economy, Innovation and Sports Philippe Muyters and Governor of West Flanders Carl Decaluwé.

The Compendium for Coast and Sea provides scientifically based and updated information in response to societal questions and issues in a marine and maritime context. The document is based on an integrated approach and covers environmental and natural research within the marine system as well as sociocultural, economic and institutional aspects. This information is partly available, yet often highly fragmented, sector-specific or hardly accessible. The Compendium for Coast and Sea therefore brings together this disperse information from Flemish and Belgian marine sciences as well as the marine and maritime sector. The objective is to make as many sources available to the public as possible via VLIZ's Integrated Marine Information System (IMIS) in line with the Open Access policy. The Compendium can be consulted in Dutch and English via the updated website www.compendiumkustenzee.be.

The Compendium for Coast and Sea primarily focuses on the Belgian part of the North Sea, the adjacent estuaries and the coastal area. The Compendium's integrated character contributes to increased communication within the network of marine scientists, experts professionally involved in coastal and marine activities, representatives from business and innovators. In addition, this initiative increases the visibility and accessibility of marine research.

The Compendium for Coast and Sea is an initiative by VLIZ. Its mission, objectives and end products are monitored by a steering committee of experts from research institutions, governmental bodies and civil society organisations. This expert group is supported in its everyday tasks by the Compendium secretariat (VLIZ) and closely collaborates with the VLIZ Scientific Board and a network of co-authors, readers and international experts in order to develop the Compendium.

The publication of the second edition of the Compendium for Coast and Sea was accompanied by the development of several derivative products:

- A brochure providing an overview of the expertise present in the Belgian marine research groups
- A catalogue of the research infrastructure available at the marine research groups
- A guide to the relevant funding instruments for marine research and innovation projects
- A vademecum on the most pertinent marine policy instruments and legislation for the Belgian part of the North Sea.

Time for self-evaluation!

The responsibilities of the Flanders Marine Institute are defined in a five-year covenant between the Flemish Government, the province of West Flanders and VLIZ. The latest management agreement expires at the end of 2016 and an evaluation needs to take place in preparation for the new covenant.

The Research division of the Department of Economy, Science and Innovation (EWI) is entrusted with the intrinsic monitoring of VLIZ. At the end of 2015, EWI appointed the consultancy 'Dialogic Innovatie en Interactie' to conduct this evaluation and an international expert panel has also been called in. The evaluation will be completed in the spring of 2016.

As part of the evaluation, VLIZ has to conduct a self-evaluation. This self-evaluation consists of an overview of the 2010-2015 period (ex-post part) and an outlook for the 2017-2021 period (ex-ante part). The ex-post part was concluded at the end of 2015. The ex-ante part will be presented to EWI on 29 February 2016.

The retrospective report was drawn up by the General Director and contributed to by the divisional heads of VLIZ. An important input for this were the results of a SWOT analysis performed by all VLIZ employees as well as the members of the Scientific Committee and the VLIZ Board of Directors. The ex-post part provides an assessment of the institute and the results achieved. When the institute is assessed, the focus is on both strategic and organisational aspects. The assessment of the results focuses on the quality as well as the quantity of the work performed. The ex-post part was approved by the VLIZ Board of Directors.

In preparation for the self-evaluation, VLIZ commissioned IDEA Consult to conduct an impact study. This shed light on the role played by VLIZ in the Flemish government's economic, scientific and innovation policy as well as VLIZ's societal impact (general public, education and policy). The importance of VLIZ for policy as well as its strengths and weaknesses, points of attention and areas for improvement were mapped by IDEA Consult on an objective basis. At the request of VLIZ, IDEA consult also surveyed about 100 stakeholders from all over the world about the results achieved by VLIZ in the past five years and its role in the scientific landscape. In addition, VLIZ had a benchmark study performed by EurOcean, which compared the participation in European projects (7th Framework Programme FP7, Interreg, Horizon2020, etc.) during the 2010-2015 period to eight marine research institutions from the neighbouring countries. The cooperation of VLIZ was also compared to that of other Belgian and foreign research groups.

VLIZ has taken note of the recommendations from all parties who provided input and aims to formulate a new mission and new strategic objectives in the management agreement for the 2017-2021 period.

IN PREPARATION FOR THE NEW COVENANT, VLIZ conducted a self-evaluation. This consists of an overview of the 2010-2015 period and an outlook for the 2017-2021 period.

A transatlantic partnership

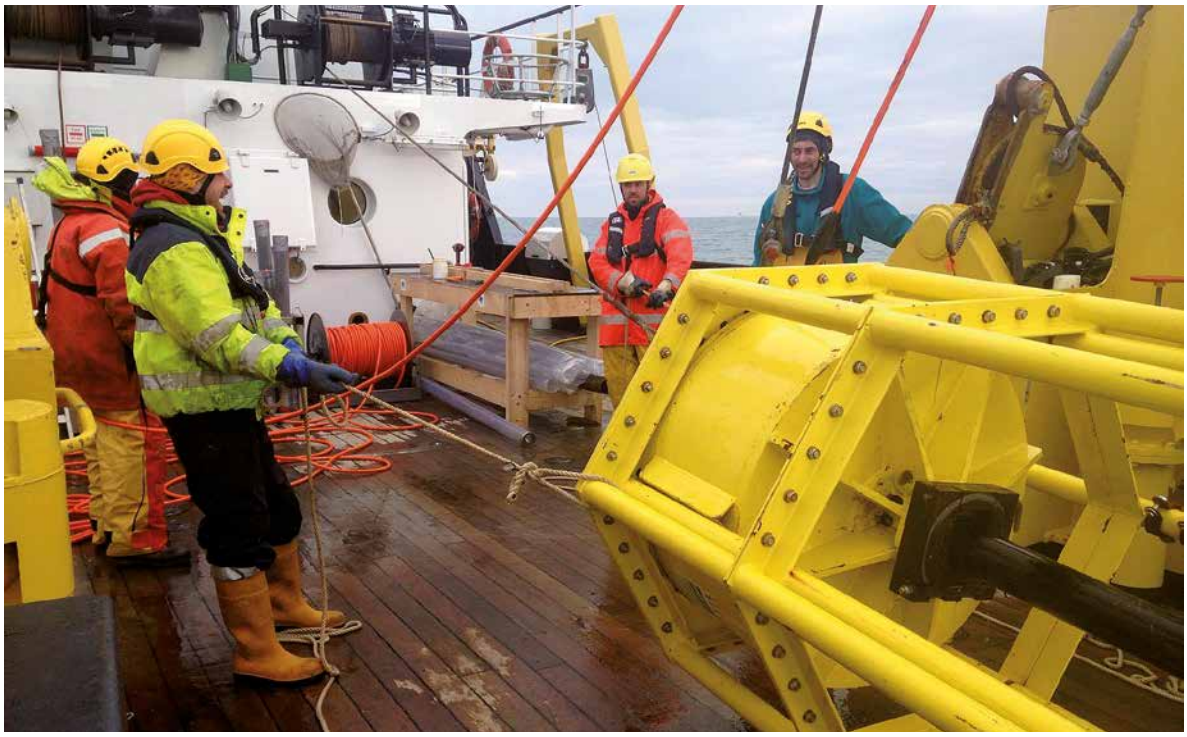
THE COOPERATION BETWEEN VLIZ AND UQAR-ISMER was officially ratified in Ghent on 23 September in the presence of (left to right) Jean D'Amour, Jean-Claude Brêthes, Carl Decaluwé, Jan Mees, Philippe Muyters and Mathias De Clercq.

The Flanders Marine Institute and the Institut des Sciences de la Mer de Rimouski initiated a formal cooperation in 2015. VLIZ consolidates its cooperation with Belgian and foreign universities, research institutions and individual research groups by entering into agreements. Located in Quebec, the Institut des Sciences de la Mer de Rimouski (UQAR-ISMER) is Canada's principal university institute in marine science.

The partnership is aimed at the development of joint marine research projects and training programmes, the sharing of scientific data and publications, and the provision of access to their research infrastructure. Exchange projects for students, professors and scientific staff between both institutes are also high on the agenda.

The Memorandum of Understanding was formally signed in Ghent on 23 September by Flemish Minister for Work, Economy, Innovation and Sports Philippe Muyters, Governor of West Flanders Carl Decaluwé, Deputy Major of Ghent Mathias De Clercq and Quebec Minister for Transport and the Implementation of the Maritime Strategy Jean D'Amour. Prof Jean-Claude Brêthes represented UQAR-ISMER and General Director Jan Mees represented VLIZ.

Supplementary agreement on the deployment of RV Simon Stevin and the extension of the research infrastructure



VLIZ HAS A VIBROCORER which can collect cores of up to 3 m long. The instrument is used aboard RV Simon Stevin.

© Jens Moerman

As research vessel Simon Stevin had been in service for a longer period and was used by marine scientists more frequently and for more specific purposes, new arrangements concerning the deployment of the vessel became imperative.

On 16 December 2015, Yves Goossens (General Director of VLOOT dab) and Jan Mees (General Director of VLIZ) therefore signed a new amendment to the current cooperation agreement between both organisations. It primarily covers better arrangements as to the deployment of the research vessel outside the availability schedule. This includes opening up RV Simon Stevin during public events organised by the Flemish government. The new arrangements also take into account the involvement of the ship in the European Strategy Forum on Research Infrastructures (ESFRI) and other international coordinated marine research partnerships. These wider arrangements have resulted in improved provision of services to marine scientists.

To improve the services provided to scientists, VLIZ invests in research infrastructure at the request of marine researchers. Every year, marine researchers can submit a motivation to purchase equipment, whereupon the VLIZ Scientific Committee makes a selection. As is the case for all equipment and research infrastructure purchased by VLIZ, the newly acquired appliances are at the disposal of the Flemish and international marine research community. A vibrocorer was purchased in 2015 by request of RCMG – UGent. A vibrocorer is the ideal instrument to study undisturbed soil cores of a relatively large length. VLIZ now has an OSIL high-power vibrocorer system which can collect cores of up to 3 m long and with a diameter of 96 mm. This instrument is used aboard research vessel Simon Stevin.

In addition, seawater holding tanks were installed in the Marine Station Ostend at the request of the Department of Morphology – UGent. This lab space comprises two 4.3 m^3 water tanks with a diameter of 2.2 m. The seawater is filtered by a system of skimmers, UV rays, ozone, etc. and its temperature can be set between 5°C and 20°C. The water tanks can be used to quarantine living marine organisms as well as to conduct experimental research on fish and marine invertebrates. The installation has been recognised by the Animal Welfare Division, and a VLIZ employee has been certified for keeping experimental animals.

Another investment in research equipment consisted of equipping remotely operated underwater vehicle Genesis with new lights and high-definition colour and black-and-white cameras which can film and take photographs.

Safety and satisfaction are paramount

VLIZ DREW UP A GENERAL PREVENTION PLAN IN 2015. Within this scope, VLIZ employees who regularly sail on board RV Simon Stevin took a sea survival course.

VLIZ is growing as an institute, not just in the number of employees, but also in the diversity of tasks carried out by the staff. It is therefore of paramount importance to ensure the well-being of employees in the workplace. Whereas employees used to carry out primarily desk work, their new tasks involve higher risks. Many employees sail on board the research vessel, are active in the offshore wind farms and work with chemicals, a forklift truck, a rotating bridge, etc. in the laboratories of the Marine Station Ostend. For this reason, a general prevention plan was drawn up in 2015 by the VLIZ health and safety officer in close collaboration with the external department for prevention and protection. This plan includes risk assessments of the workplace, fire safety, knowledge of first aid, handling large equipment, etc.

Training courses have been provided in order to increase safety knowledge. VLIZ employees who sail on board research vessel Simon Stevin have taken a sea survival course. Those responsible for the fire prevention plan have received training in handling fire extinguishers. A first aid course has also been offered. Those employed at the Marine Station Ostend have taken a training course on the correct use of the rotating bridge and forklift truck.

The prevention policy is therefore largely aimed at the physical safety of staff in the workplace, but attention is also paid to their mental well-being.

By appointing a confidential mediator, VLIZ provides a point of contact to its employees. This makes it possible to discuss delicate issues in confidence and prevent psychosocial risks in the workplace.

Philanthropy for the sea starts

VLIZ has been recognised as a philanthropic organisation with the good cause of the sea. Thanks to gifts, donations, bequests and other financial contributions from private individuals and companies, VLIZ is able to realise philanthropy projects. This includes initiatives that contribute to the scientific knowledge about coastal and marine areas, and help develop a worldwide interdisciplinary network of marine researchers.

This recognition is relatively new to VLIZ. In 2015, major investments were made in the development of a communication strategy to raise awareness of the sea as a charitable cause. These included publishing a brochure, having VLIZ included in 'De Gids voor Giften en Legaten' (guide for donations and bequests), contacting the Flemish notaries public and consistently manning a philanthropy info stand at public events. In addition, a new standard feature entitled 'De zee als goed doel' (the sea as a charitable cause) will henceforth appear in the magazine De Grote Rede. This way, VLIZ tries to appeal to as many potential donors as possible.

Within the scope of its philanthropic activities, VLIZ has begun recruiting members more actively, since membership fees are used for supporting the philanthropic activities. The number of members increased considerably in 2015 (330 members) and this provided an additional input into the philanthropy funds of approximately 8,000 EUR.

Anyone can propose new philanthropic projects, but these have to meet specific criteria. For instance, a link to the core tasks of VLIZ has to exist and a VLIZ promoter has to be assigned. Project proposals are selected by the VLIZ Scientific Committee and approved by the Board of Directors.

In addition to the existing beach observation network (SeaWatch-B), a new philanthropic project called 'Support the WoRMS Editors' was initiated in 2015. The World Register of Marine Species (WoRMS) is the leading taxonomic reference list for marine organisms. The database feeding this platform is constantly in need of updates and corrections by a group of taxonomic experts or editors, who do so on a voluntary basis. The WoRMS website now provides users with the opportunity to make a donation without engagement and thus contribute to the promotion of the WorMS editors' work. Thanks to this financial support, WoRMS editors will have additional options to fill in the gaps in the list, attend international workshops and meetings, expand and enhance the quality of the taxonomic databases, deploy staff to verify taxonomic information and purchase scientific publications.

IN 2015, VLIZ MADE MAJOR INVESTMENTS in raising awareness of the sea as a charitable cause, e.g. by publishing a brochure.

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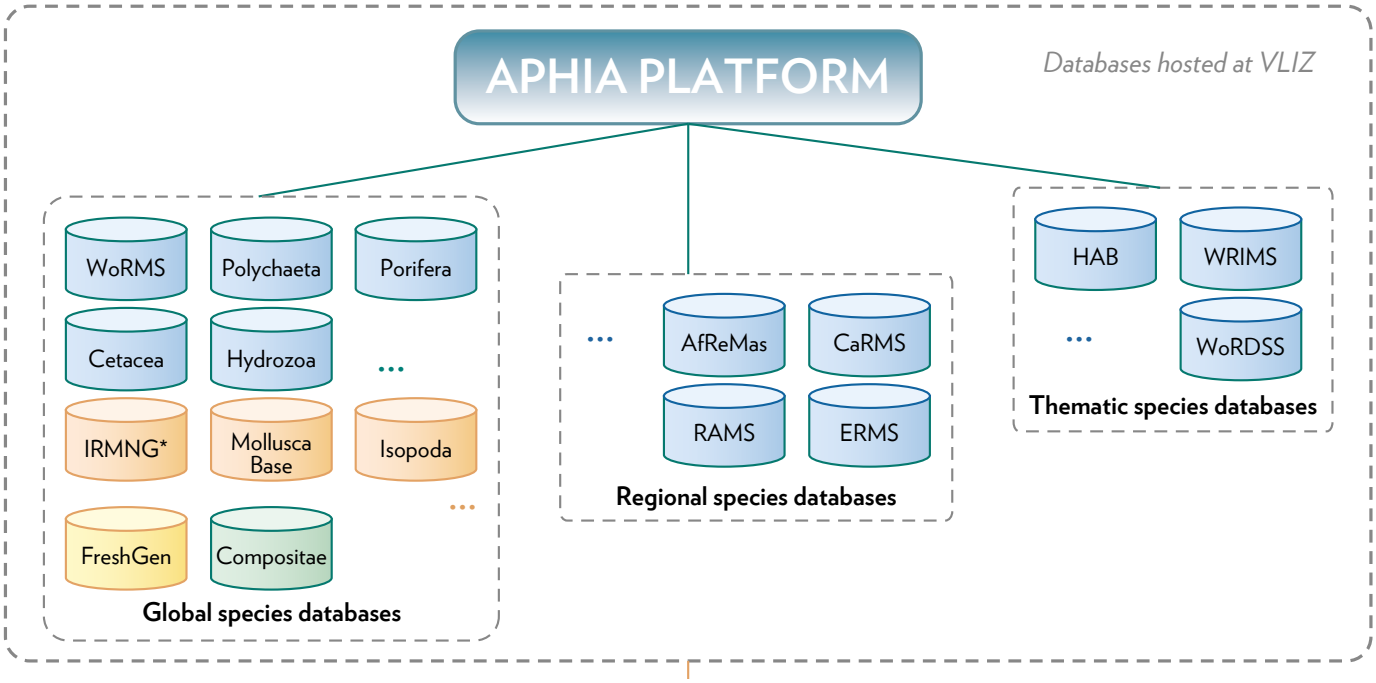
Taxonomic information under the Aphia umbrella



CONCEPTUAL ILLUSTRATION of the relationship between the Aphia platform and the constituent databases. Blue: species database with a focus on marine environments. Orange: species database covering all environments (marine, freshwater, terrestrial). Yellow: species database with a focus on freshwater environments. Green: species database with a focus on terrestrial environments.
WoRMS: World Register of Marine Species, IRMNG: Interim Register for Marine and Non-marine Genera, AfReMaS: African Register of Marine Species, CaRMS: Canadian Register of Marine Species, RAMS: Register of Antarctic Marine Species, ERMS: European Register of Marine Species, HAB: IOC-UNESCO Taxonomic Reference List of Harmful Micro Algae, WRIMS: World Register of Introduced Marine Species, WoRDSS: World Register of Deep-Sea Species.

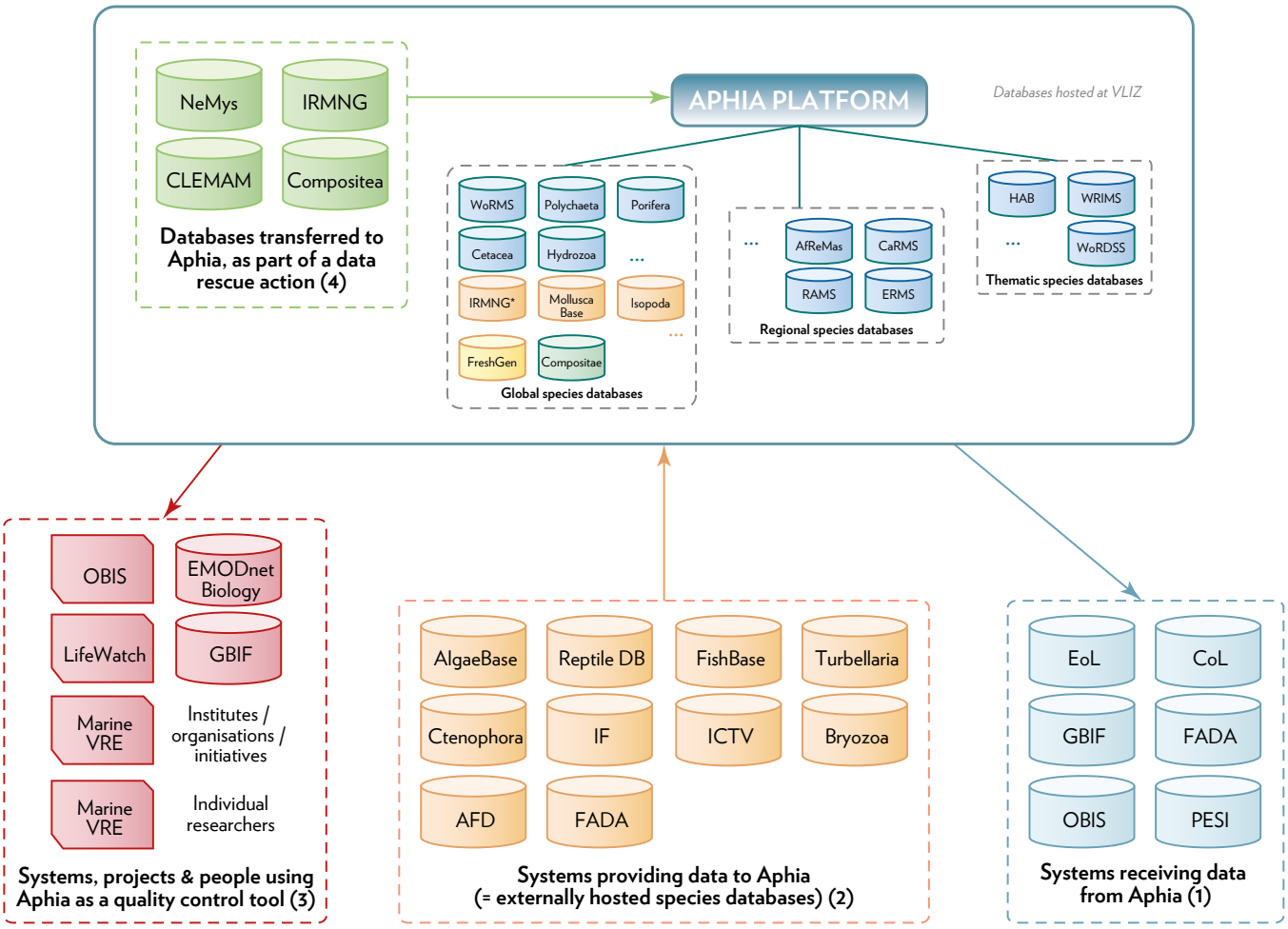
The Aphia platform is an infrastructure designed to capture taxonomic information and related data in a user-friendly online editing environment. Aphia is the core platform that underpins the World Register of Marine Species (WoRMS) and over 80 related global, regional and thematic species databases. Aphia was originally developed to manage marine species lists, but it is also perfectly possible to manage non-marine and fossil species lists in the system.

VLIZ started to develop the Aphia database 15 years ago. In the early days of digitisation of biodiversity data, Aphia began as a small-scale MS Access taxonomic database. It has become a mature, dynamic and interoperable taxonomic data platform which is easily accessible, continuously managed online by a worldwide team of experts and supported in its day-to-day operation by a small data management team from VLIZ.

Aphia is constantly adjusted in line with the latest developments and needs in the field of biodiversity information technology. For instance, it takes into consideration the increasing importance of linking taxonomic information to literature, specimen information, ecological characteristics and basic data with regard to the distribution of species. At the request of the user community, the Aphia structure has been extended further and is now able to store relevant ecological information as well as defined characteristics such as inclusion in the IUCN Red List or relevance to certain environmental regulations.

Throughout the years, partnerships have been established with other global and major regional players in the field of biodiversity and biodiversity information technology such as: Catalogue of Life (CoL), Encyclopedia of Life (EoL), Integrated Taxonomic Information System (ITIS), AlgaeBase, FishBase and Ocean Biogeographic Information System (OBIS).

As the Taxonomic Backbone, Aphia has also been part of a few biodiversity-related projects such as the Marine Biodiversity and Ecosystem Functioning Network of Excellence (EU-FP6 - MarBEF)



THE RELATIONSHIP BETWEEN APHIA and other data systems and projects. A distinction is made between four categories: data supplier, data integrator, quality control instrument, data rescue platform and infrastructure for hosting other taxonomic databases. NeMys: World List of Free-living Marine Nematodes, IRMNG: Interim Register for Marine & Non-marine Genera, CLEMAM: Checklist of European Marine Molluscs, Compositae: Global Compositae Checklist, OBIS: Ocean Biogeographic Information System, EurOBIS: European node of OBIS, Marine VRE: Marine Virtual Research Environment, GBIF: Global Biodiversity Information Facility, Turbellaria: Turbellarian Taxonomic Database, Ctenophora: Phylum Ctenophora: list of all valid species names, IF: Index Fungorum, ICTV: International Committee on Taxonomy of Viruses, Bryozoa: Recent & Fossil Bryozoa, AFD: Australian Faunal Directory, FADA: Freshwater Animal Diversity Assessment, EoL: Encyclopedia of Life, CoL: Catalogue of Life, PESI: Pan-European Species directories Infrastructure, OToL: Open Tree of Life.

and the European Marine Data and Observation Network (EMODnet).

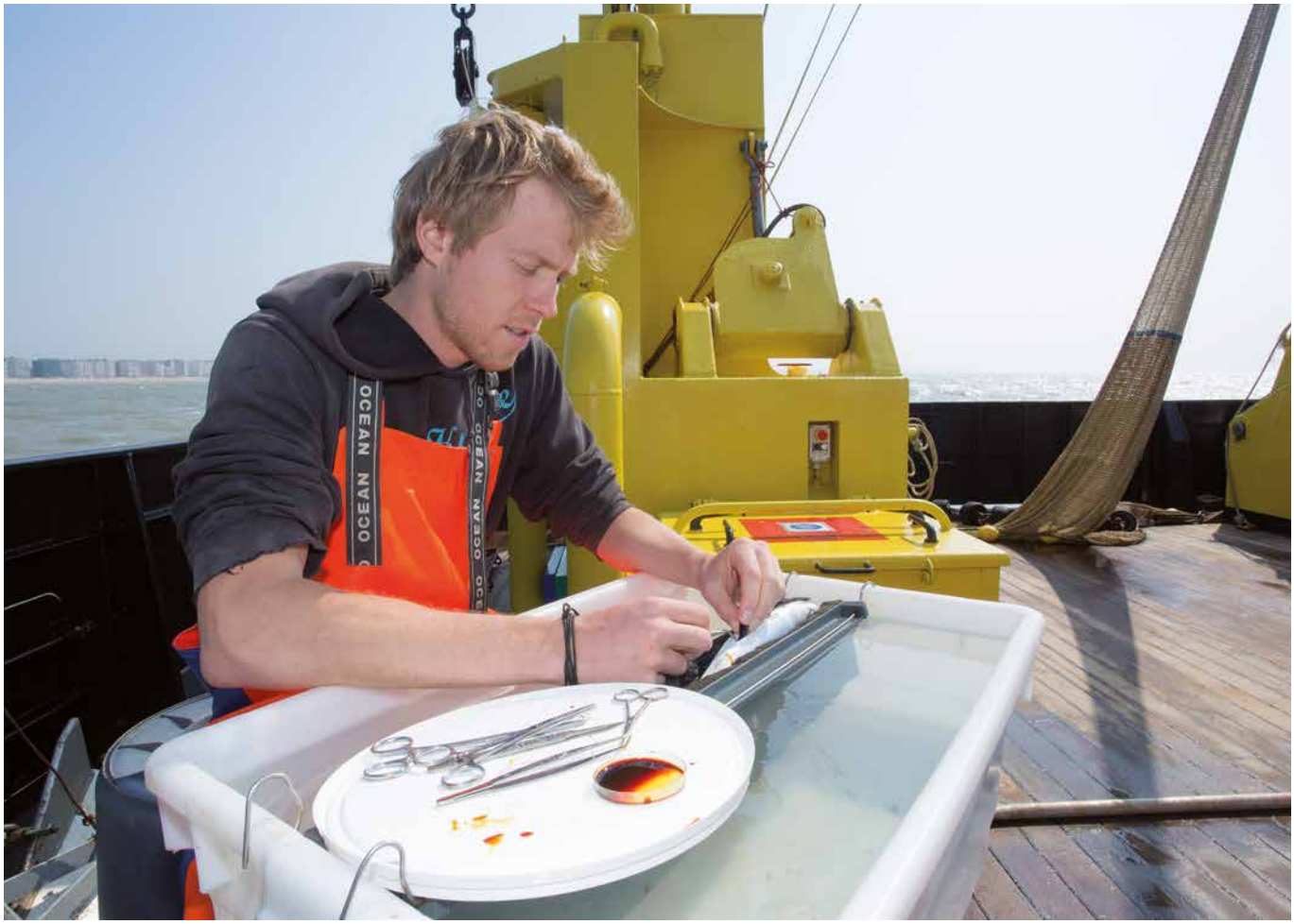
The Aphia platform has recently been deployed in its entirety in the European LifeWatch project, where it plays a major part in the LifeWatch Taxonomic Backbone. The Taxonomic Backbone virtually brings together different databases and data systems centred around five key components: taxonomy, biogeography, ecology, genetics and literature.

Aphia is therefore linked to other large data systems and projects in various functions: as data supplier, data integrator, quality control instrument, data rescue platform and infrastructure for hosting other taxonomic databases.

A detailed explanation of the contents of the Aphia database is given in the A1 publication 'How Aphia – the platform behind several online and taxonomically oriented databases – can serve both the taxonomic community and the field of biodiversity informatics'. This article written by several VLIZ employees is part of the Special Issue 'Research tools and methods for marine species acquisition and identification' published by the Journal of Marine Science and Engineering (JMSE).

More detailed information on the Aphia activities that took place in 2015 is available in the Data Centre chapter on page 51.

LifeWatch in full development



SO FAR, 99 FISH HAVE BEEN TAGGED for the LifeWatch fish acoustic receiver network.

The LifeWatch project aims to develop a single virtual European biodiversity laboratory by 2017. This biodiversity infrastructure will consist of observation stations, databases, web services and modelling tools. Several European countries have committed to developing the central and regional LifeWatch components. LifeWatch is currently in the penultimate year of the development stage (2012-2016).

Flanders contributes to the central European LifeWatch infrastructure by creating a Taxonomic Backbone and a LifeWatch Marine Virtual Research Environment (VRE). Together with INBO and with support from UGent, VLIZ contributes to the regional Lifewatch infrastructure by building observation stations for marine, freshwater and terrestrial ecosystems. Their observation station not only generates new data, VLIZ and INBO also make different existing databases and data systems available and develop web services to make these data more easily accessible.

The Taxonomic Backbone virtually brings together different databases and data systems centred around five key components: taxonomy, biogeography, ecology, genetics and literature. The World Register of Marine Species (WoRMS) and the European Ocean Biogeographic Information System (EurOBIS), both developed and managed by VLIZ, are examples of databases which are part of this functional tool to support biodiversity research. Further information on the specific developments that took place in these databases in 2015 can be found in the Data Centre chapter on page 51.

The LifeWatch Marine Virtual Research Environment (VRE) is aimed at bringing together relevant marine databases, data systems, web services, online tools, etc. in one online environment. The portal consists of three interconnected components: Access, Analyse and Develop.

- The Access component describes a range of databases and data systems containing data on species names, characteristics, distribution, genetic information, etc.
- The Analyse component provides an overview of the online tools available for the processing of all kinds of data.
- The Develop component provides users with the possibility to develop their own marine virtual laboratory by means of the available web services.

The Flemish marine observation station includes different components ranging from the monthly measurement campaigns on board research vessel Simon Stevin, the construction and extension of laboratories in the Marine Station Ostend, the purchase and installation of high-tech measurement equipment, the development of a sensor network for the tracking of fish and birds, etc.

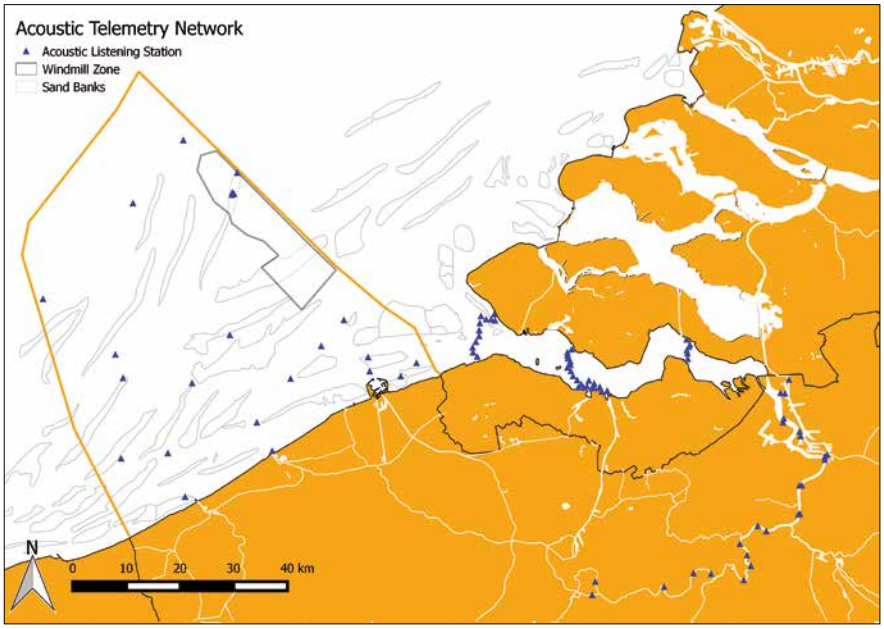
Joana, a female herring gull, became the 100th tagged bird within the LifeWatch GPS tracking network for large birds in 2015. Two years after the start of the LifeWatch project, over 100 herring gulls and lesser black-backed gulls were fitted with a lightweight GPS tag on solar energy. This makes it possible to monitor these individuals in real time. The analysis of the GPS data supplied by the birds since June 2013 has revealed some interesting behavioural and migration patterns. Initially, these data were captured only by aerials in the breeding colonies in Zeebrugge and Ostend. However, the migration patterns of the lesser black-backed gulls revealed that some individuals spent the winter in Doñana (Spain). This location was therefore developed into an observation station by installing aerials on site in 2015. As the birds move across national borders, the separate LifeWatch components of Belgium, the Netherlands and Spain are striving for coherent cooperation within the GPS tracking network for large birds.

