

ANNUAL REPORT 2018

The Flanders Marine Institute (VLIZ) promotes the accumulation of marine knowledge and excellence in marine research in Flanders. The marine research areas are the oceans and seas, the coast and the tidal systems. The target groups for knowledge accumulation are the marine research community as well as educational institutions, the general public, policymakers and the industry (within the scope of the blue economy).









Dear reader,

The importance of the sea in our society is increasing, and this will continue to be the case in de future. Just think of expanding activities such as offshore energy, large-scale aquaculture and the offshore exploitation of mineral resources. This 'blue (r) evolution' poses numerous challenges to the marine research and innovation community. As a result, the need for scientifically based marine policy and management as well as continued innovation in the field of more efficient and sustainable use of marine resources is stronger than ever.

Within this scope, an important role can be played by VLIZ, which has recently been given a mandate to initiate and conduct scientific research. The different research projects launched in 2018 illustrate the growth, interdisciplinarity and unique position of VLIZ in the national and international research landscape. In addition, VLIZ plays a crucial role in the Blue Cluster, which came into being in 2018 and is a game changer for applied research and business-driven innovation with regard to the coast and sea. In the context of the Blue Cluster, VLIZ acts as a facilitator of an efficient transfer of scientific knowledge from marine knowledge institutions to the maritime business world.

By making available the Marine Robotics Centre, research vessel Simon Stevin, various laboratory facilities at the Marine Station Ostend and unique data systems, VLIZ contributes to the continuous development of state-of-the-art research infrastructure. Partly for this reason, VLIZ is a complementary and strong partner in national and international projects, as is evident from the accreditation as an IODE National Oceanographic Data Centre, which the VLIZ data centre (Flanders Marine Data and Information Centre) obtained in December 2018.

In 2018, VLIZ organised no fewer than 39 events, including the following highlights: the exhibition 1914-'18: The Battle for the North Sea to commemorate the centenary of the First World War, the 53rd edition of the European Marine Biology Symposium (EMBS) and the first edition of the Big Shell Counting Day, with which VLIZ aims to promote citizen science among the general public. As is tradition, VLIZ released a variety of publications in 2018, ranging from A1 publications in renowned journals to books, regular publications such as De Grote Rede and Zeekrant, digital information graphs and animations. The launch of a new edition of the Compendium for Coast and Sea and the Coastal Portal was the highlight of a 2-year process coordinated by VLIZ.

Adhering to the principle that standing still is going backwards, VLIZ will implement a new structure internally in early 2019. Our institute thereby creates space for growth and prepares for the future. That future looks challenging, promising and above all blue!

JAN MEES

General Director of VLIZ

Ostend, march 2019

TABLE OF CONTENTS

PREFACE p. 4

HIGHLIGHTS p. 8

SUPPORT TO INTERNATIONAL ORGANISATIONS p. 32

KEY PERFORMANCE INDICATORS p. 38

COLOPHON p. 54



32

SUPPORT TO INTERNATIONAL ORGANISATIONS

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. This chapter briefly explains the specific partnerships in which VLIZ participated in 2018.



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HIGHLIGHTS 2018

The highlights are the special events, achievements, activities or projects of VLIZ that took place in 2018. They are often the result of intensive cooperation between various divisions.



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38

KEY PERFORMANCE INDICATORS

The Key Performance Indicators (KPIs) 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. As stated in the covenant for the period 2017-2021, VLIZ has to deliver on at least twelve KPIs every year.

ANNEXES

 \Box Only available in digital format: downloadable from the VLIZ website www.vliz.be/en/vliz-annual-report

> **ORGANISATION AND** FINANCIAL STATEMENT p. 4

MANAGEMENT INDICATORS p. 14

OTHER ANNEXES p. 38









14 (Annexes)

MANAGEMENT INDICATORS

The Management Indicators refer to important services provided by VLIZ to marine scientific researchers, policymakers, educators and the general public. They complement the Key Performance Indicators (KPIs), which are criteria to evaluate the operation of VLIZ.



ORGANISATION VLIZ

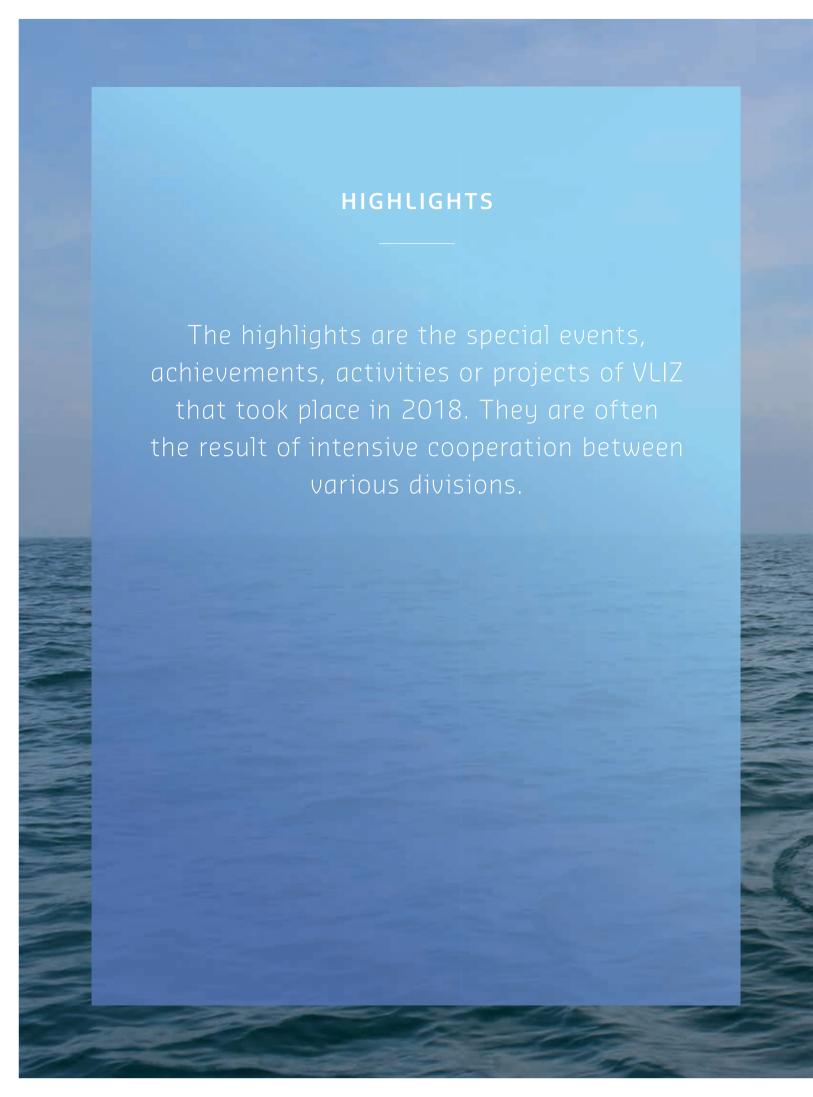
VLIZ is administered by the Board of Directors and consults the Scientific Committee for its scientific support tasks. The General Assembly provides assistance in managerial and administrative decisions.





OTHER ANNEXES

An overview of the national and international networks in which VLIZ participates, projects for which VLIZ receives external funding, the scientific equipment and infrastructure made available by VLIZ, the events (co-)organised by VLIZ and the publications published by VLIZ.





VLIZ RESEARCH PROJECTS

Research division: www.vliz.be/en/research-vliz

☐ Documents captured from enemy ships and contained in the Prize Papers Collection: www.vliz.be/en/southern-netherlandish-prize-papers-research
☐ Palaeolandscape research: www.vliz.be/en/palaeolandscape-research

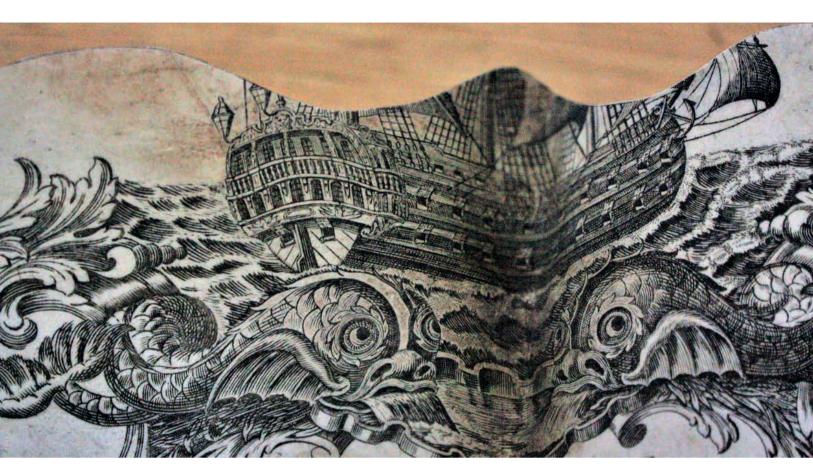
The Research division got up steam in 2018, as is evident from the diversity of research projects currently in operation and a handful of new projects in the pipeline. Two excellent examples illustrating the VLIZ Research division's growth, interdisciplinarity and unique position in the national and international research landscape are the 'Southern Netherlandish Prize Papers Research' project and the palaeolandscape research project concerning drowned landscapes and marine fossils in the North Sea.

The 'Southern Netherlandish Prize Papers Research' project investigates documents from the Prize Papers Collection, preserved at the National Archives in Kew (UK). These include letters and other shipboard documents found on ships captured by the British Admiralty between the late 17th and the early 19th century. Since then, they have been kept in the official British archives. These sources hold great potential for research on the maritime history of the Southern Netherlands and have not been studied in a Flemish context before. In collaboration with national and international partners, VLIZ has initiated thematic research on this unique historical material. Through this initiative, VLIZ aims to promote research in the field of maritime history in Flanders and include an entirely new group of researchers in the marine research community. For the transcription, interpretation and further disclosure of these

documents, VLIZ has initiated a close collaboration with the History department of Ghent University. In addition, linguists and historians from the universities of Antwerp, Brussels, Ghent and Leuven are involved in the project via an expert group. All of these experts contribute to the utilisation of these valuable sources in scientific research from the perspective of their discipline. Finally, VLIZ also ensures the Flemish participation in the international Prize Papers Project, which is coordinated by the Carl von Ossietzky University of Oldenburg and the Göttingen Academy of Sciences and Humanities under the supervision of Prof Dr Dagmar Freist.

» The current research projects are a good indicator of VLIZ's growth, interdisciplinarity and unique position in the national and international research landscape. «

MICHIEL VANDEGEHUCHTE, RESEARCH MANAGER AT VLIZ



Letterhead of ship's pass of an 18^{th} -century Southern Netherlandish vessel. This shipboard document was seized by the British and is now part of the Prize Papers Collection © VLIZ

The North Sea palaeolandscape research project is an interdisciplinary project encompassing different research programmes shedding light on palaeontological, palaeobiological, geological and geophysical aspects. The southern North Sea, including the Belgian part of the North Sea, has experienced major sea level fluctuations during the Quaternary, resulting in fossil-rich marine, terrestrial and fluvial deposits. VLIZ and its partners study these sediments and their associated fauna using morphological, microscopic, elemental and molecular techniques to better understand the nature of landscape changes and their influence on the palaeofauna and human occupation. The principal partners in this research are Ghent University, the Royal Belgian Institute for Natural Sciences (RBINS), the Natural History Museum of Rotterdam (the Netherlands) and the University of Bradford (UK). This research project is also a good example of a project in which different VLIZ divisions are closely involved.



A walrus skull found in a fishing net near Het Scheur, a navigation channel just outside Zeebrugge harbour. © VLIZ



Over the past two decades, the VLIZ data centre has delivered a great deal of innovative and service-oriented work. The Flanders Marine Data and Information Centre (VMDC) was therefore accredited by IODE in 2018 © VLIZ







DATA CENTRE ACCREDITED BY IODE

☐ Marine Data Archive (MDA): www.vliz.be/en/marine-data-archive
☐ The integrated marine information system (IMIS): www.vliz.be/en/integrated-marine-information-system
☐ Data systems: www.vliz.be/en/datasystems

In December 2018, the VLIZ data centre or Flanders Marine Data and Information Centre (VMDC) was given the status of accredited IODE National Oceanographic Data Centre.

It is only the 10th data centre to receive this accreditation for marine data management and services. The IODE accreditation is the result of a collective effort by the entire data centre and is a reward for the innovative and service-oriented work that the data centre has delivered over the past two decades.

To qualify for IODE accreditation, a data centre must meet a number of conditions as set out in the IODE Quality Management Framework (IODE-QMF). This framework also offers data centres an overall strategy, advice and guidance on the design and implementation of Quality Management Systems (QMS).

Two of the systems that were operationalised by the VMDC and played a crucial role in obtaining the IODE accreditation are the Integrated Marine Information System (IMIS) and the Marine Data Archive (MDA). IMIS discloses scientific information about available datasets, establishes the link with publications and authors, and thus provides a good overview of the expertise of researchers and institutes. The Marine Data Archive is a secure online system where researchers can archive their data files in a well-documented way. More and more scientists are using the MDA and IMIS to publish their open data formally with a Digital Object Identifier (DOI), which leads to traceability of the cited data and increased recognition for the work done.

Besides the MDA and IMIS, the data centre has also developed and maintained many other data systems that are used in dozens of international projects and networks. Examples include taxonomic registers such as the World Register of Marine Species (Aphia), the EurOBIS data system, which centralises biogeographic data on marine species, and the IOC sea level monitoring facility, which groups the operational status of the sea level monitoring stations and their raw data.

With these data systems and services, the data centre has been supporting the principles of fair and open data for many years and has previously been accredited as a World Data Centre by the International Science Council ICSU.

» The IODE accreditation highlights the reliable and unique service function performed by VLIZ in projects with a data management aspect. «

FRANCISCO HERNANDEZ, DATA CENTRE MANAGER

THE CONTRIBUTION OF VLIZ ON A FLEMISH, EUROPEAN AND GLOBAL LEVEL

In addition to the numerous initiatives launched by VLIZ in 2018, the institute also made a significant contribution on a Flemish, European and global level. This makes the institute an active player in relation to current issues in the wider marine scientific community.

On a global level, VLIZ supported various processes aimed at healthy and productive oceans and sustainable management of marine resources in 2018. One of these initiatives is the 'Decade of Ocean Science for Sustainable Development', which was proclaimed by the United Nations and begins in 2021. Belgium (Flanders) is currently identifying possible partnerships and contributions to this decade, and VLIZ plays an active part in the preparations. Through FUST (the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science), VLIZ contributes to the Sustainable Development Goals (SDGs) and the objective of UNESCO's Intergovernmental Oceanographic Commission (IOC) regarding the promotion of sustainable use of the marine environment. Together with the Flemish government department of Economy, Science and Innovation (EWI) and the UNESCO/IOC Project Office for IODE, VLIZ organised the FUST OCEAN event from 14 to 17 May 2018. This event celebrates 20 years of scientific cooperation between the Flemish government and UNESCO through FUST. On the basis of its experience with the Compendium for Coast and Sea, Belgium (Flanders, coordinated by VLIZ) plays a pioneering role in drawing up the second edition of the Global Ocean Science Report (GOSR-II), together with Canada. VLIZ is co-chair of the Editorial Board of GOSR-II. In addition, VLIZ is a member of POGO (Partnership for Observation of the Global Oceans), a forum established in 1999 by directors and leaders of major oceanographic institutions to promote oceanography worldwide, with a focus on the implementation of an international and integrated global ocean observing system.

On a European level, VLIZ is actively involved in partnerships for the preparation, development and implementation of strategic agendas for marine research and innovation in the North Sea region. VLIZ participates in various working groups of the Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans), including deep-sea mining, microplastics and marine spatial planning. VLIZ has been authorised by the Research Foundation - Flanders (FWO) to contribute to the development of a marine research strategy and provide ocean-related advice as a member of the European Marine Board (EMB). Jan Mees has chaired the EMB since 2014. In 2018, VLIZ strongly contributed to the preparation of the EMB flagship publication 'Navigating the Future V', which will be published in June 2019. The EU-funded partnership BANOS CSA (BAltic and NOrth Sea Coordination and Support Action) was launched in November 2018. Commissioned by EWI, VLIZ acts as a partner in this project, which is aimed at developing a joint research and innovation programme for the Baltic and the North Sea. Also on a European level, VLIZ is an active member of the steering committee of EurOcean (European Centre for Information on Marine Science and Technology) and a member of the CORIANE alliance of knowledge institutions for North Sea research, which was established in 2018.

VLIZ makes a fundamental contribution to the development and maintenance of international databases with increasing importance in the context of international ocean policy (e.g. EurOBIS, the European component of the Ocean Biogeographic Information System (OBIS); the World Register of Marine Species (WORMS); and the IOC sea level monitoring facility; see highlight on page 12).

At the invitation of the Portuguese president, King Philippe and Queen Mathilde made a state visit to Portugal with stops in Lisbon and Porto from 22 to 25 October 2018. The royal couple was accompanied by 170 federal and regional government representatives as well as entrepreneurs. For the first time, VLIZ put marine research as the foundation of the maritime economy on the official programme, which resulted in the participating corporate networks and representatives paying unprecedented attention to the oceans. The Compendium for Coast and Sea has turned out to be an invaluable instrument for the promotion of international marine and maritime collaboration.



For the first time, VLIZ was part of the official programme of the Belgian state visit to Portugal in October 2018 © Koen Verlaeckt



In May 2018, VLIZ
co-organised the FUST-OCEAN
event, celebrating 20 years
of cooperation between the
Flemish government and
UNESCO with regard to
ocean-related matters
© IODE – Jürgen de Witte

On a Flemish level, VLIZ is the principal point of contact/platform for ocean research and supports the internationalisation of the Flemish marine/maritime research and innovation agenda. VLIZ performs this task through bilateral agreements (MoUs) with foreign knowledge institutions (e.g. KMFRI from Kenya; UQAR-ISMER from Quebec, Canada; and NIOZ from the Netherlands). Cooperation with foreign experts provides a significant impetus to support excellent and innovative scientific research. In addition, VLIZ takes care of the marine research and innovation aspect of bilateral agreements between

the Flemish government and the governments of other regions or countries (e.g. Catalonia and Quebec). In 2018, Flanders Innovation & Entrepreneurship (VLAIO) gave the green light to a new spearhead cluster concerning the 'blue economy'. This Blue Cluster will facilitate partnerships between knowledge institutions, government agencies and companies, and prepare innovative projects aimed at developing the North Sea's economic potential. Within the scope of the Blue Cluster, VLIZ serves as a liaison between the marine scientific community and the industry.

EXHIBITION 1914- '18: THE BATTLE FOR THE NORTH SEA

 \square www.vliz.be/battle-for-the-north-sea/en



The exhibition 1914- '18: The battle for the North Sea commemorated the centenary of the U-boat campaign during the First World War and the British reaction with the Zeebrugge and Ostend raids

2018 was the last year of the centenary of the First World War. The highlight of the commemorations was the exhibition 1914-18 – The battle for the North Sea. This exhibition commemorated the centenary of the U-boat campaign during the First World War and the British reaction with the Zeebrugge and Ostend raids. The exhibition was held from 23 April to 31 August 2018 at Provinciaal Hof on Markt square in Bruges, where the Imperial German Navy orchestrated the U-boat operation during the Great War. By means of numerous special artefacts, the exhibition told the fascinating tale of the U-boat threat in the North Sea. Visitors could admire a collection of Victoria Crosses (awards for gallantry) which had never been brought together

before and unique remnants of the recently discovered submarine UB-29.

The exhibition 1914- '18 – The battle for the North Sea was an initiative of VLIZ and was subsidised by Toerisme Vlaanderen within the scope of the tourism promotion programme '2014-18 – Great War Centenary Commemoration'. This project was realised in collaboration with the War Heritage Institute, Westtoer, the City of Bruges and the Province of West Flanders, and thanks to the support of numerous sponsors, including the Belgian National Lottery. A steering committee chaired by governor of West Flanders Carl Decaluwé, also chairman of the VLIZ Board of Directors, oversaw this exhibition project.



The 11 Victoria Crosses – the highest military decoration in the United Kingdom – awarded to the participants in the Zeebrugge and Ostend raids were displayed together for the first time at the exhibition. © VLIZ



Governor of West Flanders and chairman of the VLIZ Board of Directors Carl Decaluwé opened the exhibition 1914- '18 - The battle for the North Sea at Provinciaal Hof on Markt square in Bruges. © Reinout Goddyn

VISITORS

to the exhibition 1914- '18 – The battle for the North Sea at Provinciaal Hof on Markt square in Bruges..

BRILLIANT MARINE RESEARCH IDEAS

☐ BMRIs: www.vliz.be/en/brilliant-marine-research-idea

 □ VLIZ philanthropy: www.vliz.be/en/your-contribution

29,793

THE TOTAL BUDGET (IN EUROS)

that has been allocated to the VLIZ philanthropic activities since 2017 within the scope of the BMRIs.

Every year, VLIZ launches a call for 'Brilliant Marine Research Ideas' (BMRIs) in order to inspire and enable PhD students to execute a brilliant idea within the scope of their doctoral research. The grants are allocated to researchers affiliated to a Flemish University or Flemish University College who have, at the time of the application, less than 6 years of research experience since the beginning of their doctoral research. The budget per grant amounts to a maximum of 5,000 EUR. The BMRIs are unique in Belgium and distinguish themselves from other types of funding by their focus on out-of-the-box ideas and additional research topics within the context of the cur-

rent marine research topics of young marine scientists. Since 2017, a total of 26 PhD students have submitted an application for a BMRI grant, and a total of six grants have been awarded. In 2018, the first laureates presented their results with an output of two A1 publications (one in the mega journal *Scientific Reports* and one in *Ecology and Evolution*) and the prospect of a third publication.

The BMRIs are financed through the VLIZ philanthropic activities, the only charity in Flanders specifically aimed at marine research.



The laureates of the 2017 'Brilliant Marine Research Idea' grants (left to right): Emmanuel Van Acker (UGent, Laboratory of Environmental Toxicology and Aquatic Ecology), Laurine Burdorf (VUB, Department of Chemistry), Raf Meskens (Antwerp Maritime Academy) and Franz Maximilian Heindler (KULeuven, Laboratory of Biodiversity and Evolutionary Genomics). Emmanuel Van Acker's and Franz Maximilian Heindler's BMRIs have resulted in an A1 publication. © VLIZ



BMRI laureate Franz Maximilian Heindler (KULeuven, Laboratory of Biodiversity and Evolutionary Genomics) conducts research into DNA from historical samples of Antarctic fish conserved in museum collections. © Franz Maximilian Heindler



Volunteers collected, counted and identified shells at the first edition of the Big Shell Counting Day. © VLIZ

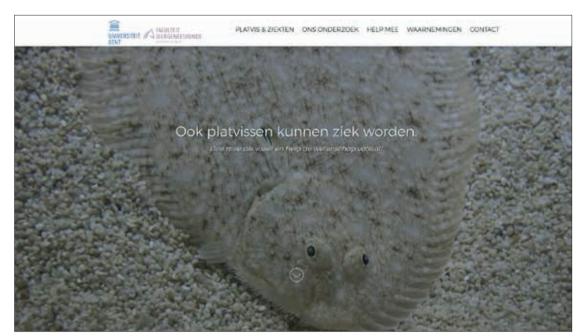
HUB FOR MARINE CITIZEN SCIENCE PROJECTS

☐ SeaWatch-B: www.seawatch-b.be
☐ Big Shell Counting Day: www.vliz.be/nl/event/2018-grote-schelpenteldag
☐ Flatfish injuries: www.platvisziekten.be
☐ Recreational sea fisheries: www.recreatievezeevisserij.be

30,200

THE NUMBER OF SHELLS

collected and identified by 400 enthusiastic citizens at the first edition of the Big Shell Counting Day In 2018, VLIZ left its mark on marine citizen science in Belgium. The SeaWatch-B project had been launched officially in June 2015, with some twenty volunteers monitoring the situation in the Belgian part of the North Sea by means of 10 standardised measurements. The resulting data have been processed into a fascinating report appearing in early 2019. In light of these efforts, VLIZ organised useful training sessions such as the fish identification training session organised by ILVO on 7 June 2018, which was attended by 50 enthusiastic participants. In addition, the SeaWatchers made a contribution to the BeRMS2020 census of het Belgian part of the North Sea during a two-day biodiversity exploration on board RV Simon Stevin (on 2 and 3 May 2018) supervised by VLIZ and other experts.



Via the website www.platvisziekten.be, professional and recreational fishermen can report flatfish with a physical injury and thus contribute to the advancement of science © UGent/VLIZ



The SeaWatchers made a contribution to the BeRMS2020 census of the Belgian part of the North Sea during a two-day biodiversity exploration (on board RV Simon Stevin).

© Aäron Fabrice

The very first Big Shell Counting Day took place on Saturday 17 March. This citizen science project enabled VLIZ, EOS, Natuurpunt and the Coastal Heritage unit to have 400 volunteers collect, count and identify 30,200 shells of over fifty species at ten counting stations along the Belgian coastline despite the bad weathers conditions. The event's success and the media attention will guarantee a second edition in 2019.

VLIZ also made other efforts in the field of marine citizen science. On 29 May, the Communication division interacted with about one hundred pupils from all six primary schools in Bredene with regard to the marine litter that had been collected. On 14 December, VLIZ organised a citizen science session on the occasion of the 90th anni-

versary of the Research Foundation – Flanders (FWO) in Antwerp as part of the 'Knowledge Makers' event.

Finally, the fisheries industry was actively involved as well. Within the scope of the 2018 VLIZ Communication Award, VLIZ created a website for Maaike Vercauteren, appealing to fishermen to report injuries in flatfish and actively contribute to the research. And on the occasion of World Oceans Day (8 June 2018), 120 recreational fishermen made their way to Staf Versluys Centrum in Bredene to be informed about the results of the RecVis project, which were partly based on their entries in the logs.

53RD EUROPEAN MARINE BIOLOGY SYMPOSIUM

The programme, the book of abstracts and the photographs of EMBS53 are available on the symposium website: www.embs53.org



In 2018, VLIZ and LifeWatch Belgium joined forces to organise the 53rd edition of the *European Marine Biology Symposium* (EMBS53), 43 years after the first edition in Ostend (1975). The general aim of the EMBS symposium series is to raise awareness about and promote the international image of marine biological sciences in Europe. But it is also aimed at reinforcing the network by means of a strong scientific programme and secondary social activities such as excursions and the *Yellow Submarine* competition (a playful competition between national teams). From 17 to 21 September 2018, 170 marine biologists from 25 countries took part in a five-day symposium in Ostend featuring presentations about historical, contemporary and future marine biological

research. The scientific presentations (5 keynote speakers, 60 oral presentations and 51 posters) were centred on four major symposium topics: 'Science from a historical perspective', 'Science in the North Sea', 'Science in a modern era' and 'Citizen science'. The programme also included information pitches provided by marine organisations and companies, an excursion to the Zwin nature reserve and to the historical city centre of Bruges as well as several networking opportunities. A great deal of attention was paid to the research based on the output of the virtual biodiversity laboratory of LifeWatch Belgium, with various presentations and live demonstrations of equipment during the information pitches.



170 marine biologists from 25 countries participated in the $53^{\rm rd}$ European Marine Biology Symposium in Ostend. \odot VLIZ



The participants of the Yellow Submarine competition – a playful competition between national teams – were given the assignment to peel shrimp, identify shells and make paper flowers. © VLIZ



The ICOS Belgium network consists of six monitoring stations, three of which perform measurements at sea: the ICOS buoy near the Thornton bank, RV Simon Stevin and RV Belgica. © ICOS (Konsta Punkka)



There was a great deal of outreach to ICOS Belgium last year! Finnish photographer Konsta Punkka chose the VLIZ monitoring stations as well as several other European ICOS monitoring stations for his travel documentary: follow #ICOScapes [www.icos-ri.eu/ icoscapes] on Instagram and via the itinerary photographic exhibition. © ICOS Belgium

ICOS INTEGRATED CARBON OBSERVATION SYSTEM

☐ Pan-European research infrastructure ICOS: www.icos-ri.eu☐ ICOS Belgium: www.icos-belgium.be☐ Ocean Thematic Centre: otc.icos-cp.eu

The European observation network ICOS (Integrated Carbon Observation System) consists of 130 monitoring stations for continuous and long-term observations of the greenhouse gas concentrations and fluxes on the European continent and in the adjacent areas. Greenhouse gas concentrations and fluxes are measured in the atmosphere (by means of atmosphere stations), in the ecosystem (by means of ecosystem stations) and above the European seas / North Atlantic Ocean (by means of ships and buoys). Accurate observations of the greenhouse gas balance contribute to a better understanding of global climate change and its possible impact on ecosystems. Long-term data as to greenhouse gas emissions will also shed light on the factors that control the changing atmospheric composition in greenhouse gases.

ICOS Belgium is supported by the Flemish government and consists of a total of six monitoring stations. VLIZ and the Operational Directorate Natural Environment take care of the oceanic component of ICOS Belgium. Measurements are performed by means of the ICOS buoy near the Thornton bank as well as the research vessels Simon Stevin and Belgica. The VLIZ buoy near the Thornton bank was officially recognised as an ICOS monitoring station in 2018. In addition, VLIZ puts an *in-situ* methane sensor and chemical analysis equipment in the Marine Station Ostend at the disposal of scientists who conduct research into this topic. ICOS is part of the European Strategy Forum on Research Infrastructures (ESFRI).



The VLIZ Policy Information division proudly presents the 3rd edition of the Compendium for Coast and Sea. © VLIZ

LAUNCH OF COMPENDIUM FOR COAST AND SEA AND COASTAL PORTAL

» The Compendium for Coast and Sea provides an integrated overview of the Flemish-Belgian marine research landscape, enabling us to present and position our community strategically. «

☐ Compendium for Coast and Sea: www.compendiumkustenzee.be
☐ Coastal Portal: www.kustportaal.be
☐ Twitter Compendium: @CompendiumVliz



Jan Mees (General Director of VLIZ) and Colin Janssen (vice-chairman of the VLIZ Board of Directors) present the Compendium for Coast and Sea 2018 to Karel Boutens, representative of the cabinet of Flemish minister for economy, science and innovation Philippe Muyters. © VLIZ

On 7 December 2018, VLIZ launched the third edition of the Compendium for Coast and Sea, a multifunctional guide for marine experts. About 100 guests, including a representative of the cabinet of Flemish minister for economy, science and innovation Philippe Muyters, attended the publication of the different publications. The Compendium's main goal has always been the scientifically based and neutral disclosure of scattered Flemish-Belgian marine scientific information. All publications were thoroughly reviewed in collaboration with an extensive network of over 150 experts. A great deal of attention was paid to the improvement of the recognisability and the user experience. The publications pertaining to the Compendium for Coast and Sea 2018 are: 'Indicator Report Marine Research and Innovation 2018' (trends and figures concerning marine research and marine innovation in Flanders

and Belgium), 'Knowledge Guide Coast and Sea 2018' (information portal on the use of the coast and sea in Flanders and Belgium), 'Expert Guide Marine Research 2018' (portfolio of marine research in Flanders and Belgium), 'Catalogue Marine Research Infrastructure 2018' (overview of the available infrastructure for marine research in Flanders and Belgium) and 'Marine Policy – Policy instruments and legislation 2018' (overview of the most pertinent international, European, Belgian and Flemish marine policy contexts). A new data portal, the Coastal Portal, has been developed to provide users with easy access to information, maps and data relating to the functions and activities taking place in the Belgian part of the North Sea and the Belgian coastal area. The launch of the Compendium and the Coastal Portal was the highlight of a 2-year process coordinated by VLIZ.

PUBLIC ACTIVITIES

☐ SuperNova: www.supernovafest.eu
☐ Science Day: www.vliz.be/en/event/science-day-2018
☐ Press releases: www.vliz.be/en/press-releases
☐ Press coverage: www.vliz.be/en/vliz-press-clippings

Sharing marine scientific knowledge with the general public is one of the core tasks of the VLIZ Communication division. This includes publications, press releases and social media posts as well as the organisation of or attendance at major public events. Two of the principal events of 2018 were the technology festival Super-Nova and Science Day.

On the weekend of 29 and 30 September, VLIZ was represented at SuperNova in Antwerp, where people of all ages could discover marine robotics and control a small remotely operated underwater vehicle. By means of an interactive stand, VLIZ aimed to demonstrate that state-of-the-art technology and innovative sensors help marine scientists explore and map the vast oceans and seas. Over the entire weekend, 4500 interested people visited the science pavilion at Het Eilandje in Antwerp.