Fish acoustic receiver network. The acoustic receiver network for fish tracking (cod and eel) was extended further in 2015. Within the scope of LifeWatch, 99 fish have so far been tagged and 83 receivers have been installed on buoys and other platforms in the Belgian part of the North Sea and in the Scheldt estuary (see overview map). The data system in which the data are processed was optimised in 2015 in line with the system used by the Ocean Tracking Network. Animal tagging data collected throughout Europe have not yet been centralised and made available. As a result, European observations have not yet been sufficiently integrated into this international Ocean Tracking Network. For this reason, VLIZ strives for the installation of a European node for fish tracking through LifeWatch. This ambition is also part of VLIZ's contribution to the AtlantOS project.

The four doctoral research projects which started in 2014 within the scope of LifeWatch generated their first data in 2015. The research is focused on the application of the high-tech measurement equipment purchased within LifeWatch: the Video Plank ton Recorder and the zooscan, the flow cytometer, the receiver network for fish tracking and the use of the molecular laboratory in the Marine Station Ostend for eDNA analysis.

Thanks to the progress made in the GPS tracking network for large birds, the fish acoustic receiver network and the doctoral research projects, LifeWatch is gradually evolving towards an operational infrastructure supporting data analysis and generating actual scientific output.

The website www.lifewatch.be underwent a total makeover in early 2015. All Belgian LifeWatch activities are now equally represented and the data are visualised better.



THE ACOUSTIC RECEIVER NETWORK for cod and eel was extended further in 2015. About 80 receivers have been installed on buoys and other platforms in the Belgian part of the North Sea and in the Scheldt estuary.

EMODnet Open Conference & Partner Jamboree

THE EMODNET OPEN CONFERENCE and the EMODnet Partner Jamboree (Ostend – October 2015) have contributed to the creation of a data community in Europe. This three-day event consisting of a conference, meetings and workshops increased the acquaintanceship and mutual trust of the attendants, which will promote future cooperation.

Under the impetus of the European Commission, the European Marine Observation and Data Network (EMODnet) aims to centralise the abundance of marine observations in Europe and make them optimally accessible for users such as government bodies, scientists and maritime companies, primarily so as to support sustainable growth and employment. Increased accessibility of marine data increases efficiency for those who need basic data, e.g. to plan and construct new offshore facilities, to assess the risk of coastal erosion, or to monitor marine protected areas.

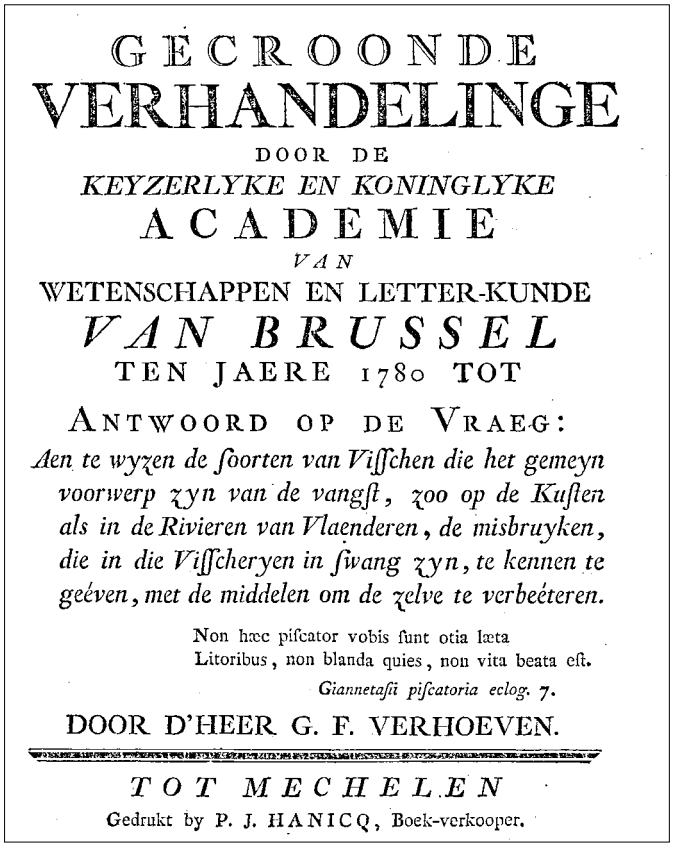
Established in 2013, the EMODnet consortium has increased its number of partners as well as its geographic distribution. The consortium now consists of over 110 partner organisations. In addition, stakeholders are increasingly involved in the development process of the EMODnet tools and services.

On 20 October 2015, two years after the start of EMODnet, DG MARE organised the EMODnet Open Conference 'Consolidating the Foundations, Building the Future' in cooperation with the EMODnet secretariat and VLIZ. This was followed by a two-day EMODnet Partner Jamboree.

The conference took place in De Grote Post, Ostend and was attended by no less than 350 visitors. It was the first time all EMODnet partner organisations came together. The conference provided a summary of the current state of play in EMODnet. It also demonstrated how the data available in EMODnet can be used. The attendants saw, for instance, how sediments, habitats, pollution, marine wildlife and human activities are distributed across the European seas. The general message of the conference was that it no longer suffices for scientists to gather data and publish an article based on these data. Data are increasingly expected to be freely available (open data access and open machine access). And this is exactly what EMODnet can help to achieve. The conference was opened by MEP João Ferreira and closed by MEP Ricardo Serrão Santos.

During the EMODnet Partner Jamboree on 21 and 22 October, the EMODnet partners assembled at the InnovOcean site and in De Grote Post. The different thematic portals held their (annual) project meetings. The programme was supplemented by a series of secondary activities during which new agreements were established, and preparations were made for the next development stage of EMODnet. Cross-Thematic Sessions took place in De Grote Post in the evening of 21 October. The unique opportunity to bring together all partners of the various thematic projects was seized to formulate several specific challenges and opportunities which are of importance to different thematic portals. In addition, issues were raised which would benefit from the contribution of experts from various thematic projects.

A wealth of information on the Scheldt estuary



GECROONDE
VERHANDELINGE
DOOR DE
KEYZERLYKE EN KONINGLYKE
ACADEMIE
VAN
WETENSCHAPPEN EN LETTER-KUNDE
VAN BRUSSEL
TEN JAERE 1780 TOT

ANTWOORD OP DE VRAEG:
Aen te wyzen de ſoorten van Viſſchen die het gemeyn voorwerp zyn van de vangſt, zoo op de Kuſten als in de Rivieren van Vlaenderen, de misbruyken, die in die Viſſcheryen in ſwang zyn, te kennen te geéven, met de middelen om de zelve te verbeéteren.

Non hæc piſcator vobis ſunt otia læta
Litoribus, non blanda quies, non vita beata eſt.
Giannetaſii piſcatoria eclog. 7.

DOOR D'HEER G. F. VERHOEVEN.

TOT MECHELEN
Gedrukt by P. J. HANICQ, Boek-verkooper.

THE OLDEST PUBLICATION IN THE SCHELDEMONITOR COLLECTION is written by W.G.F. Verhoeven, dates from 1781 and deals with fish observations at sea, in coastal areas and in rivers.

ScheldeMonitor is a Flemish-Dutch knowledge and information portal concerning research and monitoring in the Scheldt estuary. It provides an overview of the research landscape and offers an extensive literature collection. General information as well as measurement data and data products from various sources are disclosed by means of this portal.

In the last few years, the ScheldeMonitor team has invested a great deal in the public disclosure of older articles and reports regarding the Scheldt estuary in partnership with the VLIZ library. For this purpose, digital versions available online have been searched or paper archive files have been scanned. This way, the number of digital documents available online increased form 4,016 in 2012 to over 7,000 at the end of 2015.

Users can search the entire literature collection consisting of about 10,000 references at the ScheldeMonitor website. Approximately 70% of this collection is available in digital format and can be downloaded freely or requested via the VLIZ library.

Thanks to this literature action, the Scheldt is probably one of the best documented rivers in the world. Another interesting fact is that the oldest publication included in ScheldeMonitor dates from 1781; it is a treatise by W.G.F. Verhoeven on fish observations at sea, in coastal areas and in rivers.

The sea and marine sciences fascinate the general public

WORLD OCEANS DAY

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Every year, VLIZ marks two dates in its schedule. These are the UN-recognised World Oceans Day on the one hand and the Flemish government-sponsored Science Day on the other. In addition to many other public activities organised by VLIZ, these days are ideal for informing the general public about the sea, the ocean and marine sciences.

VLIZ celebrated World Oceans Day with the ZOUTBAD marine festival on Saturday 6 June 2015. The event drew 234 visitors to De Grote Post in Ostend. The attendants could enjoy underwater films and learn new information in lectures on shipwrecks and sustainable energy from the sea. At the marine market, various institutions and organisations shared their knowledge and experiences concerning microplastics, recognising fresh fish, sea kayaking, etc. However, the participants could also engage in different workshops. These included a sea yoga session, paper flower making and cooking with seaweed. Dirk Draulans moderated a Blue Café discussion on coastal development. And those who were hungry could taste a seaweed burger. The next day, the ZOUTBAD festival was continued at the Museum of Natural Sciences in Brussels, where RBINS ensured the organisation. The marine festival was supported by the EU project Sea For Society.

On Sunday 22 November 2015, VLIZ celebrated Science Day together with many Flemish marine researchers and VLOOT dab by opening research vessel Simon Stevin and the Marine Station Ostend to the general public.

In the different sheds of the MSO, visitors could meet the marine scientists who sail aboard RV Simon Stevin on a daily basis. Marine geologists (RCMG-UGent), marine biologists (ILVO and MarBiol-UGent), geneticists (GhEnToxLab), marine archaeologists (Flanders Heritage Agency) and veterinary surgeons (Department of Morphology-

SCIENCE DAY

© VLIZ - Verhaeghe

UGent) all provided further information on their research. VLIZ employees demonstrated the wide range of sampling equipment. During this edition of Science Day, companies active at sea were given the opportunity to explain their core business, which was done by DEME and Jan De Nul.

Aboard RV Simon Stevin, the crew and marine technicians gave details about the operation of the ship and the sampling equipment on board.

Visitors also got the opportunity to go on a guided tour of the VLIZ offices.

On this open house day, MSO and RV Simon Stevin were visited by a total of 664 citizens interested in science.

VLIZ Young Marine Scientists' Day 2015

THE LAUREATES OF THE VLIZ SCIENTIFIC AWARDS and the winners of the best speaker and poster contest received their prize on the VLIZ Young Scientists' Day. Left to right: Christine Rosenørn Overgaard (VLIZ North Sea Award 2014 laureate), Kim Sys (public award for best pitch presentation), Jan Trachet (VLIZ Communication Award 2015), Carol Buitrago (public award for best poster), Thibaut Van Zwijnsvoorde (VLIZ Thesis Award 2014 laureate) and Evelien Deboelpaep (VLIZ Thesis Award 2014 laureate).

The fifteenth edition of the VLIZ Young Marine Scientists' Day was attended by a record number of 347 people. Young scientists got the opportunity to present their research results by means of pitch and poster presentations at Katholieke Hogeschool VIVES in Bruges on 20 February 2015. This way they once again demonstrated the multi-disciplinarity of marine research in Flanders/Belgium.

A few experienced scientists inspired the younger generation through their rich career. Professor emeritus Jan Stel gave an enthusiastic explanation of how he sees the ocean as an Ocean Space. Peter Pissierssens shed light on the operation of the IOC Project Office for IODE (UNESCO, Ostend) and explained how worldwide collaboration with local marine scientists is possible.

This anniversary edition was also characterised by several new features such as a first speed dating session for marine scientists and the proclamation of the first VLIZ Communication Award. Another novelty was the 'Meet the Company' event where businesses from the marine or maritime sector got the chance to present themselves plenarily.

As every year, the public voted for the best speaker and poster. Kim Sys (ILVO) received the award for best speaker for her pitch presentation 'VALDUVIS, a new way of assessing and communicating the sustainability of fishing activities'. Carol Buitrago (VUB) was awarded for her poster presentation 'Genetic diversity and connectivity of *Seriatopora hystrix* along the East Coast of Africa'.

Within the context of its coordinating role, VLIZ aims at encouraging marine research, for example by granting awards for meritorious scientific studies conducted by starting scientists. The VLIZ North

THE VLIZ YOUNG SCIENTISTS' DAY is the annual meeting place for marine scientists active in Belgium.

Sea Award (1,000 EUR) is granted for post-graduate or post-doctoral research while two theses are awarded with the VLIZ Thesis Awards for Marine Sciences (2 x 500 EUR). These awards are traditionally presented at the VLIZ Young Scientists' Day. The North Sea Award 2014 was granted to Dr Christine Rosenørn Overgaard (University of Southern Denmark – Department of History) for her study 'How and why the Dutch fished for cod 1818 - 1911'.

The Thesis Awards 2014 were won by Evelien Deboelpaep (VUB – Plant Biology and Nature Management) for her master thesis 'Habitat availability for migratory birds in western Greece & northern Cyrenaica (Libya)' and by Thibaut Van Zwijnsvoorde (UGent – Department of Civil Engineering) for his master thesis 'Hydrodynamics study on various design scenarios, using a physical scale model, to improve the maritime access of the port of Zeebrugge'.

The first VLIZ Communication Award was granted to Jan Trachet (UGent – Department of Archaeology). As a result, VLIZ will coach Jan Trachet for one year in the creation of communication products concerning his research topic 'Middeleeuws Brugge en zijn voorhavens. Een landscape archaeologische bijdrage tot het Zwindebat' (Medieval Bruges and its outports. A landscape archaeological contribution to the Zwin debate).

The contributions of all participants and the winners of the VLIZ awards are bundled in a book of abstracts (VLIZ Special Publication 71). This publication provides an overview of the current marine research in Flanders and the neighbouring regions. An overview of the winners, abstracts, posters and photographs is available on the website www.vliz.be/vmsd/en.

VLIZ is administered by the Board of Directors and consults the Scientific Committee for its scientific support tasks. The General Assembly provides assistance in managerial and administrative decisions.

VLIZ organisation

www.vliz.be/en/organisation

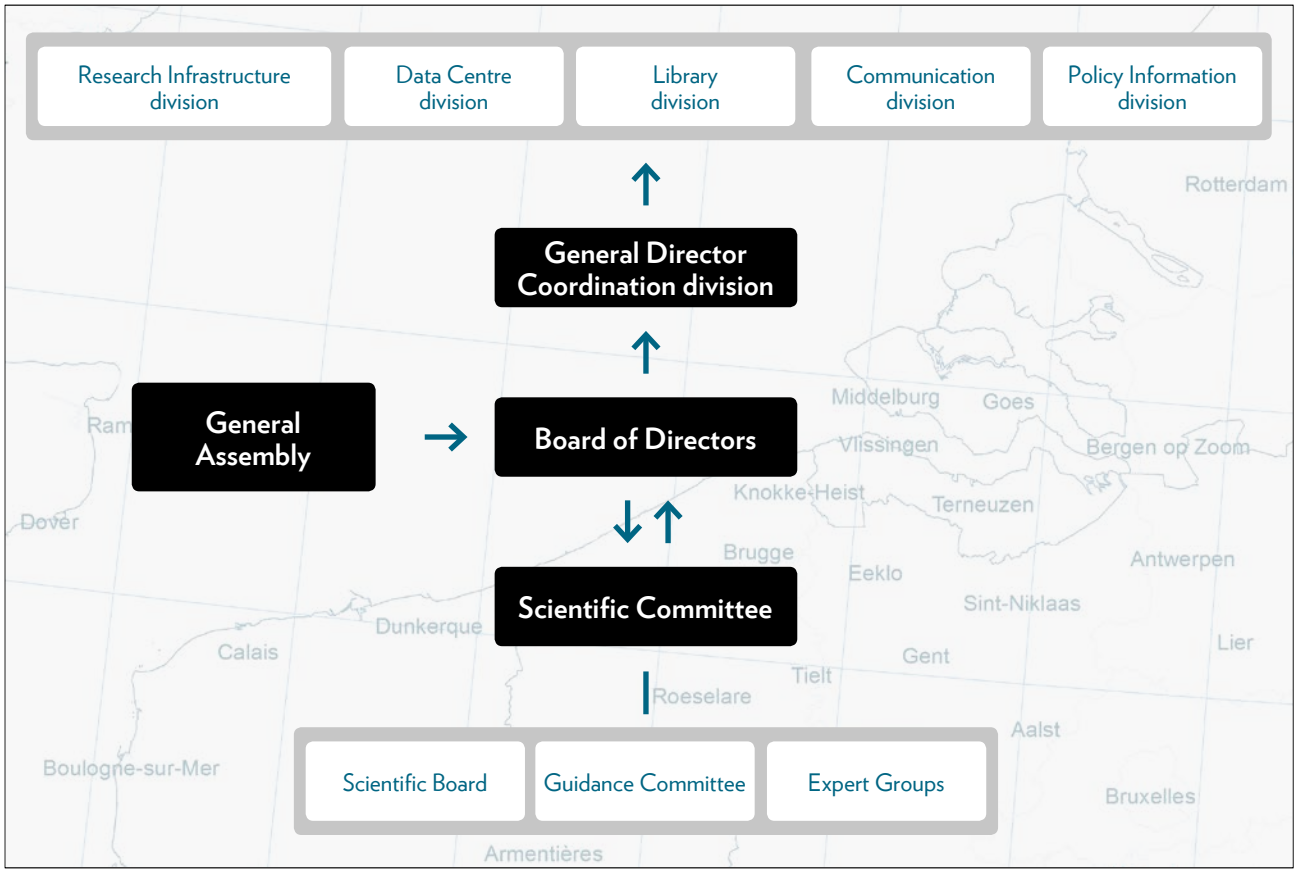

GEOX

THE VLIZ GENERAL ASSEMBLY MET IN PROVINCIEHUIS BOEVERBOS, BRUGES ON 17 MARCH 2015.
Left to right: bottom row: Frans Coussement, Carl Decaluwé, Mark Andries, Paul Breyne, Jan Mees. Second row: Colin Janssen, Guido Decorte, Patric Jacobs, Ilse Hoet. Third row: Tina Mertens, Brenda Utterwulghe, Jean Berlamont, Magda Vincx, Paul Gerard. Top row: Gert Verreet, Yves Goossens, Philip Van Avermaet.

VLIZ organisation

The Flanders Marine Institute (VLIZ) is an autonomous institute with the legal status of a non-profit organisation under Belgian law that receives an annual allowance from the Flemish Community and from the Province of West Flanders. VLIZ is administered by a Board of Directors.

The General Director ensures the coordination of daily operations with the assistance of the Coordination division. To perform and assess its scientific support tasks, VLIZ consults a permanent team of scientists several times a year. This Scientific Committee then advises the Board of Directors. If required, the Board of Directors can convene a General Assembly for specific managerial and administrative decisions.



Composition of the Board of Directors

at the end of 2015

Pursuant to the articles of association, the Board of Directors is composed of 14 members.

Carl Decaluwé, governor of West Flanders, is the chairman.

Eight members were nominated by the Flemish government:

- **Colin Janssen**, Ghent University, vice-chairman
- **Paul Breyne**, honorary governor
- **Jean Berlamont**, Katholieke Universiteit Leuven
- **Yves Goossens**, VLOOT dab (Agency for Maritime and Coastal Services – MDK)
- **Ilse Hoet**, Department of Mobility and Public Works
- **Brenda Utterwulghe**, Blauwvoet bvba
- **Philip Van Avermaet**, Department of Economy, Science and Innovation
- **Ann Vanreusel**, Ghent University

The two members nominated by the province of West Flanders are:

- **Guido Decorte**, member of the Provincial Executive (secretary)
- **Anthony Dumarey**, member of the Provincial Council

The three other members are:

- **Ann Overmeire**, Innovation, Provincial Development Agency of West Flanders
- **Paul Gerard**, AG Haven Oostende
- **Willy Versluys**, fishing vessel owner

The government commissioners are:

- **Frans Coussement**, on behalf of the Flemish Minister for Finance
- **Mark Andries**, on behalf of the Flemish Minister for Science Policy

Attend the meetings:

- **Gert Verreet**, Department of Economy, Science and Innovation
- **Patrick Braet**, province of West Flanders, Financial Manager
- **Jan Mees**, General Director of VLIZ
- **Tina Mertens**, VLIZ policy officer
- **Ingrid Dobbelaere**, VLIZ executive secretary and rapporteur

Composition of the General Assembly

at the end of 2015

Carl Decaluwé, governor of West Flanders, is the chairman.

The ten voting members appointed by the Flemish Community are:

- **Patric Jacobs**, Ghent University
- **Willy Baeyens**, Vrije Universiteit Brussel
- **Jean Berlamont**, Katholieke Universiteit Leuven
- **Ernest Schockaert**, Hasselt University
- **René Van Grieken**, University of Antwerp
- **Magda Vincx**, Ghent University
- **Philip Van Avermaet**, Department of Economy, Science and Innovation
- **Ulrike Vanhessche**, Coast Guard secretariat (MDK)
- **Ilse Hoet**, Port and Water Policy division (MOW)
- **Jan Strubbe**, honorary director-general of the Waterways and Marine Affairs Administration

The four voting members appointed by the province of West Flanders are:

- **Guido Decorte**, member of the Provincial Executive
- **Anthony Dumarey**, member of the Provincial Council
- **Patrick Braet**, Provincial Treasurer
- **Jan Denys**, principal of the Mercator Maritime Institute

The member appointed by the Research Foundation – Flanders (FWO) is:

- **Elisabeth Monard**, secretary general of the Research Foundation – Flanders

The members of the Board of Directors of VLIZ have the right to attend the General Assembly with an advisory vote.

Scientific Board

at the end of 2015

The Scientific Board consists of 14 effective and 14 substitute members. Its composition was approved by the Board of Directors on 27 October 2010.

The chairman is the vice-chair of the Board of Directors:

- Colin Janssen

Two delegates from Ghent University:

- Ann Vanreusel (substitute: David Van Rooij)
- Gilbert Van Stappen (substitute: Peter Troch)

Two delegates from Katholieke Universiteit Leuven:

- Filip Volckaert (substitute: Ilaria Coscia)
- Jaak Monbaliu (substitute: Erik Toorman)

One delegate from Vrije Universiteit Brussel:

- Margaret Chen (substitute: Marc Kochzius)

One delegate from the University of Antwerp:

- Patrick Meire (substitute: Gudrun De Boeck)

One delegate from Hasselt University:

- Tom Artois (substitute: Natalie Beenaerts)

One delegate from the Institute for Agricultural and Fisheries Research (ILVO):

- Hans Polet (substitute: Bart Sonck)

One delegate from the Research Institute for Nature and Forest (INBO):

- Maurice Hoffmann (substitute: Eric Stienen)

One delegate from the Flemish Institute for Technological Research (VITO):

- **Roger Dijkmans** (substitute: Bart Deronde)

One delegate from the Flemish Environment Agency (VMM):

- **Steven Vinckier** (substitute: Marleen Van Steertegem)

One delegate from the Flanders Heritage Agency:

- **Marnix Pieters** (substitute: Tom Lenaerts)

One delegate from Flanders Hydraulics Research:

- **Frank Mostaert** (substitute: Toon Verwaest)

Attend the meetings:

The General Director, the Assistant Director and a rapporteur from the Flanders Marine Institute:

- **Jan Mees**
- **Tina Mertens**
- **Jan Seys** (substitute: Nancy Fockedey)

A representative of the Department of Economy, Science and Innovation:

- **Gert Verreet**

A FEW MEMBERS OF THE SCIENTIFIC BOARD VISITED THE MARINE STATION OSTEND (VLIZ) ON 10 MARCH 2015.
Left to right: Wim Versteeg, Marc Kochzius, Colin Janssen, Steven Vinckier, Hans Polet, André Cattrijsse and Marnix Pieters.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In addition to the highlights of the year, many other projects, activities, events and publications should be considered as well. As these are mostly the achievements of a specific division, they are discussed in the respective chapters.

VLIZ divisions

www.vliz.be/en/divisions

Coordination

The **Coordination division** oversees the daily operations of VLIZ and constitutes the communication link with all other partners of the InnovOcean site in Ostend. The Coordination division concludes cooperation agreements with Flemish research groups and administrations, and integrates the activities of VLIZ into national and international networks.

http://www.vliz.be/en/general-director-and-coordination-division

COORDINATION DIVISION: Delphine Vanhaecke, Fien De Raedemaecker, Heidi Coussens, Jan Mees, Nathalie Keersebilck, Tina Mertens, An Vanhoorne, Melissa Blieck, Ingrid Dobbelaere and Petra Willaert.

IN OCTOBER 2015, THE VLIZ BOARD OF DIRECTORS visited the Marine Station Ostend, where the new infrastructures and equipment were shown.

The Flanders Marine Institute (VLIZ) is an autonomous institute with the legal status of a non-profit organisation under Belgian law that receives an annual allowance from the Flemish Community and from the Province of West Flanders. VLIZ is administered by a Board of Directors. The General Director ensures the coordination of daily operations with the assistance of the Coordination division. To perform and assess its scientific support tasks, VLIZ consults a permanent team of scientists several times a year. This Scientific Committee then advises the Board of Directors. If required, the Board of Directors can convene a General Assembly for specific managerial and administrative decisions.

Investment subsidy. In addition to the basic amount of € 4.098 million, VLIZ receives an annual investment subsidy of € 1.09 million. This additional amount is made available by the department of Economy, Science and Innovation (EWI) of the Flemish government and has been included in the Covenant for the 2012-2016 period. In 2015, this subsidy was largely used to finance the furnishing of 'the house' at the Marine Station Ostend as well as the installation of seawater holding tanks at the MSO and the purchase of a vibrocorer.

Self-evaluation. The mission of VLIZ is defined in a five-year covenant between the Flemish Government, the province of West Flanders and VLIZ. The latest management agreement expires at the end of 2016 and an evaluation needs to take place in preparation for the new covenant. As part of this evaluation, VLIZ has to conduct a self-evaluation. This consists of an overview of the 2010-2015 period and an outlook for the 2017-2021 period. The ex-post part was concluded at the end of 2015. The ex-ante part will be released in early 2016. You can read more on this topic under the highlight on page 13.

Board of Directors. VLIZ is administered by a Board of Directors. It met four times in 2015 (17 March, 17 June, 6 October and 16 December). The composition of the Board of Directors is discussed in the chapter 'VLIZ Organisation'.

The **General Assembly** consists of the effective or voting members of VLIZ, who control the institute's policy through this highest ruling organ. The General Assembly is convened at least once a year and presided by the chairman of the Board of Directors. Two General Assembly meetings were held in 2015, the first on 17 March and the second on 16 December, at the same time as the Board of Directors meetings. The meetings took place in Provinciehuis Boeverbos, Bruges.

The **Scientific Committee** consists of a Scientific Board, a Guidance Committee and various Expert Groups. The Scientific Board is a compact steering committee that reports to the Board of Directors. Its composition is discussed in the chapter 'VLIZ Organisation'. The Scientific Board met four times in 2015. The meeting of 10 March was held at the InnovOcean site, as was the June meeting, which was combined with the annual Scientific Guidance Committee meeting. Both meetings were followed by a visit to the Marine Station Ostend. The other two Scientific Board sessions took place at Het Pand (UGent) on 29 September and 11 December.

The Guidance Committee is convened once a year by VLIZ for a plenary session open to all marine scientists (independent academic staff, postgraduates and executives). The Guidance Committee meeting in Ostend on 11 June was attended by 44 scientists from the most diverse marine disciplines.

Staff. On 31 December 2015, VLIZ employed 66 staff members, who accounted for 60.75 full-time equivalents (FTEs). Over half of them were part of the permanent staff (33.54 FTEs), the rest were employed on a temporary basis (27.21 FTEs). Scientific employees accounted for 43.75 FTEs, while 17 FTEs were devoted to support work (including 6.34 FTEs for administrative staff, 9.4 FTEs for IT workers and 1.26 FTEs for maintenance staff). During the summer months, 40 students were employed at VLIZ, accounting for 3.94 FTEs. During the previous calendar year, 11 students did a work placement at different VLIZ divisions.

Members. VLIZ is a membership organisation. Anyone who is interested in marine research can individually or collectively join as a member. Members have access to numerous publications and events, and are thus further informed about various activities and achievements of the Flemish and Belgian marine research landscape. At the end of 2015, VLIZ had a total of 328 members, including 213 individual members, 24 students, 27 institutional members and 14 honorary members. In comparison with previous years, the number of members has increased considerably. This is thanks to the recognition of VLIZ as a charity. Read more on VLIZ's philanthropic activities under the relevant highlight on page 17.

Cooperation Agreements. VLIZ consolidates its cooperation with Belgian and foreign universities, research institutions and individual research groups by concluding agreements. In 2015, VLIZ entered into partnerships with:

- Ghent University and the Ostend Bird Rescue Centre so as to install an experimental flight pen for studying birds
- l'Institut des Sciences de la Mer de Rimouski (UQAR-ISMER), Quebec (Canada) for general cooperation
- VLOOT dab so as to deploy RV Simon Stevin more flexibly outside the availability schedule and within the scope of international programmes (amendment to the agreement)

Cooperation with the Coastal Division of the Agency for Maritime and Coastal Services (MDK) with regard to the use of the greenhouses in De Haan was discontinued.

The complete list of current national and international cooperation agreements can be found at www.vliz.be/en/cooperation-agreements. Read more on the collaboration with UQAR-ISMER and VLOOT dab under the highlights in question.

Tour of Flanders. VLIZ delegations visit research groups and administrations in Flanders and the wider region to exchange information on our activities, proactively promote partnerships and optimise the current cooperation. Several foreign delegations visited VLIZ in 2015 to discuss potential partnerships. These included the Centre for Environment, Fisheries and Aquaculture Science (Cefas) – United Kingdom, Campus de la Mer – France, Instituto de Investigaciones Marinas y Costeras (INVEMAR) – Colombia, Permanent Commission for the South Pacific (CPPS), Biosphere Reserves as a Tool for Coastal and Island Management in the South-East Pacific Region (BRESEP) and l'Institut des Sciences de la Mer de Rimouski (UQAR-ISMER) – Canada.

(Inter)national visits. VLIZ provides interested people with information sessions regarding its activities. Six groups of students visited VLIZ in 2015. International organisations paid informal visits to VLIZ as well. In 2015 these delegations came from Portugal, Vietnam, Kenya, Canada and China.

Networks, committees and expertise. One of VLIZ's most important tasks is to network with people from different backgrounds who are active in marine sciences. Every year VLIZ organises numerous events to achieve this. VLIZ is also active in numerous national and international formal networks. A list of the events and networks is available in the digital annexes to this annual report (page 19).

Marine Biotechnology ERA-NET. Six projects were funded in 2015 within the scope of the first ERA-MBT call 'The development of biorefinery processes for marine biomaterials'. Flemish partners are active within the SeaRefinery project (SIOEN Industries NV and Centexbel, financed by the agency for Innovation by Science and

TRAINEES AND THESIS STUDENTS SUPERVISED BY VLIZ IN 2015

Christiaens Laura	Amsterdam University College (NL)	Policy Information trainee
Cours Marie	Ghent University	Communication/Policy Information trainee
Houttave Kim	Ghent University	Data Centre trainee
Lust Jerry	VHL University of Applied Sciences (NL)	Communication trainee
Martelé Lorenzo	HoWest, Bruges	Data Centre trainee
Moerman Dylan	HoWest, Bruges	Data Centre trainee
Montgomery Louise	University of Glasgow (UK)	Communication trainee
Nys Jens	HoWest, Bruges	Data Centre trainee
Persoon Kilian	Ghent University EMBC+	Policy Information trainee
Radujkovic Dajana	University of Antwerp	Data Centre trainee
Romero Susana	University of Antwerp	Data Centre trainee
van der Meer Rutger	VHL University of Applied Sciences (NL)	Communication trainee

STUDENT EMPLOYEES ACTIVE AT VLIZ IN 2015

Andries Maaike	Desmet Charlotte	Lust Jerry	Steenkiste Gregory
Bashnin Tayebeh	Diana Alex	Mees Meskerem	Torrez Pieter
Dauwe Eduard	Fabrice de Kisangani Aäron	Mees Temesgen	Troch Matthias
De Blick Yves	Halsberghe Ruben	Meire Sara	Van Massenhove Janus
De Koninck Judith	Hernandez Lisa	Meyers Nelle	Vandecasteele Loes
de Lichtervelde Astrid	Hernandez Samuel	Mogensen Tess	Vanlerberghe Karolien
De Taeye Simon	Hernandez Simon	Panagiotou Marika	Versteeg Muriel
De Wulf Leontien	Laurenz Schröer	Pissierssens Jeffrey	Willemse Stijn
Decock Elien	Lier Yeo	Scholier Tiffany	Withouck Inne
Delhaise Emma	Lorent Sophie	Seys Tineke	Wittoeck Janne

Technology [IWT]) as well as the NEPTUNA project (ARC UGent, financed by the Research Foundation – Flanders [FWO]). A second call on the topic of 'Biodiscovery – Bioactive molecules from the marine environment' was launched at the end of 2015. For both calls, VLIZ organised an information session to fill potentially interested scientists and companies in on the Flemish modalities for participation.