At the 8th edition of Science Day (25 November 2018), VLIZ demonstrated marine research into different North Sea mysteries. A total of 850 visitors rolled their sleeves up at numerous interactive stands in the Marine Station Ostend. The countless activities included digging up fossil bone fragments of mammoth and woolly rhinoc-

eros, controlling a remotely operated underwater vehicle and producing CO_2 with household items. The tour of the research vessel Simon Stevin was also a great success: enthusiastic crew members showed 870 visitors round the vessel, while scientists explained the research conducted on board. There was also a great turnout of 250 participants for a series of short, interesting lectures at the VLIZ library. Experts provided a summary of the state of play of four current research topics: underwater heritage, electric pulse fishing, plastic pollution and submerged North Sea landscapes and fossils.

In 2018, VLIZ sent out 15 (inter) national press releases (sometimes in collaboration with other institutes) and co-organised one press conference. These press releases included topics such as the Big Shell Counting Day and the interim report on the recreational fisheries project by VLIZ-ILVO and were widely covered by the local and national media. Reports about the discovery of WWII aircraft, the palaeontological expedition to the Brown Bank and the opening of the exhibition 1914-'18 – The battle for the North Sea were also mentioned in the international press. VLIZ is often contacted by the press, which results in additional press coverage (194 press reports in total) concerning different topics.



The VLIZ Marine Robotics Centre was presented at the technology festival SuperNova, where visitors could experience what it is like to control a remotely operated underwater vehicle. © VLIZ



A record turnout for Science Day at VLIZ: over 1,000 participants found out more about research into various North Sea mysteries. © VLIZ



Long-term research into the history of Flemish fisheries has resulted in the book *Vissen in het verleden: 500 jaar Vlaamse zeevisserij* (Fishing in the past: 500 years of Flemish sea fisheries).

FISHING IN THE PAST: 500 YEARS OF FLEMISH SEA FISHERIES



The exhibition 'Vissen in het Verleden' (Fishing in the past) provided visitors with on overview of the eventful history of fisheries: from a thriving industry to naval wars and crisis..

With the book 'Vissen in het verleden: 500 jaar Vlaamse zeevisserij' (Fishing in the past: 500 years of Flemish sea fisheries), Ann-Katrien Lescrauwaet (VLIZ), Jan Parmentier (Museum aan de Stroom – MAS) and Ruth Pirlet (National Fisheries Museum – NAVIGO) created a comprehensive overview of new insights into the history of Flemish sea fisheries in 2018. This publication outlines five centuries of Flemish sea fisheries and is based on an extensive study of the archives, data and literature. It demonstrates that Flanders, in spite of its small fishing fleet and short coastline, was able to make a significant contribution to the maritime history of the North Sea. In essence, the book deals not with the fishermen, but with the core of the general fishing industry: the fleet, fishing techniques, catches and fishing grounds, target species, consumption as well as the economic, geographical and political context

of fisheries. It provides an outline of how the Flemish sea fisheries were constantly aimed at profitability and meeting the needs of consumers over the centuries. This history is characterised by finding a balance between profitable fishing in the North Sea, the English Channel and the North Atlantic Ocean on the one hand and surviving in a region where international conflicts have often been fought out at sea on the other hand. The book is filled with wonderful illustrations and is a reference work for the fascinating story of sea fisheries in Flanders, which appeals to researchers as well as the general public.

The publication of the book was accompanied by the exhibition of the same name that was held at the National Fisheries Museum NAVIGO in Oostduinkerke from 1 July 2018 to 6 January 2019.

SUPPORT TO INTERNATIONAL ORGANISATIONS

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. This chapter briefly explains the specific partnerships in which VLIZ participated in 2018.

🖵 www.vliz.be/en/international-mandates



EUROPEAN MARINE BOARD



Simon Claus (VLIZ) writes down remarks and ideas during one of the break-out sessions at the EOOS conference. © Dirk Leemans

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

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 FWO in the European Marine Board and was given the mandate by the Flemish government to accommodate and support the EMB secretariat.

The European Marine Board (EMB) secretariat, located at InnovOcean benefits from VLIZ support through the use of the general VLIZ infrastructure, IT support, and one EMB staff member. Jan Mees, VLIZ General Director, has been the EMB chairman since 2014, with a mandate to Spring 2019. Furthermore, the VLIZ head of Communications Jan Seys actively supports the EMB Communications Panel.

In 2018, VLIZ and the European Marine Board cooperated on several ongoing EMB activities such as the development of EMB Flagship publication Navigating the Future V (including VLIZ coauthors Jan Mees and Michiel Vandegehuchte); the EMB Working Group on Research Vessels in which André Cattrijsse (VLIZ) is participating as one of the WG members; and the H2020 SOPHIE

project on Oceans and Human Health for which EMB is developing the Strategic Research Agenda with the help of in international expert group including Michiel Vandegehuchte (VLIZ).

In July 2018, EMB published its 3rd 'Future Science Brief' entitled 'Strengthening Europe's Capability in Biological Ocean Observations', which was co-authored by Francisco Hernandez (VLIZ). This publication sheds light on the gaps and priorities for the improvement of the current biological ocean observation capacity as part of the broader European Ocean Observing System (EOOS), which is fit-for-purpose in the context of user needs and societal benefits.

From 21 to 23 November 2018, EMODnet, EMB and EuroGOOS organised the first EOOS conference with the support of DG MARE. This event brought together various ocean observing stakeholders – from scientists, public authorities and industries, including fisheries, energy and transport, to the wider society. The EOOS strategy and implementation plan as well as a strong call to action were presented at the conference. VLIZ employees contributed to the event by presenting posters and by moderating, reporting or participating in one of the break-out sessions.

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.

The European Marine Observation and Data Network (EMODnet) is a network of organisations supported by the European Fund for Maritime Affairs and Fisheries (EFMAF) within the scope of the EU's integrated maritime policy. These organisations work together to conduct marine observations, process the data according to international standards and make that information freely available as interoperable data layers, data products and services.

The EMODnet secretariat has been managed by Seascape since 2013 and is established at the InnovOcean site in Ostend with the support of VLIZ and the Flemish government. VLIZ provides the EMODnet secretariat with office space for 5 staff members as well as administrative and IT support. In addition, VLIZ contributes to the development of EMODnet's Central Portal (www.emodnet.eu). This Central Portal gives users access to EMODnet's different thematic activities (bathymetry, geology, biology, chemistry, human

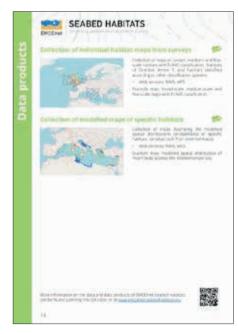
activities, etc.), regional activities (EMODnet Sea-basin Checkpoints) and data services (map viewer, query tool, data catalogue, etc.).

In 2017, the EMODnet secretariat and VLIZ jointly launched a new important information product: the data and data product portfolio, accessible via the Central Portal (www.emodnet.eu/data-portfolio). The portfolio provides a clear and succinct overview of the data and products offered by EMODnet's thematic portals. In addition, the concept of an advanced query tool to search information about different EMODnet topics was developed further in 2018 and will be refined and launched in 2019.

Finally, VLIZ supported the EMODnet secretariat in the organisation and content development of several events in 2018, including a training workshop at the UGent Blue Growth Summer School in Ostend in September and a conference about ocean observation in Europe in November. For the Blue Growth Summer School, VLIZ created a challenge for students as part of their assessment at the end of the programme. During this exercise, the students had to make use of EMODnet's marine data and sources to identify areas suitable for the implementation of offshore wind farms and to examine blue growth opportunities in one of the oceanic basins.

- www.vliz.be/en/european-marineobservation-and-data-network-emodnet
- ¬ www.emodnet.eu/about-secretariat





The data and data product portfolio launched by EMODnet in 2018.

JPI OCEANS



The meeting of the Board of Directors of JPI Oceans (April 2018). © JPI Oceans

 $\ensuremath{\mathbb{Q}}$ www.vliz.be/en/jpi-healthy-and-productive-seas-and-oceans-jpi-oceans $\ensuremath{\mathbb{Q}}$ www.jpi-oceans.eu

The Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans) is an intergovernmental platform aimed at increasing the impact of national marine and maritime research and innovation investments. By joining forces, JPI Oceans focuses on long-term collaboration between EU member states, associated countries and international partners. The platform provides its member countries with a shared voice, strategic agenda and action plan to address complex ocean-related societal challenges that cannot be solved at national level.

VLIZ has been commissioned by the Flemish government to support the JPI Oceans secretariat. VLIZ does so by employing a full-time employee at the JPI Oceans secretariat in Brussels. In addition, a part-time employee has been funded within the scope of the Horizon 2020 CSA Oceans 2 project. As part of this project and on the occasion of the itinerary exhibition 'Ocean Plastic Lab', the JPI Oceans secretariat organised three public events concerning oceanic plastic pollution in Brussels in 2018. This series of lectures in English, Dutch and French allowed the general public to learn more about what science and society are doing to understand the plastics problem and come up with solutions.

In addition, VLIZ employees supported JPI Oceans in its communication activities. In particular, VLIZ staff updated and restructured the JPI Oceans website, developed new factsheets and presentations of JPI Oceans actions and prepared the organisation of the JPI Oceans seminar in January 2019.

UNESCO/IOC PROJECT OFFICE

FOR IODE



Participants in the OTGA training course 'Ocean Data Management for Researchers' (03 – 07 December 2018, Ostend, Belgium) visit the Marine Station Ostend (VLIZ). © UNESCO/IOC Project Office for IODE

 \square www.vliz.be/en/unescoioc-project-office-iode

¬ www.iode.org

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.

VLIZ supports the IOC Project Office for IODE by appointing employees who account for 3.5 full-time equivalents. In addition, VLIZ provides support to the operational activities focusing on the development and maintenance of online data and information services, the coordination of the global IODE network of oceanographic data centres and the organisation of specialised technical training sessions.

In the period from 2014 to 2018, IODE developed the training courses and educational methods of its training centre in Ostend into a network of 9 regional training centres (RTCs) located in Belgium, Colombia, China, India, Iran, Kenya, Malaysia, Mozambique and Senegal, constituting the OceanTeacher Global Academy (OTGA). The RTC model makes it possible to train a much larger group of participants and offer courses in various languages. The model is dependent on the available educational expertise of the RTCs and the regions; the lesson content is shared through the OTGA e-learning platform. In 2018, over 600 people from 80 countries benefitted from the OTGA training activities, which were all coordinated from Ostend. The IOC Project

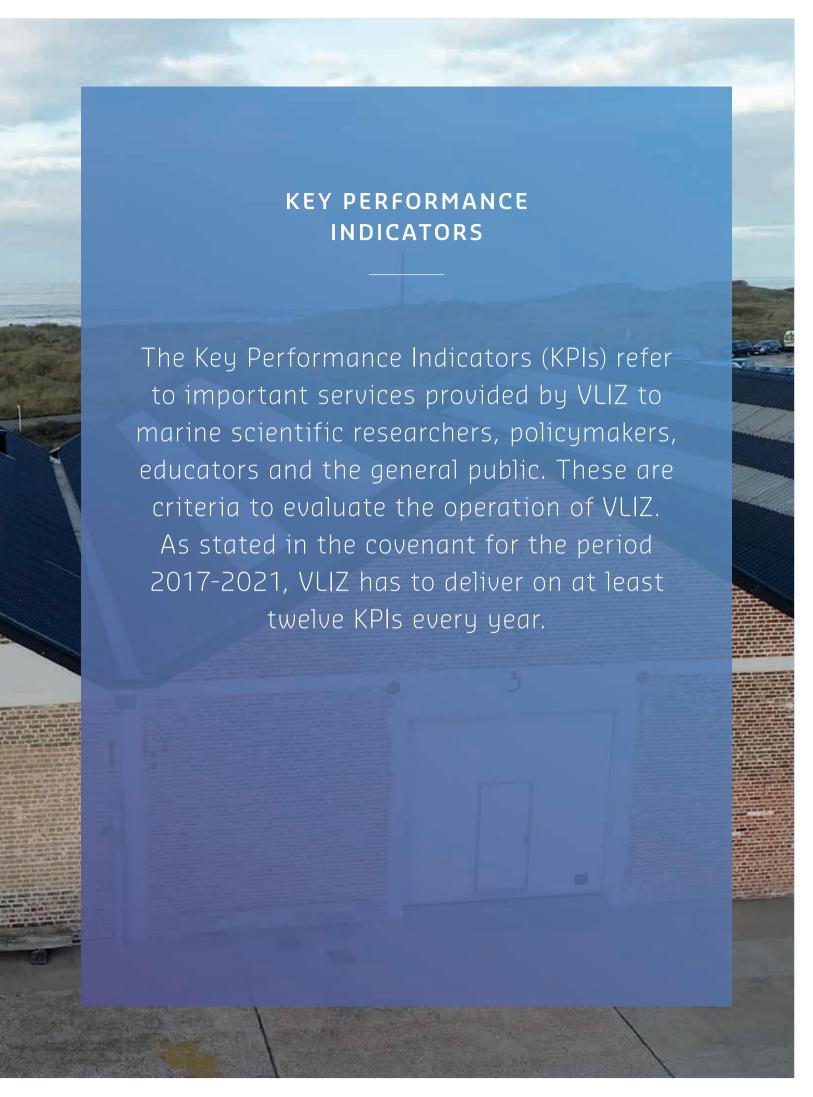
Office for IODE was certified as a Learning Services Provider (ISO 29990) in April 2018.

The IOC Project Office for IODE has coordinated the IOC's Capacity Development (CD) programme since 2017. The IOC CD programme covers the three regional IOC secretariats located in Cartagena (Colombia), Nairobi (Kenya) and Bangkok (Thailand), which coordinate the IOCARIBE, IOCAFRICA and WESTPAC regions respectively. The IOC Project Office also manages the IOC CD website (www.ioc-cd.org).

Since 2012, the IOC Project Office for IODE has accommodated the secretariat of the Ocean Biogeographic Information System (OBIS). OBIS (www.obis.org) builds and maintains a worldwide database containing data on the distribution, abundance and diversity of all marine species. The VLIZ data centre manages the European OBIS node and publishes marine species distribution data collected in European waters or by European researchers outside European marine waters. OBIS also makes use of the World Register of Marine Species (WoRMS) and the geographical index of Marine Regions as a reference list for taxonomy and maritime boundaries respectively.

In 2018, the IOC Project Office for IODE began to develop the IOC Ocean Data and Information System (ODIS), which will serve as a central catalogue of hundreds of ocean-related web-based sources and information products and services.





AT LEAST SEVEN A1 PUBLICATIONS ARE WRITTEN BY VLIZ EMPLOYEES IN 2017 AND 2018



33

A1 PUBLICATIONS "

written by VLIZ employees were published in 2018, including five A1 publications with a VLIZ employee as the first author and 28 A1 publications with a VLIZ employee as a co-author.



© VLIZ

THE ORGANISATION OF THE ANNUAL EVENT 'MARINE SCIENCE MEETS MARITIME INDUSTRY'



© Port of Ostend – Laure Martroye



The 'Marine Science meets Maritime Industry' event was organised by Flanders' Maritime Cluster (FMC) and VLIZ for the fourth time on 24 May 2018. The aim of this annual meeting is to facilitate the exchange of knowledge and ideas between scientists and industrialists in order to support the blue economy. At this 4th edition, thirteen speakers gave motivating and inspiring presentations on pitfalls, successes and challenges in the blue innovation landscape. During the speed dating lunch, the participants got the chance to become acquainted with and network with the speakers and other representatives from science and industry.



REPRESENTATIVES

from knowledge institutions, government agencies and the private sector attended the event 'Marine Science meets Maritime Industry' in 2018.



PRIVATE SECTOR



KNOWLEDGE

INSTITUTIONS GOVERNMENT

35.1%

57.7%

7.2%

AT LEAST 180 SAILING DAYS SPENT ON SCIENTIFIC RESEARCH. MONITORING AND EDUCATION EACH YEAR

RV SIMON STEVIN

OTHER VESSELS EQUIPPED WITH VLIZ EQUIPMENT



RIB ZEEKAT





DAYS SPENT AT SEA

This is the total number of days spent at sea with RV Simon Stevin, RIB Zeekat and other vessels equipped with VLIZ equipment.



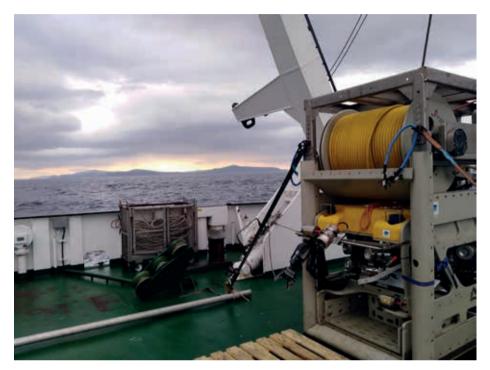
@ VI 17

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.