CREST. The IWT project CREST started in November 2015. The project is aimed at gaining a better understanding of the littoral and onshore physical processes and potential flood risks. The resilience of the Belgian coast will be assessed so as to deal with the impact of climate change in the most appropriate manner. VLIZ takes care of the data management and coordinates the project communication.

Research Infrastructure

The **Research Infrastructure division** provides logistical support to marine researchers by ensuring the management, maintenance and operational support of research facilities and equipment.

www.vliz.be/en/research-infrastructure-division

RESEARCH INFRASTRUCTURE DIVISION. Left to right: André Cattrijsse, Wim Versteeg, Michiel T'Jampens, Dries Vandenwoude. Missing in the photo: Thanos Gkritzalis and Tom Van Cauwenberghe.

WITHIN THE SCOPE OF THE SEARCH PROJECT, RV Simon Stevin and RV Belgica conducted a joint research campaign for the first time on 26 March 2015.

RV Simon Stevin. The research vessel spent 176 actual days at sea on scientific research in 2015, including 18 overnight trips. The ship was deployed for a total of 1,600 hours for measurements throughout the Belgian part of the North Sea, the Western Scheldt and the Dutch continental shelf.

Since the federal research vessel Belgica was temporarily laid up, RV Simon Stevin took over a few obligatory monitoring trips for a total of 15 days at sea. These trips included the monitoring of the environmental situation in the vicinity of the wreck of MV Flinterstar (Directorate Natural Environment), chemical monitoring by the Directorate Natural Environment, biological monitoring around dredge spoil disposal sites (ILVO) and on the offshore wind farms (MarBiol-UGent).

Scientists and passengers. A total of 931 people sailed on board RV Simon Stevin in 2015, including 621 scientists and 310 students. Nineteen marine research groups made use of RV Simon Stevin within the scope of 34 different projects. The vessel made 22 day trips for educational or demonstration purposes, e.g. within the scope of PlaneetZee@Work and for training courses at the Antwerp Maritime Academy as well as the universities of Brussels (biology), Ghent (biology, geology, environmental toxicology), Hasselt (biology), Leuven (biology), Liège (biology) and KULAK (biology).

Joint campaign of RV Simon Stevin and RV Belgica. Within the scope of the SeArch project, RV Simon Stevin and RV Belgica conducted a joint research campaign for the first time on 26 March 2015. Scientists from RCMG-UGent and Deltares sailed on board the vessel to carry out seismic measurements with the support of VLIZ marine technicians. RV Belgica operated a sleeve gun emitting sound waves and RV Simon Stevin used a streamer to receive the reflected sound waves. This exercise provided information about the presence of prehistoric valleys, generated knowledge for future offshore construction projects and made it possible to assess marine sand supplies.

Measuring and sampling equipment. The wide range of marine scientific measuring and sampling equipment VLIZ puts at the disposal of the marine research community was extended in 2015 with a vibrocorer, seawater holding tanks as well as new lights and HD cameras for remotely operated underwater vehicle Genesis. You can read more on this equipment under the highlight in question. In addition, a sensor was purchased to measure methane concentrations in seawater. The device is taken on board RV Simon Stevin to perform measurements during sailing trips. This mainly took place in the Western Scheldt in 2015.

Measurement buoy. In early 2015, VLIZ technicians made the necessary technical adjustments to optimise the measurement buoy's operation at sea. After a few weeks of performing measurements, the measurement buoy once again turned out not to be fully operational. Some sensors stopped transmitting data. However, due to the bad weather conditions it was impossible to collect the measurement buoy and as a result, no maintenance could be carried out on the measurement instruments.

Global Carbon Budget 2015. Within the scope of the ICOS project, RV Simon Stevin carries on board a pCO_2 analyser which has gathered measurement data since 2013. These data have contributed to the A1 publication 'Global Carbon Budget 2015' in the scientific journal Earth System Science Data. C. Le Quéré is the main author, and a VLIZ employee is one of the co-authors.

The Facebook page 'RV Simon Stevin' had about 1,180 followers at the end of 2015. The brief reports supplemented with appealing photos and videos are supplied by the researchers who make use of the research vessel. This social medium provides interested citizens with an insight into the daily operations on board and illustrates the fieldwork of marine scientists.

THE PRESENCE OF A PERMANENT MEASURING STATION at a fixed location at sea adds value to the marine research. To this end, a measurement buoy was installed near the artificial reef at the C-Power wind farm.

RESEARCH PROJECTS WHICH MADE USE OF RV SIMON STEVIN IN 2015

MARINE RESEARCH GROUP	PROJECT	# OF DAYS AT SEA
ILVO - Fisheries	Species separation in beam-trawl fishing (TechVis)	8
ILVO - Fisheries	Understanding connectivity patterns in marine fishes for sustainable management (FISHCONNECT)	10
ILVO - Fisheries	Demersal Young Fish Survey (DYFS)	8
ILVO - Fisheries	Benthic ecosystem fisheries impact study (BENTHIS)	6
ILVO - Fisheries	GA Genomics / CleanSea	19
ILVO - Fisheries	Impact of dredge spoil disposal on soil organisms	6
ILVO - Fisheries	Flatfish survival	2
ILVO & Directorate Natural Environment	Monitoring of Flinterstar	4
INBO	Monitoring of seabirds	12
MOW - WL	Shoreface nourishments as a measure	7
Directorate Natural Environment	Fauna on natural hard substrates	2
Directorate Natural Environment	Monitoring of BCP (chemistry)	1
Directorate Natural Environment	ROV Genesis - INDI67	2
Directorate Natural Environment	Monitoring of wind turbines (hard substrates)	1
Flanders Heritage Agency	Archaeological evaluation of shipwrecks	6
Ghent University – RCMG & Flanders Heritage Agency	SeArch: archaeological heritage in the North Sea	11
Ghent University - Marine Biology	Monitoring of wind turbines	4
Ghent University - Marine Biology	Migration of cod	18
Ghent University - Marine Biology	Fish migrations in coastal areas	21
Ghent University - Marine Biology	Biodiversity patterns of zooplankton	24
Ghent University - Marine Biology	Variability in the benthopelagic coupling	4
Ghent University – GhEnToxLab	eDNA	14
Ghent University - PAE	LifeWatch microbial foodweb	19
Ghent University – GhEnToxLab	Global change impact on copepods	4
Ghent University – Microbiology	Methanotrophic bacteria	3
Ghent University – Morphology & ILVO	Skin ulcers in fish	8
VLIZ	Monitoring of porpoises	1
VLIZ	LIVIS – Recreational fishing observations	11
VLIZ	LifeWatch measurement campaigns	24
VLIZ	PlaneetZee@Work	1
VLIZ	Multibeam survey	8
VLIZ	ICOS – pCO_2 measurements	10
VLIZ	SeaChange	1
VUB - ANCH	Hardwiring the ocean floor	2

A SEAWATER SETUP consisting of two water tanks was installed at the Marine Station Ostend. In this picture, the infrastructure is used by the Department of Morphology – Ghent University for research into the cause of skin ulcers in dabs.

© Maaike Vercauteren

The monthly measurement campaigns carried out by VLIZ on board RV Simon Stevin in the Belgian part of the North Sea are part of the LifeWatch project. VLIZ employees take samples of water, sediment, macrobenthos, zooplankton and seawater parameters at nine stations near the coast. In addition, eight stations are sampled seasonally according to an offshore-inshore gradient. All the information gathered is freely available to the research community. Marine scientists from other research groups increasingly embark on these trips as well, so that the trips become multidisciplinary measurement campaigns. The flow cytometer, the VPR, the SPI camera or the nutrient analyser are usually deployed in this case.

Marine Station Ostend. With the Marine Station Ostend, VLIZ provides a satellite laboratory by the sea to marine scientists. The MSO facilities were expanded in 2015 with two water tanks as part of a seawater setup. You can read more on this topic under the highlight in question. In addition, the furnishing of the 'house' was optimised.

An increasing number of marine research groups as well as university colleges find their way to the Marine Station Ostend, e.g. for field training or sample analyses. Please refer to the table of external users of the MSO. Numerous students from marine training courses visited the station in 2015 as well.

ROV Genesis. Remotely operated underwater vehicle Genesis conducted the first official scientific campaign on board RV Simon Stevin in August 2015 on behalf of RBINS – Directorate Natural Environment. The campaign was primarily aimed at collecting video images and samples of the gravel fields near the Hinder Banks. The Directorate Natural Environment carried out these additional samplings to understand why the seabed in this area has greater biodiversity. The assessment of this zone is important for preventing any form of potential damage by human activities now and in the future. This activity is part of an initiative by RBINS which evaluates the added value of visual observations for mapping habitats and assessing environmental impacts. The data are also used to support the IND167 project. Video images of the artificial reefs in the offshore wind farms were also made during the campaign.

AN INCREASING NUMBER OF MARINE RESEARCH GROUPS as well as university colleges find their way to the Marine Station Ostend, e.g. for field training or sample analyses. This picture shows Oceans & Lakes master students who made use of the MSO for a four-day field training.

RESEARCH PROJECTS WHICH MADE USE OF THE MARINE STATION OSTEND IN 2015

MSO INFRASTRUCTURE USED	REASON	MARINE RESEARCH GROUP
Core repository	Analysis or collection of drill cores	RCMG – Ghent University
LifeWatch lab	Measurements in soil cores after sampling on board RV Simon Stevin	ANCH – VUB
LifeWatch lab, shed 2 & house	Field training for Oceans & Lakes master students	MarBiol – Ghent University
LifeWatch lab	Field training for bachelor students of natural sciences	Karel De Grote University College
Molecular lab	Training in using PCR	GhEnToxLab – Ghent University
Shed 3 – agricultural vehicle	Field training, 3D measurements on the beach	Geography – Ghent University
Molecular lab	eDNA research	GhEnToxLab – Ghent University
Seawater holding tanks	Dab quarantine	Morphology – Ghent University
Shed 3	Workshop: ROV Genesis + mini ROV	Sint-Rembert VTI Torhout
Shed 1	Archaeological finds	Flanders Heritage Agency & Magnel Laboratory for Concrete Research – Ghent University

Data Centre

The **Data Centre division** provides assistance, technologies and tools to scientists and policy makers to support marine data management. Within international networks, VLIZ participates in the development of data infrastructures and promotes the flow of marine data from Belgium.

www.vliz.be/en/data-centre-division

DATA CENTRE DIVISION. Left to right: Francisco Tinerfe Hernandez, Francisco Hernandez, Francisco Souza Dias, Paula Oset Garcia, Lennert Tyberghein, Robin Houthoofdt, Daphnis De Pooter, Filip Waumans, Elien Dewitte, Louise Haspeslagh, Simon Claus, Bart Vanhoorne, Klaas Deneudt, Jan Reubens, Wim Decock, Roeland T'Jampens, Annelies Goffin, Liesbeth Lyssens, Bruno Pinto Vitorino, Jonas Mortelmans, Nathalie De Hauwere, Pieter Maes, Stefanie Dekeyzer, Ruth Vandepitte and Carolien Knockaert. Not shown in the picture: Leen Vandepitte, Aina Trias Verbeeck, Lorenzo Bovit and Joram Declerck.

Aphia. The Aphia database integrates global and regional taxonomic registers and cooperates with other acknowledged species registers. You can read more on Aphia under the highlight in question (page 18).

The World Register of Marine Species is part of the consolidated Aphia database. WoRMS is the leading taxonomic reference list for marine organisms. The highest priority is given to valid scientific names, but synonyms and non-scientific vernacular names and information on the distribution and ecological characteristics of species are included as well. By the end of 2015, the register contained over 535,000 names, including more than 230,000 valid species names. Approximately 6,500 new marine species were added, 1,587 of which were described. A total of 249 taxonomic experts from all over the world have actively contributed to the verification and supplementation of the register.

Aphia receives data from recognised species registers such as AlgaeBase and FishBase. In this context, investments were made in optimising the synchronisation with these databases via web services in 2015. A final synchronisation with the externally managed Hexacorallia species list was performed in the same year, and all relevant information was included in WoRMS. As the Hexacorallia species list will no longer be maintained externally, this action was required to prevent information loss. This species group will henceforth be managed through WoRMS.

FADA (Freshwater Animal Diversity Assessment) is another example of a species register which collaborates with WoRMS. Several FADA and WoRMS editors exchanged knowledge of overlapping groups during a workshop in September 2015. Within this scope, solutions were sought to avoid duplication. Arrangements were also made for continuous data exchange between both databases.

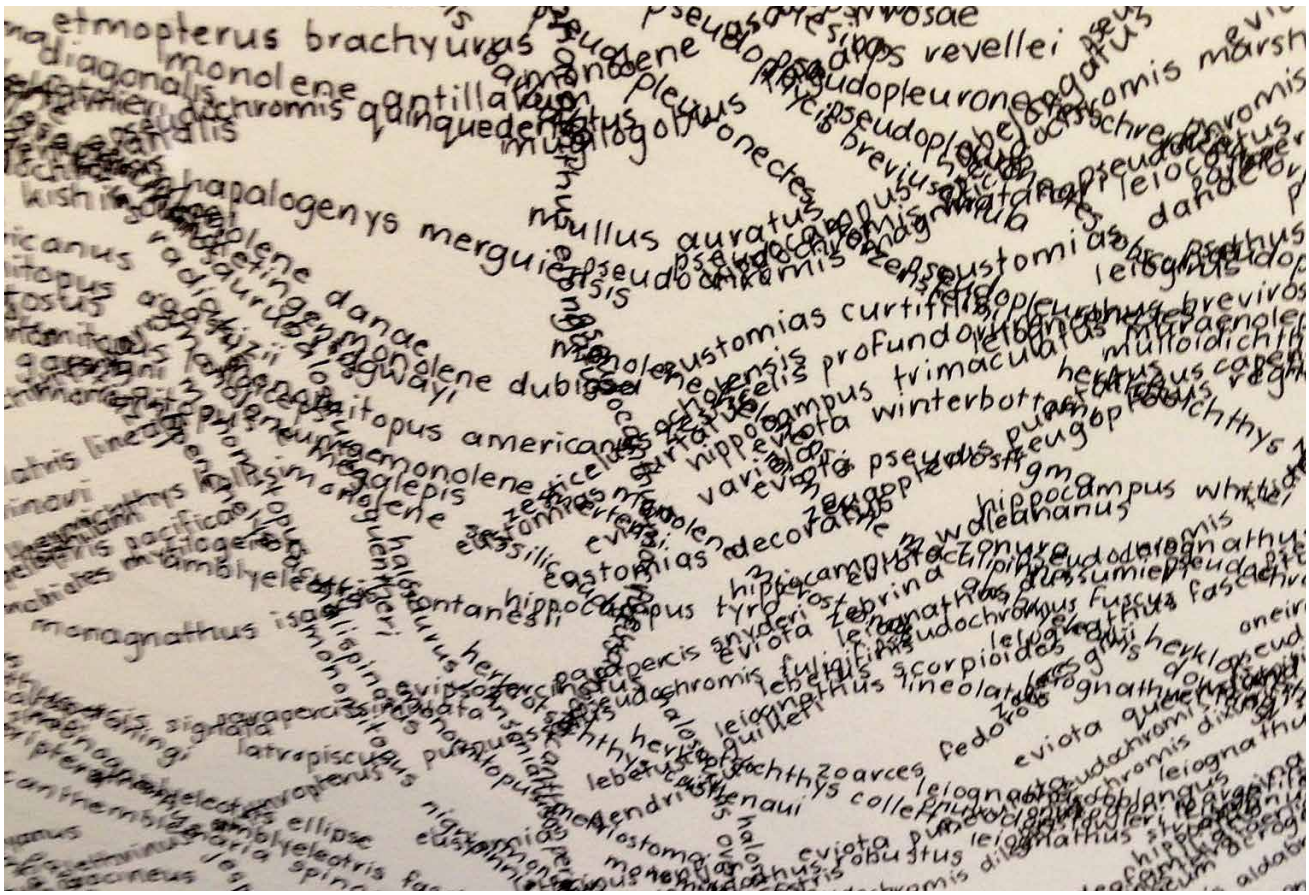
The Catalogue of Life (CoL) is one of the systems which receive data from Aphia. CoL aims at providing an overview of all species that have ever been described worldwide. As a supplier of marine species data, WoRMS is one of the principal contributors to this register. The cooperation between CoL and WoRMS was therefore continued in 2015.

The thematic species database WRIMS was launched as part of WoRMS in 2015. The World Register of Introduced Marine Species includes over 1,400 non-native species and describes the area where they have been introduced. In addition, the database also indicates whether the species is reported to have had ecological or economic impacts.

It is vitally important to tag species in the Aphia database. Since WoRMS contains an increasing number of species from non-marine ecosystems, it is expedient to document the habitat. The occurrence of approximately 13,000 accepted species from the Aphia database in marine, freshwater, brackish and terrestrial environments was specified in 2015. This way, it is possible to maintain a clear overview of the marine species listed in WoRMS.

Within the scope of EMODnet, it is also recorded whether a species is of importance to society. For instance, inclusion in the IUCN Red List, EU Birds and Habitats Directives, FAO or OSPAR Convention is now indicated for all relevant species listed in Aphia.

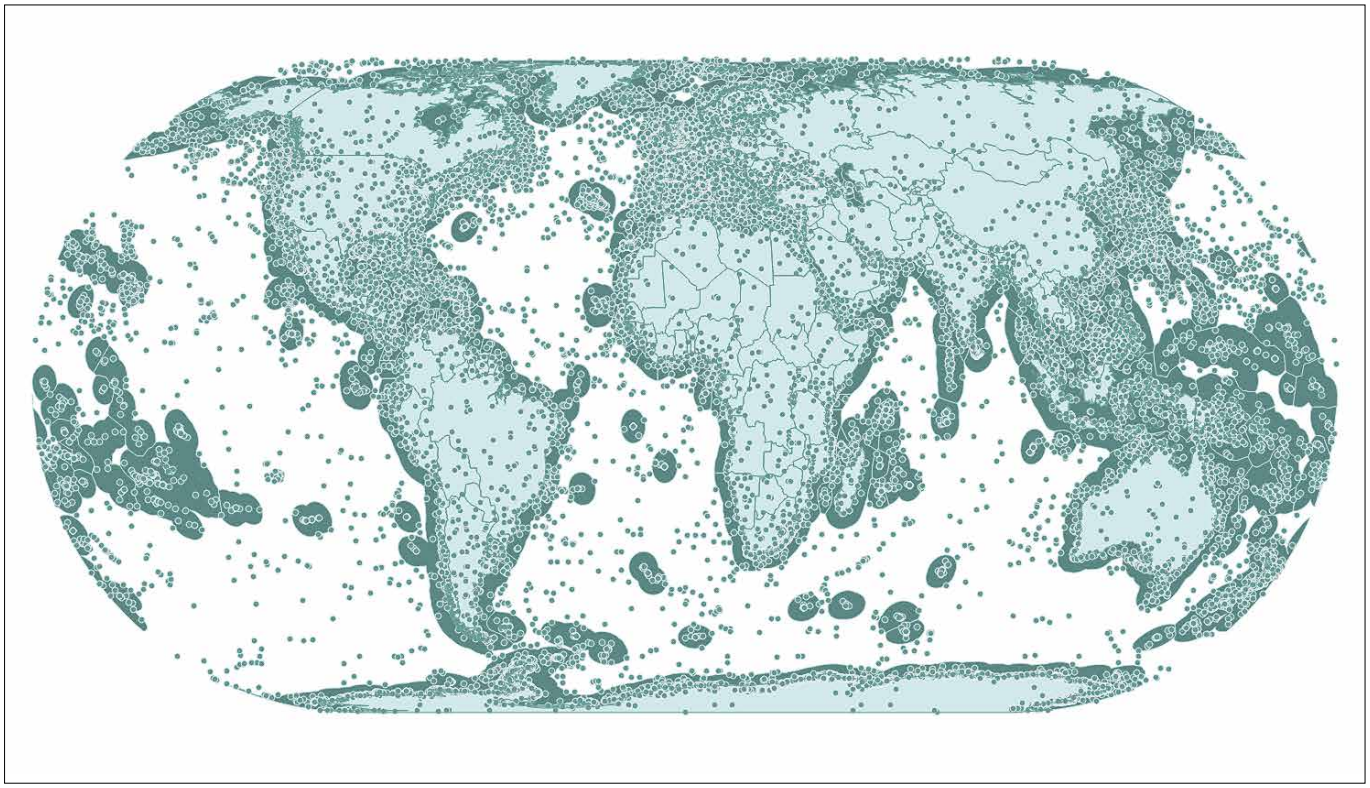
A new feature of Aphia is the documentation of body size.



DETAIL OF THE ARTWORK ENTITLED NETT by South African artist Craig McClenaghan. An original handwritten representation of the names of all 17,027 marine fish species listed in the WoRMS database.

The European Ocean Biogeographic Information System (EurOBIS) publishes distribution data of marine species found in European marine waters or collected by European researchers outside European marine waters. As EurOBIS, VLIZ undertakes several central tasks within the international OBIS community. OBIS is part of UNESCO's Intergovernmental Oceanographic Commission (IOC) within the scope of the International Oceanographic Data and Information Exchange (IODE) programme. OBIS is an example of a system using Aphia and in particular WoRMS for the taxonomic quality control of all regional nodes. In addition, VLIZ manages the metadata of all OBIS data sets. The mark of 20 million distribution records in EurOBIS was surpassed in 2015. This is partly thanks to the major efforts to make monitoring data available within the scope of the EMODnet biology portal. In collaboration with Ghent University, VLIZ published the A1 article 'Fishing for data and sorting the catch: assessing the data quality, completeness and fitness for use of data in marine biogeographic databases' in the scientific periodical Database in 2015. The publication describes the different steps developed for the quality control of the distribution records in EurOBIS and OBIS.

On the basis of WoRMS, a dataset was also made available in OBIS with information on the type locality of each species. In case the coordinates of this location are known, the location of the holotype is mentioned for each species.



MARINE REGIONS PROVIDES A STANDARDISED LIST of marine place names linked to geospatial information. This image visualises the information present in Marine Regions in 2015. The dots represent the 47,449 georeferenced places and areas while the dark green zones illustrate the boundaries of the Exclusive Economic Zones.

In 2015, OBIS-ENV-DATA launched a pilot project to expand OBIS into a database containing more than just species observation data. Within this project, OBIS strives to make related data such as ecological and biometric data, sediment data and detailed information on the sampling method easily available as well.

All the above activities have been carried out within the scope of the LifeWatch Taxonomic Backbone.

Marine Regions. The Marine Regions data system is a standard list of marine georeferenced place names and areas such as seas, sandbanks, bays and undersea mountain ranges. For this purpose, Marine Regions collects geospatial data from various administrative or managerial areas and boundaries as well as information from regional and global checklists and thematic geographical dictionaries.

2015 was a great year for Marine Regions. Thanks to the addition of 12,425 new geographic objects, the total number of georeferenced places and areas rose to 47,449. The fact that users find their way to the data system is demonstrated by the huge increase in the number of downloads (8,784 in 2015) and the number of unique website visitors (86,793). Marine Regions is known all over the world and is used by the industry, civil society and academics. It has provided data for the following purposes: the reconstruction of the worldwide fish catches reported in the periodical Nature Communications; the assessment of the state of the oceans in the Ocean Health

Index; the preparatory analysis of concession areas for large industries active at sea (BP, Arcadis, ExxonMobil). Policymakers from the maritime sector such as the Regional Seas Commissions also make use of Marine Regions to determine boundaries and to delimitate areas.

Sea Level Monitoring System. This system, developed and maintained by the data centre, operated 829 tide gauges throughout the world in 2015 and shows the tide height (virtually in real time) at each tide gauge. The website and the real-time data service processed some 500 million page requests and distributed no less than 5264 GB of data online in 2015.

Projects. In 2015 the European FP7 projects such as MicroB3, MERMAID and SeaDataNet2 were concluded and the new European research programme Horizon 2020 started, with particular attention being paid to blue growth. The Data Centre division will contribute to the following Horizon 2020 projects over the coming years: AtlantOS, JERICO NEXT and ODIP2.

AtlantOS is aimed at the integration of ocean observing activities in the Atlantic Ocean and at optimising and enhancing the observation systems. The project is centred around transatlantic ocean research and is made up of partners from Europe, the US, Canada and Brazil. Within this project, VLIZ contributes to the harmonisation of data flows as well as to the development of an Atlantic fish tracking network.

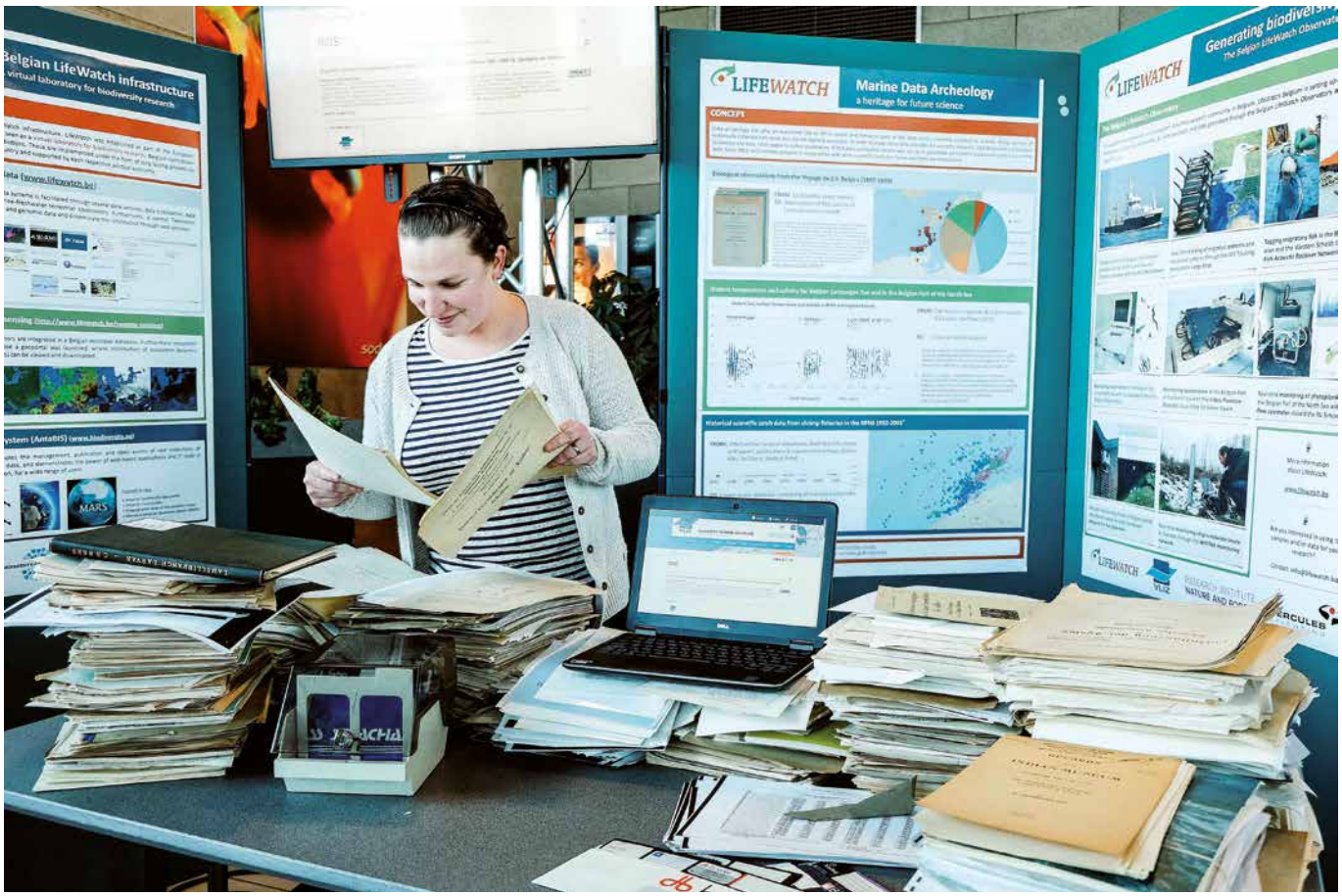
The JERICO NEXT project is aimed at the creation of a European network of marine observatories in the coastal areas. VLIZ will contribute to the development of data management standards, which will increase the quality and quantity of chemical, biological and physical data within the infrastructure. VLIZ will also study the project's impact on current initiatives such as Copernicus, EMODnet and OBIS.

The ODIP project strives for a European, American and Australian IOC-IODE coordination platform. Its objective is to determine the interoperability of oceanographic and marine data management infrastructures and to demonstrate this cooperation by means of different joint EU – USA – Australia – IOC-IODE prototypes. VLIZ will provide input for workshops and the resulting tasks with regard to marine biological data management and the standardisation of marine place names.

Data archaeology. Data archaeology comprises the reassessment of historical research data which are often only partly available in scientific reports, articles, forms, etc. The input of this information into data systems makes it possible to reconstruct historical time series and therefore to conduct research into a specific area and/or a specific subject.

In 2015, for instance, VLIZ supplemented the data reported to ICES and thus created a time series regarding temperature and salinity for the 1930-1970 period. In that period, Belgian scientists conducted a lot of measurements in the Southern Bight of the North Sea and the Belgian part of the North Sea. In addition, lightship Westhinder registered basic seawater parameters for a long period of time. By tracing and integrating these data, VLIZ contributes to the historical knowledge of the Belgian part of the North Sea.

Other data archaeology activities include the tracing of available phytoplankton and zooplankton data as well as the digitisation of biotic data collected during Belgian campaigns such as the Antarctic expedition led by Adrien de Gerlache de Gomery in 1897-1899.



DATA ARCHAEOLOGY COMPRISES THE RECOVERY OF HISTORICAL RESEARCH DATA which are often only partly available in scientific reports, articles, forms, etc. The input of this information into data systems makes it possible to reconstruct historical time series for a specific area and/or a specific research subject.

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Data publication. As a service to Flemish marine scientists, VLIZ has developed a procedure to make data sets traceable, citable and publicly available by creating a data publication. This formal publication of data sets can henceforth take place by means of a Digital Object Identifier (DOI). This publication procedure ensures that scientists receive more recognition for their work. The information system and the Marine Data Archive of VLIZ are used for this purpose. The information system captures all information necessary to make the data set publishable, e.g. scientists' contact details, relevant publications, data descriptions and links to data. The data files to be published are documented and stored in the Marine Data Archive.

LifeWatch. You can read all about LifeWatch under the highlight on page 20.

EMODnet. You can read all about EMODnet under the highlight on page 22.

Library

The **VLIZ library** manages the most extensive collection of marine scientific literature in Belgium. It is the central point of contact for marine information for scientists, policymakers and the public at large.

http://www.vliz.be/en/library-division

LIBRARY DIVISION. Left to right: Zohra Bouchti, Heike Lust, Chilekwa Chisala, and Jan Haspeslagh.

GERARD MERCATOR & ABRAHAM ORTELIUS. (1571). Flanders. One of 70 maps from the Cultuurbibliotheek Brugge collection which have been digitised within the scope of the project 'Historical maps of the coastal area'.

Belgian Marine Bibliography. The core of the VLIZ library collection consists of publications in the Belgian Marine Bibliography (BMB). This is the reference list of all publications on the Flemish coast and the Belgian part of the North Sea as well as all other marine, estuarine and coastal publications written by Belgian authors and scientists as well as foreign scientists affiliated to Belgian institutes.

The VLIZ library's ongoing key task is to capture and register all published Belgian marine, estuarine and coastal output at least as a reference in the VLIZ information system. The Flemish / Belgian marine research landscape can be mapped by integrating literature metadata with institutional information and expertise from various marine research groups. The brochure 'Belgian Marine Research' is derived from Chapter 1 of the Compendium for Coast and Sea and based on this detailed information.

Most bibliographic databases only describe titles of periodicals and monographs. The VLIZ library goes one step further and provides more metadata to its users. For instance, articles and referenceable chapters are recorded separately in the catalogue. In addition, content-related metadata such as standardised and author-assigned keywords as well as taxonomic and geographical terms are added to literature records. The taxonomic terms in literature records are systematically linked to the World Register of Marine Species. Consistently adding detailed information to literature records increases their visibility on the Internet.

The VLIZ library has owned an extensive paper collection of conference and meeting documents from the International Council for the Exploration of the Sea (ICES) for several years. Within the scope of

developing the BMB, all Belgian publications in this collection have been selected and digitised. This action has resulted in 452 Belgian reports which are now digitally available and freely accessible. The ICES database will be regularly searched to track and disclose Belgian contributions in the future as well.

Belgian Open Marine Archive. The Open Marine Archive (OMA) aims to archive as many digital full-text files from the BMB as possible and make them freely available online. Through OMA, Belgian marine publications are disseminated and promoted worldwide. OMA's annual increase is the VLIZ library's key performance indicator (for details see KPI 1). No fewer than 4,568 digital publications were added to this archive in 2015, over half of which were peer-reviewed articles. This gives a total of 23,840 publications in this open-access repository.

Digitisation. The main objective of digitising the library collection is to increase and enhance the availability and dissemination of marine full-text publications. In 2015, the digitisation of the collection was focused on paper collection articles published between 1800 and 1999, and originating from the former IZWO library. Approximately 35,000 pages were scanned during this action. These articles can now be consulted online via the catalogue.

The digitisation infrastructure for marine literature, the book scanner, has also been put at the disposal of the marine research community.

Other literature in the collection. In addition to Belgian marine literature, the VLIZ library also continues to expand its collection with international literature relevant to marine research. The new publications in the catalogue are itemised in the VLIZ Library Acquisitions List on a weekly basis, and this list is sent to 285 subscribers by e-mail. A total of 12,324 publications were added in 2015, of which 88% were digital.

Service. The VLIZ collection is available to anyone. The library is freely accessible on workdays and anyone can search the collection online via the VLIZ website. Publications can be requested online via the catalogue and by e-mail. The library processed 1,136 literature requests in 2015. Over half of these could be supplied from the VLIZ collection. For the remaining requests, the library made use of the (inter)national network of marine libraries and information centres.

ScheldeMonitor. You can read more on this topic under the highlight on page 23.

Historical maps of the coastal area. Launched in 2015, this project is aimed at providing open access to historical maps containing specific information on the coastal area, the Belgian part of the North Sea and the Scheldt estuary. Within the scope of the project, these maps are georeferenced and digitised in high resolution, and shapefiles are generated of them. Initially, VLIZ and Cultuurbibliotheek Brugge cooperated to select about 70 representative maps from the 16th, 17th and 18th centuries. The digital files of these maps and associated geographical and bibliographic metadata can now be consulted via the VLIZ catalogue.

Informatie aan Zee (information by the sea). This biennial conference for library and information professionals took place in Ostend on 17 – 18 September 2015. VLIZ gave a lecture on the efforts made with regard to providing open access to publications and open data. The attendants also got the opportunity to take a guided tour of RV Simon Stevin and visit the VLIZ library.

DIGITISED COLLECTIONS CAN EASILY AND EFFICIENTLY BE DISSEMINATED via online catalogues and document supply. This way, the storage of unwieldy paper documents is avoided.

Communication

The VLIZ **Communication division** aims to share knowledge with people fascinated by the sea. We try to achieve this central objective by disclosing high-quality marine information to very diverse target groups (young & old, professionals & the general public, local & international, education & research) and in different formats.

www.vliz.be/en/communication-division

COMMUNICATION DIVISION. Left to right: Michèle Van den Berghe, Laure Van Medegael, Jerry Lust, Louise Montgomery (master thesis student), Jan Seys, Nancy Fockedey and Evy Copejans. Missing in the photo: Karen Rappé.

© MO* Magazine

Info Desk & Press. Once again, the VLIZ Info Desk received numerous questions (367) from interested citizens, companies, policy makers, scientists and educators in 2015. The national press also contacted VLIZ regularly in search of information or visual materials. In case of general marine scientific questions, VLIZ provides the answer itself, while experts in specific fields are contacted in case of specialised questions.

VLIZ sent out 10 press releases in 2015. VLIZ published a press release entitled 'Over 1,000 New Ocean Fish Species Identified in Past Eight Years, Including 122 Sharks, Rays' which highlighted the wealth of information contained within the World Register of Marine Species. This press release drew international attention and appeared in 18 paper magazines/newspapers and on no less than 434 news websites all over the world (59 countries, 21 languages). In addition, 11 radio stations paid attention to this topic.

Other highlights in terms of press coverage received by press releases were: the discovery of a giant Japanese oyster (38 cm) at the Belgian coast (48); the presentation of the SeaWatch-B project in which volunteer scientists monitor the status of the Belgian North Sea (15); the joint research campaign of RV Simon Stevin and RV Belgica (5) and the publication of the information package on sharks, rays and skates for Belgian fishermen (6).

Furthermore, VLIZ was mentioned in another 60 media items.

MO* Magazine. The spring issue of MO*magazine featured a dossier entitled 'Oceanen, goudmijnen van de toekomst' (oceans, goldmines of the future) in 2015. This topic was explored in seven articles. VLIZ provided input for a vision article entitled 'De 21ste eeuw is de eeuw van de oceaan' (the 21st century belongs to the oceans). The MO*talks @ deBuren event (Brussels, 11 March) was linked to this publication. Three experts, including one from VLIZ, entered into debate, led by MO* journalist Alma De Walsche, on the economic and ecological importance of the oceans with each other and the public.

Public events. You can read more on this topic under the highlight page 24.

VLIZ-EMPLOYEES provide some explanation as to research conducted on board RV Simon Stevin in the popular science programme 'De Schuur van Scheire'.

De Schuur van Scheire. In the popular science programme 'De Schuur van Scheire', VLIZ employees got the opportunity to provide some explanation as to the research conducted on board RV Simon Stevin. In this television broadcast, VLIZ was given 8 minutes of prime-time coverage to bring marine science to about 610,000 Flemish viewers. A more extensive interview (40 minutes) conducted by presenter Lieven Scheire is available as the podcast 'Moules de Geek #8 – De Zee'.

Initiatives for teachers and guides. As a Structural Science Communication Partner of the Flemish government, VLIZ actively informs teachers and other educators on all things connected with the sea. Two of the performance indicators (KPI 5 and KPI 6) relate to this important specific task.

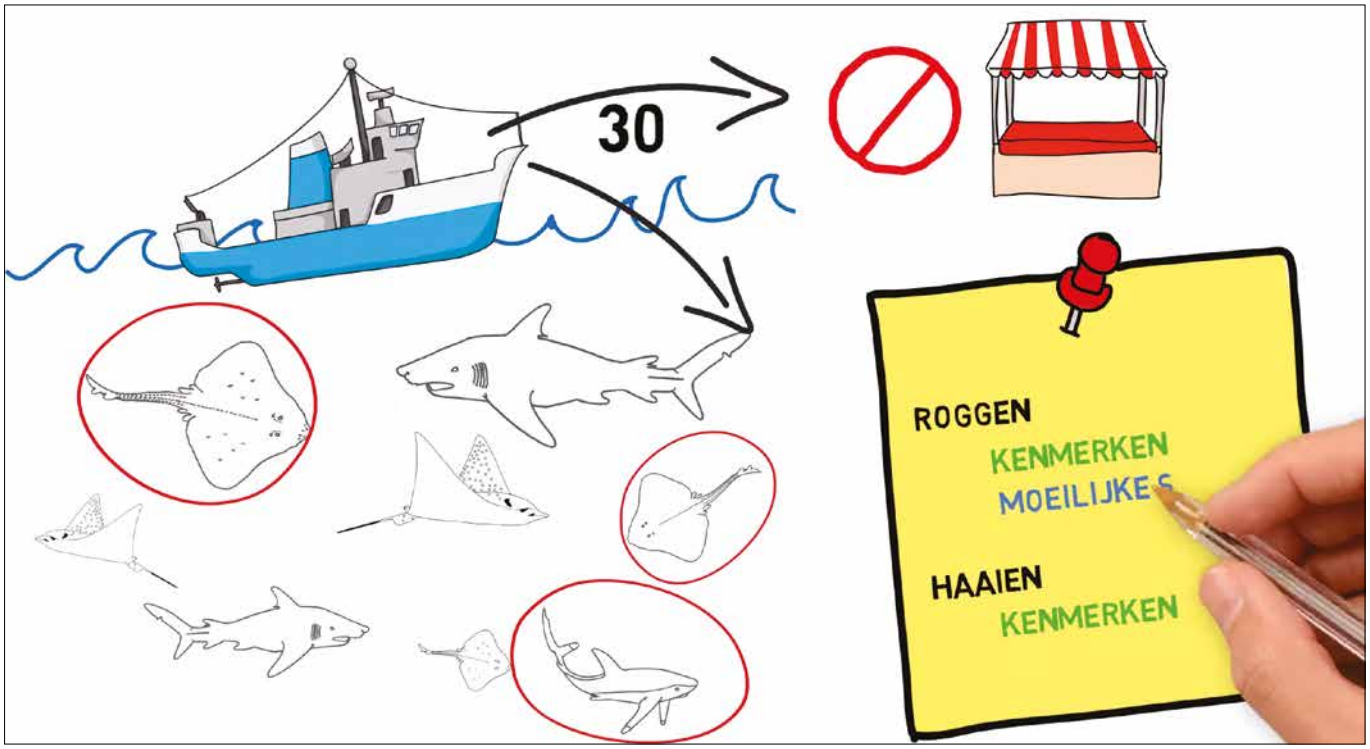
VLIZ organised or supported 7 events for teachers and other educators in 2015 (for details see KPI 5). These include the coastal guide training course provided by SYNTRA West for which VLIZ employees gave two lectures and offered an educational trip on board RV Simon Stevin. In addition, VLIZ once again organised a workshop within the scope of the Flemish Congress for Science Teachers and co-organised the Seaside Dip for Teachers as well as the European Marine Science Educators Association Conference.

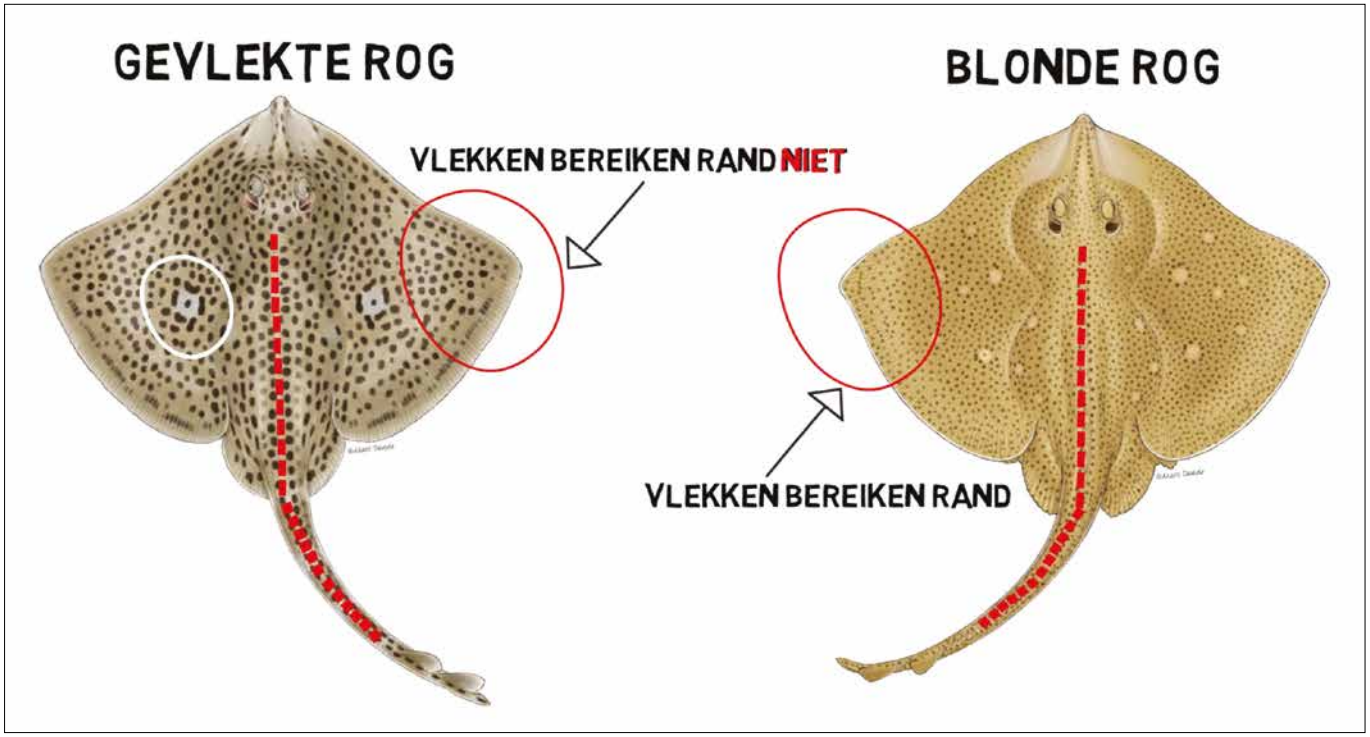
Finally, two educational teaching packages and two practical exercises on the sea and coast were developed in 2015 (for details see KPI 6, page 89).

PlaneetZee@Work. Every year, VLIZ organises a contest for schools on the digital learning platform 'Planeet Zee' (Planet Ocean). This contest got a completely new formula in 2015. Within the scope of PlaneetZee@Work, classes from the third cycle of secondary education can participate in a workshop at a laboratory of a marine research group. After the workshop, students illustrate their findings by means of a scientific poster. All participating classes then enter a contest with these posters. VLIZ selects the three best posters after which the finalists present their work as a class to a professional jury at a closing event on the InnovOcean site. Two finalists win a diving initiation session while the winning class goes on a multiple-day marine internship.

The grade 4 Science class of the Barnum school in Roeselare won the first prize in 2015. Accompanied by VLIZ experts, they left on a four-day marine internship (27 – 30 April) at the Opal Coast (Nord-Pas-de-Calais, France). During this field training, they were fully immersed in the marine world.

Sustainable fish. VLIZ contributes to the dissemination of information about the sustainability of fish consumption. For instance, VLIZ provided input for the smartbook 'Hoe bereid ik vis' (how to prepare fish), a digital makeover of the standard cookery book published by VLAM, now with additional teaching content, videos, recipes, brochures, links to websites, etc. This updated digital platform is primarily used for training purposes, but it is also a handy tool for fishmongers.





A BILINGUAL EDUCATIONAL VIDEO has been created to distinguish between the different species of sharks, rays and skates. You become acquainted with the principal characteristics needed to identify sharks, rays and skates, and the features that set apart the species which are the most difficult to distinguish.

HAROkit. To achieve sustainable fishing and correct landing data regarding sharks, rays and skates, it is essential that the separate cartilaginous fish species should be identified with their correct name on board fishing vessels, at the fish market and throughout the fishery chain. Regulations for each separate species should be clear as well. Within the HAROkit project, a user-friendly identification kit has therefore been developed which can be used on board, in fish markets and in fishing schools. The information set includes identification charts for sharks, rays and skates, cards to identify the different species, a fact sheet concerning the safe handling of cartilaginous fish, a folder full of information, an educational identification video and a report with policy recommendations.

VLIZ HAS CREATED A FEW PLAYFUL VIDEOS highlighting the importance of the oceans for mankind as a teaser for an international competition to find ideas for the Sea Change project..

© VLIZ

Energy atoll. The Marine Spatial Plan provides for a zone for the construction of an energy island on Wenduinebank off the coast of De Haan. The possible construction of the iLand energy atoll has raised concern among citizens. In view of its neutral informative role, VLIZ is therefore regularly asked to explain the positive and negative aspects of the energy atoll on the basis of scientific knowledge. This took place during an information session for various advisory councils, members of the Public Centre for Social Welfare (OCMW) and the Municipal Executive of De Haan. A representative from the Flanders Bays project, VLIZ and the responsible officer of iLand addressed all aspects of the energy atoll during this session. VLIZ also provided some explanation regarding the energy atoll at the coastal forum within the scope of a lecture on the Marine Spatial Plan in the presence of State Secretary for the North Sea Bart Tommelein and Flemish ministers Ben Weyts and Joke Schauvliege.

Sea Change. The European Horizon 2020 project Sea Change started in 2015. The project is aimed at increasing ocean literacy (understanding our impact on the ocean and the ocean's impact on us) among the general public so that they are able to take more sustainable decisions.

VLIZ will carry out project tasks focused on education, the public at large and the government.

ONE OF THE STUDY SITES OF THE MERMAID PROJECT was the Gemini project located north of the Netherlands in the North Sea. For this area, the scientists and stakeholders came to the conclusion that the combination of wind energy and aquaculture of mussels and seaweed has considerable potential.

MERMAID conference. The MERMAID project focuses on the planning, construction and operation of innovative offshore platforms which combine functions such as energy extraction, aquaculture and logistics. The project was planned to be concluded with a closing conference in 2015. This Conference on multi-use offshore platforms – Challenges and opportunities for Europe was scheduled to take place in Brussels on 26 November. The event would have provided the offshore sector, experts and other stakeholders with the unique opportunity to exchange ideas with the European research community. 147 international participants had registered for this event. However, the conference had to be cancelled due to the immediate threat of a terrorist attack in Brussels. A similar conference, albeit on a much smaller scale, had to be organised in haste at another location. It eventually took place at the Technical University of Denmark (DTU) in Copenhagen on 15 December.

Policy Information

The **Policy Information division** supports a scientifically founded coastal and marine policy by providing policy-relevant scientific information products. It focuses on scientists and policy makers as well as coastal and marine professionals.

www.vliz.be/en/policy-information-division

POLICY INFORMATION DIVISION. Left to right: Alex Diana (student employee), Thomas Verleye, Hans Pirlet, Ann-Katrien Lescrauwaet and Ruth Pirlet.

THREE DUTCH-LANGUAGE POLICY INFORMING BRIEFS and one English-language policy informing brief were published in 2015, including one about recreational sea fisheries in Belgium: monitoring the capacity, intensity and density at sea.

Compendium for Coast and Sea and derivative products. The second version of the Compendium for Coast and Sea was published in 2015. You can read more on this topic under the highlight on page 12.

Dutch-language and English-language Policy Informing Briefs. VLIZ provides policy-relevant information concerning marine, estuarine and coastal matters at the request of target groups as well as on its own initiative. This information is made available in the form of Dutch-language policy informing briefs (*beleidsinformerende nota's* or BINs). Replies to public consultations regarding specific marine policy issues of the European Commission are published in English-language policy informing briefs (PIBs).

The contents of the policy informing briefs are based on current scientific insights and objective information and data. VLIZ relies as much as possible on the expertise of coastal and marine scientists within the network of marine research groups in Belgium / Flanders as well as within the international network. Three BINs and one PIB were published in 2015.

Dutch-language policy informing briefs published in 2015:

- Recreational sea fishing in Belgium: Monitoring the capacity, intensity and density at sea (first results). Available in Dutch and English.
- Initial risk assessment under Regulation A-4 of the Ballast Water Management Convention for Belgium using the joint HELCOM/OSPAR Harmonised Procedure.
- Marien onderzoek in Vlaanderen en België (2015): Een inventaris van het onderzoekslandschap (Marine Research in Flanders and Belgium (2015): An Inventory of the Research Landscape).

English-language policy informing briefs published in 2015:

- EC Consultation on how the EU could contribute to achieving better international ocean governance to the benefit of sustainable blue growth.

Policy processes & advisory committees. The Policy Information division aims to mobilise scientific data, information and knowledge in policy processes in a targeted manner. This concerns processes relating to marine spatial planning, coastal zone management, environmental management in a marine context and achieving good environmental status in the BNS. Priority is given to projects concerning major societal challenges (climate change, environmental quality, biodiversity, etc.), blue economy and innovation. The activities are performed by means of advisory and (project) steering committees, consultation and working groups, networks and parliamentary questions. The Policy Information division also monitors the European and global developments concerning marine policy and integrated coastal zone management.

VLIZ participated in the following relevant national and international processes and partnerships focused on marine (science) policy in 2015:

- Secretariat of the expert group 'Compendium for Coast and Sea 2015'
- Representation in the 'Scientific working group on the implementation of the EU regulation on invasive alien species' (Interministerial Conference on Environment - Belgium)
- Participation in the working group and consultation for the drafting of the programme of measures of the Marine Strategy Framework Directive (Marine Environment Division – FPS Environment)
- Collaboration with Flanders' Maritime Cluster in the development of a 'Blue Cluster'
- Contribution to the Coastal Ecosystem Vision guidance group
- Member of the editorial board of the 'Global Ocean Science Report' of IOC-UNESCO regarding marine science mapping
- Participation (on behalf of EWI) in the JPI-Oceans reference expert group on marine spatial planning in line with the strategic objective 'Science in support of coastal and maritime planning and management'
- Participation as a member of the ICES Working Group on the History of Fish and Fisheries
- Participation as a member of the ICES Working Group on Recreational Fisheries Surveys
- Participation as a member of the Oceans Past Initiative steering committee.

Projects. The Policy Information division has an excellent overview of the strategic developments within marine (science) policy. As a result, VLIZ is a suitable partner in national, European and international projects aimed at the transfer of policy-relevant marine information.

This way, the division takes part in two recently launched European Horizon2020 projects. The COLUMBUS project strives for knowledge transfer to promote blue growth. The SeaChange project strives to increase ocean literacy. In this context, the division focuses on elements of ocean literacy which contribute to stronger ocean management. In addition, VLIZ acts as national representative in the management committee of the Oceans Past Platform, a Horizon 2020 COST initiative focusing on the socio-economic, cultural and environmental impact of long-term use of the European seas and their resources.

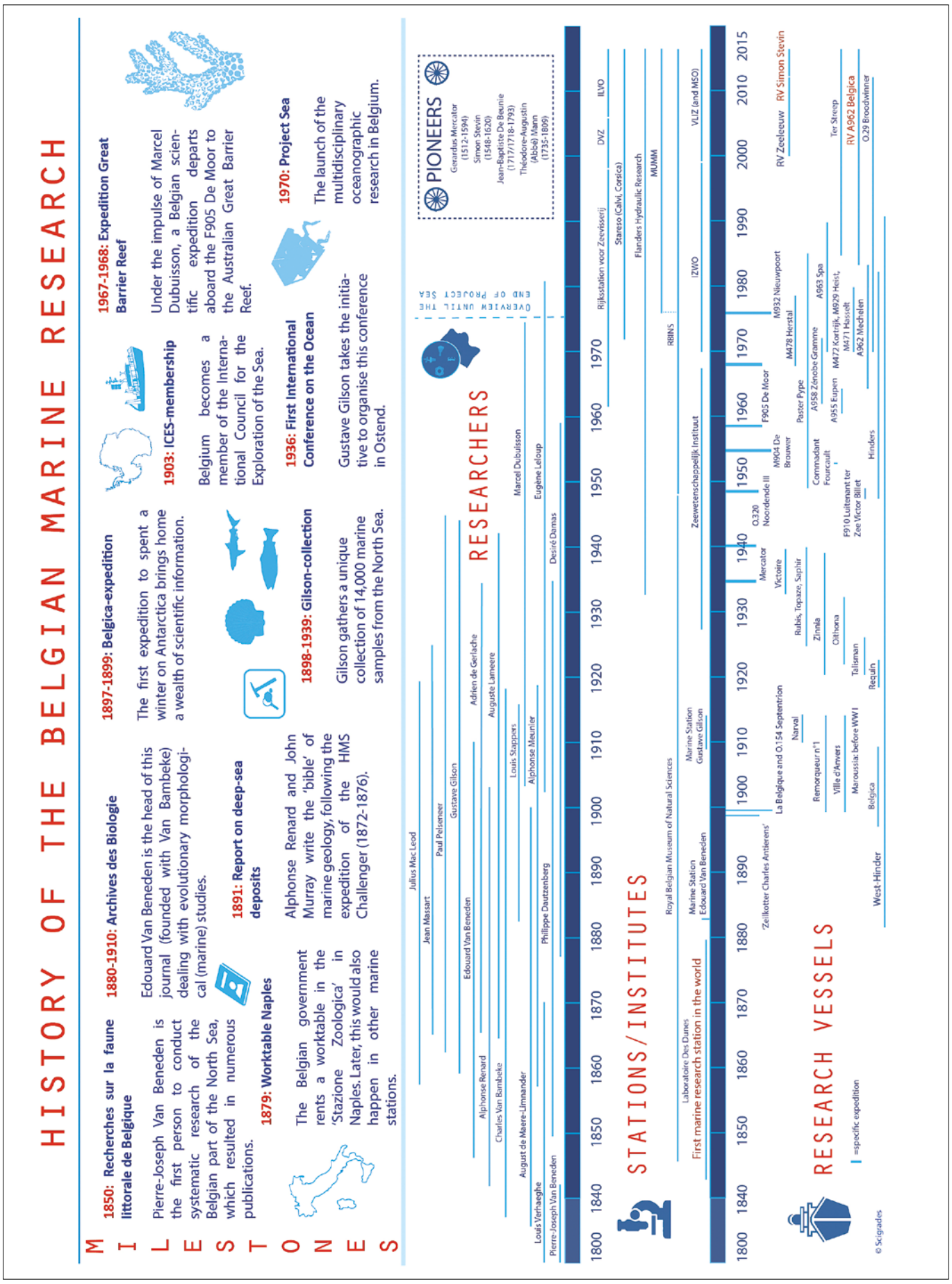
At the national level, the division is a partner together with ILVO within the LIVIS project (EFF-Axis4) which provides the first insights into the scope and efforts of Belgian recreational sea fisheries. It also contributes to the HisGisKust project (province of West Flanders) which makes the unique historical cartography for the Belgian part of the North Sea and the coastal areas publicly available and which maps the evolution of the Flemish coastline and other morphological components.

Marine Sciences History. The different historic milestones for the marine stations and research vessels in Belgium have been mapped on the basis of a thorough study of the archive records, historical sources and publications in the VLIZ Library. This information has been published in a series of fact sheets on the history of Belgian marine research. An overview of this knowledge is provided in the 'History of Belgian marine research' infographic. The history of the research vessels and other vessels deployed for marine research has been outlined in the De Grote Rede article entitled 'Belgische onderzoeksschepen toen, nu en in de toekomst' (Belgian research vessels then, now and in the future).

Publications for professional users. Drawing on its expertise, the division also contributes to publications aimed at other professional target groups.

A book entitled 'Oesterpassie' (passion for oysters) was published on the occasion of the exhibition of the same name at the National Fisheries Museum in Oostduinkerke (NAVIGO). Ten Flemish scientists including two VLIZ employees are cited in the book. From the perspective of their discipline, they give some explanation as to the role played by the oyster and the way in which this delicious shellfish has been used.

The position paper 'Hoogtij(d) voor kustvisserij' (High Time/Tide for Inshore Fisheries) was published within the scope of the GIFS project. It advances the position that it is high time to take targeted actions so as to ensure the future of Belgian inshore fisheries. Facts, figures and obstacles to the development of inshore fisheries are presented, mostly small-scale and artisanal businesses are mapped, and concrete actions are proposed.



THE 'HISTORY OF BELGIAN MARINE RESEARCH' INFOGRAPHIC illustrates the historic milestones of two centuries of marine research in Belgium in terms of researchers, marine stations/institutes and research vessels.

© Scigrades - Pieter Torrez

By order of the Flemish government, VLIZ supports several international organisations. This capitalises on VLIZ's international experience and reputation, and makes it possible to embed important European initiatives in Flanders.

Support to international organisations

www.vliz.be/en/international-mandates

European Marine Board secretariat

The European Marine Board provides a Pan-European platform to its marine scientific member organisations to establish common research priorities, to promote marine research and to close the gap between science and policy. VLIZ represents Flanders in the European Marine Board and was given the mandate by the Flemish government to accommodate and support the EMB secretariat.

www.vliz.be/en/european-marine-board-emb
www.marineboard.eu

The European Marine Board represented 36 member organisations from 19 countries in 2015

Expert groups. EMB brings European scientists and other experts together in order to draw up position documents on marine topics of strategic importance for Europe. Such position documents contain scientific recommendations and strategic policy suggestions which contribute to influencing the current and future national and European research agendas. The working groups on marine training programmes (WG Training) and on valuing marine ecosystems (WG VALMARE) were continued in 2015. The working group on deep-sea research (WG Deep-Sea) was concluded.

Publications. The EMB publications are aimed at European and national research programme managers, strategic developers, policymakers and the marine research community. They analyse the state of affairs of the topic in question and provide a phased plan with concrete recommendations to improve European research. EMB publications in 2015 included 'Delving Deeper: Critical challenges for 21st century deep-sea research'. This 22nd position document is an extensive report covering some of the principal societal trends and opportunities which will impact the deep sea. The publication was officially launched at the 14th Deep Sea Biology Symposium in Portugal in September 2015.

The policy brief 'Delving Deeper', a summary of the respective position paper, was officially presented at the 3rd Ocean of Tomorrow Conference, organised by the European Commission in Brussels on 11 November 2015.

European projects. EMB takes part in framework programme projects of the European Commission to promote cooperation between European marine and maritime stakeholders as well as joint identification of research priorities so as to avoid duplication. EMB is a partner in two new EU Horizon 2020 projects which started in 2015: AtlantOS and Sea Change.

AtlantOS is short for 'Developing in-situ Atlantic Ocean Observations for a better management and sustainable exploitation of the maritime resources'. The project is aimed at achieving a transition from a loosely coordinated set of ocean observations to a sustainable, efficient and fit-for-purpose Integrated Atlantic Ocean Observing System (IAOOS). The tasks to be performed by EMB within the scope of AtlantOS are planned for a later stage of the project.

THE 5TH EMB FORUM PANEL. Left to right: Dr Andrea Tilche (European Commission), Prof Mojib Latif (GEOMAR), Prof Ricardo Serrão Santos (MEP), Dr Ceri Lewis (University of Exeter), Prof Jan Mees (EMB Chair), Prof Michael Schulz (MARUM) and Dr Vladimir Ryabinin (IOC/UNESCO).

The contribution of EMB to the Sea Change project, on the other hand, was concentrated in the first project year. Sea Change strives to increase European citizens' awareness of the importance of the oceans in their lives through different actions. The communication products created by EMB are an animation and a booklet explaining the need for ocean literacy as well as the complex interaction between the ocean, human health and well-being to the general public.

Events. During the European Maritime Days, which took place in Athens and Piraeus on 28-29 May 2015, EMB was well represented with an information stand and as the organiser of two workshops, one about marine training programmes entitled 'How innovative training can support blue growth' and another about underwater heritage entitled 'Maritime cultural heritage and blue growth: what's the connection?'. European Commissioner for Environment, Maritime Affairs and Fisheries Karmenu Vella visited the EMB information stand at the event; the operation of EMB and a few publications were presented on this occasion.

The 5th EMB Forum on the Ocean-Climate Nexus took place at the European Parliament on 21 October 2015. The event provided the opportunity to cooperate with the Consortium for Ocean Leadership, a North American organisation with a role similar to that of EMB. The forum resulted in a statement on the crucial part played by the oceans in climate regulation and global warming. The importance of ocean science as part of the societal response to climate change and the research priorities on climate and ocean were also included in the statement.

This statement was clearly communicated externally in the run-up to the United Nations Framework Convention on Climate Change (COP21). The ocean was the central theme of a two-day conference parallel to the COP21 meeting. The promotion was successful and resulted in the COP21 agreement, which subscribed to the importance of the ocean.

EMB and EuroGOOS organised a workshop on the development of a European Ocean Observing System (EOOS) on 12-13 May 2015. Approximately 20 experts from the marine scientific world and the oceanographic community worked out ideas for the development of a phased plan, a timeline and a management structure for the European Ocean Observing System. EuroGOOS will continue to monitor the development of EOOS.

You can read more on these highlights and many other initiatives and publications by the European Marine Board in their Annual Report 2015.

Seconded VLIZ staff: Dina Eparkhina until June 2015, Karen Donaldson from July 2015 onwards.

EMODnet-secretariat

EMODnet, the European Marine Observation and Data Network, aims to centralise the abundance of marine observations in Europe and make them optimally accessible for use by government bodies, scientists and maritime companies, primarily so as to support sustainable economic growth and employment. The Flemish government has mandated VLIZ to accommodate and support the EMODnet secretariat.

www.vliz.be/en/european-marine-observation-and-data-network-emodnet
www.emodnet.eu/about-secretariat

As part of an EMODnet support package, the Flemish government makes available € 180,000 for the accommodation of the secretariat as well as for investment through VLIZ in technical and scientific support to the development of the central data portal and accompanying data services.

Communication. In 2015, EMODnet launched two videos highlighting the importance of sharing marine data and marine information via an interoperable data infrastructure. The videos also shed light on the relevance of EMODnet for achieving the 'Marine Knowledge 2020' objectives. "Marine Knowledge 2020" brings together marine data from different sources with the aim of (i) helping industry, public authorities and researchers find the data and make more effective use of them to develop new products and services, and (ii) improving our understanding of how the seas behave. The videos are available online via the central data portal www.emodnet.eu/video.