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. In 2018, a total of 1,074 persons boarded the ship, including 773 scientists and 301 students. Sixteen marine research groups made use of RV Simon Stevin within the scope of 29 different projects

(see annex p. 52). The vessel made 24 day trips for educational or demonstration purposes, e.g. within the scope of Planeet Zee and training courses at the Antwerp Maritime Academy as well as the universities of Brussels (biology), Ghent (geology, biology, environmental toxicology and veterinary medicine), Hasselt (biology) and Leuven (biology). ROV Genesis is an unmanned underwater vehicle deployed nationally and internationally from research vessels (see p. 43). RIB Zeekat can be deployed from the research vessel Simon Stevin or from the shore, including for sampling in coastal waters, the Belgian ports and the Scheldt estuary. The reinforced keel is designed to run the vessel aground on tidal banks.

ROV GENESIS DEPLOYED ON AT LEAST FOUR CAMPAIGNS A YEAR



ROV Genesis on board RV Belgica © VLIZ



Remotely Operated Vehicle (ROV) Genesis is deployed for national research in the Belgian part of the North Sea and for deep-sea research from international research vessels. ROV Genesis has been operational since 2006 and has explored virtually all ocean basins: the Atlantic Ocean, the Indian Ocean, the South Pacific and the Southern Ocean. By 2018, the remotely operated underwater vehicle had carried out a total of 29 expeditions. On the weekend of 29 and 30 September, ROV Genesis was on display at the first edition of the technology festival SuperNova in Antwerp.



CAMPAIGNS

in which ROV Genesis was deployed, including one campaign with RV Belgica (23 May – 8 June, Porcupine Basin, west of Ireland), one with RV Simon Stevin (16 – 20 July, Belgian part of the North Sea), and one with Sarmiento de Gamboa (August, Gulf of Malaga). In addition, the ROV was one of the attractions of the technology festival SuperNova in Antwerp (29 – 30 September).

EXTERNAL PARTIES USE THE MARINE STATION OSTEND FOR SCIENTIFIC OR EDUCATIONAL ACTIVITIES AT LEAST 120 CALENDAR DAYS A YEAR



© VLIZ



$\textbf{DAYS}^{\, (i)}$

when external parties used the Marine Station Ostend for scientific or educational activities. On these days, a total of 569 scientists, students and visitors made use of the MSO infrastructure. The seawater tanks were used for 211 days in 2018.⁽²⁾



© VLIZ

The Marine Station Ostend (MSO) is the satellite laboratory by the sea for all Flemish marine scientists and is used within the scope of the European infrastructure networks LifeWatch and EMBRC. The MSO comprises multifunctional wet, dry and molecular laboratories, cold stores with water tanks for marine organisms, a storage and working space for data and research equipment, a core repository for cold storage of drill cores and a space for public activities.

¹⁾ in 2017: 134

⁽²⁾ An overview of marine scientific projects that made use of the MSO in 2018 can be found on page 53 of the annexes.

AT LEAST 30 DATA SETS A YEAR MADE AVAILABLE TO FLEMISH MARINE RESEARCHERS AND PUBLISHED IN 'OPEN ACCESS' AFTER HAVING BEEN ACQUIRED BY RV SIMON STEVIN OR THE FLEMISH ESFRI RESEARCH INFRASTRUCTURES, OR AFTER HAVING BEEN SUPPLIED WITHIN THE SCOPE OF INTERNATIONAL NETWORKS OR PROJECTS IN WHICH VLIZ IS INVOLVED









© VLIZ

120

A great deal of data are collected within the scope of Flemish marine research. Data supplied to VLIZ are archived and – with permission of the data owner – integrated into data systems or processed into data products so that they can be efficiently disclosed. To facilitate the search for data, VLIZ provides a detailed description of the data in data sets and discloses them via an online information system. The data can be requested online via the VLIZ website: www.vliz.be/en/request-data.

DATA SETS (1)

were made available to Flemish marine researchers and published in 'Open Access' in 2018 after having been acquired by RV Simon Stevin or the Flemish ESFRI research infrastructures, or after having been supplied within the scope of international networks or projects in which VLIZ was involved.

AT LEAST 3 DATA ANALYSIS AND TRAINING WORKSHOPS ORGANISED EVERY YEAR



DATA-ANALYSIS & -TRAINING WORKSHOPS"

were organised, including 4 LifeWatch-WoRMS editor workshops, 2 OBIS-ENV workshops, 1 EMODnet Bio workshop, 1 LifeWatch Observatory workshop, 1 LifeWatch Data Archeology workshop, 1 LifeWatch-EurOBIS/OBIS data management training session and 4 OTGA/VLIZ or OTGA/KMFRI training courses.



Sixteen students from around the world took the OTGA/VLIZ training course 'Research Cruise Planning & Management', October 2018 © VLIZ

VLIZ manages several taxonomic, biogeographical and traits- experts who provide data to these databases in 2018. related databases. Considerable investments were made in training

ANNUAL GROWTH OF THE NUMBER OF NEW REFERENCES IN THE OPEN MARINE ARCHIVE OF AT LEAST 2500 UNITS A YEAR (BROKEN DOWN BY NUMBER OF ARTICLES, THESES, BOOKS AND REPORTS, CONFERENCE PROCEEDINGS [INCL. ABSTRACTS], ETC.)



1,611 ARTICELS

439 A1 PUBLICATIONS

16.1%



23 PHD-THESES

0.84%



The VLIZ Library manages a very extensive collection of (inter) national marine scientific literature. The collection contains books, maps, periodicals, reports and theses, and can be searched via the online catalogue. VLIZ strives for open communication. The VLIZ Library aims to make as many publications as possible freely available in digital form. A great deal of Belgian marine literature is digitally available via the Open Marine Archive (OMA), the principal collection component of the VLIZ library. In addition, search

engines such as Google Scholar give publications included in OMA

a prominent ranking.



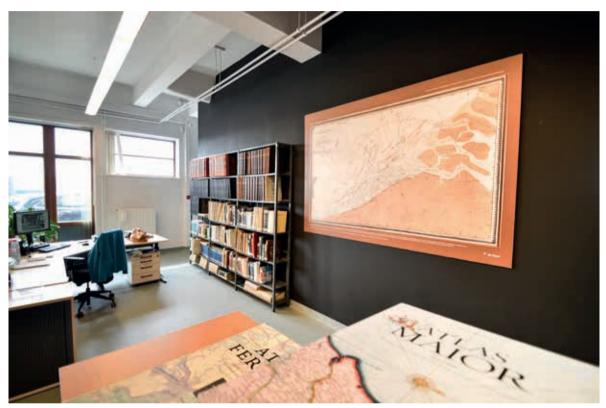
1,094 REPORTS, **BOOKS AND** OTHER WORKS

40.1%

NEW REFERENCES (1)

were added to the Open Marine Archive in 2018. This brings the total number of digital publications in OMA to 31,887.

AT LEAST 90% OF LITERATURE REQUESTS PROCESSED BY THE LIBRARY RESULT IN DOCUMENT DELIVERY WITHIN ONE WORKDAY AFTER THE REQUEST



© VLIZ



95.4%

DOCUMENT DELIVERIES WITHIN 1 WORKDAY

In 2018, the VLIZ library processed 978 literature requests. $^{\circ}$ 95.4% of document deliveries were made within one workday after the literature request.

PARTICIPATION IN AT LEAST TEN CONSULTATIONS AT FORMAL CONSULTATION FORUMS

(IN ACCORDANCE WITH THE ANNUALLY UPDATED WORK PLAN OR STRATEGIC PLAN) AND THREE POLICY
RECOMMENDATIONS WITH REGARD TO RESEARCH INTO THE BLUE ECONOMY, PROVIDED WITHIN TWENTY
WORKDAYS AFTER THEY HAVE BEEN REQUESTED, WITHIN THE SCOPE OF AN ANNUALLY UPDATED
STRATEGIC PLAN CONCERNING 'POLICY ADVICE ON THE BLUE ECONOMY'.



33

PARTICIPATIONS IN CONSULTATIONS "

33 participations in consultations at formal consultation forums, including 2 consultations within the scope of the Complex Project Coastal Vision, 11 consultations concerning the Blue Cluster, 3 consultations with the Think Tank North Sea working group, 4 consultations of the Flemish Aquaculture Platform with the Strategic Aquaculture Steering Group (SSAQ), 1 state visit (Portugal) and 12 sectoral consultations.



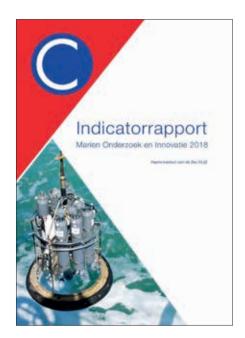
POLICY RECOMMENDATIONS (2)

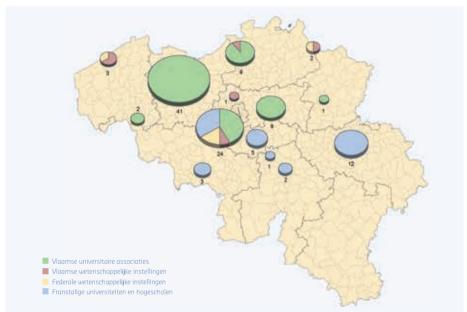
with regard to research into the blue economy. The majority of policy advice requests came from the Flemish policy areas, in particular Economy, Science and Innovation (2), Mobility and Public Works (3), Flanders Heritage Agency (2), Agriculture and Fisheries (2) and Environment (1). Federal requests came from the Federal Public Service Economy (1) and the Federal Public Service Environment (5). Finally, there were 4 other policy recommendations.

The industry was added to the target groups to be served in the recently concluded management agreement between the Flemish government and VLIZ (2017-2021). VLIZ was also given the task of representing the scientific community in initiatives to support the blue economy. To perform this task, VLIZ makes a valuable

contribution to the implementation of the policy with regard to economic development at sea through participation in consultations at formal consultation forums and the provision of policy recommendations with regard to research into the blue economy.

ANNUAL UPDATE OF THE INVENTORY OF THE MARINE RESEARCH LANDSCAPE IN FLANDERS (COMPENDIUM FOR COAST AND SEA)





Left: *Indicator Report Marine Research and Innovation 2018'* is a publication compiling trends and figures regarding marine research and marine innovation in Flanders and Belgium. Right: Marine research groups in Flanders and Belgium (Pirlet *et al.*, 2018).

☐ Compendium voor Kust en Zee: www.compendiumkustenzee.be

Every year, the marine research landscape in Flanders and Belgium is surveyed by means of a fixed methodology. In 2018, the Policy Information division described the current situation in 'Indicator Report Marine Research and Innovation 2018'. The indicator report expands this annual inventory with additional figures on the marine research and innovation landscape (funding, training, technometrics, etc.). The report was drawn up in the context of the third edition of het Compendium for Coast and Sea, a multifunctional guide for marine experts launched in 2018 (see Highlight on p. 26). On the benchmark date (13 July 2018), 114 active marine research groups pertaining to universities and scientific institutions were counted, accounting for over 1,600

persons actively involved in marine scientific research. It appears that marine research in Flanders/Belgium is in the ascendant and is preparing for a future where the blue economy and the seas and oceans will be increasingly important.

With this annual update and inventory of the marine research landscape, VLIZ intends to inform marine and maritime (scientific) policymakers, the marine research community and other stakeholders.

The indicator report puts these figures in a broader context and can be consulted via www.compendiumkustenzee.be

AT LEAST 8 EVENTS ORGANISED AND COMMUNICATION PRODUCTS CREATED A YEAR
IN COLLABORATION WITH SCIENTISTS, WITH MARINE INFORMATION BEING TRANSFERRED TO
RESEARCHERS, THE GENERAL PUBLIC AND/OR EDUCATORS





COMMUNICATION PRODUCTS

EVENTS

Left: Press at the Big Shell Counting Day 2018 © VUIZ; Right: Vis- en Zeevruchtengids 2018 (2018 Seafood Guide) is an initiative by European NGO Ethic Ocean, adapted to the Belgian market by VUIZ and ILVO. © Ethic Ocean – VUIZ

One of the strategic objectives of VLIZ is to promote ocean literacy in Flanders and the visibility of marine research to the public at large. VLIZ tries to achieve this objective by disclosing high-quality marine information to very diverse target groups (young and old, professionals and the general public, local and international, education and research) through events, communication products and publications as well as the information desk and social media.

28

EVENTS, COMMUNICATION, A.O.

A total of 14 events organised (annexes p. 54),
11 communication products and publications (annexes p. 57)
and 3 other activities. Other activities include (1)
the information desk (annexes p. 23), where various target
groups can ask questions, (2) VLIZ's presence and activities on
social media (annexes p. 25) and (3) the VLIZ press briefings
(see Highlight on p. 28).





COLOPHON

This 2018 Annual Report of the Flanders Marine Institute (VLIZ) has been presented for approval to the Board of Directors and the General Assembly on 25 March 2019.

COORDINATION AND FINAL EDITING

- Jan Mees General Director of VLIZ
- Tina Mertens VLIZ Assistant Director
- Jan Seys Head of the VLIZ Communication division
- Bart De Smet Senior Science Officer VLIZ Communications

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

COVER PHOTO

RIB Zeekat near the beach of Ostend © VLIZ - Nick Decombel

DESIGN:

Zoe©k - Marc Roets & Yves Moerman

AVAILABILITY

This document is available as a PDF file on the VLIZ website (www.vliz.be/en/vliz-annual-report).

TO BE QUOTED AS FOLLOWS:

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ANNEXES VLIZ ANNUAL REPORT 2018

ONLY AVAILABLE IN DIGITAL VERSION

ORGANISATION AND FINANCIAL STATEMENT OF VLIZ p. 4

 $\mbox{ VLIZ ORGANISATION } \mbox{ \it p. 6}$ BALANCE SHEET AND INCOME STATEMENT $\mbox{\it p. 12}$

MANAGEMENT INDICATORS p. 14

OTHER ANNEXES p. 38

NATIONAL AND INTERNATIONAL NETWORKS $\it p. 40$ PROJECTS – EXTERNAL FINANCING $\it p. 42$ SCIENTIFIC EQUIPMENT AND INFRASTRUCTURE $\it p. 50$ RESEARCH PROJECTS $\it p. 52$

EVENTS p. 54

TRAINEES, MASTER STUDENTS AND STUDENT EMPLOYEES $\it p. 56$ PUBLICATIONS $\it p. 57$

4

ORGANISATION AND FINANCIAL STATEMENT OF VLIZ

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.











14

MANAGEMENT INDICATORS

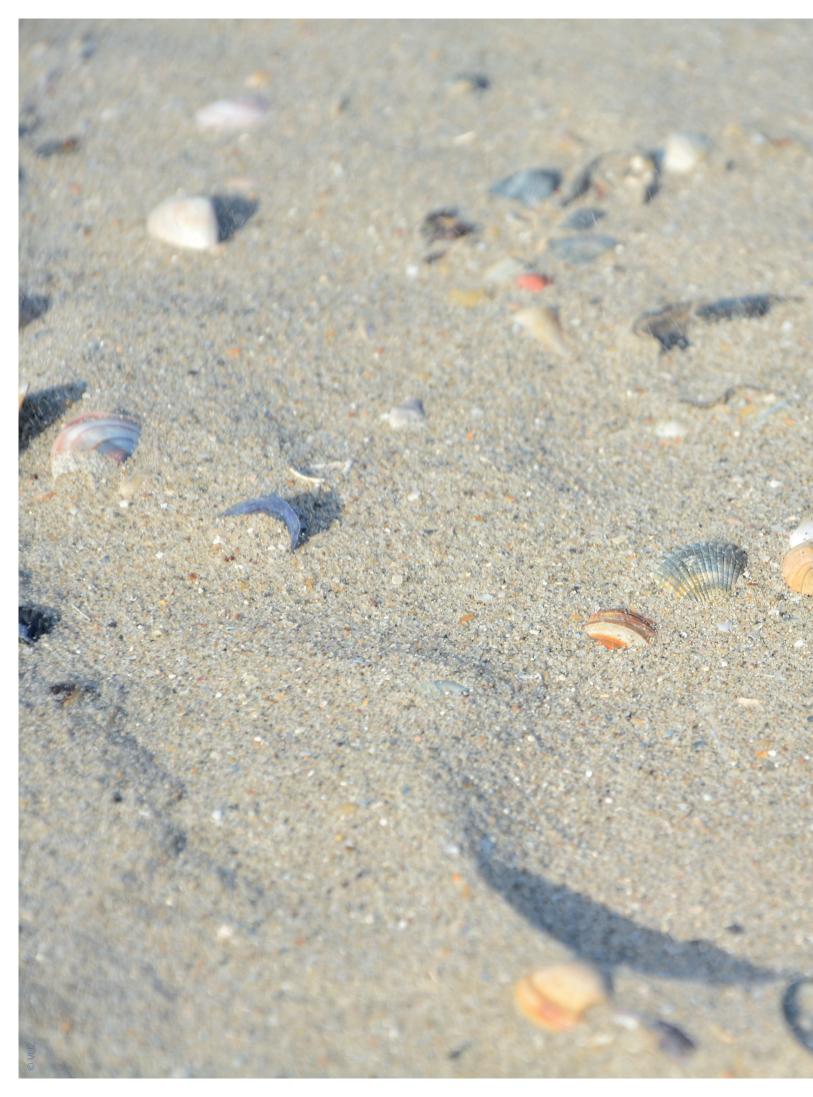
The Management Indicators refer to important services provided by VLIZ to marine scientific researchers, policymakers, educators and the general public. They complement the Key Performance Indicators (KPIs), which are criteria to evaluate the operation of VLIZ.

38

OTHER ANNEXES

An overview of the national and international networks in which VLIZ participates, projects for which VLIZ receives external funding, the scientific equipment and infrastructure made available by VLIZ, the events (co-)organised by VLIZ and the publications published by VLIZ.





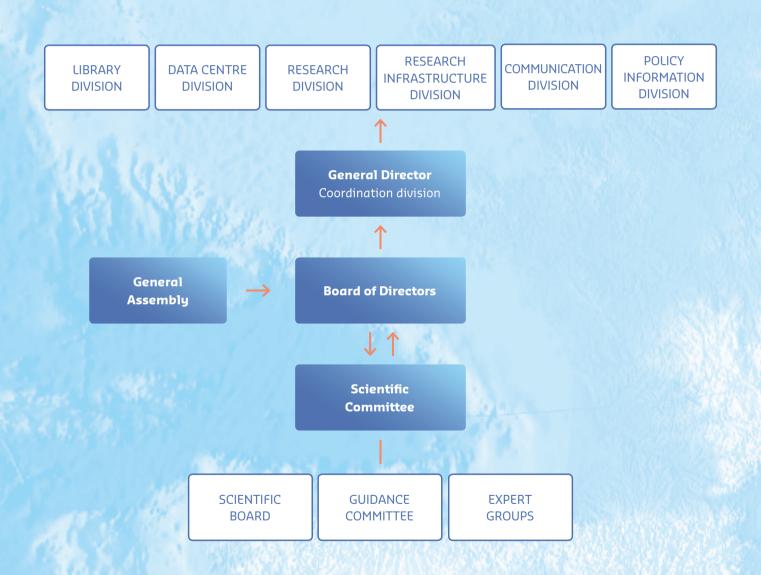
ORGANISATION AND FINANCIAL STATEMENT OF VLIZ

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administrative decisions.

www.vliz.be/en/organisation

VLIZ ORGANISATION

For more information about the organisation of VLIZ, visit: $\label{eq:power} \begin{picture}(150,0) \put(0,0){\line(1,0){100}} \put(0,0){\line(1,0){$



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 government, in particular from the department of Economy, Science and Innovation (EWI), and from the province of West Flanders. VLIZ is administered by a Board of Directors. The highest ruling organ of VLIZ is the General Assembly. The organisation is administered by a Board of Directors, and its daily operations are overseen by the General Director, assisted by the Coordination division. A permanent team of scientists in the Scientific Committee, which advises the Board of

Directors on all scientific aspects of the VLIZ operations, is consulted several times a year to define and adjust its scientific support tasks. This committee consists of three interconnected and mutually reinforcing components. The Scientific Board is a compact steering committee giving high-quality and scientifically sound advice to the Board of Directors. The Guidance Committee is convened annually for a plenary meeting open to a wide group of marine scientists to discuss important new and planned activities. Expert groups are thematic working groups composed of the most relevant experts from Belgium and abroad and are established for a limited or longer period of time.

COMPOSITION OF THE BOARD OF DIRECTORS

AT THE END OF 2018

VLIZ is administered by the Board of Directors, consisting of 12 members.

The six members nominated by the Flemish government are:

THE SIX MEMBERS NOMINATED BY THE FLEMISH GOVERNMENT ARE:

- Carl Decaluwé, governor of West Flanders, chairman
- Nathalie Balcaen, Agency for Maritime and Coastal Services
- Ilse Hoet, Mobility and Public Works Department
- Romina Vanhooren, cabinet of the vice prime minister of the Flemish government
- Hendrik Wallijn, Director of Partool
- N.N.

THE TWO MEMBERS NOMINATED BY THE PROVINCE OF WEST FLANDERS ARE:

- Guido Decorte, member of the Provincial Executive
- Anthony Dumarey, member of the Provincial Council

THE FOUR INDEPENDENT MEMBERS ARE:

- Colin Janssen, Ghent University, vice-chairman
- Jean Berlamont, Katholieke Universiteit Leuven
- Ann Overmeire, Blue Cluster
- · 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, Flemish Government Department of Economy, Science and Innovation
- Patrick Braet, province of West Flanders, financial manager
- · Jan Mees, General Director of VLIZ
- Tina Mertens, VLIZ Assistant Director
- Heidi Coussens, VLIZ executive secretary and rapporteur

COMPOSITION OF THE GENERAL ASSEMBLY

AT THE END OF 2018

Mr Carl Decaluwé, governor of West Flanders, is THE CHAIRMAN.

THE TEN VOTING MEMBERS APPOINTED BY THE FLEMISH GOVERNMENT 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, Flemish Government Department of Economy, Science and Innovation
- Ulrike Vanhessche, Coast Guard secretariat (MDK)
- Ilse Hoet, Mobility and Public Works Department
- 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:

• Hans Willems, 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. Sympathising members have the right to participate in the discussions of the General Assembly.

SCIENTIFIC BOARD

AT THE END OF 2018

The Scientific Board consists of **16 members** and the composition reflects the **inter-university and interdisciplinary character** of VLIZ.

THE CHAIRMAN is the vice-chair of the Board of Directors, Mr Colin Janssen (Ghent University).

TWO DELEGATES FROM GHENT UNIVERSITY (UGENT):

- Marleen De Troch (substitute: David Van Rooij)
- Gilbert Van Stappen (substitute: Peter Troch)

TWO DELEGATES FROM KATHOLIEKE UNIVERSITEIT LEUVEN (KULEUVEN):

- Filip Volckaert (substitute: Gert Jan Weltje)
- Jaak Monbaliu (substitute: Erik Toorman)

TWO DELEGATES FROM VRIJE UNIVERSITEIT BRUSSEL (VUB):

- Margaret Chen (substitute: Marc Kochzius)
- Marc Kochzius (substitute: Karolien Van Puyvelde)

TWO DELEGATES FROM THE UNIVERSITY OF ANTWERP (UA):

- Ronny Blust (substitute: Gudrun De Boeck)
- Filip Meysman (substitute: Patrick Meire)

ONE DELEGATE FROM HASSELT UNIVERSITY (UHASSELT):

• 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 (FHR):

• Frank Mostaert (substitute: Toon Verwaest)

ATTEND THE MEETINGS:

- Jan Mees, General Director of VLIZ
- Tina Mertens, VLIZ Assistant Director
- Jan Seys, rapporteur (substitute: Nancy Fockedey)

A DELEGATE FROM THE DEPARTMENT OF ECONOMY, SCIENCE AND INNOVATION (EWI):

Gert Verreet



Visit by the Scientific Board to the University of Antwerp on 8 October 2018. $\hbox{@}$ VLIZ

BALANCE SHEET AND INCOME STATEMENT

— 31-12-2018

-6,264.61 **—** 17.93 **—** 17.62 -5,240.21

> **- 400.54** --- 3.29

-11,944.20

-17.93

-8,254.70

DECEMBER 2018

BALANCE ON 31 DECEMBER 2018

Deferred charges and accrued income —

A35013		
(kEUR)	—— 31-12-2017	
Intangible fixed assets —		–
Tangible fixed assets —	5,444.09	
Financial fixed assets —	0	
Stocks—	5	—
Amounts receivable within one year —	1,061.16	-
Cash investments —	0	-
Liquid assets —	1,726.52	_

LI	Α	В	ш	JT.	ΊE	S

TOTAL ———

(kEUR) —	—— 31-12-2017	31-12-2018
Allocated funds —	537.00	584.00
Profit and losses brought forward —	1,620.44	1,811.91
Capital grants —	4,800.30	7,709.09
Provisions for liabilities and charges —	0	0
Amounts payable after one year —	0	0
Amounts payable within one year —	1,296.96	1,839.20
Deferred charges and accrued income —	0	0
TOTAL —	8,254.70	11,944.20

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 2018 (art. 12 § 3 of the covenant).

Budgetary deviations from the 2018 budget (art. 12 § 3 of the covenant): none.

INCOME STATEMENT ON 31 DECEMBER 2018

INCOME —		
(KEUR)	- 31-12-2017	31-12-2018
Operating income —	9,261.33	10,915.00
Financial income	804.45	1,001.22
Exceptional income —	12.46	11.74
TOTAL —	10,078.24	11,927.26
COSTS		
(kEUR)		31-12-2018
(KEUR) ————————————————————————————————————	6.29	———— 11.66
(kEUR) ————————————————————————————————————	6.29 5,551.44	——————————————————————————————————————
(kEUR) ————————————————————————————————————	6.29 5,551.44 1,829.94	
(kEUR) ————————————————————————————————————	6.29 5,551.44 1,829.94	
(kEUR) ————————————————————————————————————		
KEUR) Stocks Remuneration and social security Services and other goods Provisions for liabilities and charges		
(KEUR) Stocks Remuneration and social security Services and other goods Provisions for liabilities and charges Depreciation		
(KEUR) Stocks Remuneration and social security Services and other goods Provisions for liabilities and charges Depreciation Financial expenses		

RESULT —		
(kEUR)	31-12-2017	31-12-2018
Result for the financial year —	312.16	238.45
Transfer to allocated funds	62.00	
Profit brought forward as of 31/12 —	1,620.44	1,811.89

MANAGEMENT INDICATORS

The Management Indicators refer to important services provided by VLIZ to marine scientific researchers, policymakers, educators and the general public. They complement the Key Performance Indicators (KPIs), which are criteria to evaluate the operation of VLIZ.



SOCIAL INDICATORS

2018

90

EMPLOYEES

Out of a total of 90 employees, 46 are permanent and 44 are temporary employees.

Number of people of foreign origin: 2.⁽¹⁾

Number of people with an employment disability: 2.





MEN50





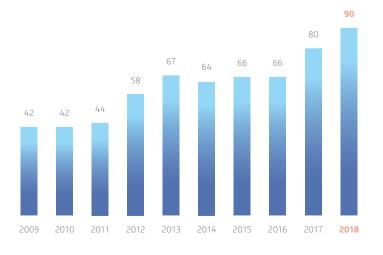


46

44

NUMBER OF EMPLOYEES

AGE OF THE EMPLOYEES











⁽¹⁾ 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 USA and Canada.

STAFF TURNOVER



I N 18 **→**

OUT

10

20.6%

LEAVE ETC

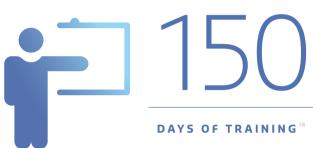
The total number of days of absence as a result of maternity leave, parental leave, time credit, leave, sickness, etc. versus the total number of days to be performed. $^{\circ}$



3%

SICKNESS ABSENCE

3% of the total number of days to be performed. (2)



received by 29 employees.



75

PERFORMANCE INTERVIEWS (6)

83

HIGHER-EDUCATED EMPLOYEES (5)

and 7 persons who completed secondary education at most (ESF definition).



A 67 **B**

C

D 2

⁽¹⁾ unchanged compared to 2017

RESEARCH PROJECTS

2018

10 RESEARCH PROJECTS WITH EXTERNAL FUNDING INITIATED -

PROJECT —			NUMBER OF PARTNERS
OMES11 —	€2,756,860.93	€10,142.00	1 (1)
Scheldemonitor —	€ 242,758.89	€242,758.89	0
Intertide —	€ 224,900.00	€99,900.00	1 (1)
COASTAL —	€4,999,943.75	€46,256.25	24 (1)
Operation North Sea exhibition—————	€250,000.00	——— €20,000.00	3 (1)
North Sea Wrecks —	€4,202,428.00	€727,692.00	8 (0)
Banos-	€2,715,998.75	€172,812.00	10 (0)
Envri Fair —	€1,836,875.00	€213,565.00	5
Alternative fishing weights ————————————————————————————————————	€15,006.98	———€15,006.98	0
Marine Robotics Centre —	€2,982,165.92	€2,982,165,92	0

⁽¹⁾ number of Belgian/Flemish projects (figure between brackets)

9 RESEARCH PROJECTS WITH INTERNAL FUNDING INITIATED -

Quantification and Identification of Microplastics, BeRMS 2020, Blue health along the Belgian coast, Monitoring Sea Spray Aerosols, Origin of ridge bedforms in the Dover Strait, Palaeolandscape and archeology in the southern North Sea, Palaeontologic, archeologic and palaeolandscape research of 'het Scheur', IPHAB, Relative contribution of multiple stressors on copepod density and diversity dynamics in the Belgian part of the North Sea

NATIONAL AND INTERNATIONAL COOPERATION AGREEMENTS

2018



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

33

COOPERATION AGREEMENTS IN FORCE

incl. 23 national and 10 international agreements.

11 of the 23 national cooperation agreements were concluded with governments, 5 with the Flemish universities and 1 with a network organisation.

Two MoUs (with Ukraine and Vietnam) were terminated

and 1 MoU (with CPPS) was concluded in 2018.

⁽¹⁾ in 2017: 10 research projects with external funding initiated and 6 with internal funding.

⁽²⁾ in 2017: 36 national and international cooperation agreements.

⁽³⁾ compared to 2017, the different cooperation agreements with research groups of UGent were clustered

ENVIRONMENTAL INDICATORS

2018



NUMBER OF PRINTS " AND COPIES

One print/copy corresponds to one page. The printer counters were read at the end of February 2019; consequently, the reading corresponds to a 14-month period instead of a 12-month period.



TONER CONSUMPTION (2)

used for printers and photocopiers per staff member.

GAS, WATER & ELECTRICITY CONSUMPTION®



28,641 \mathbf{m}^3



219,715 kWh



674

COMMUTING (4)

TRAIN, TRAM & BICYCLE ALLOWANCES

refunded to employees.

NUMBER OF KILOMETRES AND FUEL CONSUMPTION OF VLIZ CARS AT THE END OF 2018

FIAT DOBLO ⁽⁵⁾ / NISSAN PULSAR (new) 25,382			152,763	178,115
NISSAN NAVARA (6) (old and new model) 6,472		113,064		119,536
FIAT SCUDO (7) / NISSAN PANEL VAN (new) 11,956	77,074			89,030
NISSAN LEAF (new) 3,023				3,023
0	50,000 km	100,000 km	150,000 km	200,000 km

Number of kilometers at the end of 2018



Total fuel consumption: 5,316 liter (8)

⁽¹⁾ in 2017: 88,246 prints and copies

⁽²⁾ in 2017: 0.55 toner consumption

 $^{^{(3)}}$ in 2017 gas: 34,810 m³, electricity: 206,415 kWh, water: 569 m³

⁽⁴⁾ in 2017: € 79,792 train, tram and bicycle allowances

⁽⁵⁾ in 2017: 15, 733 km, underestimate because the number of kilometres of the Fiat Doblo is unknown.