Event. At the EC event "European Maritime Days" that took place in Athens and Piraeus in May 2015, EMODnet manned an information stand where the various EMODnet portals were demonstrated. Several EMODnet portals were presented to an audience of stakeholders during a workshop on ocean observation and marine data.

Conference. On 20 October 2015, two years after the start of EMODnet, DG MARE organised the first EMODnet Open Conference 'Consolidating the Foundations, Building the Future' in cooperation with the EMODnet secretariat and VLIZ. The conference took place in Ostend and was attended by no less than 350 visitors. This was followed by a two-day EMODnet Partner Jamboree on 21 – 22 October. Read more about the EMODnet conference and the two-day EMODnet Partner Jamboree under the highlight on page 22.

EMODNET POSTED TWO VIDEOS highlighting the importance of sharing marine data and marine information via an interoperable data infrastructure.

© EMODnet

EMODnet-MSFD. EMODnet has an important role to play in supporting those responsible for implementing the Marine Strategy Framework Directive (MSFD). The products supplied by EMODnet with regard to pollution, the distribution of marine organisms, etc. should better meet the needs of actors within the scope of the MSFD, other marine environment monitoring obligations and the related reporting obligations.

Staff. The EMODnet secretariat recruited two new employees in 2015. Belén Martín Míguez is now employed as Project Officer and Oonagh McMeel works as Knowledge Transfer Officer.

JPI Oceans

The Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans) is a coordinating and integrating platform open to all European countries that invest in marine and maritime research. Its aim is to combine national research funds and structure cooperation in the field of research policy. VLIZ has been commissioned by the Flemish government to support the JPI Oceans secretariat.

www.vliz.be/en/jpi-healthy-and-productive-seas-and-oceans-jpi-oceans
www.jpi-oceans.eu

First JPI Oceans conference. The first JPI Oceans conference was organised in collaboration with VLIZ in Brussels on 7 May 2015 and was attended by 175 participants from 29 countries. The Strategic Research and Innovation Agenda was officially presented at the event in the presence of Belgian State Secretary for the North Sea Bart Tommelein, State Secretary at the Norwegian Ministry of Trade, Industry and Fisheries Dilek Ayhan and Director-General of DG Research and Innovation at the European Commission Robert-Jan Smits. The Belgian State Secretary referred to the role played by Belgium and Flanders in the JPI Oceans initiative and said he looked forward to a joint action on marine spatial planning. The conference was complemented with panel sessions regarding blue growth and strategic foresight studies. The documentary 'Jean-Michel Cousteau's Secret Ocean 3D' premiered in Belgium prior to the event.

New action – Munitions in the Sea. Belgium was one of 12 countries within JPI Oceans which committed to an action concerning the problem of munitions in our waters. Large quantities of conventional and chemical weapons were dumped in European seas throughout the 20th century. This problem has been recognised, but is not considered a research priority. Coordinated by Italy, the JPI Oceans action therefore aims to assess the risks, define priorities and suggest intervention options. The action will consist of scientific support, technology transfer and knowledge exchange.

Pilot action – Intercalibration for the EU Water Framework Directive (WFD) coastal and transitional waters in the North-East Atlantic. The actions for this pilot action were continued in 2015 following an evaluation of the first results by the environmental administrations. At the administrative level, a second Memorandum of Understanding established the countries' continued financial contributions.

The intercalibration of the evaluation methods for invertebrate zoobenthos in coastal waters was finalised and evaluated positively in 2015. This exercise demonstrated that the member states have fairly comparable methodologies, despite regional differences.

Three additional experts were contracted for the phytoplankton. A new milestone was also reached for the evaluation methods regarding phytoplankton. Chlorophyll a and nutrients from all North-East Atlantic member states were jointly analysed to achieve a common relationship

model. This model indicated which regional and methodological differences had to be taken into account to be able to compare and adjust the legal boundaries of the different member states.

The work is still ongoing for the Wadden Sea and estuaries.

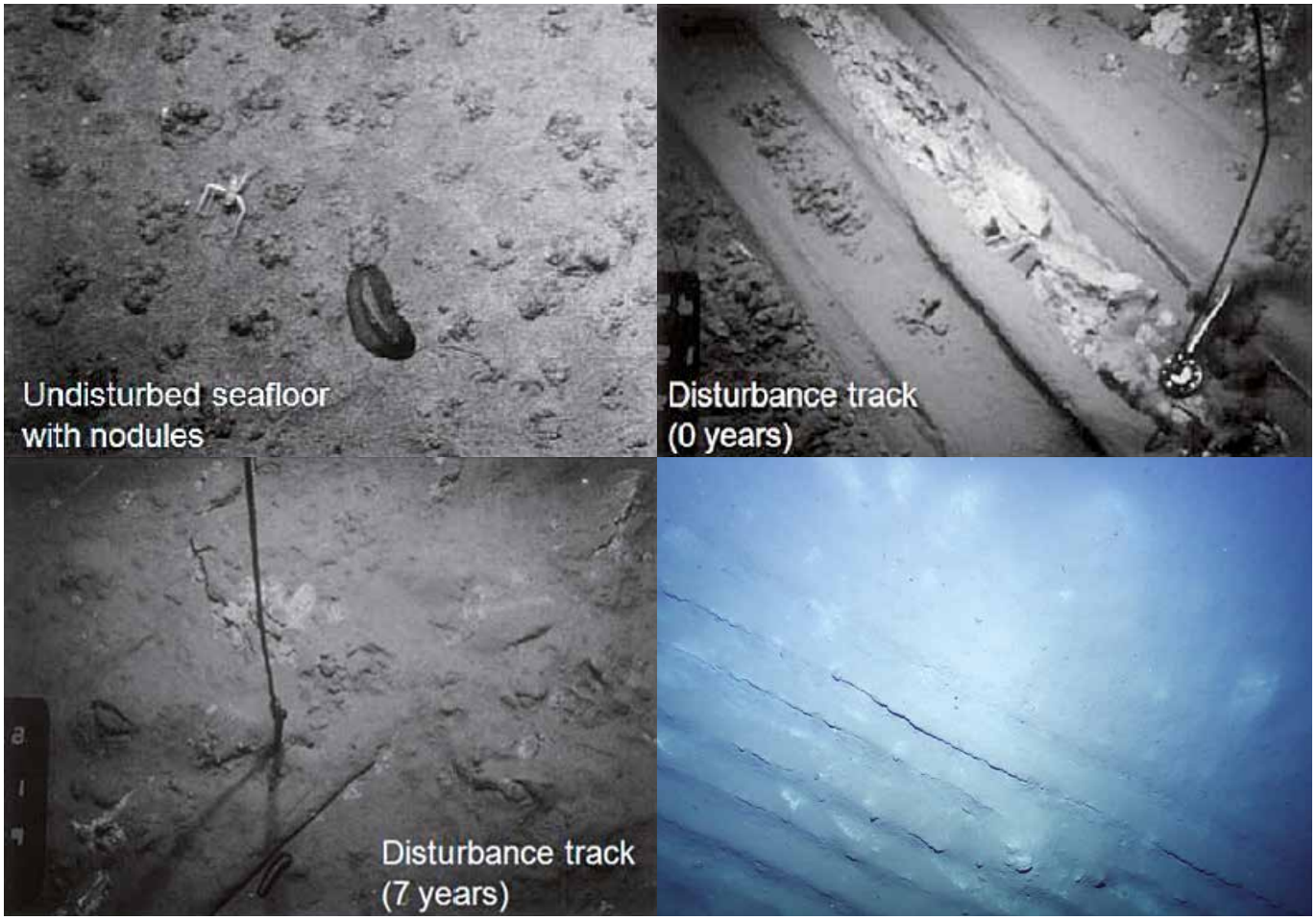
Pilot action – deep-sea mining. A research campaign in the Clarion-Clipperton Fracture Zone and in the so-called DISCOL area in the Pacific Ocean started in March 2015 for the pilot action "Ecological Aspects of Deep-Sea Mining". In 1989, the latter site was used for an experiment in which researchers simulated deep-sea mining activities. The site was revisited 26 years on to assess the long-term impact. The first results have shown that traces of the simulation experiment are still clearly visible and that recolonisation of the site is limited. The campaign and accompanying research activities are funded by 11 member states of JPI Oceans, including Belgium (BELSPO and EWI). The Belgian participation is taken care of by MarBiol-UGent and RBINS. Ghent University also hosted the annual project meeting. This meeting was open to scientists and policymakers, and was attended by approximately 100 participants.

Pilot action – microplastics. Research will focus on the (ecotoxicological) impacts of plastics on marine organisms. In addition, the projects will work on the harmonisation of the monitoring methods and ways to isolate microplastics. This is important as different methodologies are currently used, as a result of which the results of various projects cannot be compared.

Research funds were made available by a joint call for research proposals on microplastics. A total of 21 proposals were received, jointly requesting over € 26 million. After an evaluation by independent experts and the representatives of the participating countries, four proposals were selected. Belgium is one of the ten participating countries which fund the projects. The Belgian funds for the projects were provided by BELSPO. Several Belgian researchers and universities are involved in each project.

- **BASEMAN** - Defining the baselines and standards for microplastics analyses in European waters (participated in by Université de Liège)
- **EPEMARE** - Ecotoxicological effects of microplastics in marine ecosystems (participated in by the University of Antwerp)
- **PLASTOX** - Direct and indirect ecotoxicological impacts of microplastics on marine organisms (participated in by Ghent University)
- **WEATHER-MIC** - How microplastic weathering changes its transport, fate and toxicity in the marine environment (participated in by Katholieke Universiteit Leuven).

G7 considers the future of the oceans a priority. The leaders of the world's seven largest economies discussed marine litter at the G7 summit in Berlin in 2015. The Leaders' Declaration of this summit acknowledged the risks posed by marine litter, particularly plastics, to marine ecosystems and human health. In addition, the statement called for actions and solutions to combat this global problem, and an action plan was drawn up. The summit was followed by a meeting of the G7 ministers of science and the European Commissioner for Research, Innovation and Science. In the statement that followed the meeting, the activities of JPI Oceans were acknowledged and the ministers asked to build further on the momentum. The growing interest in deep-sea mining was also discussed and the ministers referred to the research activities on the impact of deep-sea mining within the scope of JPI Oceans.



A RESEARCH CAMPAIGN IN THE DISCOL AREA in the Pacific Ocean started in March 2015 for the pilot action "Ecological Aspects of Deep-Sea Mining". In 1989, an experiment was conducted on this site in which researchers simulated deep-sea mining activities. In the photo series you can see images of the seabed taken prior to the experiment (undisturbed seafloor with nodules), immediately after the simulation (0 years), and 7 years and 26 years after the disturbance (in 2015).

Seconded VLIZ staff: Wendy Bonne, Willem De Moor and Tom Redd.

UNESCO/IOC Project Office for IODE

VLIZ has a special responsibility to accommodate and support the secretariat of the International Oceanographic Data and Information Exchange Programme (IODE) of UNESCO's Intergovernmental Oceanographic Commission (IOC). The UNESCO/IOC Project Office for IODE is the principal training centre of the IODE programme worldwide.

www.vliz.be/en/unescoioc-project-office-iode
www.iode.org

The Flemish government annually contributes approximately € 250,000 to the operational support of the UNESCO/IOC Project Office for IODE, and VLIZ seconds three employees to the office.

Thanks to this support, Flanders contributes to the development of international coordination with regard to oceanography and to the promotion of sustainable use and development of coastal areas worldwide. In addition to the funds made available by the Flemish government through VLIZ, the Project Office also receives funds from UNESCO, the European Commission, the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST), and individual IOC member states.

Training courses. The UNESCO/IOC Project Office for IODE in Ostend is primarily a training centre where oceanographic data and information managers can acquire the necessary knowledge and skills thanks to the OceanTeacher Global Academy Project (OTGA). OceanTeacher is internationally considered a reference for (short-term) technical training mechanisms.

In 2015, the UNESCO/IOC Project Office for IODE organised 14 training courses within the scope of the OceanTeacher Global Academy project, four of which were held at the InnovOcean site in Ostend. A total of 459 participants, including 380 students from 66 countries, took part in these training activities. Once more, particular attention was paid to an equal distribution between male and female participants. Furthermore, the OceanTeacher Global Academy project heralds a new age in training courses: while most courses had been held in Ostend until then (which entailed limitations on the number of participants and the language of the course), regional training centres were set up in Colombia, the United States, Senegal, Kenya, South Africa, India, Malaysia and China in 2015. Thanks to this new network, it will not just be possible to train more students but also to organise courses in different languages (English, French, Spanish, Chinese, etc.).

Meeting place. The UNESCO/IOC Project Office for IODE in Ostend is also a meeting place where experts and data and information managers can discuss and develop IODE projects. Seven international meetings were organised at the Project Office in 2015. The complete list of meetings, workshops, conferences etc. can be consulted on the IODE calendar at the IODE website.

However, 2015 was a special year for IODE due to the 10th anniversary of the Project Office. This milestone was celebrated in Bruges on 16 March 2015 in the presence of about 160 invited guests.

On the occasion of this anniversary, the UNESCO Platform Flanders published the brochure 'Unlocking the Ocean – 10 years UNESCO/IOC Project Office for IODE in Ostend'.

This was followed by de 23rd session of the IODE Committee, also in Bruges. This edition welcomed 105 participants from 40 IOC member states and 10 organisations. The session made several important decisions relating to IODE's future structure and strategy.

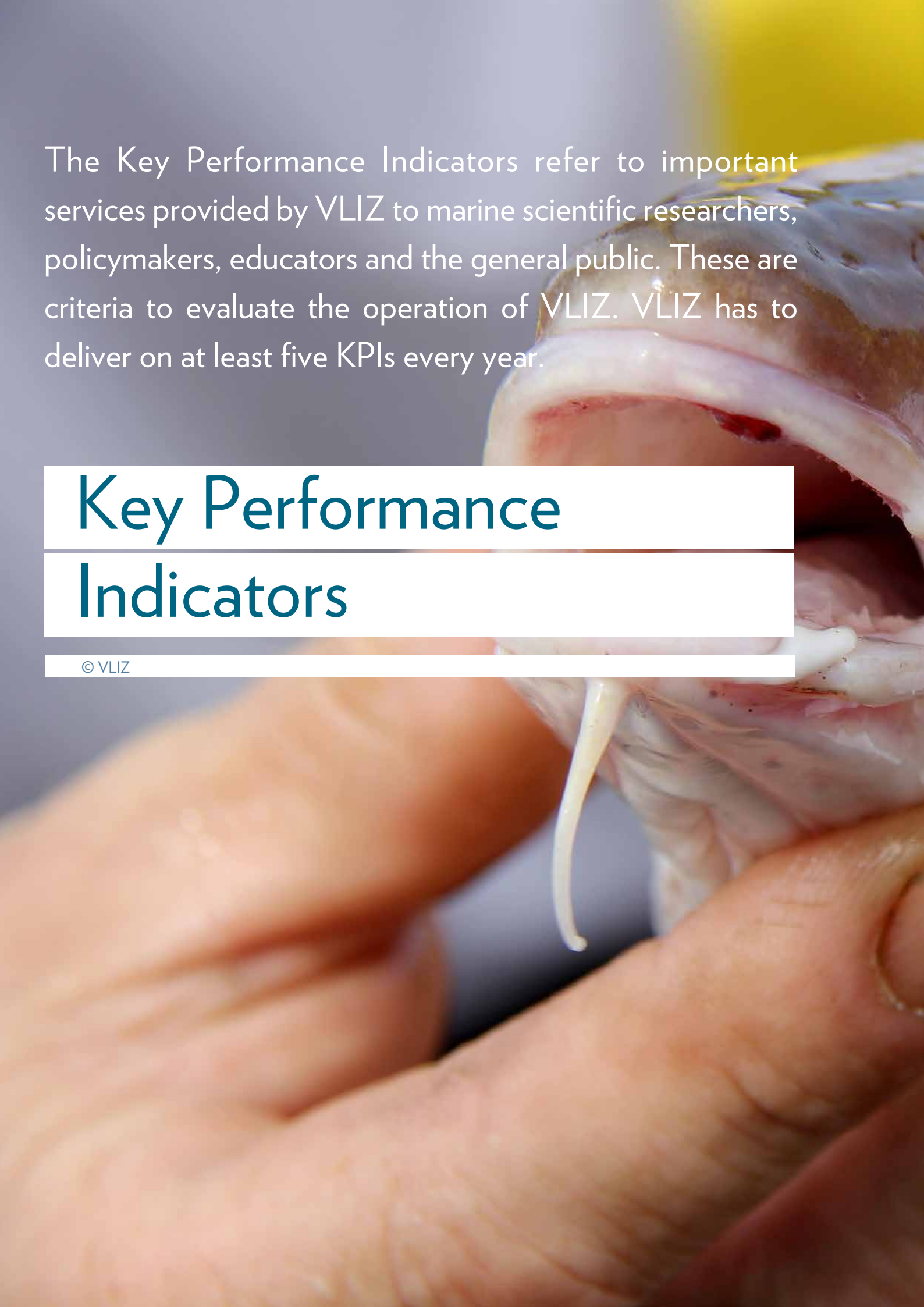
OBIS. The OBIS project made considerable progress in 2015: three new OBIS nodes were added to the network: Arctic OBIS node, Ocean Tracking Network and Ocean Past Initiative. The OBIS nodes were 'harvested' four times in 2015, and 4.3 million observations from 278 new data sets were added to the OBIS database.

A new development to support time series analyses, ecological niche modelling and climate change studies is carried out within the scope of OBIS-ENV-DATA, a biennial IODE pilot project in which OBIS is expanded with ecological data. This pilot project was launched in March 2015 and is carried out under the supervision of VLIZ in partnership with the OBIS secretariat. It is aimed at finding solutions for extending data in biological data sets to more than just registration of the occurrence of species. As a result, OBIS is upgraded to a database which can also include a hierarchical sampling structure containing ecological and biometric data as well as details on the nature of the observation / measurement, the data collection method including the sampling equipment used, the data processing and the efforts made with regard to sampling.

THE 10TH ANNIVERSARY OF THE 'UNESCO/IOC PROJECT OFFICE FOR IODE'
was celebrated in Provinciaal Hof in Bruges in the presence of 160 attendants.

Online Data and Information Products. The Project Office provides several data and information services to the worldwide oceanographic community. It currently hosts over 80 websites. These include OceanExpert: the directory of the oceanographic community; OceanDocs: an electronic library; and OceanDataPractices: an electronic library with reference documents. The web platform supporting the OceanTeacher project is also managed and further developed in Ostend.

Seconded VLIZ staff: Kristin de Lichtervelde, Claudia Delgado, Annelies Groen and Mark Van Crombrugge.



The Key Performance Indicators refer to important services provided by VLIZ to marine scientific researchers, policymakers, educators and the general public. These are criteria to evaluate the operation of VLIZ. VLIZ has to deliver on at least five KPIs every year.

Key Performance Indicators

KPI 1

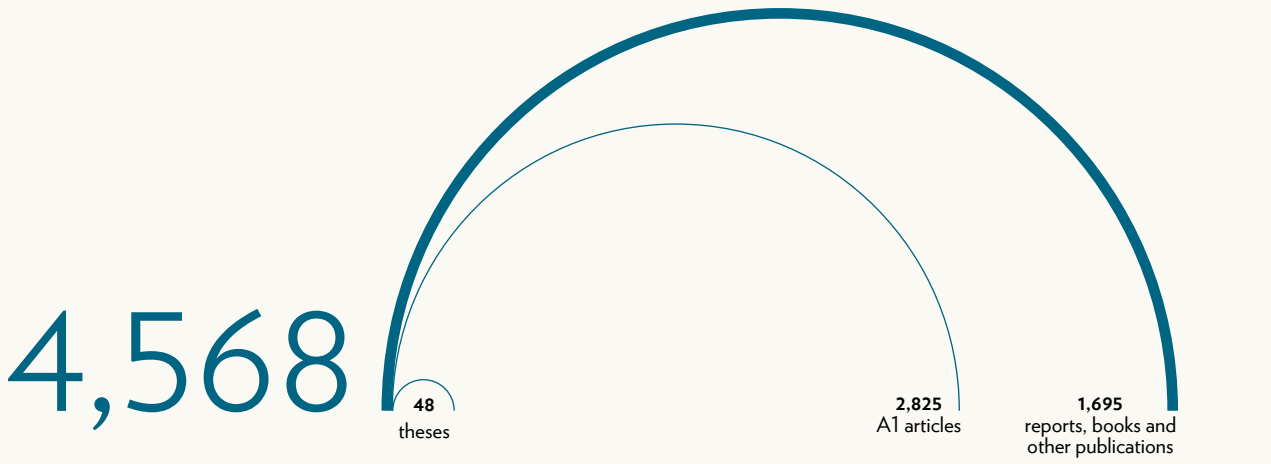
Increase in data volume of the Open Marine Archive for Flanders (articles, reports and theses) of 1,000 units a year.

A key element of the VLIZ library collection is the Open Marine Archive (OMA), which makes publications on the Belgian coast written by Belgian marine scientists digitally available. OMA includes peer-reviewed articles as well as reports, theses, conference papers, scientific posters and publications intended for a general audience.

Internet users from all over the world can freely consult and download this wide range of publications from the VLIZ website (www.vliz.be/en/open-marine-archive). In addition, search engines such as Google Scholar give publications included in OMA a prominent ranking. This way, Belgian marine research results attain maximum visibility and dissemination via the Internet, and the scientific communication of these results is promoted.

A total of 4,568 new references were added to the Open Marine Archive in 2015. These references include 2,825 A1 articles, 48 theses and 1,695 reports, books and other publications.

NEW REFERENCES ADDED TO THE OPEN MARINE ARCHIVE



By way of comparison: a total of 3,170 new references were added to the Open Marine Archive in 2014. These references included 1,274 A1 articles, 56 theses and 1,840 reports, books and other publications.

KPI 2

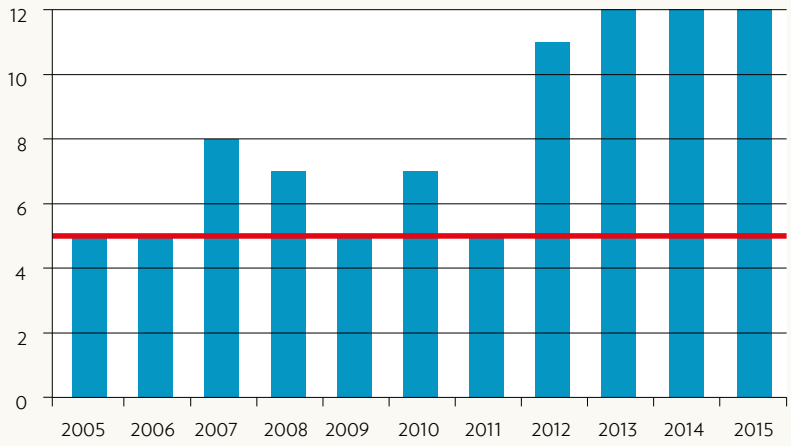
Yearly publication of at least five issues of the electronic newsletter 'VLIZINE' and three issues of 'De Grote Rede'.

One of the responsibilities of the Flanders Marine Institute is to popularise and distribute marine scientific information towards various target groups. The Communication division takes care of two regular publications: the information magazine 'De Grote Rede' and the digital newsletter 'VLIZINE'.

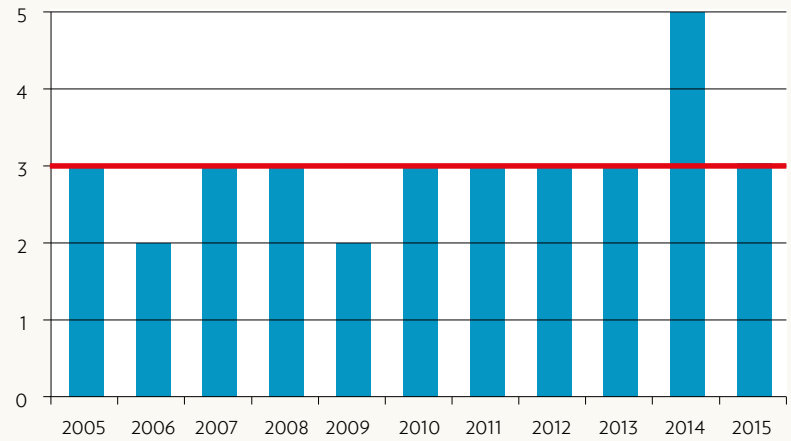
VLIZINE provides practical information on research and policy supplied by and intended for Flemish marine scientists. It also includes announcements of new projects and publications, events, doctorates, vacancies and fairs as well as interesting scientific facts on our coast, seas and ocean. A total of 12 issues of VLIZINE reaching 1,206 subscribers appeared in 2015.

'De Grote Rede' is the information magazine on the coast and sea for the Flemish region and surrounding area. With three leading articles and nine standard features, 'De Grote Rede' provides its readers with a varied and objective outlook on current knowledge about the coast, sea and ocean as well as an explanation of the conducted research and pursued policy. VLIZ published 3 issues of De Grote Rede and sent these to 7,249 subscribers in 2015. The results of a satisfaction survey appeared in De Grote Rede 42.

NUMBER OF ISSUES OF VLIZINE



NUMBER OF ISSUES OF DE GROTE REDE



KPI 3

At least 150 sailing days spent on scientific research and associated measurement campaigns on a yearly basis.

VLIZ provides researchers with logistical support by ensuring the management, maintenance and operation of research infrastructure and equipment.

VLIZ has three vessels at its disposal for scientific research: RV Simon Stevin, RIB Zeekat and ROV Genesis. If need be, other vessels, e.g. from the Flemish fleet, can be deployed for research and monitoring activities in the Scheldt estuary. The vessels Scaldis I, Pierre Petit, Zeeschelde and Luctor were used for this purpose in 2015.

RV Simon Stevin is deployed for academic coastal oceanographic research in the Southern Bight of the North Sea and the eastern part of the English Channel. It also serves as a training platform for students from marine sciences as well as maritime training courses.

ROV Genesis is an unmanned underwater vehicle used nationally and internationally on research vessels.

RIB Zeekat can be deployed from the research vessel Simon Stevin or from the shore. RIB Zeekat can be deployed in the Scheldt estuary as well. The reinforced keel is designed to run the vessel aground on tidal banks.

VLIZ coordinated a total of 251 actual scientific days at sea in the calendar year 2015, including 176 with RV Simon Stevin, 21 with RIB Zeekat, 4 with ROV Genesis and 50 with other vessels from VLOOT dab, NIOZ and the Maritime Access division. Throughout the year, 18 continuous trips (consecutive days including sampling at night) were made with RV Simon Stevin. Research vessel Simon Stevin was deployed for 1,600 hours in 2015 for sampling in the Belgian coastal waters, the Scheldt estuary and the Dutch continental shelf.

NUMBER OF DAYS AT SEA

Vessels	2006	2007	2008	2009	2010	2011	2012	2013	2015	2015
RV Simon Stevin							100	147	183	176
RV Zeeleeuw	122	150	162	166	151	152	57			
RIB Zeekat	35	51	39	32	57	40	37	5	17	21
ROV Genesis							6	26	20	4
Third-party vessels	41	38	37	36	84	73	110	42	48	52
Total	**188**	**239**	**238**	**234**	**292**	**265**	**310**	**220**	**268**	**253**

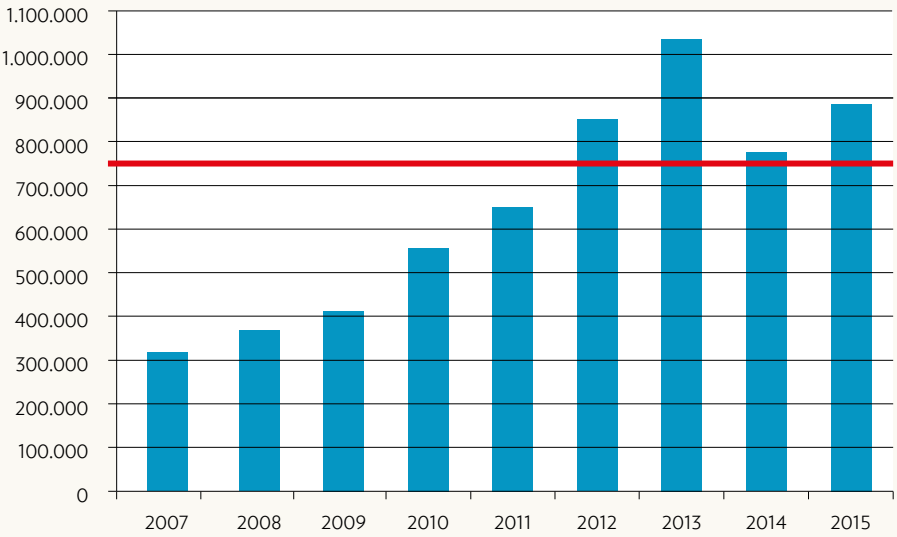
KPI 4

At least 750,000 unique visitors to the informative websites managed by VLIZ on a yearly basis.

One of the principal aims of VLIZ is to make the versatile and high-quality marine and coastal research in Flanders and the wider region more widely known. For this purpose we invest a great deal in making research results and derivative data products available on the Internet.

A total of 890,267 unique visitors consulted VLIZ's informative websites with the URL www.vliz.be in 2015. The most consulted pages were the VLIZ homepage, the IMIS database, the Coastal Wiki, the catalogue of the VLIZ library, the sluice dock website and the Wetenschatten website.

UNIQUE VISITORS TO THE VLIZ WEBSITES



KPI 5

The organisation of at least two initiatives (seminars, conferences, workshops, etc.) a year for teachers.

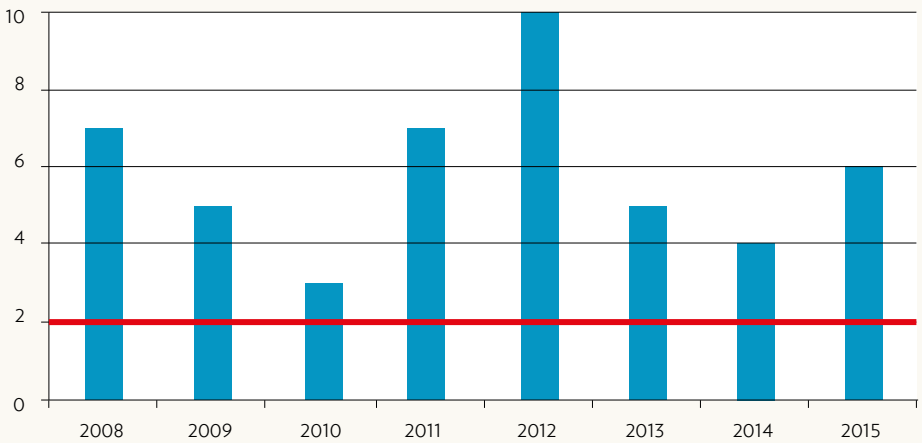
Since 2007, VLIZ has placed a special focus on schools and other educational institutes by means of a Structural Partnership with the Flemish Government. Generally educational products such as practical exercises, posters, images, photo and film galleries as well as thematically arranged marine scientific information can be consulted on the VLIZ website. Specific learning modules for the second and third cycle of secondary education are available on the digital learning platform 'Planeet Zee' (Planet Ocean). These rich sources of information are presented to teachers and other educators (e.g. guides) during seminars, conferences or workshops.

VLIZ (co)organised 6 initiatives for teachers and other educators in 2015.

INITIATIVES FOR TEACHERS AND OTHER EDUCATORS IN 2015

		LOCATION	ORGANISATION
01 - 03.2015	10 workshops within the scope of PlaneetZee@Work	MarBiol - UGent, GhEnToxLab - UGent, Antwerp Maritime Academy, InnovOcean site Ostend, etc.	co-organised by VLIZ
25.02.2015	Seaside Dip for Teachers workshop	Artevelde University College, Ghent	co-organised by VLIZ
22.04.2015	Workshop for secondary education natural science teacher training (BSc) at Karel De Grote University College, Antwerp	Marine Station Ostend (VLIZ)	VLIZ
28.09.2015	EMSEA15: European Marine Science Educators Association Conference	HCMR, Crete	EMSEA (in which VLIZ actively participates)
07.10.2015	Seaside Dip Workshop for Vereniging Leerkrachten Aardrijkskunde (Geography Teachers Association)	InnovOcean site, Ostend	co-organised by VLIZ
14.11.2015	Workshop at 21st Flemish Congress for Science Teachers	VIVES, Kortrijk	VeLeWe

INITIATIVES FOR TEACHERS AND OTHER EDUCATORS



KPI 6

The development and provision of at least two educational teaching packages on the sea and coast a year.

In 2015, VLIZ developed 2 educational teaching packages on the sea and coast as well as 2 practical tests. The learning modules, based on the final attainment levels for the second and third cycle of secondary education, are available on the digital learning platform Planeet Zee (www.planeetzee.be/lesmodules). The practical exercises can be carried out during science classes and can be consulted on the VLIZ website (www.vliz.be/en/exercises).

Planeet Zee (Planet Ocean) learning modules:

- Survival in the deep sea
- Life in the North Sea

Practical exercises:

- Ecology and biodiversity
- Microbial life around hydrothermal vents in the deep sea: chemosynthesis
- Study the differences: 'Life in the North Sea' drawing assignment

Colophon

This 2015 Annual Report of the Flanders Marine Institute (VLIZ) has been presented for approval to the Board of Directors and the General Assembly on 22 March 2016.

Coordination and final editing:

- **Jan Mees** – General Director of VLIZ
- **Tina Mertens** – VLIZ policy officer
- **Jan Seys** – head of the VLIZ Communication division
- **Karen Rappé** – Senior scientific assistant of the VLIZ Communication division

Many thanks to all who contributed to the completion of this document.

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Marine Station Ostend (VLIZ). Copyright: VLIZ - Verhaeghe

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ISBN 978-94-92043-23-8
D/2016/10.906/2

Annexes

Balance Sheet and Income Statement

December 2015

BALANCE ON 31 DECEMBER 2015 (kEUR)

Assets	31-12-2014	31-12-2015
Intangible assets	19.76	7.44
Tangible fixed assets	5,405.73	5,236.96
Financial assets	0	0
Amounts receivable within one year	971.31	1376.32
Cash investments	257.66	260.28
Liquid assets	592.31	1,082.08
Deferred charges and accrued income	0	0
Total	**7,426.77**	**7,963.08**

Liabilities		
Allocated funds	375	375
Profit and losses brought forward	1,341.71	972.63
Capital grants	4,219.57	4,613.62
Provisions for liabilities and charges	169	0
Amounts payable after one year	330.59	0
Amounts payable within one year	810.65	2,001.83
Deferred charges and accrued income	0.25	0
Total	**7,426.77**	**7,963.08**

The figures of the balance sheet and income statement include all subsidies received by VLIZ as stated in the management agreement or the covenant.

No surplus of the allocated subsidy was brought forward as a reserve in 2015 (art. 11 $ 3 of the covenant).

Budgetary deviations from the 2015 budget (art. 11 $ 3 of the covenant): none.

INCOME STATEMENT ON 31 DECEMBER 2015 (kEUR)

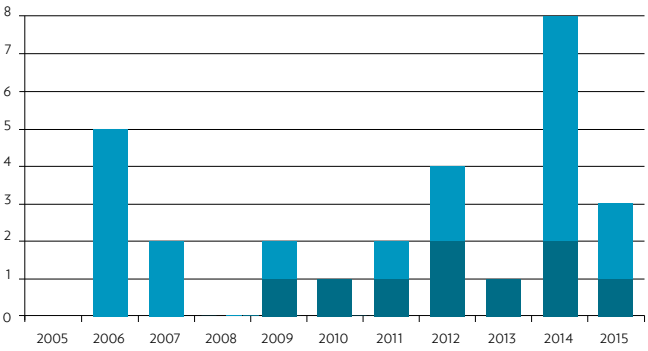
Income	31-12-2014	31-12-2015
Operating income	7,858.44	7,489.32
Financial income	642.42	705.20
Exceptional income	9.22	6.84
Total	**8,510.08**	**8,201.36**
Costs		
Remuneration and social security	4,533.88	4,554.91
Services and other goods	2,078	1,966.12
Provisions for liabilities and charges	169	-169
Depreciation	832.14	871.92
Financial expenses	20.10	17.76
Other operating expenses	1,341.79	1,328.73
Exceptional expenses	5	0
Total	**8,979.91**	**8,570.44**
Income		
Result for the financial year	**-469.83**	**-369.08**
Transfer to allocated funds	**0.00**	**0.00**
Profit brought forward as of 31/12	**1,341.71**	**972.63**

Other Indicators

Coordination division

Figures for the majority of indicators date back to the start-up year of VLIZ (1999). However, to promote readability of the diagrams, the choice was made to begin the time series in 2005. For figures prior to 2005, please consult the 2013 Annual Report on www.vliz.be/en/vliz-annual-report.

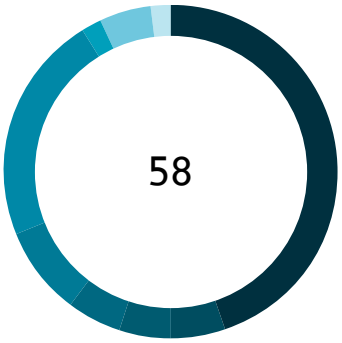
AGREEMENTS WITH MARINE RESEARCH GROUPS



Number of national cooperation agreements: 2
Number of international cooperation agreements: 1
1 national discontinued. Total: 34

A list of all agreements is available on www.vliz.be/en/cooperation-agreements.

PERFORMANCE INTERVIEWS



Data Centre	26
Communication	3
Library	3
Policy Information	3
Research Infrastructure	5
Coordination	13
EMB	1
IODE	3
JPI Oceans	1

2015 ENVIRONMENTAL INDICATORS

PAPER CONSUMPTION

1.08

Number of packs of paper per staff member

An increase compared to 2014 (0.77)

TONER CONSUMPTION

0.85

Number of toners for printers and photocopiers used per staff member per personeelslid

An increase compared to 2014 (0.69)

GAS, WATER & ELECTRICITY CONSUMPTION

38,452 m^3 171,909 kWh 573 m^3

Values in 2014: gas 35,694 m^3, electricity 102,067 kWh, water 416 m^3

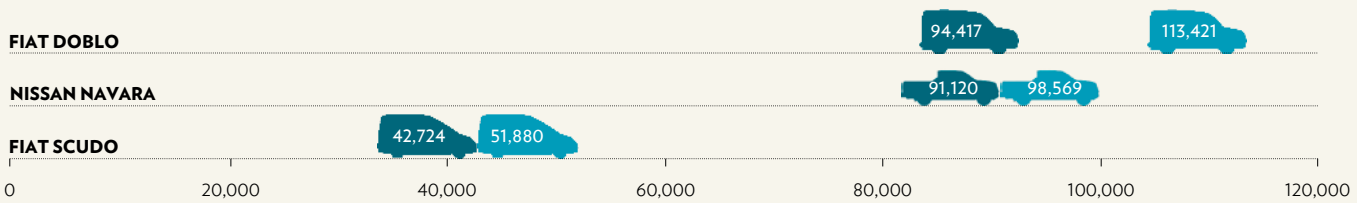
COMMUTING

€60,029

Train, tram and bicycle allowances refunded to employees

An increase compared to 2014 (38,406 EUR)

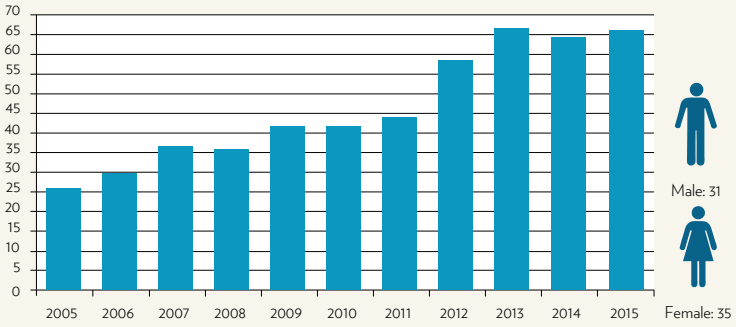
NUMBER OF KILOMETRES OF VLIZ CARS AT THE END OF 2015



The number of kilometres driven up to the end of 2015
The number of kilometres driven up to the end of 2014

2015 SOCIAL INDICATORS

NUMBER OF STAFF



FOREIGN ORIGIN

2

Number of people of foreign origin*

* Source: Wikipedia (Flemish perspective): any person living in the Flemish or Brussels Region, of whom at least one grandparent was born outside the European Union – excluding other Western and Northern European states, the US and Canada.

EMPLOYMENT DISABILITY

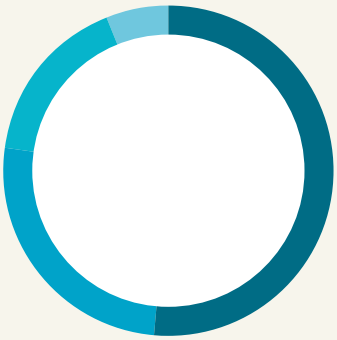
1

Number of people with an employment disability

PERMANENT & TEMPORARY STAFF

Permanent	56%
Temporary	44%

AGE OF EMPLOYEES



-34 y	34
35-44 y	17
45-54 y	11
55+	4

STAFF TURNOVER

In: +9

Out: -4

Compared to 2014: +5 in en -5 out.

LEAVES ET AL

26%

Total number of days of absence (= leave, illness ...) versus the total number of days to be performed

An increase compared to 2014 (20%)

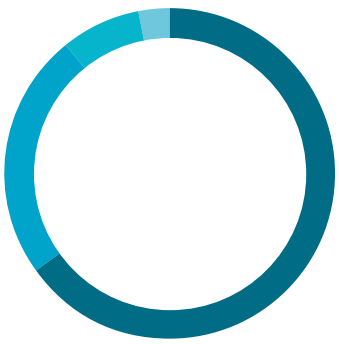
SICKNESS ABSENCE

2.70%

Number of days on which staff reported sick versus the total number of days to be performed

An increase compared to 2014 (2.28%)

LEVEL OF EDUCATION



A	43
B	16
C	5
D	2

- 59 higher-educated employees
- 7 persons who completed secondary education at most (ESF definition)

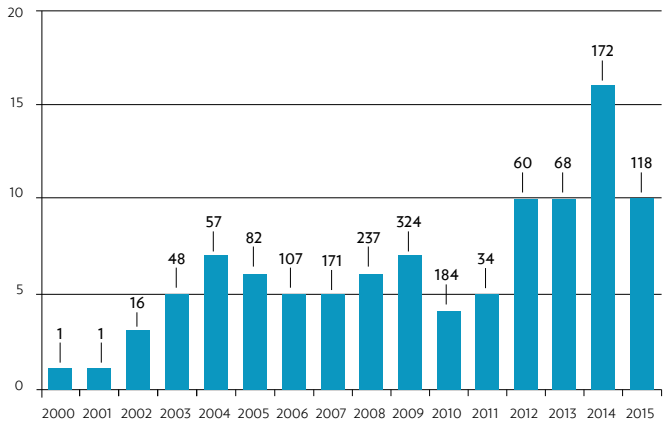
TRAINING COURSES

25

Total number of training co
taken by staff

An increase compared to 2014 (11)

MENTION OF THE TERMS 'SEA', 'MARINE' OR 'VLIZ' IN POLICY-RELATED DOCUMENTS

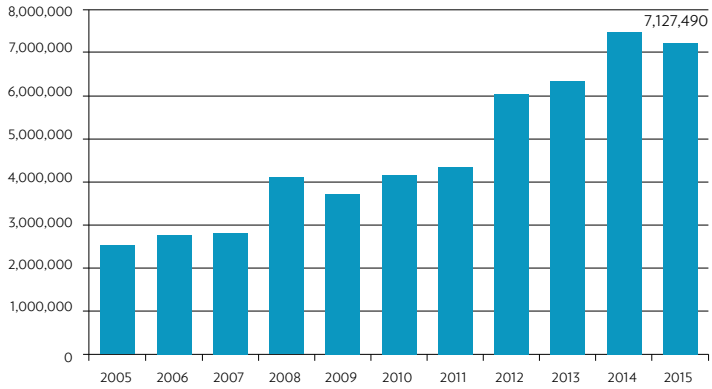


Number of policy-related documents mentioning the search terms

Figure = number of mentioned search terms

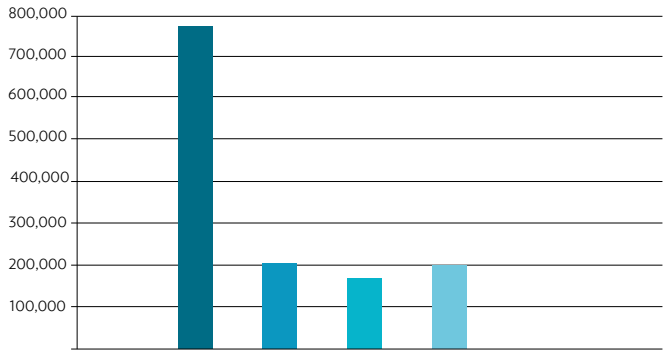
Note: the counts include searches of policy papers (ministers/state secretaries competent for the North Sea, science and innovation, the environment and climate), policy briefs, coalition agreements (Flemish/federal), press releases, ministerial letters, inaugural speeches, policy plans as to science communication, and budget browsers. This list is not exhaustive, as various documents are no longer digitally searchable.
This means that the figures are a rough estimate.

VLIZ TURNOVER (in euro)



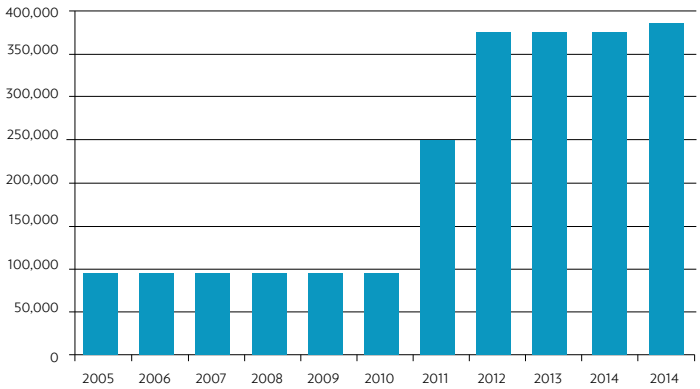
Membership fees, donations, legacies and subsidies

TURNOVER OF OTHER PARTNERS IN 2015 (in euro)



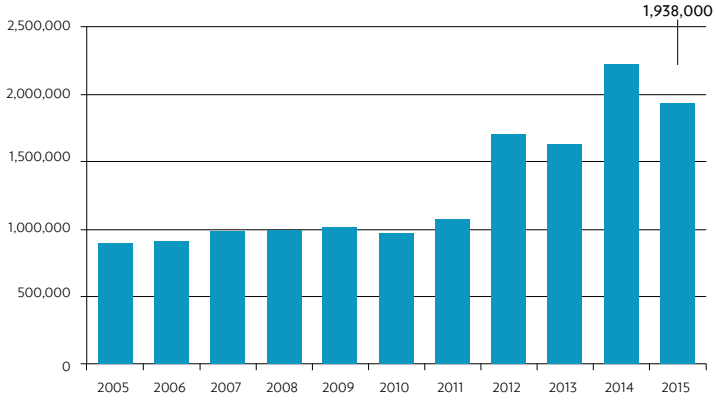
IOC Project Office for IODE	771,468 EUR
European Marine Board secretariat	201,700 EUR
EMODnet secretariat	170,000 EUR
JPI Oceans	198,800 EUR

SOCIAL LIABILITIES (in euro)



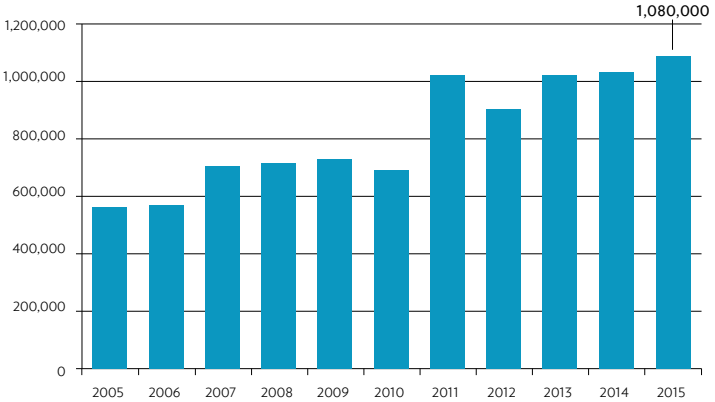
OVERVIEW OF SUBSIDIES

ACTIVITIES OF FLEMISH GOVERNMENT (in euro)



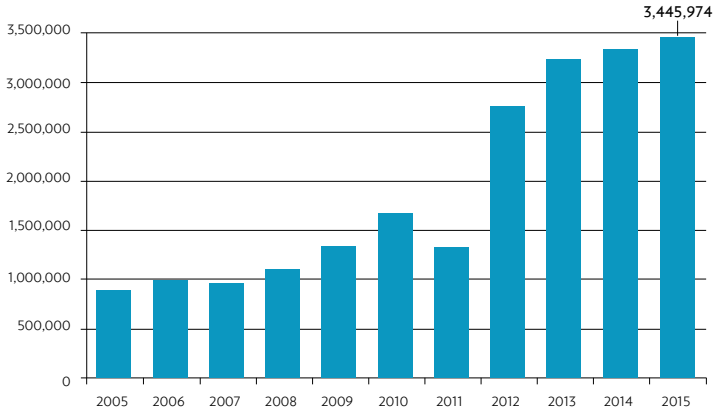
INTERNATIONAL SUBSIDIES

IOC PROJECT OFFICE FOR IODE, EMB, EMODnet secretariat, JPI Oceans (in euro)

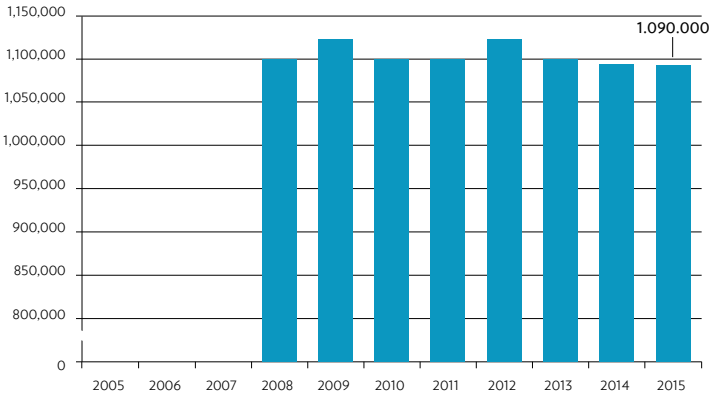


EXTERNAL FINANCING

LifeWatch, province of West Flanders, national and international projects (in euro)

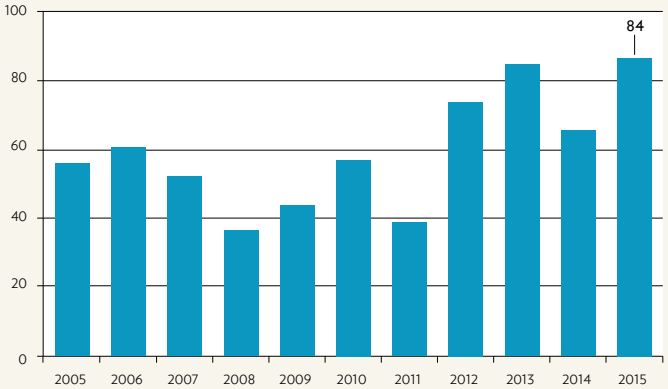


INVESTMENTS BY THE FLEMISH GOVERNMENT (in euro)



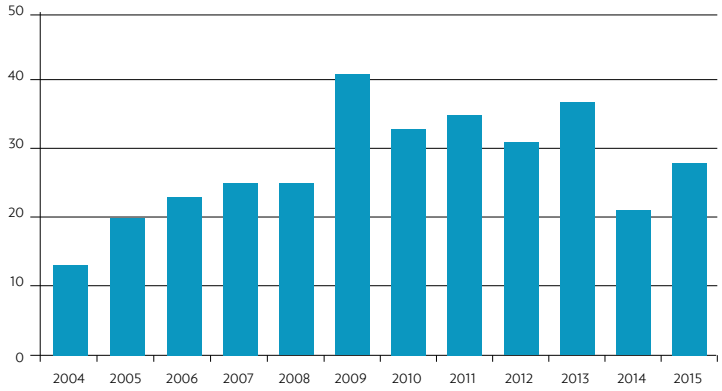
EXTERNAL FINANCING VERSUS OTHER FINANCING

(in %)



Research Infrastructure division

NUMBER OF PUBLICATIONS ON VLIZ RESEARCH FACILITIES
(RV SIMON STEVIN / RV ZEELEEUW AND GREENHOUSES)



Sum: 344

SCIENTIFIC PROJECTS

148

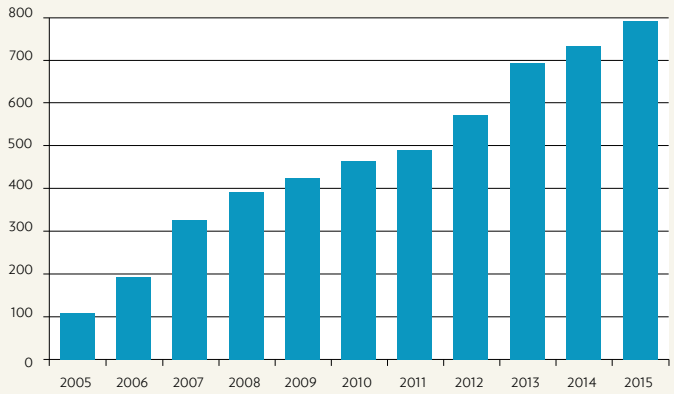
Number of scientific projects which have made use of RV Simon Stevin / RV Zeeleeuw since 1999.
In 2015: 34 projects

© VLIZ

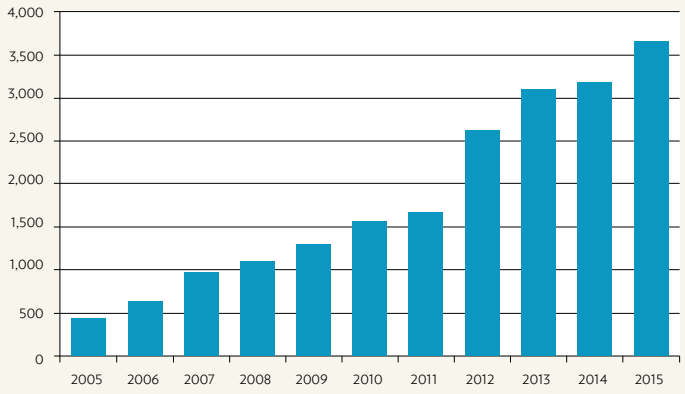
Data Centre division

ARCHIVED AND DISCLOSED DATA SETS

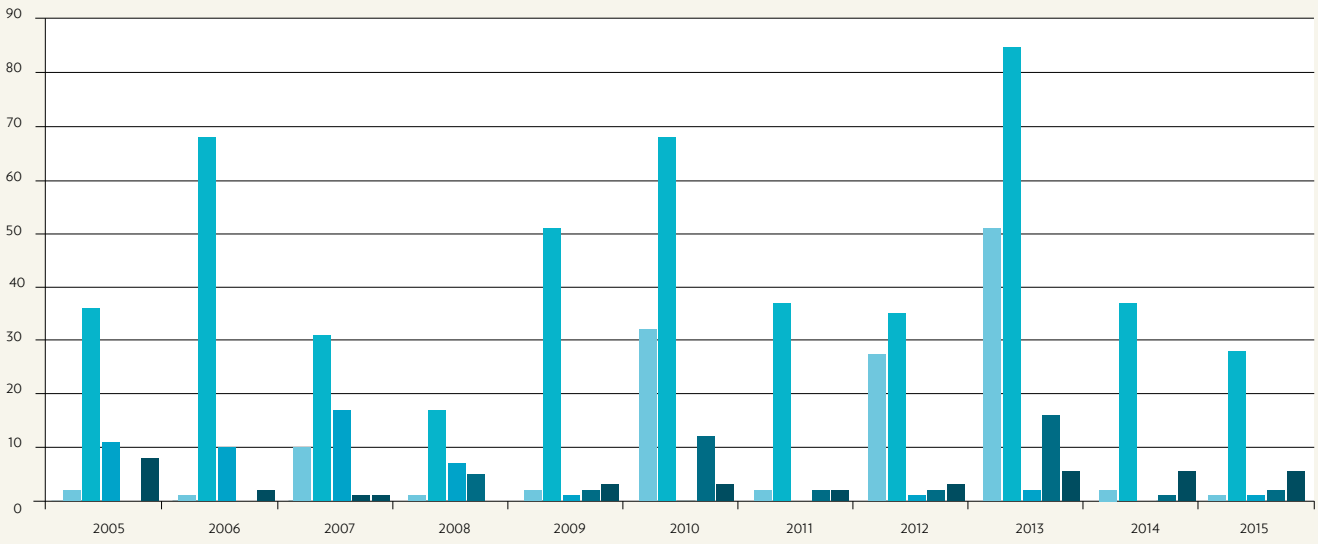
ARCHIVED DATA SETS



DISCLOSED DATA SETS



INTEGRATED DATA SETS



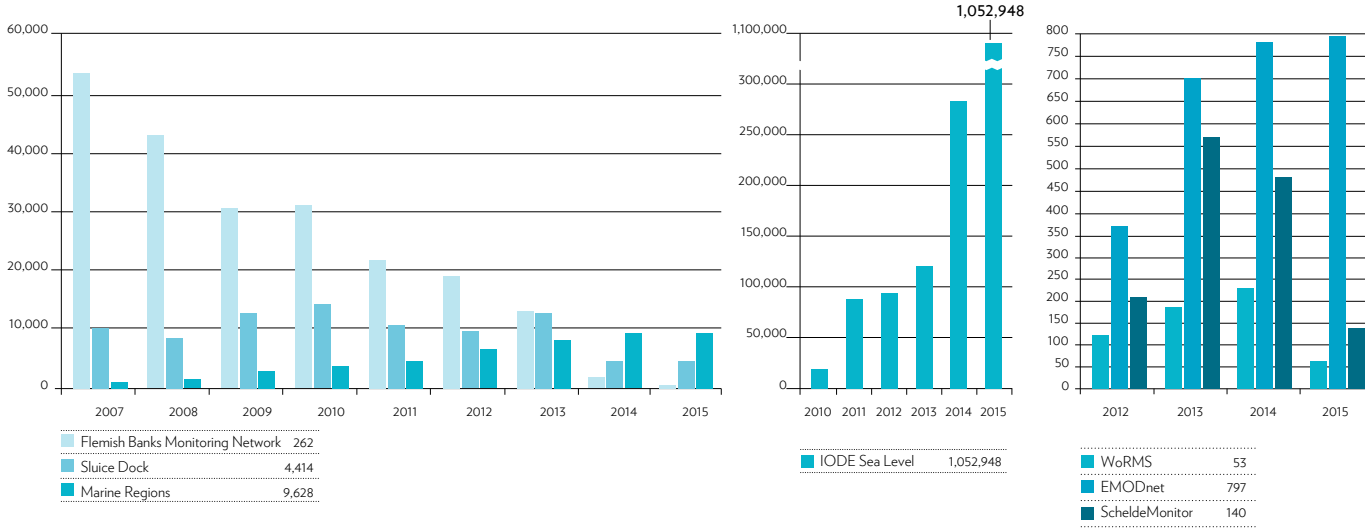
integrated in WoRMS	1
integrated in EurOBIS	28
integrated in IMERS	1
integrated in ScheldeMonitor data portal	2
integrated in Marine Regions	5

SUPPLIED DATA

175 Number of data requests (via data@VLIZ.be) in 2015

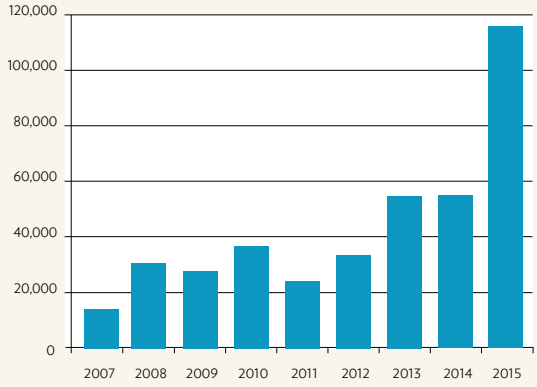
An increase compared to 2014 (170)

DOWNLOADS OF DATA



DOWNLOADS OF INFORMATIVE PRODUCTS

DE GROTE REDE



TEACHING PACKAGES

5,848

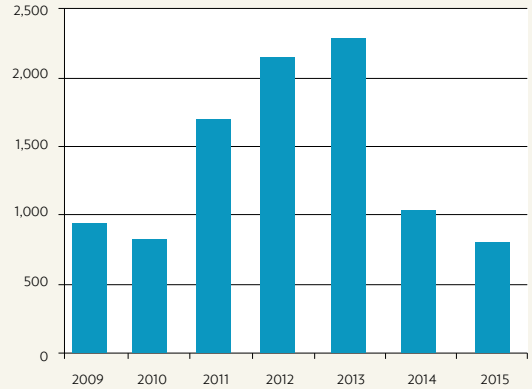
Since 01.11.2011

SIMON STEVIN PRODUCTS

52,375

Since 01.09.2012

ZEEKRANT



VIDEO

314,875

2005-2015 period

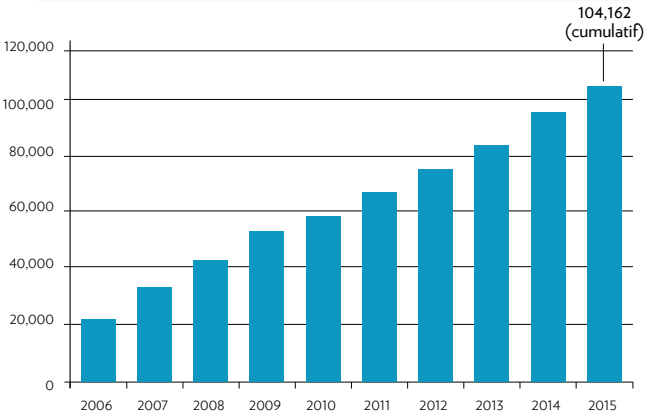
PHOTOS

20,104,603

2005-2015 period

Library division

GROWTH OF LIBRARY COLLECTION

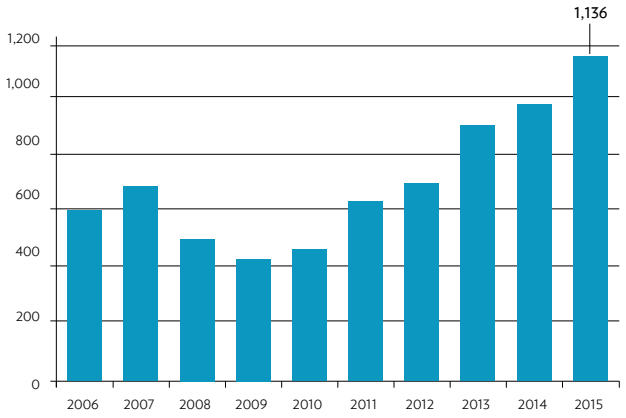


Total number of new publications in the library, i.e. the growth of the paper and digital collection

ACQUISITIONS IN 2015

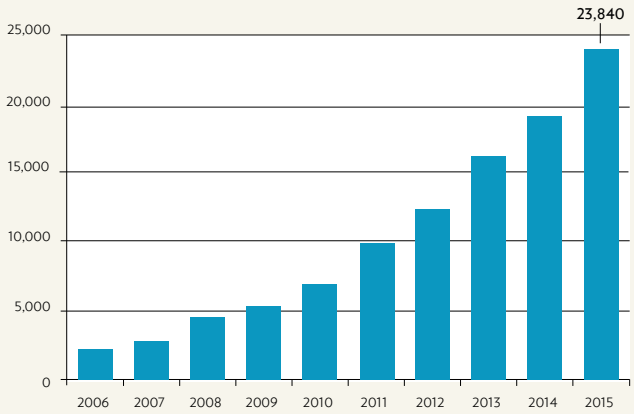
Values for 2014: 82% digital and 18% on paper

LITERATURE REQUESTS IN THE LIBRARY

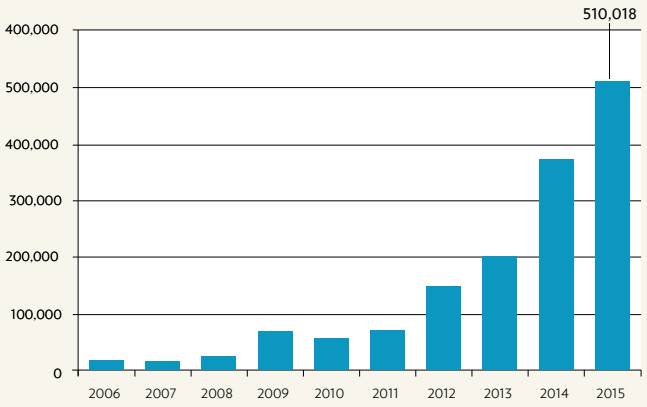


Total number of literature requests (incl. requests for information) to the library via library@vliz.be

REFERENCES IN THE OPEN MARINE ARCHIVE



TOTAL NUMBER OF DOWNLOADS FROM THE OPEN MARINE ARCHIVE



UNIQUE TITLES DOWNLOADED FROM THE OPEN MARINE ARCHIVE IN 2015

21,209

Total number of downloads in 2015

An increase compared to 2014 (19,033)

OTHER ITEMS FROM THE OPEN ACCESS COLLECTION

19,089

Unique titles downloaded in 2015

An decrease compared to 2014 (24,396)