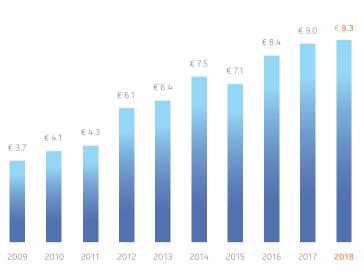
⁽⁶⁾ in 2017: 112,039 km

⁽⁷⁾ in 2017: 75,643 km ⁽⁸⁾ in 2017: 3,689 liter

VLIZ TURNOVER

SOCIAL LIABILITIES

IN MILLION EURO



IN THOUSAND EURO



2018: € 584.000

2018: € 9,374,490

Membership fees, donations, leaacies and subsidies

TURNOVER OF INNOVOCEAN SITE PARTNERS

IN EURO

€1,175,019

TOTAL TURNOVER



IOC PROJECT OFFICE FOR IODE

€ 751,821







EUROPEAN MARINE BOARD SECRETARIAT **EMODNET SECRETARIAT**

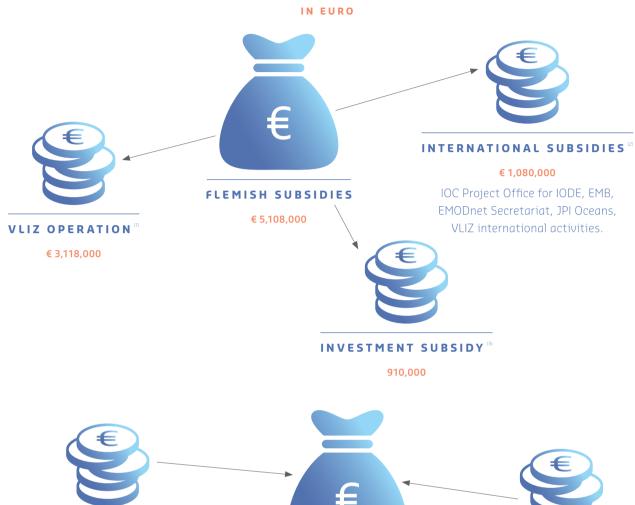
€ 175,208

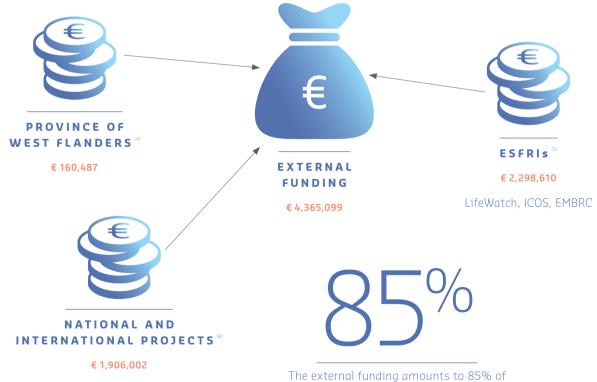
JPI OCEANS

€ 102,000

€ 145,990

OVERVIEW OF SUBSIDIES





⁽¹⁾ in 2017: $ext{ € 3,118,000; in 2012: € 1,697,000; in 2007: € 1,160,000}$

the Flemish subsidies (7).

⁽²⁾ in 2017: \in 1,080,000; in 2012: \in 900,000; in 2007: \in 700,000

⁽³⁾ in 2017: € 910,000; in 2012: € 1,122,000; in 2007: not applicable

 $^{^{(4)}}$ in 2017: € 158,898; in 2012: € 146,548; in 2007: € 136,035

 $^{^{(5)}}$ in 2017: € 2,298,610; in 2012: € 1,464,750; in 2007: not applicable

 $^{^{(6)}}$ in 2017: € 1,055,468; in 2012: € 1,147,951; in 2007: € 825,443

⁽⁷⁾ in 2017: 69%

EVENTS

2018

OVERNIGHT STAYS

The number of overnight stays in Ostend by people visiting the InnovOcean site or attending events organised by the InnovOcean partners in Ostend.



INTERNATIONAL VISITS (2)

The number of meetings and events with an international character that took place in Ostend, attended by 1,663 participants in total.





NUMBER OF PARTICIPANTS IN ORGANISED EVENTS ⁽³⁾

The number of participants in 39 events (co)organised by VLIZ.

(1) in 2017: 1,408

(2) in 2017: 71 visits with 2098 participants

(3) in 2017: 3,877 participants in 48 events. The significant difference in the number of participants between 2017 and 2018 is mainly due to the 8,527 visitors to the exhibition 1914- '18: The battle for the North Sea and the $5{,}000$ visitors to the technology festival Supernova in 2018.

 $^{(4)}$ in 2017: 152 missions to 23 countries

MISSIONS

The number of missions to 21 countries.



VLIZ MEMBERS

The total number of VLIZ members, including 347 individual members, 115 partner members, 26 institutional members, 25 students, 15 honorary members, 18 members of the Board of Directors, 6 members of the General Assembly and 21 members of the Scientific Committee. In 2017, VLIZ was joined by 89 new members and 29 members resigned their membership.



VLIZ AWARDS (2)

Awards were granted by VLIZ, including 1 bachelor students, 2 for master students, 4 for PhD students, 2 for post-doctoral researchers and 1 for master students, PhD students and post-doctoral researchers.





REQUESTS FOR INFORMATION

2018

QUESTIONS ANSWERED (3)

Total number of requests for information granted across all VLIZ divisions via info@vliz.be.

LITERATURE REQUESTS "

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

QUESTIONS COMPENDIUM ⁽⁵⁾

Total number of requests for information with regard to the Compendium.

SUBSCRIBERS

2018

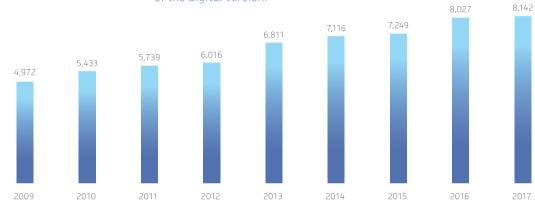


8,503

2018

SUBSCRIBERS TO DE GROTE REDE

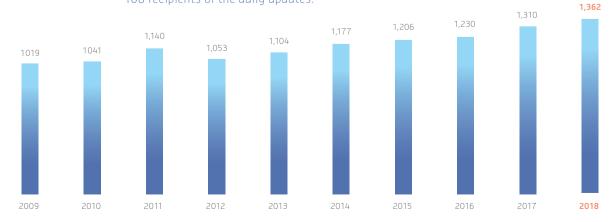
The number of subscribers to 'De Grote Rede' (since 1999), including 7,986 recipients of the paper version and 517 recipients of the digital version.



SUBSCRIBERS TO VLIZINE

The number of subscribers to VLIZINE (since 1999), including 1,362 recipients of the monthly updates, 330 recipients of the weekly updates and 108 recipients of the daily updates.





LECTURES

2018

GENERAL PUBLIC REACHED BY INFORMATIVE LECTURES

Members of the general public reached by means of 45 informative lectures on the VLIZ premises and elsewhere.



SOCIAL MEDIA REACH

2018



TWITTER (2)

FOLLOWERS TWEETS

3,540

7,780



FOLLOWERS

POSTS



FACEBOOK (4)

VLIZ (@VLIZnieuws)

FOLLOWERS POSTS

1,477

381

RV Simon Stevin (5) (@rvsimonstevin)

FOLLOWERS

POSTS

1,731

749



LINKEDIN (6)

FOLLOWERS POSTS

853



FOLLOWERS POSTS

293

⁽¹⁾ in 2017: 1,499 members of the general public reached by means of 31 informative lectures.

²⁾ in 2017: 3,113 followers; 6,778 tweets

⁽³⁾ in 2017: 92 followers; 362 posts

⁽⁴⁾ In 2017: 1,033 followers; 235 posts

⁽⁵⁾ In 2017: 1,611 followers; 703 posts

⁽⁶⁾ In 2017: 659 followers; 13 posts

GROWTH OF THE LIBRARY COLLECTION

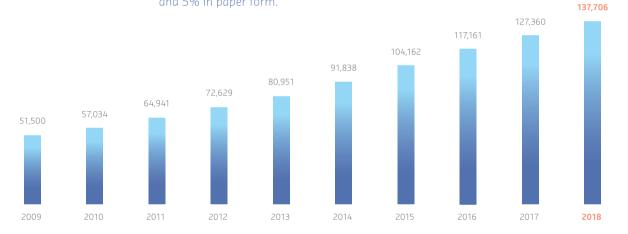
2018

137,706

PUBLICATIONS

The total number of (paper and digital) publications in the library, i.e. the cumulative growth of the paper and digital collection. In 2018, the collection was expanded with 10,346 new publications, of which 95% in digital form and 5% in paper form.





VLIZ PUBLICATIONS

2018

102

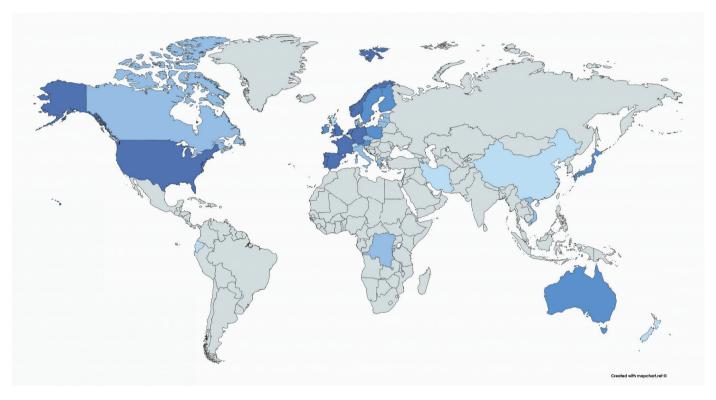
PUBLICATIONS (1)

with at least one author affiliated to VLIZ or published by VLIZ.



RESEARCHERS AND RESEARCH GROUPS IN A1 PUBLICATIONS

2018



Distribution of the 212 international researchers across all A1 publications authored by a VLIZ employee from 2018 (KPI1 p. 40) per country.

■ >6 ■ 2-3 ■ 4-5 ■ 1

265

RESEARCHERS IN
A1 PUBLICATIONS

The number of researchers in all A1 publications authored by a VLIZ employee (KPI 1 p.40), including 59 Belgian and 212 international researchers (see world map).

183

RESEARCH GROUPS IN A1 PUBLICATIONS (2)

The number of research groups in A1 publications authored by a VLIZ employee, including 25 Belgian and 158 international research groups.

CITATIONS

2018

804

CITATIONS "

The number of citations of A1 publications authored by a VLIZ employee.



PUBLICATIONS ON VLIZ RESEARCH FACILITIES

SINCE 2001

521

PUBLICATIONS ON VLIZ RESEARCH FACILITIES

A total of 36 new publications on VLIZ research facilities appeared in 2018, including 26 on RV Simon Stevin, 2 on ROV Genesis, 1 on the Marine Station Ostend, 2 on RV Zeeleeuw and 5 on the VLIZ equipment.



RV SIMON STEVIN

161



RV ZEE-LEEUW

295



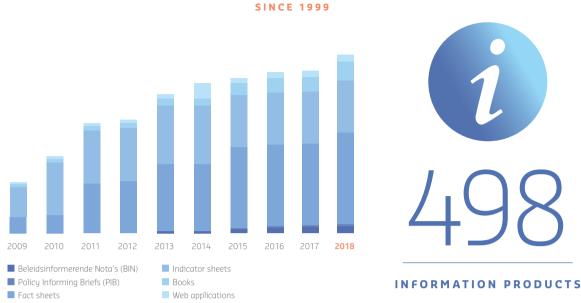
VLIZ EQUIPMENT

15

⁽¹⁾ in 2017: 542 citations

⁽²⁾ the number of publications on VLIZ research facilities that have appeared since 2001, including 295 publications on RV Zeeleeuw, 161 publications on RV Simon Stevin, 31 publications on the greenhouses at De Haan, 16 publications on ROV Genesis, 15 publications on VLIZ equipment and 3 publications on the Marine Station Ostend.

INFORMATION PRODUCTS



In 2018, there were 45 new information products, including 2 policy informing briefs (BINs/PIBs), 30 fact sheets, 11 books and 2 web applications.

The number of information products since 1999.

NEW COMPENDIUM FOR COAST AND SEA INFORMATION PRODUCTS

2018



427

COMPENDIUM FOR COAST AND SEA

427 new Compendium for Coast and Sea information products in 2018, including 321 (updated) fact sheets of marine research groups, 32 (updated) thematic chapters and 74 (updated) fact sheets on laws/treaties.



VISITORS TO THE VLIZ WEBSITES

2018

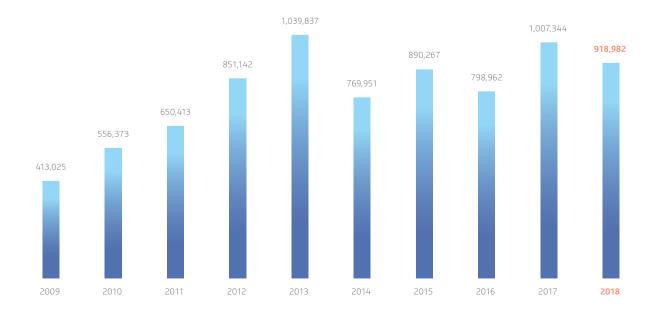
918,982



UNIQUE VISITORS

The number of unique visitors to the informative websites managed by VLIZ (url: www.vliz.be).





DOWNLOADS

2018

705,418



DOWNLOADS OPEN MARINE ARCHIVE

Total number of downloads from the Open Marine Archive (OMA).



24,262

UNIQUE TITLES DOWNLOADED

Unique titles downloaded from the Open Marine Archive.

23,612

UNIQUE OPEN ACCESS TITLES (2)

Number of unique Open Access titles downloaded from the library collection.

684,954

OPEN ACCESS TITELS (3)

Total number of Open Access titles downloaded from the library collection.



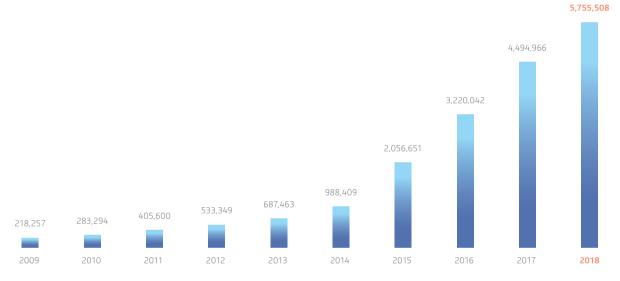
DATA DOWNLOADS

2018

NUMBER OF DATA DOWNLOADS SINCE 2006

In 2018, the number of data downloads was 1,263,418.





Cumulative figures

DATA DOWNLOADS -

	2009	<u> </u>	2011	2012	2013	2014	2015	2016	2017	2018
Flemish Banks Monitoring Network ————————————————————————————————————	-30,246	-30,780	—21,508	—18,858	—12,820	——1,623	262	230	220	 73
Sluice Dock——————	-12,495	-13,873	—10,387	——9,381	—12,550	4,240	4,414	3,979	5,336	5,014
IOC Sealevel monitoring facility -	107	-16,954	-85,538	<u> </u>	-119,348	- 284,518	-1,052,948	-1,145,428	-1,248,812	-1,237,284
Marine Regions —————	 2,584	-3,430	— 4,339	6,291	7,944	— 9,087	9,628	12,743	——16,633	——19,715
WoRMS —	NA	NA	 75	—— 121	—— 183	224	53	118	129	 106
EMODnet —	NA	NA	210	 373		 780	 797	 776		——1,052
ScheldeMonitor ——————	NA	NA	249	209	 569	474	140	117		174
TOTAL —	-45,432	-65,037	-122,306	-127,749	-154,114	-300,946	-1,068,242	-1,163,391	-1,272,048	-1,263,418

DOWNLOADS OF INFORMATIVE PRODUCTS

2018



TEACHING PACKAGES

7,663

downloads since 01.11.2011⁽¹⁾



DE GROTE REDE

61,335

downloads in 2018⁽²⁾



ZEEKRANT

1,035

downloads in 2018⁽³⁾



VIDEOS

556,925

downloads since 2005



PHOTOGRAPHS

26,473,707

downloads since 2005



COMPENDIUM PRODUCTS

2,154

downloads since 2015

REGISTERED USERS OF VLIZ DATABASES

2018

SUPPLIED DATA

2018



REGISTERED USERS

The number of registered users of databases managed by VLIZ.



DATA REQUESTS (2)

The number of data requests (via data@vliz.be).

SCIENTIFIC PROJECTS

SINCE 1999

SCIENTIFIC PROJECTS (3)

which have made use of RV Simon Stevin / RV Zeeleeuw since 1999.

See p. 52 for a list of the research projects which made use of RV Simon Stevin in 2018.





MASTER THESES, PHDs AND INTERNSHIPS

2018



MASTER THESES, PHDs
AND WORK PLACEMENTS

The number of master theses (4), PhDs (2) and internships (18) of which VLIZ is the (co-)supervisor.

See p. 56 for an overview of the master theses and internships in 2018.

ABSTRACTS AND LECTURES BY INVITATION

2018



ABSTRACTS AND LECTURES
BY INVITATION®

The number of abstracts and lectures by invitation on research.