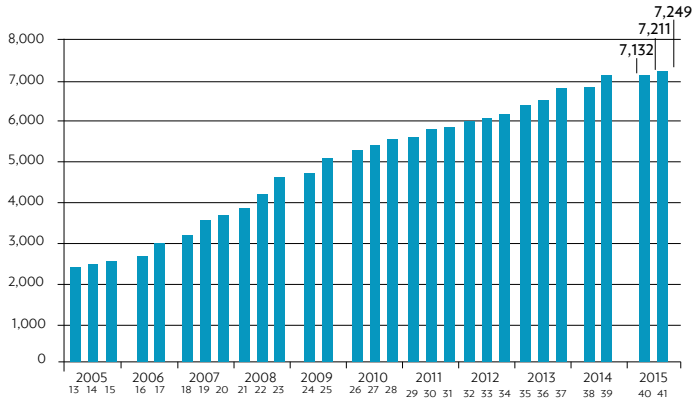
483,103

Total number of downloads in 2015

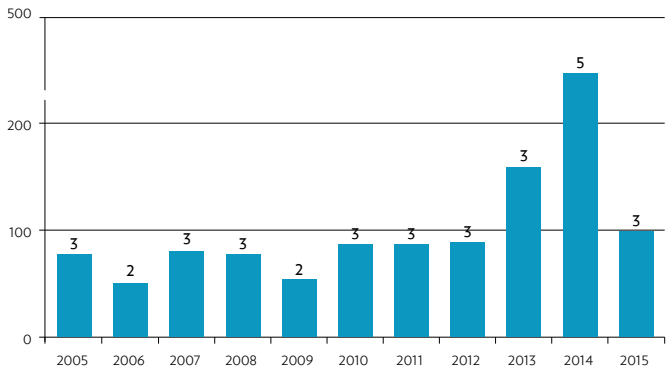
An decrease compared to 2014 (486,718)

Communication division

NUMBER OF SUBSCRIBERS TO DE GROTE REDE

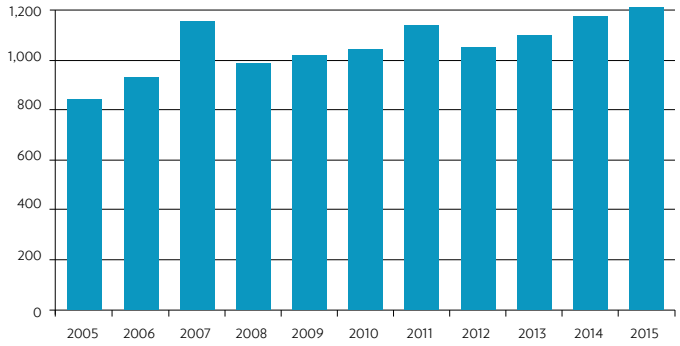


PAGES AND ISSUES OF DE GROTE REDE

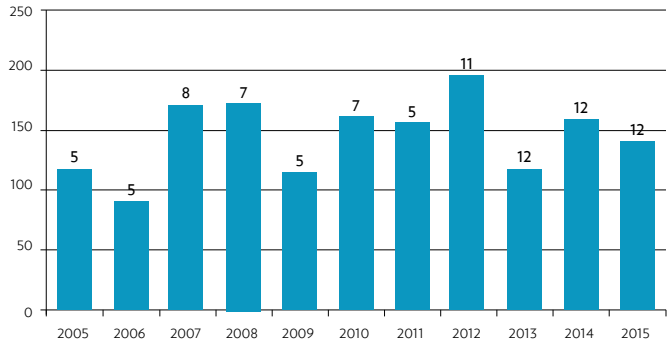


Total number of pages of De Grote Rede
Figures: number of issues of De Grote Rede

NUMBER OF SUBSCRIBERS TO VLIZINE

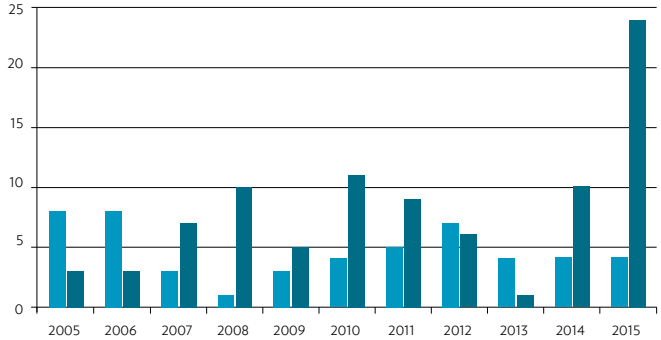


ARTICLES AND ISSUES OF VLIZINE



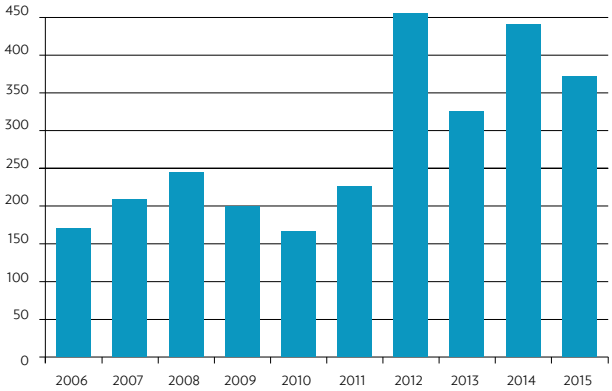
Total number of articles in VLIZINE
Figures: number of issues of VLIZINE

OTHER PUBLICATIONS

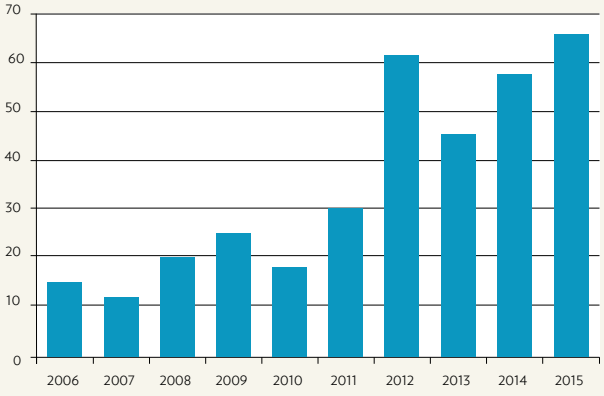


VLIZ Special Publications
(contributions to) other publications for the public at large

REQUESTS FOR INFORMATION ANSWERED BY VLIZ IN ITS ENTIRETY

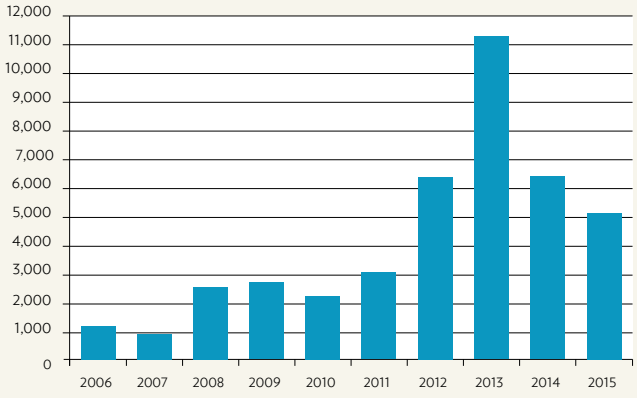


NUMBER OF EVENTS ORGANISED



Events (co)organised or facilitated by VLIZ
2015: 67 + 4 active participation

NUMBER OF PARTICIPANTS IN ORGANISED EVENTS



GENERAL PUBLIC REACHEDBY MEANS OF LECTURES

48

Informative lectures in 2015

A decrease compared to 2014 (67)

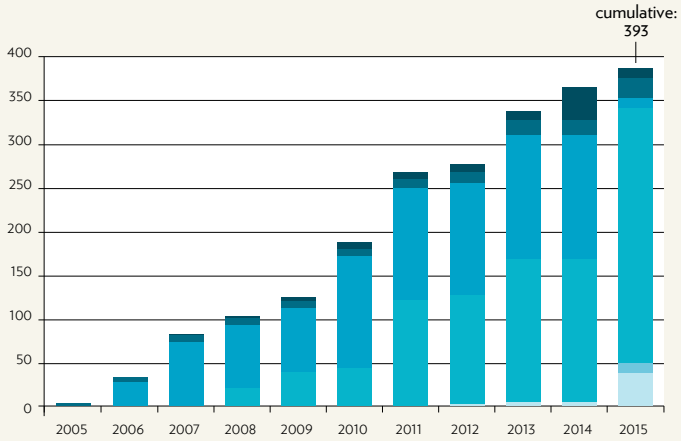
2,985

Members of the general public reached

An increase compared to 2014 (2,294)

Policy Information division

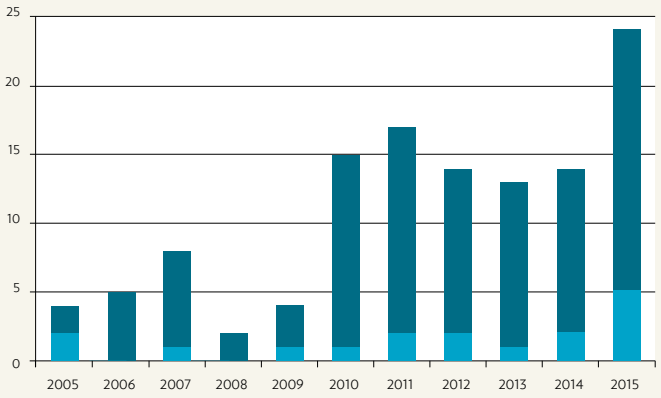
INFORMATION PRODUCTS



Number of new products in 2015:

Beleidsinformerende Nota (BIN)	3
Policy Informing Brief (PIB)	1
Fact sheet	26
Indicator sheet	1
Book	2
Web application	1

COOPERATION AGREEMENTS AS TO POLICY DEVELOPMENT AND SUPPORT



Number of new cooperation agreements in 2015:

External projects	5
Steering committees, guidance groups and working groups	19

NEW COMPENDIUM FOR COAST AND SEA 2015 INFORMATION PRODUCTS

294

(Updated) fact sheets of marine research groups

30

Thematic chapters on the use of the coast and sea

212

(Updated) fact sheets on legislation/treaties

WEB PAGES OF COMPENDIUM FOR COAST AND SEA

10,451

Unique visitors

367,236

Hits

© VLIZ

Networks in which VLIZ participates

National networks and advisory and consultative committees

A few examples of national networks in which VLIZ participates:

- Consultation on sustainable coastal management by the province of West Flanders
- Science Information Network (WIN) of the Flemish government
- Flanders' Maritime Cluster vzw
- Flanders Bays steering committee
- Flemish Aquaculture Platform
- Flemish Marine Biotechnology Platform
- Flemish Platform for Algae Research
- IkHebEenVraag.be consortium (RBINS)
- Flemish Association for Libraries, Archives and Documentation Centres (VVBAD)
- Local group of Axis 4 of the Belgian Operational Programme for the Fisheries Industry and steering committee of Fish2know, Fish2know for Professionals, VALDUVIS, A l'Ostendaise, NorthSeaChefs & vissers, Het Grote Noordzeeviskookboek, Smartboek Hoe bereid ik vis
- Advisory Committee of VNR Knokke-Heist & Westkust (ANB)
- Coastal Barometer working group
- 'Surveillance, early warning and rapid response – Invasive Alien Species' steering committee
- NAVIGO scientific advisory group
- Coastal Ecosystem Vision
- Programme of measures of the Marine Strategy Framework Directive of the Marine Environment Division

International networks and advisory and consultative committees

A few examples of international networks in which VLIZ participates:

- IODE oceanographic data centre network (UNESCO/IOC) (IODE NODC)
- Executive Council and General Assembly of the Intergovernmental Oceanographic Commission (IOC) of UNESCO
- Steering committee of the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST)
- Editorial board of Global Ocean Science Report of IOC-UNESCO (GOSR)
- IAMSLIC/IODE Group of Experts on Marine Information Management
- IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices
- Partnership for Observation of the Global Oceans (POGO)
- News & Information Group of the Partnership for Observation of the Global Oceans
- European Marine Board (representative of Research Foundation – Flanders and chairmanship)
- European Marine Board Communications Panel (EMBCP)
- Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans)
- JPI Oceans reference expert group on marine spatial planning
- European Centre for Information on Marine Science and Technology (EurOcean)
- EuroMarine cluster (cluster of three European marine FP6 networks: EUR-OCEANS, MarBEF and Marine Genomics Europe) (Euromarine+)
- European network of Marine Biodiversity and Ecosystem Functioning (MARBEF+)
- European Network of Marine Research Institutes and Stations (MARS)
- European Research Vessel Organisation (ERVO)
- International Research Ship Operators (IRSO)
- European Association of Aquatic Sciences Libraries and Information Centres (EURASLIC)

- National Marine Educators Association (NMEA)
- European Marine Science Educators Association (EMSEA)
- European Census of Marine Life (EuroCoML)
- Society for the Management of European Biodiversity Data (SMEBD)
- Executive committee of the European Register of Marine Species (ERMS)
- ICES Data and Information Group (ICES – DIG)
- ICES Working Group on the History of Fish and Fisheries (ICES – WGHIST)
- ICES Working Group on Recreational Fisheries Surveys (ICES – WGRFS)
- Steering committee of the World Register of Marine Species (WoRMS)
- Sea Data Network (SeaDataNet II)
- International Coastal Atlas Network (ICAN)
- Global Sea Level Observing System Network (GLOSS)
- Flemish-Dutch Scheldt Commission – Environmental impact assessment (VNSC)
- World Data System of the International Council for Science (ICSU-WDS)
- LifeWatch National Centers network (LiNC)
- European Marine Biodiversity Observatory System (EMBOS)
- Species 2000
- INSPIRE Thematic Working Group on Biogeographical Regions, Habitats and Biotopes and Species Distributions
- Coastal Wiki Editorial Board
- Steering Committee and Marine Observation and Data Expert Group (MODEG) within the European Marine Observation and Data Network (EMODnet)
- Seaweb Europe – Jury of Concours Olivier Roellinger
- Catalogue of Life Global Team, Editorial Board, Board of Directors
- Occupational Fields Advisory Committee of Hogeschool Zeeland
- Ocean Tracking Network
- Oceans Past Initiative (OPI)
- Working Group on Invasive Alien Species (WGIAS)

In addition, VLIZ is represented in **guidance groups and end-user committees** of several research projects, including: LECOFISH, CLIWAT, BEES - ECOPLAN, WAKO-II.

Projects – External financing

VLIZ received external financing for coordination, communication and/or data management within the scope of 38 projects in 2015. Most of these projects were carried out in cooperation with research groups.

EU

ALFF – *The Algal Microbiome: Friends and Foes*
Duration: 01.01.2015 – 31.01.2019
sams.ac.uk/Algal-doctorate-EU-Marie-Curie/algal-microbiome-friends-or-foes-alff
ALFF is a research project which involves both fundamental and applied scientific investigations into algae and microalgae. Various doctoral research projects are funded through this project. VLIZ plays a modest role in communicating the results and collaborates with the Multimedia Technology programme of Karel De Grote University College in Antwerp in this context.

AtlantOS – *Optimizing and Enhancing the Integrated Atlantic Ocean Observing System*
Duration: 01.04.2015 – 31.07.2019
www.atlantos-h2020.eu
The overall objective of ATLANTOS is to evolve from a not well-coordinated series of existing ocean observations to a sustainable, efficient and fit-for-purpose Integrated Atlantic Ocean Observing System (IAOOS). The ATLANTOS consortium consists of 62 partners from 18 countries. VLIZ takes part in work package 7: data flow and data integration.

COLUMBUS – *Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue Growth*
Duration: 01.03.2015 – 31.03.2018
www.columbusproject.eu
The COLUMBUS project develops a strategy for monitoring, identifying and selecting successful marine and maritime research projects in terms of their output and impact on the Blue Growth agenda as well as those supporting the European Marine Strategy Framework Directive. VLIZ is one of the organisations responsible for collecting, analysing and disseminating information relating to different topics (marine management and government, monitoring and observation). VLIZ will also conduct a pilot study investigating nationally funded marine projects in Belgium.

CSA Oceans – *JPI Oceans Preparatory Action*
Duration: 01.09.2012 - 31.08.2015
www.jpi-oceans.eu/csa-oceans
This FP7 support action is designed to make the transition from the startup phase to the operational phase of JPI Oceans as smooth as possible. This 3-year action is specifically aimed at 1) supporting the operation of management structures to develop JPI Oceans; 2) promoting the realisation of a strategic research and innovation agenda (SRIA) as well as an implementation plan (iPlan) in line with the vision and objectives of JPI Oceans; and 3) proposing procedures and tools to further long-term cooperation within JPI Oceans. VLIZ coordinates the communication tasks within the CSA.

EGI-Engage – *Engaging the Research Community towards an Open Science Commons*
Duration: 01.03.2015 – 31.01.2018
www.egi.eu
This project aims to accelerate the implementation of the Open Science Commons, and investigates the expansion of a European backbone of federated services for the processing and storage of data, communication, knowledge and expertise. In addition, it investigates the expansion possibilities within specific research communities. The aim of LifeWatch EGI CC is to capture and address the requirements of biodiversity and ecosystems research communities. To achieve this, the CC will (1) deploy cloud and GPGPU based e-Infrastructure services required to support data management, data processing and modelling for Ecological Observatories, (2) explore possibilities to increase the participation of citizens in data-intensive biodiversity research, and (3) facilitate the adoption

and exploitation of the EGI infrastructure by the LifeWatch user community. Together with the Spanish CSIC, VLIZ will ensure the formulation of the requirements as to grid-based e-infrastructure services in support of data management, data processing and modelling.

EMBRC – *European Marine Biological Resource Centre*
Duration: continually since 2015
www.embrc.eu
EMBRC will be a distributed infrastructure for research and training at leading marine research stations in Europe. It constitutes a virtual network of marine stations for the study of marine species, biodiversity and ecosystem functioning, developmental biology and evolution, biogeochemistry, global change, biomedical sciences and marine products. EMBRC will provide end users from SMEs, academia and industry with access to marine biodiversity, associated metadata and extractable products. Services include access to marine species (model species), biobanks, dedicated 'omics' platforms, structural biological facilities and imaging (microscopy, cytometry, etc.). The Flemish contribution is coordinated by the Marine Biology Laboratory (Ghent University) and VLIZ, with VLIZ making seagoing and land-based facilities available and providing technical support.

EMBOS – *Development and implementation of a pan-European Marine Biodiversity Observatory System*
Duration: 01.02.2011 - 01.02.2015
www.embos.eu
This COST project focuses on the coordination and management of a marine biological observation network linked to LifeWatch.

EMODnet – *European Marine Observation and Data Network*
Duration: 2014 - 2016
www.emodnet.eu
The European Marine Observation and Data Network (EMODnet) develops a data infrastructure to make marine data available so as to support scientists, policy makers and other end users within the scope of the new European maritime policy. VLIZ is responsible for the biological pilot project (bio.emodnet.eu). It will use the existing European atlas with distribution data of marine species (EurOBIS) as a basis and complete it. VLIZ is also involved in the chemical project of EMODnet. In addition, VLIZ is expanding the EMODnet Central Portal (emodnet-biology.eu), which should provide access to the data products and data collected within the EMODnet thematic networks. The EMODnet Secretariat is located at the InnovOcean site in Ostend.

EUROFLEETS – *Towards an Alliance of European Research Fleets*
Duration of phase 1: 01.09.2009 - 31.08.2014
Duration of phase 2: 01.03.2014 - 28.02.2017
www.eurofleets.eu
A network of 24 European research institutes that want to deploy their vessels and research infrastructure more efficiently and develop a central system in order to gain access to other European research vessels (www.eurofleets.eu). VLIZ coordinates a recommendation for an ecological regional research fleet and contributes to the development of a strategic view of the European research fleet. Broadly speaking, EuroFleets II continues the tasks of EuroFleets I but has a different focus. Within the second project, VLIZ continues to contribute to the strategic vision and to a generic design of regional research vessels. In addition, it needs to contribute to the organisation of training courses for young researchers and 'floating universities'. The main contribution of VLIZ consists in making RV Simon Stevin available to foreign researchers for a project in the Southern Bight of the North Sea.

HAROkit – *Sharks, rays and skates in Belgian fisheries: HAROkit identification tools*
Duration: 01.04.2015 – 30.11.2015
www.vliz.be/en/harokit
In order to realise a species-specific approach for sharks, skates and rays in the Flemish fishing industry, identification tools and training courses have been provided (on board, in fish markets and in fishing schools), and areas for improvement have been analysed to optimise species traceability after landing. This project is carried out by Natuurpunt, ILVO and VLIZ in cooperation with Rederscentrale, Maritiem Instituut Mercator and Vlaamse Visveiling.

ICOS – *Integrated Carbon Observing System*
Duration: continually since 2012
www.icos-infrastructure.eu
ICOS provides the long-term observations required to understand the present state and predict future behaviour of the global carbon cycle and greenhouse gas emissions. VLIZ performs the oceanographic measurements which Flanders will transfer to ICOS through the University of Antwerp. Within this scope, VLIZ performs measurements aboard RV Simon Stevin. Within the scope of ICOS, VLIZ collaborates with NIOZ-Yerseke and the University of Liège (Alberto Borges).

JERICO NEXT
Duration: 01.09.2015 - 30.09.2019
www.jerico-fp7.eu
JERICO-NEXT is the continuation of the JERICO project. One of the project's objectives is to establish a pan-European network of marine observatories. In this context, alignment takes place with ongoing initiatives such as the pan-European Infrastructure for Ocean and Marine Data Management (SeaDataNet) and the European Global Ocean Observing System (EuroGOOS). Within the scope of JERICO-NEXT, VLIZ will take part in Work Package 5, in which data management standards will be set, the quality and quantity of biological, chemical and physical data within the infrastructure will be increased, and the project's impact on ongoing initiatives such as Copernicus, EMODnet and OBIS will be examined.

LIVIS – *Low-Impact Fisheries*
Duration: 01.09.2014 - 30.09.2015
www.west-vlaanderen.be/overdegrens/gebiedenbeleid/subsidies/EVFAS4/goedgekeurdeprojecten/Paginas/LIVIS
The project was aimed at mapping recreational fisheries by means of small boats (pole-and-line vessels and trawlers) (inventory). The LIVIS project was carried out in partnership with ILVO, which ensured the identification of bottlenecks impeding the transition from recreational to commercial fisheries. ILVO provided advice on how these bottlenecks can be eliminated.

Marine Biotechnology ERA-NET – *ERA-MBT*
Duration: 30.01.2015 - 29.01.2018
www.marinebiotech.eu
The social and economic importance of marine biotechnology is steadily increasing. However, the current marine biotechnological landscape in Europe is highly fragmented and lacks coordination. The CSA MarineBiotech project has been successful in creating a network of funding institutions and programme managers interested in joint support of marine biotechnological research. The 20 partners from 13 countries have formed the Marine Biotechnology ERANET (ERA-MBT). ERA-MBT is aimed at paving the way for common programmes and collaborations so as to move beyond the current fragmentation and avoid duplication. This includes the provision and use of shared research infrastructure. VLIZ coordinates the communication tasks within ERA-NET.

Marine Regions - *Towards a standard for georeferenced marine names*

Duration: continually since 2011
www.marineregions.org
Marine Regions is a standardised geographic data system which makes geographic information on marine place names and maps freely available. It integrates geographic information on seas, oceans and undersea features, and indicates the boundaries of various marine areas throughout the world. The website www.marineregions.org now makes it possible to easily locate the Exclusive Economic Zones (EEZs) as well many marine place names worldwide. Marine Regions integrates the data and information from the VLIMAR Gazetteer (place name register) and the MARBOUND database (EEZ boundaries). Both global data systems have been developed by the Flanders Marine Institute and have demonstrated their added value for many users over the past few years. By combining both databases, the different target groups will undoubtedly be served even better.

MERMAID

Duration: 01.01.2012 - 31.12.2015
www.mermaidproject.eu
MERMAID developed concepts for the next generation of offshore platforms which can be used for multiple purposes, including energy extraction, aquaculture and platform-related transport. MERMAID examined new concepts which combine various functions. VLIZ was responsible for project dissemination & outreach, and organised an end user conference, among other things. Belgian end users include DEME, De Nul, Flanders' Maritime Cluster and Versluys.

Micro B3

Duration: 01.01.2012 - 31.12.2015
www.microb3.eu
Micro B3 developed innovative bioinformatic approaches and a legal framework to make large-scale data on marine viral, bacterial, archaeal and protists genomes and metagenomes accessible for marine ecosystems biology and to define new targets for biotechnological applications.

OPP - *Oceans Past Platform*

Duration: 01.01.2015 – 31.12.2018
www.tcd.ie/history/opp
The project investigates when, how and with what socio-economic, political, cultural and ecological implications humans have impacted marine life in the European seas since the last ice age. OPP makes use of historians, archaeologists and other social scientists as well as colleagues from marine sciences. OPP builds on various studies carried out within the scope of the History of Marine Animal Populations project, which demonstrated we are able to quantify the history of marine extractions through interdisciplinary collaboration. OPP explores the human, social and cultural consequences of changing dietary habits and extractive techniques (coastal fisheries, deep water, aquaculture) and promotes dialogue between studies of the distant past and recent developments. The network enters into a dialogue with marine managers and policymakers about the relevance of historical findings for the regeneration and development of coastal communities.

ODIP 2 - *Extending the Ocean Data Interoperability Platform*

Duration: 01.04.2015 - 30.04.2018
www.odip.eu
The ODIP project strives for a European, American and Australian IOC-IODE coordination platform. Its objective is to establish the interoperability of oceanographic and marine data management infrastructures and to demonstrate this coordination by means of different joint EU – USA – Australia – IOC-IODE prototypes. These need to ensure the continuous availability and effective exchange of data across scientific domains, organisations and national borders. VLIZ will provide input for workshops and the resulting tasks with regard to marine biological data management and the standardisation of marine place names.

Sea Change
Duration: 01.03.2015 - 31.03.2018
www.seachangeproject.eu
On the basis of the compilation of knowledge and best practices, this Ocean Literacy project will translate the topic of Ocean & Human Health for the widest possible public. This takes place on a European level and in cooperation with transatlantic partners. VLIZ is involved in all work packages and is leader of the work package 'Engage with the public'.

SeaDataNet 2 – *A Pan-European Infrastructure for ocean and marine data management*
Duration of SeaDataNet2: 01.10.2011 - 30.09.2015
www.seadatanet.org
Professional data centres from 35 countries collaborated to make the data sets collected by the pan-European oceanographic research fleet and the new automated observation systems available within one efficiently distributed data system (www.seadatanet.org). VLIZ supplied the (meta)data and information collected in Flanders.

SE FINS – *Cluster programma*
Duration: 2014 - 2015
Cluster programme of two Interreg projects regarding alien species (MEMO and RINSE). VLIZ was an associated beneficiary of INBO. VLIZ only provided advice in communication and assessment products developed by the project partners and the organisation of the cluster event (September 2014).

Sea for Society
Duration: 01.06.2012 - 30.11.2015
www.seaforsociety.eu
This project developed modalities for stakeholder participation with regard to the concept of Blue Society. Surveys and consultations of target groups were organised in different European regions by means of developed protocols. The project was coordinated by Nausicaa, and VLIZ was participating as a member of EurOcean. VLIZ organised a public event 'Zoutbad' that promoted the interaction between scientists, stakeholders, the public at large and the industry.

VLAM-Smartboek: Hoe bereid ik vis *(How to prepare fish)*
Duration: 01.12.2014- 30.09.2015
The book 'Hoe bereid ik vis' *(How to prepare fish)* was transformed into a digital platform enriched with additional materials and made available to cookery schools via knooppunt.net. In 2015, the smartbook was updated (e.g. with information on species and sustainability aspects) and translated into French.

Flemish government, Flemish eGovernment Coordination Unit (CORVE) and EWI

WILOD – *Wetenschap & Innovatie Linked Open Data*
Duration: continually sinces 2012
The Wetenschap en Innovatie Linked Open Data (WILOD) project is aimed at developing an Open Data platform which brings together and makes accessible a variety of research information so as to promote multidisciplinary research, maximally disclose research data, develop innovative products and services, and increase the strategic intelligence within the policy area of Science and Innovation.

Flemish government, Waterwegen en Zeekanaal (W&Z)

OMES – *Research on the environmental effects of the SIGMA plan*
Phase VI: 01.02.2012-30.04.2014
Phase VII: 01.02.2014-30.04.2015
Phase VIII: 01.02.2015-30.04.2015
Phase IX: 01.02.2015-30.04.2016
VLIZ is responsible for the integrated OMES database and ensures its dissemination through the OMES website (www.vliz.be/projects/omes).

Flemish government, Maritime Access division

SchkeldeMonitor – *Flemish-Dutch knowledge platform for research and monitoring of the Scheldt estuary*
Duration of current phase: 01.01.2015 - 31.12.2018; started in 2010
www.scheldemonitor.org
The SchkeldeMonitor website underwent a total makeover in 2015. The website offers information and, since 2010, data as well in support of the cross-border monitoring and research in the Scheldt estuary.

BELSPO

4DEMON – *Four decades of Belgian marine monitoring: uplifting historical data to today's needs*
Duration: October 2014 – December 2017
www.4demon.be
Historical data are essential for understanding long-term changes in the quality of the marine environment. The 4DEMON project aims to centralise, integrate and valorise data on contamination, eutrophication and ocean acidification collected during expeditions in the BCS over the last four decades. 4DEMON focuses on contaminants and data for determining the level of eutrophication and acidification.

AquaRES – *Aquatic species Registry Exchange and Services*
Duration: 2014 - 2016
odnature.naturalsciences.be/aquares/
The World Register of Marine Species (WoRMS) – including the Antarctic Register of Marine Species – and the Freshwater Animal Diversity Assessment (FADA) database are large Global Species Directories (GSD) hosted in Belgium. The AquaRES project is aimed at ensuring and promoting the interoperability of both databases and making them available to the public. In addition, tools are developed to check the quality of the data.

NewSTHEPS – *New Strategies for monitoring and risk assessment of Hazardous chemicals in the marine environment with passive samplers*
Duration: 01.12.2014 – 31.03.2019
www.belspo.be/belspo/brain-be/projects/NEWSTHEPS_en.pdf
In this project, novel and integrated passive sampling techniques will be developed in marine waters. The focus is on the quantification of micropollutants and metals. VLIZ is a subcontractor for the creation of a website and the data management activities relating to the further development of the INRAM and ENDIS-RISKS database.

Proba4Coast – *Proba-V for total suspended matter and turbidity retrieval in coastal areas*
Duration: 01.12.2015 -31.12.2017
VLIZ is a subcontractor in this project in which VITO and the Hydraulics Laboratory of KU Leuven collaborate to make the Proba-V imagery (used for global vegetation mapping) also usable for turbidity and suspended matter measurements in coastal waters. VLIZ is responsible for the necessary samplings during satellite overpasses.

Province

Historical maps of the coastal zone
Duration: 01.07.2015 – 31.05.2016
The aim is to scan some fifty maps from the 16th, 17th and 18th centuries (the golden age of cartography in Flanders and the Low Countries) containing detailed information on the coastal area (incl. border areas), het Belgian part of the North Sea, the Zwin area and/or the Scheldt estuary. These scanned documents will then be made freely available in digital format within a regional collection. For each scanned map, a fact sheet stating the geometric accuracy will be drawn up so as to inform the user on possible distortions and margins of error. Subsequently, the maps will be georeferenced and made freely available via Geoserver. In addition, time-lapse movies about the evolution of parts of the coastal area (e.g. the Zwin area, the Scheldt estuary, Ostend, etc.) will be made by means of a chronological sequence of the georeferenced historical maps. All products will be made freely available to end users via a web application.

Hercules Foundation

LifeWatch – *Flemish contribution to LifeWatch.eu*
Duration: continually since 2012
www.lifewatch.be
The Flemish contributions to the LifeWatch infrastructure are coordinated by the Research Institute for Nature and Forest (INBO) and, as far as the marine component is concerned, by the Flanders Marine Institute (VLIZ). Flanders contributes to the central LifeWatch infrastructure with a taxonomic backbone which is developed through various projects, including the World Register of Marine Species or WoRMS (www.marinespecies.org) and EurOBIS (www.eurobis.org). WoRMS aims to provide an authoritative and comprehensive list of names of marine organisms, including information on synonyms. EurOBIS is a distributed system which makes it possible to simultaneously search for biogeographic information on marine organisms in various data sets. EurOBIS has been developed within the MarBEF network and serves as the European node of OBIS. Marine, freshwater and terrestrial observatories are developed regionally within LifeWatch, as are different biodiversity data systems, web services and models.

UNESCO

GLOSS – *Sea Level Station Monitoring Facility*
Duration: continually since 2008
www.ioc-sealevelmonitoring.org
A worldwide service for real-time sea level monitoring by means of measuring stations in cooperation with GLOSS (Global Sea Level Observing System) and IOC (Intergovernmental Oceanographic Commission).