NUMBER OF DAYS SPENT AT SEA

2018



SAILING DAYS

NUMBER OF DAYS SPENT AT SEA

	2009 -	2010 -	2011 -	2012	2013	2014	2015	2016	— 2017	2018
RV Simon Stevin ————	—— N/A -	—— N/A -	—— N/A -	100	147	183	176	184	<u> </u>	 169
RV Zeeleeuw ————	166 -	151 -	152 -	 57	N/A	—— N/A	N/A	N/A	— N/A	N/A
RIB Zeekat ————	32 -	57 -	40 -	37	5	17	21	18	<u> </u>	28
ROV Genesis ————	—— N/A -	—— N/A -	—— N/A -	6	2 6	20	4	3	——11	 10
Third-party vessels———										
TOTAL ———	234 -	292 -	265 -	310	220	268	251	241	 234	270

SAILING DAYS WITH INTERNATIONAL PARTICIPATION

2018



SAILING DAYS

The number of days spent at sea in foreign waters and/or with the participation of international research groups.

BORROWING OF VLIZ EQUIPMENT

2018

BORROWS

The number of times that VLIZ equipment was borrowed.

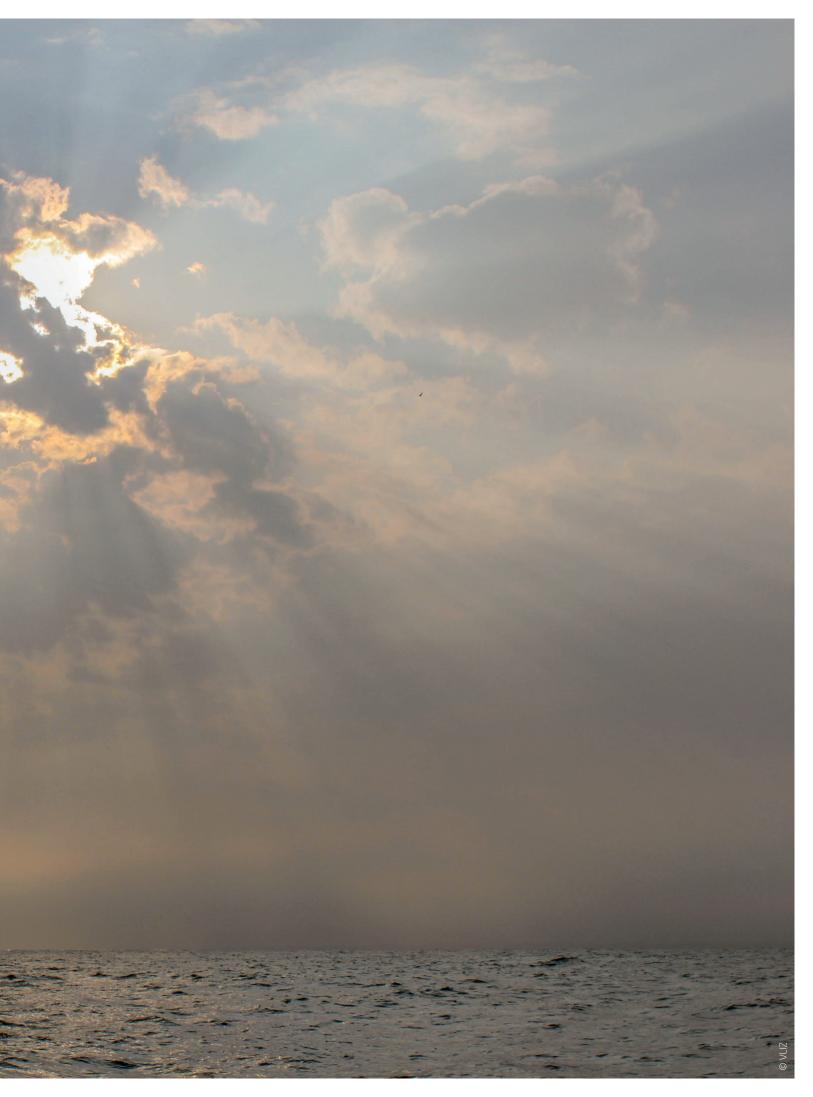




ROV Genesis © VLIZ

OTHER ANNEXES

An overview of the national and international networks in which VLIZ participates, projects for which VLIZ receives external funding, the scientific equipment and infrastructure made available by VLIZ, the events (co-)organised by VLIZ and the publications published by VLIZ.



NETWORKS

2018

NATIONAL NETWORKS AND ADVISORY AND CONSULTATIVE COMMITTEES

This list of national networks and (temporary or project-related) advisory and consultative committees in which VLIZ participates is not exhaustive.

- Advisory Committee of VNR Knokke-Heist & Westkust (ANB)
- Administrative consultations about deep-sea mining
- Policy committee of the Complex Project Coastal Vision (Kustvisie)
- Covenant for Sustainable Fisheries WG Coast SWG Education and Training
- The Blue Cluster (Board of Directors, steering committee and scientific advisory board)
- Infrastructure expert group TUA West
- IkHebEenVraag.be consortium (RBINS)
- · KULeuven Industrial Advisory Board
- KVAB science communication awards (KVAB)
- National and Flemish working group on Marine Litter
- NAVIGO scientific advisory group (NAVIGO)
- Network of the Liaison Agency Flanders-Europe (VLEVA)
- · Consultation on sustainable coastal management by the province of West Flanders
- Board of Directors of the Port of Oostende
- North Sea and Oceans Steering Committee (MNZ)
- 'Surveillance, early warning and rapid response Invasive Alien Species' steering committee
- Strategic steering committee of the Flemish Aquaculture Platform (SSAQ)
- Think Tank North Sea
- Flemish Europe Platform (VEP)
- Flemish Association for Libraries, Archives and Documentation Centres (VVBAD)
- Coast Working Group
- Science Information Network of the Flemish government (WIN)

INTERNATIONAL NETWORKS AND ADVISORY AND CONSULTATIVE COMMITTEES

This list of international networks and (temporary or project-related) advisory and consultative committees in which VLIZ staff participate is not exhaustive.

- · Catalogue of Life Global Team, Editorial Board, Board of Directors (Catalogue of Life)
- · Coastal Wiki Editorial Board (Coastal Wiki)
- Editorial board of Global Ocean Science-II Report van IOC-UNESCO (GOSR)
- · European Association of Aquatic Sciences Libraries and Information Centres (EURASLIC)
- European Census of Marine Life (EuroCoML)
- European Centre for Information on Marine Science and Technology (EurOcean)
- European Marine Biodiversity Observatory System (EMBOS)
- European Marine Board (representative of the Research Foundation Flanders) (EMB)
- European Marine Board Communications Panel (EMBCP)
- European Marine Research Network (EuroMarine)
- European Marine Science Educators Association (EMSEA)
- European Network of Marine Research Institutes and Stations (MARS)
- European Regions Research and Innovation Network (ERRIN)
- European Research Vessel Organisation (ERVO)

- Executive Committee of the European Register of Marine Species (ERMS)
- Executive Council and General Assembly of the Intergovernmental Oceanographic Commission (IOC) of UNESCO
- Global Sea Level Observing System Network (GLOSS)
- Group of European Data Experts in Research Data Alliance (GEDE-RDA)
- ICES Data and Information Group (ICES DIG)
- ICES Working Group on Biodiversity Science (ICES WGBIODIV)
- ICES Working Group on Marine Litter (ICES WGML)
- ICES Working Group on Recreational Fisheries Surveys (ICES WGRFS)
- ICES Working Group on the History of Fish and Fisheries (ICES WGHIST)
- INSPIRE Thematic Working Group on Biogeographical Regions, Habitats and Biotopes and Species Distributions (INSPIRE)
- Integrated Carbon Observation System Marine Station Assembly (ICOS)
- Integrated Carbon Observation System Oceanographic Thematic Centre meeting (ICOS)
- International Coastal Atlas Network (ICAN)
- International Research Ship Operators (IRSO)
- IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (IODE GE-BICH)
- IOC Group of Experts on Capacity Development (GE-CD)
- IODE Network of National Oceanographic Data Centres (IODE NODC)
- Joint IAMSLIC/IODE Group of Experts on Marine Information Management (IAMSLIC/ IODE GE-MIM)
- Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans)
- JPI Oceans reference expert group on marine spatial planning (JPI Oceans)
- LifeWatch National Centers netwerk (LifeWatch LiNC)
- Marine Observation and Data Expert Group (MODEG) within the European Marine Observation and Data Network (EMODnet)
- National Marine Educators Association US (NMEA)
- News & Information Group of the Partnership for Observation of the Global Oceans (POGO News & Information Group)
- Ocean Biogeographic Information System (OBIS)
- Ocean Tracking Network (OTN)
- Oceans Past Initiative (OPI)
- Partnership for Observation of the Global Oceans (POGO)
- Sea Data Network (SeaDataNet II)
- SeaWeb Europe Jury concours Olivier Roelinger (SeaWeb)
- Species 2000 (Species 2000)
- Steering Committee of the European Marine Biological Resource Centre (EMBRC)
- Steering Committee of the Flanders UNESCO Trust Fund (FUST)
- Steering Committee of the World Register of Marine Species (WoRMS)
- Vlaams-Nederlandse Scheldecommissie m.e.r. (VNSC)
- Working Group on Invasive Alien Species (WGIAS)
- World Data System of the International Council for Science (ICSU WDS)

VLIZ participates in steering committees of (research) projects in interface with the blue economy, such as SCAPE – Shaping Climate Change Adaptive Places (pilot sites for developments on the Flemish coast, Interreg V 2 Seas, 2016-2020), TOPSOIL – salinification of the coastal zone (Interreg North Sea Region, 2015-2020) and Electric Pulse Fishing on the Flemish Coast – Part I.

PROJECTS - EXTERNAL FINANCING

VLIZ RECEIVED EXTERNAL FINANCING FOR COORDINATION, COMMUNICATION AND/OR DATA MANAGEMENT WITHIN THE SCOPE OF 41 PROJECTS IN 2018. MOST OF THESE PROJECTS WERE CARRIED OUT IN COOPERATION WITH RESEARCH GROUPS.

EU -

ALFF - The Algal Microbiome: Friends and Foes

Duration: 01.01.2015 - 31.12.2018

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. The VLIZ Communication division was subcontracted by UGent to explore collaboration possibilities between researchers and non-scientists. It does so by means of the Multimedia professional bachelor programme at Karel de Grote University College, an art programme in Ghent and a partnership with Steve Bridger.

AQUA-LIT – Preventive measures for averting the discarding of litter in the marine environment from the aquaculture industry

Duration: as from 01.01.2019

https://aqua-lit.eu/

AQUA-LIT aims to provide the aquaculture sector with a sustainable toolbox to limit marine littering in 3 ways: prevention and reduction; monitoring and quantification; and removal and recycling. In addition, AQUA-LIT will evaluate the current policies and make policy recommendations to improve the decision-making process in the aquaculture sector.

ASSEMBLE Plus - Association of European Marine Biological Laboratories Expanded

Duration: 09.2017 - 09.2021 www.assembleplus.eu/

ASSEMBLE Plus operates under the umbrella of the European Marine Biological Resource Centre (EMBRC) and integrates 32 marine biological research stations worldwide. It provides scientists from academia, industry and policy with a high-quality programme of transnational and virtual access to marine biological research facilities, historical observation data and advanced training opportunities. VLIZ provides transnational access to the infrastructure offered within EMBRC and manages a work package concerning the improvement of virtual access to marine biological data, information and knowledge. UGent acts as a subcontractor of VLIZ for specific activities.

AtlantOS - Optimizing and Enhancing the Integrated Atlantic Ocean Observing System

Duration: 01.04.2015 - 01.07.2019

www.atlantos-h2020.eu

The overall objective of ATLANTOS is to evolve from a poorly 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.

BANOS CSA - 'Towards a Baltic and North Sea research and innovation programme'

Duration: as from 01.11.2018

The general aim of BANOS CSA is to develop the necessary conditions for long-term coordination of joint research and innovation efforts in the countries surrounding the Baltic Sea and the North Sea through the of a joint research and innovation framework programme. BANOS CSA is coordinated by BONUS EEIG (TFEU Art 185) and represents the leading research and innovation funders of the states surrounding the Baltic Sea and the North Sea.

COASTAL – Collaborative land sea integration platform

Duration: as from 01.05.2018 https://h2020-coastal.eu/

COASTAL is a multi-actor project involving stakeholders in the development of business roadmaps and policy solutions for enhancing coastal-rural collaboration and synergies by combining local knowledge and scientific expertise in a cocreation process.

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.

COST- 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.

CSA Oceans 2 - JPI Oceans Preparatory Action

Duration of phase 1: 01.09.2012 - 31.08.2015 Duration of phase 2: 01.03.2016 - 28.02.2019

www.jpi-oceans.eu/csa-oceans-2

CSA Oceans 2 is aimed at facilitating and supporting the implementation of JPI Oceans' Strategic Research and Innovation Agenda (SRIA). CSA Oceans 2 will continue to build on the outcomes of the FP7 CSA Oceans project and will be linked closely to the JPI Oceans structures. Its principal activities are: 1) deal with the implementation of joint transnational activities; 2) maintain and further develop the relationships between JPI Oceans and the different relevant actors; 3) support the implementation of the SRIA; and 4) deliver the necessary tools for information management as well as outreach and dissemination (VLIZ). The CSA Oceans 2 project will be implemented by a consortium of funding, coordinating and research organisations.

EMODnet – European Marine Observation and Data Network

Duration: continually since 2014

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 (www.emodnet-biology.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 (www.emodnet. 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.

ENVRI FAIR - ENVironmental Research Infrastructures building Fair services Accessible for society, Innovation and Research

Duration: 01.12.2018 - 30.11.2021

http://envri.eu/envri-fair/

ENVRI-FAIR is the connection of the Cluster of Environmental Research Infrastructures (ENVRI) to the European Open Science Cloud (EOSC). Participating research infrastructures (RI) cover the subdomains Atmosphere, Marine, Solid Earth and Biodiversity/Ecosystems. The overarching goal is that at the end of the proposed project, all participating RIs have built a set of FAIR data services which enhances the efficiency and productivity of researchers, supports innovation and enables data- and knowledge-based decisions.

EOSC-LIFE – Providing an open collaborative space for digital biology in Euro

Duration: 01.12.2018 - 30.11.2021

EOSC-Life brings together the 13 Biological and Medical ESFRI research infrastructures (BMS RIs) to create an open collaborative space for digital biology. The projects aims to respond to the challenge of analysing and reusing the prodigious amounts of data produced by life-science. By publishing data and tools in a Europe-wide cloud, EOSC-Life aims to bring the capabilities of big science projects to the wider research community.

JERICO NEXT

Duration: 01.09.2015 - 01.09.2019

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.

MARINERG-iT

Duration: 01.2017 - 06.2019

www.marinerg-i.eu

MARINERG-i will produce a scientific and business plan for an integrated European Research Infrastructure designed to facilitate the future growth and development of the Offshore Renewable Energy sector. This plan will ensure that the MARINERG-i Research Infrastructure model attains the criteria necessary for being successful in an application to the European Strategy Forum on Research Infrastructures (ESFRI) roadmap in 2020. The MARINERG-i project is a first step in forming an independent legal entity of distributed testing infrastructures, united to create an integrated centre for delivering Offshore Renewable Energy. By consolidating expertise, investment and access to infrastructures, the MARINERG-i Research Infrastructure will foster innovation across a variety of Offshore Renewable Energy technologies and stages of development.

Marine Regions – Towards a standard for georeferenced marine names

Duration: 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. '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.

North Sea Wrecks – an opportunity for blue growth (NSW) Noordzeewrakken - een opportuniteit voor blauwe groei Duration: since 2018

The project will provide the tools required by planners, response organisations, economic actors and other stakeholders to assess the risks posed by shipwrecks and ammunition in the North Sea and propose risk mitigation solutions.

ODIP - Extending the Ocean Data Interoperability Platform

Duration: 04.2015 - 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

Sea Change aims to raise European citizens' awareness of the intrinsic links between the ocean and human health, and of the direct impact of human activities on the oceans. Sea Change intends to increase ocean literacy among the general public by means of various activities, events and (online or other) publications. Sea Change aims to foster responsible behaviour of citizens towards the seas and oceans and their natural resources. 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 at 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'.

SeaDataCloud – Further developing the pan-European infrastructure for marine and ocean data management

Duration: 01.11.2016 - 01.10.2020

SeaDataCloud is a continuation of SeaDataNet, where professional data centres from 35 countries collaborate 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. SeaDataCloud aims at considerably advancing SeaDataNet services and increasing their usage, adopting cloud and HPC technology for better performance. SeaDataCloud is developing a Virtual Research Environment (VRE) to provide researchers with various functionalities to calculate oceanographic data products on the basis of in situ observations and remote sensing data.