IWT – Strategic Basic Research

SeArch – *Archaeological Heritage in the North Sea*
Duration: 2014 - 2016
www.sea-arch.be
Development of an efficient assessment methodology and proposals for a sustainable management in Belgium. VLIZ is one of the six partners and in charge of the work package concerning 'outreach and guidance' (WP 3). Within this scope, VLIZ ensures the layout and distribution of several information products as well as the organisation of a number of workshops and seminars. VLIZ also provides support in terms of the setup of the website.

CREST – *Climate resilient coast. Wave action in a changing climate: effects on the dynamics of the coast and implications for future safety. Een veerkrachtige kustzone.*
Duration: November 2015 – October 2019
www.crestproject.be
In the CREST project, research is conducted to gain a better understanding of the littoral processes resulting from currents, waves and wind so as to assess the impact of future coastal safety measures and developments along the coastline (e.g. Flanders Bays). All results are analysed by a Guidance Committee comprised of governmental bodies, market players and ecological experts. In addition, interim feedback is organised with technical experts from Belgium and abroad. The consortium consists of experts with an academic background in the field of physical aspects of coastal processes (waves, currents, sediment dynamics) and with experience in scientific research, and more specifically representatives from KU Leuven, Ghent University, VUB, Flanders Hydraulics Research, Maritime Access division, RBINS–Directorate Natural Environment and VLIZ supplemented with valorisation partners (IMDC and Fides Engineering). VLIZ is responsible for the support activities relating to data management and communication.

Toerisme Vlaanderen

The battle of the North Sea, exhibition on WWI and the sea
Duration: October 2014 – September 2018
From 23 April to the end of September 2018, an exhibition on WWI and the sea will be organised in Provinciaal Hof at the Markt square in Bruges. On this occasion, VLIZ cooperates with the tourism services, WWI experts, the Bruges museums, the cabinet of the governor and the Agency for Maritime and Coastal Services (MDK).

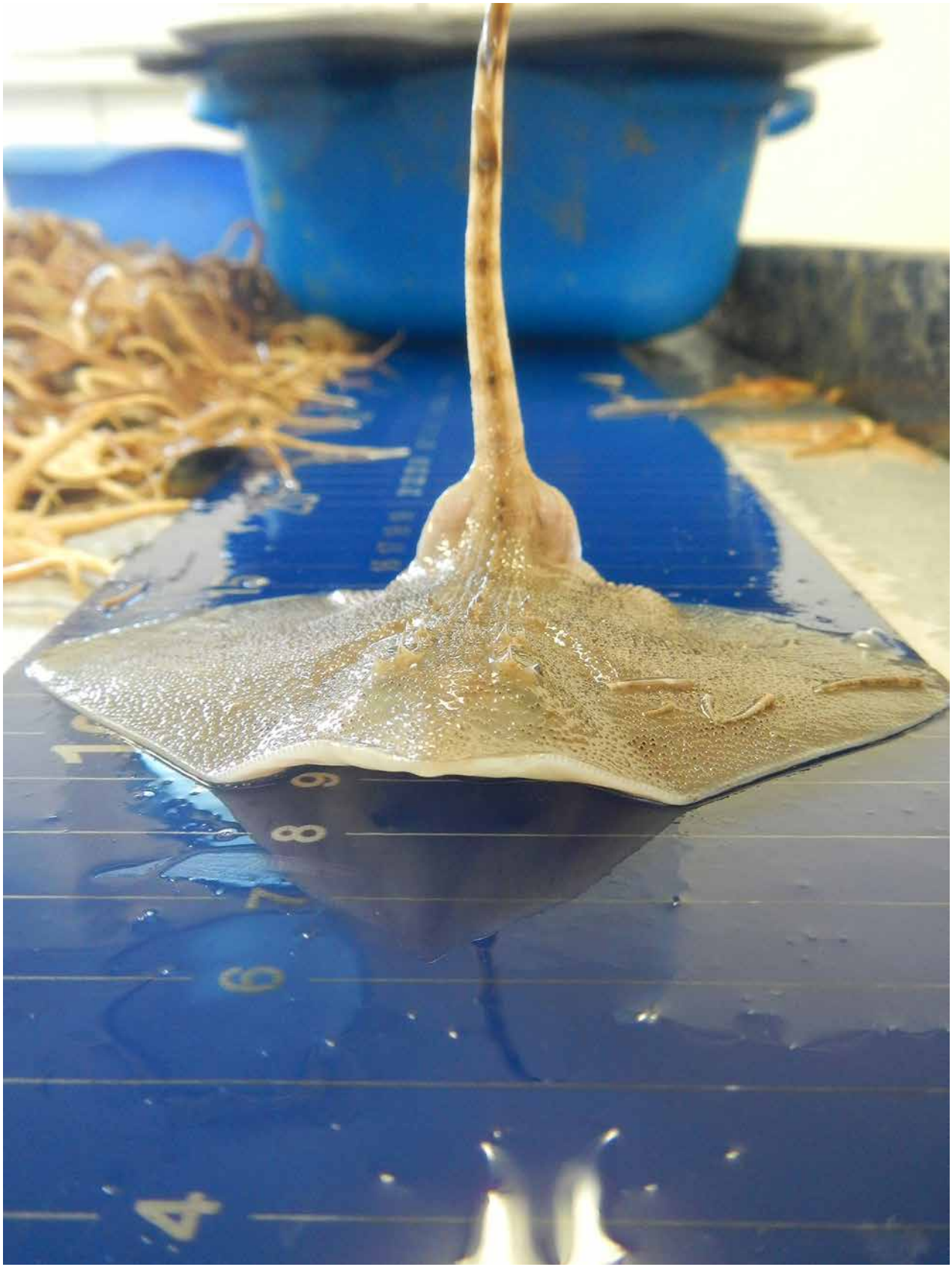
FUST - Flanders UNESCO Trust Fund for Science

SPINCAM

Duration: 2008 - 2016

www.spincamnet.net

The project has been designed to establish an integrated coastal area management (ICAM) indicator framework in the countries of the Southeast Pacific region (Chile, Colombia, Ecuador, Panama and Peru) focusing on the environment and the socio-economic conditions in the context of sustainable development and integrated coastal zone management. The application of a harmonised methodology and the development of a set of indicators among the participating countries will permit the calculation of a core of common indicators at regional level. In addition, information systems will be developed at national and regional level to support the creation of the indicators and the dissemination of the results.



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Scientific equipment and infrastructure

Overview of scientific equipment and infrastructure for scientific research made available by VLIZ.

Water sampling and characterisation equipment

- Acoustic current meter (ADCP) and speed log
- Carrousel 6 x 4 litre Niskin bottles
- CTD equipped with sensors for:
  - Chlorophyll a
  - Photosynthetically active radiation (PAR)
  - Dissolved oxygen
  - Turbidity
  - Acidity and oxidation reduction potential (ORP)
  - pCO_2
- Fluorometer
- 10 litre GO-FLO bottle
- Measurement buoy at sea with:
  - Temperature, salinity, turbidity, chlorophyll a, pCO2, pH, current and dissolved oxygen sensors
  - VEMCO receiver for fish
  - Porpoise detector
- Methane sensor
- Multibeam sonar
- 5 litre Niskin bottle
- 10 litre Niskin bottle
- Secchi disk
- Tripod
- LISST-100X turbidity meter
- Underway data acquisition system on board RV Simon Stevin with:
  - Thermosalinograph
  - Fast repetition rate fluorometer
  - Flow cytometer
  - Fluorometer
  - Nutrient analysis system
  - Optical nitrate sensor
  - Atmospheric pCO_2 analysis system
  - Oxygen sensor
  - Turbidity sensor

Soil sampling and soil mapping equipment

- Bowers & Connoly multi-corer
- Cohesive Strength Meter (CSM)
- Gilson dredge
- Hamon grab
- Multibeam sonar
- Reineck Box Corer
- Sediment Profile Imaging
- Singlebeam sonar
- Van Veen grab
- Vibrocorer

Biological sampling equipment

- Bat recorder
- Bongo net
- Beam trawl
- Otter trawl
- Pelagic otter trawl
- Bowers and Connelly multi-corer
- Porpoise detectors
- Fast repetition rate Fluorometer (FrrF)
- Flow cytometer
- Gilson dredge
- Hamon grab
- Hydrophone
- Hyperbenthic sledge
- MIK net
- Neuston net
- Sieving table
- Apstein plankton net
- CalCoFi plankton net
- Vertical plankton net – WP2
- Plankton pump
- Reineck Box Corer
- Sediment Profile Imaging (SPI) system
- Sensor network for gulls
- Van Veen grab
- VEMCO receiver network in Western Scheldt and coastal waters
- Video frame
- Video plankton recorder
- Fish sorting table
- Wilson auto-siever
- Zooscan

Miscellanea

- Biological laboratory
- Bird tracking camera
- Chemical laboratory
- Compressor for filling diving cylinders
- Core repository – cold store for drill cores
- DGPS hand-held unit
- Freezers
- Weather station on board RV Simon Stevin:
  - Atmospheric pCO_2
  - Wind speed
  - Wind direction
  - Temperature
  - Atmospheric pressure
- Microscopes
- Mini ROV
- Molecular laboratory
- Underwater camera
- ROV Genesis
- Underwater diver receiver
- Video frame
- Web cameras
- Seawater setup with water tanks

Events organised, co-organised and facilitated by VLIZ in 2015

67 EVENTS - 5,106 PARTICIPANTS

DATE	TITLE	LOCATION	NUMBER OF PARTICIPANTS	ORGANISER	ROLE OF VLIZ	TYPE
01 - 03.2015	PlaneetZee@Work - workshops	MarBiol, GhEnTox-Lab, VUB, Antwerp Maritime Academy, MSO, RV Simon Stevin	121	VLIZ in collaboration with MRGs	co-organised by VLIZ	workshop
13 - 15.01.2015	JPI Oceans microplastics workshop	InnovOcean site, Ostend	25	JPI Oceans in collaboration with VLIZ	co-organised by VLIZ	workshop
27.01.2015	AquaValue meeting	InnovOcean site, Ostend	35	Flanders' Maritime Cluster	facilitated by VLIZ	meeting
06.02.2015	Teambuilding event for the JPI Oceans Secretariat	InnovOcean site, Ostend	20	JPI Oceans	facilitated by VLIZ	meeting
20.02.2015	VLIZ Young Marine Scientists' Day	VIVES, Bruges	347	VLIZ	organised by VLIZ	seminar
24 - 26.02.2015	NeMys - World Register of Free-living Marine Nematodes	InnovOcean site, Ostend	14	UGent-MARBIOL in collaboration with VLIZ	co-organised by VLIZ	workshop
25.02.2015	Seaside Dip for Teachers	Artevelde University College, Ghent	38	VLA Oost-Vlaanderen in collaboration with VLIZ	co-organised by VLIZ	workshop
11 - 12.03.2015	EMODnet WP5 workshop	InnovOcean site, Ostend	10	VLIZ	organised by VLIZ	workshop
16 - 20.03.2015	23rd Session of the IOC Committee on International Oceanographic Data and Information Exchange & 10th Anniversary (2005-2015) Celebration of the Establishment of the IOC Project Office for IODE, Ostend, Belgium	Provinciaal Hof, Bruges	120	IOC Project Office for IODE in collaboration with VLIZ	co-organised by VLIZ	conference
31 - 01.04.2015	Catalogue of Life global team meeting - spring 2015	InnovOcean site, Ostend	18	Catalogue of Life in collaboration with VLIZ	co-organised by VLIZ	meeting
02.04.2015	Catalogue of Life mini symposium - spring 2015	InnovOcean site, Ostend	50	Royal Museum for Central Africa in collaboration with VLIZ	co-organised by VLIZ	seminar
01.04.2015	PlaneetZee@work finals	InnovOcean site, Ostend	40	VLIZ	organised by VLIZ	competition
15 - 16.04.2015	An introduction and practical use of European marine data infrastructures	Bremen, Germany	20	FixO in collaboration with VLIZ	co-organised by VLIZ	workshop
22.04.2015	Introduction to littoral fauna - natural science teacher training (Karel De Grote University College, Antwerp)	MSO, Ostend	13	VLIZ	organised by VLIZ	workshop
28.04.2015	European Marine Board ExCom meeting	Het Pand, Ghent	8	EMB in collaboration with VLIZ	co-organised by VLIZ	meeting
29 - 30.04.2015	European Marine Board spring plenary meeting	Het Pand, Ghent	48	EMB in collaboration with VLIZ	co-organised by VLIZ	meeting
07.05.2015	PIANC - 5th YP-COM Biennial Technical Visit - Wind, Blue & Green Energy	InnovOcean site, Ostend	100	Maritime Access Division - Ports & Coastal Districts Unit	facilitated by VLIZ	seminar
07.05.2015	First JPI Oceans conference	KVAB, Brussels	175	CSA Oceans in collaboration with VLIZ	co-organised by VLIZ	conference
21.05.2015	Empowering Biodiversity Research conference	KVAB, Brussels	138	Belgian Biodiversity Platform in collaboration with VLIZ	co-organised by VLIZ	conference

DATE	TITLE	LOCATION	NUMBER OF PARTICIPANTS	ORGANISER	ROLE OF VLIZ	TYPE
28.05.2015	Studiedag De Zee (the sea seminar)	InnovOcean site, Ostend	79	Uitstraling Permanente Vorming vzw (VUB)	facilitated by VLIZ	seminar
06.06.2015	World Oceans Day	De Grote Post, Ostend	234	VLIZ	organised by VLIZ	open house day
09 - 10.06.2015	EMODnet Biology marine species traits workshop	HCMR, Crete	19	HCMR in collaboration with VLIZ	co-organised by VLIZ	workshop
10.06.2015	Flanders Aquaculture Platform meeting	InnovOcean site, Ostend	6	Department of Agriculture & Fisheries	facilitated by VLIZ	meeting
10.06.2015	Flemish Aquaculture Platform meeting and networking event	InnovOcean site, Ostend	34	Department of Agriculture & Fisheries	facilitated by VLIZ	meeting
11.06.2015	VDAB team day	InnovOcean site, Ostend	35	VDAB Brugge	facilitated by VLIZ	meeting
11.06.2015	Guidance Committee – Scientific Committee	InnovOcean site, Ostend	44	VLIZ	organised by VLIZ	meeting
25.06.2015	Reception of participants in OSPAR committee	InnovOcean site, Ostend	16	OSPAR/EWI	facilitated by VLIZ	meeting
01.07.2015	Flemish brown shrimp: developments and innovations	InnovOcean site, Ostend	54	ILVO	facilitated by VLIZ	info session
06 - 08.07.2015	Dinoflagellate cyst taxonomy workshop	InnovOcean site, Ostend	35	Palaeontology Research Unit, UGent	facilitated by VLIZ	workshop
12.08.2015	AquaValue meeting - WP4 focus group session	InnovOcean site, Ostend	20	eCoast Marine Research	facilitated by VLIZ	meeting
20.08.2015	AquaValue meeting	InnovOcean site, Ostend	12	eCoast Marine Research	facilitated by VLIZ	meeting
27.08.2015	Flanders' Maritime Cluster consultation	InnovOcean site, Ostend	12	Flanders' Maritime Cluster	facilitated by VLIZ	meeting
07 - 11.09.2015	INTERCOH 2015 - International Conference on Cohesive Sediment Transport Processes	KU Leuven, Leuven	140	KU Leuven, Civil Engineering Department; Hydraulics Division	co-organised by VLIZ	conference
17 - 18.09.2015	Informatie aan Zee (information by the sea)	Kursaal Oostende, Ostend	500	VVBAD in collaboration with VLIZ	co-organised by VLIZ	conference
23.09.2015	Signature of MoU by VLIZ and ISMER	Town hall, Ghent	30	VLIZ	organised by VLIZ	ceremony
28.09.2015	European Marine Science Educators Association Conference	HCMR, Crete	100	EMSEA in collaboration with VLIZ	co-organised by VLIZ	conference
28.09.2015	Press conference on foundation-stone laying ceremony for European Food Centre	InnovOcean site, Ostend	70	Vlaamse Visveiling	facilitated by VLIZ	press conference
28 - 30.09.2015	AquaRES workshop	BELSPO, Brussels	32	RBINS in collaboration with VLIZ	co-organised by VLIZ	workshop
30.09.2015	Training course: Belgian shrimp rediscovered!	InnovOcean site, Ostend	10	ILVO	facilitated by VLIZ	training course
05 - 07.10.2015	OBIS-ENV-DATA workshop	InnovOcean site, Ostend	24	IOC Project Office for IODE in collaboration with VLIZ	co-organised by VLIZ	workshop
07.10.2015	Seaside Dip Workshop for Vereniging Leraars Aardrijkskunde (Geography Teachers Association) - refresher course	InnovOcean site, Ostend	22	VLA in collaboration with VLIZ	co-organised by VLIZ	workshop
16.10.2015	EMBRC Guidance Committee event	InnovOcean site, Ostend	79	MARBIOL–UGent in collaboration with VLIZ	co-organised by VLIZ	seminar
19.10.2015	23rd Meeting of the Marine Data and Observation Expert Group (MODEG)	InnovOcean site, Ostend	25	DG Mare	facilitated by VLIZ	meeting
19.10.2015	EMODnet Geology technical working group	InnovOcean site, Ostend	20	EMODnet secretariat in collaboration with VLIZ	facilitated by VLIZ	meeting

DATE	TITLE	LOCATION	NUMBER OF PARTICIPANTS	ORGANISER	ROLE OF VLIZ	TYPE
20 - 23.10.2015	EMODnet conference & project meetings	InnovOcean site, Ostend	297	EMODnet secretariat in collaboration with VLIZ	co-organised by VLIZ	conference
21 - 22.10.2015	EMODnet Seabed Habitats	InnovOcean site, Ostend	12	VLIZ	organised by VLIZ	meeting
21.10.2015	5th European Marine Board Forum 'Ocean Climate Nexus'	European Parliament, Brussels	100	European Marine Board	facilitated by VLIZ	conference
22.10.2015	Speech by the Governor. A Sea of Opportunities: Our North Sea	Provinciaal Hof, Bruges	150	The Province of West Flanders	actively participated in by VLIZ	panel discussion
27.10.2015	VALDUVIS II (ILVO) steering committee	InnovOcean site, Ostend	17	ILVO	facilitated by VLIZ	meeting
28.10.2015	Water & Climate Reflection Programme	KVAB, Brussels	20	KVAB	actively participated in by VLIZ	debate
30.10.2015	Studiedag Vissen in het Verleden (fishing in the past seminar)	InnovOcean site, Ostend	124	NAVIGO, Flanders Heritage Agency and VLAM in collaboration with VLIZ	co-organised by VLIZ	seminar
19 - 20.11.2015	EurOcean Steering Committee Meeting	InnovOcean site, Ostend	34	EurOcean in collaboration with VLIZ	co-organised by VLIZ	meeting
19.11.2015	Technology for Integrated Water Management Students: data management workshop	InnovOcean site, Ostend	25	VLIZ	organised by VLIZ	workshop
21.11.2015	Pintafish information and networking day	Cinema City, Nieuwpoort	120	Pintafish, ILVO, Climaxi vzw in collaboration with VLIZ	co-organised by VLIZ	info session
22.11.2015	Science Day: Marine Station Ostend & RV Simon Stevin open their doors	MSO, Ostend	664	VLIZ	organised by VLIZ	open house day
23.11.2015	Pekel en kabeljauw	InnovOcean site, Ostend	130	Doris Klausing	facilitated by VLIZ	book presentation
24.11.2015	MARPOL network	InnovOcean site, Ostend	12	Marine Environment Division – FPS Health, Food Chain Safety and Environment	facilitated by VLIZ	meeting
24.11.2015	Launch of Compendium for Coast and Sea 2015	Flemish Parliament, Brussels	51	VLIZ	organised by VLIZ	book presentation
26 - 27.11.2015	LifeWatch data analysis workshop	InnovOcean site, Ostend	21	VLIZ	organised by VLIZ	workshop
30.11 - 04.12.2015	Marine Biogeographic Data Management (contributing and using OBIS)	InnovOcean site, Ostend	23	IOC Project Office for IODE in collaboration with VLIZ	co-organised by VLIZ	workshop
01.12.2015	Webex EMODNet biology - EMODnet Seabed Habitats	InnovOcean site, Ostend	4	VLIZ	organised by VLIZ	workshop
02.12.2015	Fish tracking database meeting	InnovOcean site, Ostend	11	UGent	facilitated by VLIZ	meeting
07 - 09.12.2015	PERSEUS conference	KVAB, Brussels	170	HCMR in collaboration with VLIZ	co-organised by VLIZ	conference
08.12.2015	Lib@WEB ITP Training Course	InnovOcean site, Ostend	24	VLIRUOS in collaboration with VLIZ	co-organised by VLIZ	workshop
10.12.2015	Offshore event	InnovOcean site, Ostend	35	Port of Oostende	facilitated by VLIZ	info session
15.12.2015	MERMAID Conference on multi-use offshore platforms	DTU, Denmark	60	VLIZ in collaboration with DTU	co-organised by VLIZ	conference
22.12.2015	B-FishConnect project meeting	InnovOcean site, Ostend	10	ILVO	facilitated by VLIZ	meeting

2015 publications

De Grote Rede

- Issue 40 (April 2015) with leading articles on the 'sand engine': three years of building with nature; drastic reform of the European common fisheries policy: the 'Big Change'; deep-sea mining: the new gold rush?
- Issue 41 (November 2015) with leading articles on the "Big 5" of the North Sea; Belgian research vessels in the past, present and future; Vikings on the coast?
- Issue 42 (December 2015) with leading articles on the Zwin debate in perspective; the sea, a maze of currents; your opinion on De Grote Rede!

VLIZINE

A total of 12 issues of the e-newsletter 'VLIZINE' appeared in 2015, including a total of 141 articles.

VLIZ Library Acquisitions

A total of 39 Library Acquisitions lists were forwarded by e-mail in 2015.

Zeekrant 2015

This eight-page annual publication of the Flanders Marine Institute and the province of West Flanders was printed in 70,000 copies.

Social Media

Facebook:
RV Simon Stevin

Twitter:
@jmeesvliz
@LifeWatchVLIZ
@VLIZBib
@WRMarineSpecies

LinkedIn:
VLIZ - Flanders Marine Institute

Books

A selection of books (co-)written or contributed to by VLIZ employees :

- Lamour, L.; Vallet, E.; Fockedey, N.; Moreau, K.; Kinds, A.; Polet, H. (Ed.) (2015). Vis- en zeevruchtengids voor professionele gebruikers. Voor een markt met duurzame producten uit de zee. 2015 edition. SeaWeb Europe/VLIZ: Paris, Ostend. 182 pp.
- Steevens, I.; Van Moerbeke, K. (Ed.) (2015). Oesterpassie. Navigo/Stichting Kunstboek: Koksijde-Oostduinkerke. 96 pp.
- Decaluwé, C. (2015). Een zee van kansen: onze Noordzee. Rede van Carl Decaluwé Gouverneur van West-Vlaanderen, 22 oktober 2015. Province of West Flanders: Bruges. 134 pp.
- Meire, P.; Amery, D.; Decleer, M. (2015). De Schelde. Van bron tot monding. 1st edition. Academic and Scientific Publishers: Brussels. 264 pp.
- du Bois, M. (2015). Vlaamse visgids. Vis van het jaar - vis van de maand - kies de juiste vis - wat is duurzaam? Stardust Foundation: Belgium. 31 pp.
- (2015). Herkennen van haaien en roggen. Project HAROKIT. ILVO/Natuurpunt/VLIZ: Ostend. 76 pp.

VLIZ Special Publications

- No. 71: Mees, J.; Seys, J. (Ed.) (2015). Book of abstracts – VLIZ Young Scientists' Day. Brugge, Belgium, 20 February 2015. *VLIZ Special Publication*, 71. Vlaams Instituut voor de Zee - Flanders Marine Institute (VLIZ): Ostend. xvi, 196 pp.
- No. 72: Mees, J.; Vanhaecke, D.; Nyonje, B.; Ruwa, R. K. (Ed.) (2015). Proceedings of the VLIR-UOS International Conference 'Sustainable use of marine and coastal resources in Kenya: from research to societal benefits'. Kikambala, Kilifi County, Kenya, 27- 29 October 2014. *VLIZ Special Publication*, 72. Flanders Marine Institute (VLIZ): Ostend. 124 pp.
- No. 73: De Moor, W.; De Raedemaecker, F.; Redd, T. (2015). Report first JPI Oceans conference. WP 8–Deliverable 8.5. *VLIZ Special Publication*, 73. Vlaams Instituut voor de Zee: Ostend. ISBN 978-94-92043-09-2. 46 pp.
- No. 74: Toorman, E.A.; Mertens, T.; Fettweis, M.; Vanlede, J. (Ed.) (2015). INTERCOH2015: 13th International Conference on Cohesive Sediment Transport Processes. Leuven, Belgium, 7-11 September 2015. *VLIZ Special Publication*, 74. Hydraulics Division, Department of Civil Engineering, KU Leuven/Flanders Marine Institute (VLIZ): Leuven, Ostend. ISBN 978-94-920430-8-5. xxii, 224 pp.

Fact Sheets

- VLIZ Wetenschatten (2015). De historiek van de onderzoeksschepen, en de vaartuigen die ingezet werden voor marien onderzoek – Historische mijlpalen van het zeewetenschappelijk onderzoek. *VLIZ Information Sheets,* 147 - 171. Flanders Marine Institute (VLIZ): Ostend.
- VLIZ Wetenschatten (2015). Mariene stations aan de Belgische kust en de historiek van het ZWI, IZWO en VLIZ. Wetenschatten – Historische mijlpalen van het zeewetenschappelijk onderzoek. *VLIZ Information Sheets,* 142. Flanders Marine Institute (VLIZ): Ostend. 23 pp.

Teaching Packages

- Planeet Zee learning modules on the following topics: Survival in the deep sea; life in the North Sea; marine biotechnology.
- Practical exercises on the following topics: microbial life around hydrothermal vents in the deep sea: chemosynthesis; study the differences: 'Life in the North Sea' drawing assignment.

Movies

- PlaneetZee@Work promotional video. 2015. Filmed by Bruneel H. Coordinated by Copejans E.. Executive producer: VLIZ. Ostend.

Scientific A1 publications (co-)written by VLIZ employees

- Coro, G.; Webb, T.J.; Appeltans, W.; Bailly, N.; Cattrijsse, A.; Pagano, P. (2015). Classifying degrees of species commonness: North Sea fish as a case study. *Ecol. Model.* 312: 272-280.
- Costello, M.J.; Claus, S.; Dekeyzer, S.; Vandepitte, L.; Ó Tuama, É.; Lear, D.; Tyler-Walters, H. (2015). Biological and ecological traits of marine species. *PeerJ 3(e1201):* 29 pp.
- Costello, M.J.; Vanhoorne, B.; Appeltans, W. (2015). Conservation of biodiversity through taxonomy, data publication, and collaborative infrastructures. *Conserv. Biol. 29(4):* 1094-1099.
- de Jong, Y. *et al.* (2015). PESI - a taxonomic backbone for Europe. *Biodiversity Data Journal 3:* e5848.
- Engelhard, G.H.; Thurstan, R.H.; MacKenzie, B.R.; Alleway, H.K.; Bannister, R.C.A.; Cardinale, M.; Clarke, M.W.; Currie, J.C.; Fortibuoni, T.; Holm, P.; Holt, S.J.; Mazzoldi, C.; Pinnegar, J.K.; Raicevich, S.; Volckaert, F.A.M.; Klein, E.S.; Lescrauwaet, A.-K. (2015). ICES meets marine historical ecology: placing the history of fish and fisheries in current policy context. *ICES J. Mar. Sci./J. Cons. int. Explor. Mer Online first.*
- Garcia-Moreno, D.; Verbeeck, K.; Camelbeeck, T.; De Batist, M.; Oggioni, F.; Oscar, Z.H.; Versteeg, W.; Jomard, H.; Collier, J.S.; Gupta, S.; Trentesaux, A.; Vanneste, K. (2015). Fault activity in the epicentral area of the 1580 Dover Strait (Pas-de-Calais) earthquake (northwestern Europe). *Geophys. J. Int. 201(2):* 528-542.
- Haspeslagh, J. (2015). Open Research Data. Het Vlaams Instituut voor de Zee. *META 7(5):* 14-17.
- Kopf, A. *et al.* (2015). The ocean sampling day consortium. *GigaScience 4:* 27.
- Le Quere, C. *et al.* (2015). Global Carbon Budget 2015. *ESSD 7(2):* 349-396.

- Lescrauwaet, A.-K.; Vandepitte, L.; Fockedey, N.; De Pooter, D.; Verleye, T.; Mees, J. (2015). Invasive Alien Species in Belgian marine waters: an information platform and checklist for science and policy support. *Manag. Biol. Inv. 6(2):* 209–213.
- Meland, K.; Mees, J.; Porter, M.; Wittmann, K.J. (2015). Taxonomic review of the orders Mysida and Stygiomysida *(Crustacea, Peracarida). PLoS One 10(4):* 28 pp.
- ten Hoopen, A.; Pesant, S.; Kottmann, R.; Kopf, A.; Bicak, M.; Claus, S.; Deneudt, K.; Borremans, C.; Thijssen, P.; Dekeyzer, S.; Schaap, D.M.A.; Bowler, C.; Glöckner, F.O.; Cochrane, G. (2015). Marine microbial biodiversity, bioinformatics and biotechnology (M2B3) data reporting and service standards. *Stand Genomic Sci.* ***10:*** 20 [1-10].
- Vandepitte, L.; Bosch, S.; Tyberghein, L.; Waumans, F.; Vanhoorne, B.; Hernandez, F.; De Clerck, O.; Mees, J. (2015). Fishing for data and sorting the catch: assessing the data quality, completeness and fitness for use of data in marine biogeographic databases. *Database 2015:* 14 pp.

A selection of publications (co-)written by VLIZ employees

(except for regular VLIZ publications and peer-reviewed publications)

- Mees, J.; Verleye, T.; Pirlet, H.; Lescrauwaet, A.-K.; Janssen, C. (Ed.) (2015). Belgisch Marien Onderzoek - een overzicht. Flanders Marine Institute (VLIZ): Ostend. 146 pp.
- Pirlet, H.; Verleye, T.; Lescrauwaet, A.-K.; Mees, J. (Ed.) (2015). Compendium for Coast and Sea 2015: An integrated knowledge document about the socio-economic, environmental and institutional aspects of the Coast and Sea in Flanders and Belgium. Flanders Marine Institute (VLIZ): Ostend.
- Pirlet, H.; Verleye, T.; Lescrauwaet, A.-K.; Mees, J. (2015). Wegwijzer 'Financieringsinstrumenten voor Mariene Onderzoeks- en Innovatieprojecten'. Flanders Marine Institute (VLIZ): Ostend. 42 pp.
- Pirlet, H.; Verleye, T.J.; Lescrauwaet, A.-K.; Mees, J. (Ed.) (2015). Catalogue 'Marine research infrastructure. Flanders Marine Institute (VLIZ): Ostend. 129 pp.
- Verleye, T.J.; Pirlet, H.; Lescrauwaet, A.-K.; Maes, F.; Mees, J. (Ed.) (2015). Vademecum: Marine policy instruments and legislation for the Belgian part of the North Sea. Flanders Marine Institute (VLIZ): Ostend. 128 pp.
- VLIZ (2015). Financiering van het marien onderzoek in Vlaanderen en België: Resultaten tellingen 2015 (periode 2008-2014). Flanders Marine Institute (VLIZ): Ostend. 20 pp.
- Verleye, T.; Lescrauwaet, A.-K.; van Oven, A.; Kleppe, R.; Roelofs, M.; Persoon, K.; Polet, H.; Torreele, E.; van Winsen, F. (2015). De recreatieve zeevisserij in België: Monitoring van de capaciteit, intensiteit en densiteit op zee (eerste resultaten). *VLIZ Beleidsinformerende Nota's, 2015_001.* Flanders Marine Institute (VLIZ): Ostend. 20 pp.
- VLIZ (2015). Initial risk assessment under Regulation A-4 of the Ballast Water Management Convention for Belgium using the joint HELCOM/OSPAR Harmonised Procedure. *VLIZ Beleidsinformerende Nota's,* 2015_002. Flanders Marine Institute (VLIZ): Ostend. 88 pp.
- Verleye, T.; Lescrauwaet, A.-K.; van Oven, A.; Kleppe, R.; Roelofs, M.; Persoon, K.; Polet, H.; Torreele, E.; van Winsen, F. (2015). Recreational sea fishing in Belgium: Monitoring the capacity, intensity and density at sea (first results). *VLIZ Beleidsinformerende Nota's, 2015_004.* Flanders Marine Institute (VLIZ): Ostend. 20 pp.

VLIZ acknowledged

- VLIZ was mentioned in the acknowledgements of 17 peer-reviewed publications and 37 non-peer-reviewed publications.

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