FLEMISH GOVERNMENT, FLEMISH EGOVERNMENT COORDINATION UNIT (CORVE) AND EWI

WILOD - Wetenschap & Innovatie Linked Open Data

Duration: continually since 2012

The Wetenschap en Innovatie Linked Open Data (WILOD) project is aimed at developing an Open Data platform which brings together and discloses a variety and multiplicity of research information. This project is aimed at the promotion of multidisciplinary research, the maximum disclosure of research data, the development of innovative products and services, and increasing 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 Phase X: 01.02.2016 - 30.04.2017 www.omes-monitoring.be/en

The OMES consortium has implemented this multidisciplinary monitoring programme commissioned by Waterwegen en Zeekanaal since 1995. Various components of the ecosystem are sampled: water quality, carbon cycle, phytoplankton, zooplankton, microphytobenthos, primary productivity and sediment characteristics. 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

ScheldeMonitor – 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

ScheldeMonitor is a Flemish-Dutch knowledge and information system for research and monitoring of the Scheldt estuary. This portal provides an overview of publications, institutions, projects, datasets, etc. related to research and monitoring in the Scheldt estuary as well as access to measurements and data products such as maps, charts and indicators.

FEDERAL GOVERNMENT, BELSPO

4DEMON - Four decades of Belgian marine monitoring: uplifting historical data to today's needs

Duration: 10.2013 - 06.2018

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 collected during expeditions in the Belgian part of the North Sea over the last four decades. 4DEMON focuses on contaminants and data for determining the level of eutrophication and acidification.

HyperMaq - Hyperspectral and multi-mission high resolution optical remote sensing of aquatic environments

Duration: 12.2016 - 12.2019

In the HyperMaq project, hyperspectral satellite images will be calibrated. In partnership with the Directorate Natural Environment (OD Nature), VLIZ will conduct field measurements during regular and project campaigns. In addition, VLIZ ensures the development of a rotating platform to remotely position spectroradiometer systems for the calibration of light measurements during satellite passages.

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.

PERSUADE - ExPERimental approaches towards Future Sustainable Use of North Sea Artificial HarD SubstratEs

Duration: 01.2017 - 04.2020

The project is aimed at the construction of an in-situ underwater hard-substrate garden where organisms will be collected for mesocosm experiments. The marine food chain near offshore artificial hard substrates will be imitated in the seawater tanks of the Marine Station Ostend (MSO). VLIZ supports the development of the underwater garden and provides technical assistance for the setup of the experiments.

TrIAS - Tracking Invasive Alien Species: Building a data-driven framework to inform policy

Duration: 01.2017 - 12.2021

www.belspo.be/belspo/brain-be/projects/TrIAS_en.pdf

TrIAS is primarily aimed at the establishment of a data mobilisation framework for alien species on the basis of different data sources. The combination of these data with a Belgian checklist of alien species will feed indicators for the identification of emerging species, their level of invasion in Belgium, changes in their invasion status and the identification of areas and species of concern that could be negatively impacted. The second objective is to develop data-driven procedures for risk evaluation based on risk modelling, risk mapping and risk assessment.

FEDERAL GOVERNMENT, MARINE ENVIRONMENT DIVISION

Lead Alternative Fishing Weights

Duration: 24.09.2018 - 30.06.2019

This project aims to test lead alternative fishing weights and sinkers in collaboration with the marine recreational fishing community (cf. MSFD programme of measures, 29D).

RecVis – Marine recreational fisheries monitoring

Duration: 01.05.2016 - 31.12.2021 www.recreatievezeevisserij.be

Development and implementation of a protocol for systematic monitoring of the recreational fishing sector (fishing effort, location, catches, etc.).

PROVINCE

Zeekrant

Duration: since 06.2007

Annual publication of VLIZ with all sorts of facts on the sea and beach. After 10 editions, an updated version of Zeekrant was released in partnership with the province of West Flanders.

FWO (FORMER HERCULES FOUNDATION)

LifeWatch – Vlaamse bijdrage aan 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. As part of LifeWatch, 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. Marine, freshwater and terrestrial observatories are developed regionally within LifeWatch, as are different biodiversity data systems, web services and models.

EMBRC - European Marine Biological Resource Centre

Duration: 01.01.2015 - 31.12.2018

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.

ICOS - Integrated Carbon Observing System

Duration: 01.2012 - 12.2018 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).

INTERTIDE - INTERcomparison of TIDal Estuaries in NW Europe

Duration: 01.2018 - 12.2020

INTERTIDE focuses on an inter-estuarine comparison of both abiotic and biotic parameters to get insight into fundamental relations underlying the development of these systems.

Marine Robotics Centre

Duration: as from 01.01.2018

VLIZ develops a Marine Robotics Centre to promote innovative marine research activities by means of autonomous platforms.

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).

VLAIO (FORMER IWT - STRATEGIC BASIC RESEARCH)

CREST – Climate resilient coast. Wave action in a changing climate: effects on the dynamics of the coast and implications for future safety.

Duration: 11.2015 - 10.2019 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 for the North Sea, exhibition on WWI and the sea

Duration: 10.2014 - 09.2018

Website: www.vliz.be/battle-for-the-north-sea/en

This exhibition at Provinciaal Hof on Markt square in Bruges (from 21-4 to 31-8-2018) deals with WWI and the sea. The exhibition was organised in partnership with the tourist services, sponsored by Toerisme Vlaanderen and supervised by a steering committee of WWI experts, including the municipal museums of Bruges, the Governor's cabinet, curator Tomas Termote, the Royal Army and Military History Museum, etc. Additional sponsoring was obtained from numerous private companies and government institutions.

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.

JOINT INDUSTRY PROGRAMME ON ESP SOUND AND MARINE LIFE

PCAD4COD

Duration: 01.04.2017 - 01.07.2019

The PCAD4COD project is an integrated set of studies into the impact of airgun sounds on fish which combines different models with the collection of field data on behaviour, physiology, growth and maturation. VLIZ is involved in the collection of field data by means of acoustic telemetry.

SCIENTIFIC EQUIPMENT AND INFRASTRUCTURE

2018

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
- Dissolved inorganic carbon analysis system
- · System for oxygen analysis by means of Winkler titration
- · Seawater acidity analysis system
- Aquadopp current profiler (ADCP)
- Carrousel 6 x 4 litre Niskin bottles
- CTD equipped with sensors for:
 - o Photosynthetically active radiation (PAR)
 - o Dissolved oxygen and redox potential (ORP)
 - o Turbidity
 - o Chlorophyll a
- · Aeolian sand transport monitoring network
- Fluorometer
- 10 litre GO-FLO bottle
- · Methane sensor
- Multibeam sonar
- 5 litre Niskin bottle
- Nutrient analysis system
- Underway data acquisition system on board RV Simon Stevin with:
 - o Thermosalinograph
 - o Fluorometer
 - o Atmospheric pCO2 analysis system
 - o Oxygen sensor
 - o Turbidity sensor
- Secchi disk
- Total alkalinity sensor
- LISST-100X and LISST-200X turbidity meter

BENTHIC SAMPLING AND SEAFLOOR MAPPING EQUIPMENT

- Bowers & Connelly multi-corer
- Cohesive Strength Meter (CSM)
- Hamon grab
- Multibeam sonar
- · Multibeam sonar system for shallow areas
- Multi-transducer sub-bottom echosounder
- · Reineck Box Corer
- Sediment Profile Imaging (SPI) system
- Singlebeam sonar
- Van Veen grab
- Gilson dredge
- Vibrocorer

BIOLOGICAL SAMPLING EQUIPMENT

- Bat recorder
- Bongo net
- · Beam trawl
- Otter trawl
- Pelagic otter trawl
- Bowers and Connelly multi-corer
- Porpoise detectors C-PODs
- Fast repetition rate Fluorometer (FrrF)
- FlowCam
- Flow cytometer
- Fluorometer
- 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 large birds
- · Van Veen grab
- · VEMCO fish acoustic receiver network in the Western Scheldt and coastal waters
- Video plankton recorder
- Wilson auto-siever
- Zooscan

MISCELLANEA

- · Augmented reality sandbox
- 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:
 - o Atmospheric pCO₂
 - o Wind speed
 - o Wind direction
 - o Temperature
 - o Atmospheric pressure
- Microscopes
- Mini ROV
- Molecular laboratory
- Underwater camera
- RIB Zeekat
- ROV Genesis
- Video frame
- Water tanks for marine organisms
- Web cameras

RESEARCH PROJECTS

RESEARCH PROJECTS WHICH MADE USE OF RV SIMON STEVIN IN 2018

RESEARCH PROJECTS RV SIMON STEVIN	
MARINE RESEARCH GROUP —	PROJECT —
FPS Economy – Continental Shelf Service —	——— Monitoring of sand and gravel extraction———————
Antwerp Maritime Academy —	Archaeological evaluation of shipwrecks
ILVO —	IAPF —
ILVO —	——— Dredge spoil disposal ————————————————————————————————————
ILVO —	Coastbusters
ILVO - Fisheries —	TECHVIS—
ILVO - Fisheries —	——— Demersal Young Fish Survey (DYFS) ————————————————————————————————————
ILVO - Fisheries —	
INBO —	——— Monitoring of seabirds
Directorate Natural Environment & UGent - Marine Biology ———	
Directorate Natural Environment & UGent - Marine Biology & ILVO & ULg - MAST	
UGent - Marine Biology —	——— Fish migration in coastal areas ————————————————————————————————————
UGent - Marine Biology ————————————————————————————————————	Plastox—
UGent - Morphology —	Flatfish injuries
UGent - RCMG-	Bedforms in the Channel
ULg-	DMS cycle in the North Sea
University of Antwerp - SPHERE	Perfluor bioaccumulation —
VLIZ —	WORMS biodiversity measurement
VLIZ —	——— Community Transcriptomics————————————————————————————————————
VLIZ —	LifeWatch VEMCO & C-Pods —
VLIZ —	——— Hardwiring the ocean floor———————————————————————————————————
VLIZ —	
VLIZ —	——— Multibeam survey ————————————————————————————————————
VLIZ —	LifeWatch measurement campaigns—
VLIZ-	
VLIZ —	ROV survey
VLIZ —	
VLIZ —	
VLIZ —	—— Hypermaa

In 2018, RV Simon Stevin was used for 29 projects (including 13 new ones), amounting to a total of 165 days at sea. A total of 181 unique projects have made use of RV Simon Stevin since 2000.

RESEARCH PROJECTS

RESEARCH PROJECTS WHICH MADE USE OF THE MARINE STATION OSTEND IN 2018

RESEARCH PROJECTS MARINE STATION OSTEND					
MSO INFRASTRUCTURE USED —	- REASON -	– MARINE RESEARCH GROUP————————————————————————————————————			
Water tanks for marine organisms ———	— PERSUADE experiments ——————	– OD Nature & Ugent - Marine Biology ——			
Water tanks for marine organisms ———	— Flatfish injuries ————————————————————————————————————	UGent - Morphology ————————————————————————————————————			
Core repository ————————————————————————————————————	— Analysis or collection of drill cores ———	– DEME/UGent – RCMG —————			
Base of operations————————————————————————————————————	– CREST –	UGent - Geography —————			
Lab infrastructure —	– ICOS ————————————————————————————————————	- VLIZ			
Lab infrastructure —	– LifeWatch —————	- VLIZ			

The Marine Station Ostend was used for marine scientific projects, educational purposes, visits, meetings and open house days for 155 days in 2018.

EVENTS (CO)ORGANISED BY VLIZ

IN 2018

EVENTS	(CO	OORGANISED	BY VLIZ IN 2018-
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25-26.01.2018 LifeWatch.be User 6 Stakeholders Event InnovOcean site, Ostend organiser 15 05-08.02.2018 W0RMS/MolluscaBase Workshop InnovOcean site, Ostend organiser 15 22-23.02.2018 LifeWatch Data Analysis Workshop InnovOcean site, Ostend organiser 19 01-02.03.2018 LifeWatch Data Analysis Workshop InnovOcean site, Ostend organiser 19 01-02.03.2018 ASSEMBLE Plus Data Management Plan InnovOcean site, Ostend organiser 112 07-08.03.2018 Korel De Grote University College teacher training workshop InnovOcean site, Ostend organiser 10 12.03.2018 UtJ. UtJ. Ucent Lectures InnovOcean site, Ostend organiser 33 17.03.2018 Big Shell Counting Day 10 Flemish coastal municipalities organiser 500 21.03.2018 Exhibition: 1914-118. The battle for the North Sea Provinciaal Hof, Bruges co-organiser 350 V 21.04.2018 Exhibition: 1914-118. The battle for the North Sea Provinciaal Hof, Bruges co-organiser 35.0 23-27.04.2018 LifeWatch-WoRMS editor workshop InnovOcean site, Ostend organiser 23 23-25.04.2018 LifeWatch-WoRMS editor workshop: InnovOcean site, Ostend organiser 32 16.04.2018 User LifeWatch-WoRMS editor workshop: InnovOcean site, Ostend organiser 9 16.05.2018 Cluster Data Workshop: InnovOcean site, Ostend organiser 9 16.05.2018 Cluster Data Workshop: InnovOcean site, Ostend organiser 9 16.05.2018 Cluster Symposium Marine Biodiversity InnovOcean site, Ostend organiser 9 16.05.2018 Workshop: InnovOcean site, Ostend organiser 9 16.05.2018 Workshop: InnovOcean site, Ostend organiser 32 17.21.05.2018 SeeWatch-WoRMS News Markshop: InnovOcean site, Ostend organiser 35 17.22.06.2	DATE —	- TITLE	LOCATION	ROLE OF VLIZ	NUMBER OF PARTI- CIPANTS	KPI12 EVENT
22-23.02.2018 LifeWatch Data Analysis Workshop InnovOcean site, Ostend organiser 19 01-02.03.2018 ASSEMBLE Plus Data Management Plan Workshop InnovOcean site, Ostend organiser 12 07-08.03.2018 Care De Grote University College teacher training workshop InnovOcean site, Ostend organiser 10 12.03.2018 VUZ-UGent Lectures InnovOcean site, Ostend organiser 33 17.03.2018 Big Shell Counting Day 10 Flemish coastal municipalities organiser 500 21.03.2018 2018 VUZ Marine Science Day MEC Staf Versluys, Bredene organiser 350 V 21.04.2018 Exhibition: 1914-18: The battle for the North Sea Provinciaal Hof, Bruges organiser 350 V 21.04.2018 Exhibition: 1914-18: The battle for the North Sea Provinciaal Hof, Bruges organiser 23 and tracking data InnovOcean site, Ostend organiser 23 and tracking data InnovOcean site, Ostend organiser 13 InnovOcean site, Ostend organiser 13 InnovOcean site, Ostend organiser 20 Ostend Ostend Ostend Ostend Ostend Ostend Organiser 20 Ostend Ostend	25-26.01.2018 —	– LifeWatch.be User & Stakeholders Event ———	InnovOcean site, Ostend —————	organiser ———		
ASSEMBLE Plus Data Management Plan UnnovOcean site, Ostend organiser 12 Workshop Karel De Grote University College teacher training workshop 1 12.03.2018	05-08.02.2018-	— WoRMS/MolluscaBase Workshop——————	InnovOcean site, Ostend —————	organiser ———	15 _	
Or-0203_2018 Workshop InnovOcean site, Ostend Organiser 12 Or-08.03_2018 VILZ-UGENT Lectures InnovOcean site, Ostend Organiser 33 Organiser 35 Organis	22-23.02.2018 —	– LifeWatch Data Analysis Workshop —————	InnovOcean site, Ostend —————	organiser ———	19 _	
MSD, Ostend Organiser 10	01-02.03.2018 —	Workshop	InnovOcean site, Ostend —	organiser———	12 -	
17.03.2018 Big Shell Counting Day 10 Flemish coastal municipalities organiser 500	07-08.03.2018 -		MSO, Ostend	organiser ———	10 -	
21.03.2018	12.03.2018 ——	– VLIZ-UGent Lectures –––––	InnovOcean site, Ostend —————	organiser ———	33 –	
21.04.2018	17.03.2018 ——	— Big Shell Counting Day ———————————————————————————————————	10 Flemish coastal municipalities——	organiser ———	500 —	
31.08.2018 CKNIDITION: 1914-18: The battle for the North Sea — Provincidal Hof, Bruges————————————————————————————————————	21.03.2018 ——	– 2018 VLIZ Marine Science Day –––––	MEC Staf Versluys, Bredene-	organiser ———	350 —	
and tracking data 23-25.04.2018 — LifeWatch-WoRRNS editor workshop — InnovOcean site, Ostend — organiser — 13 26.04.2018 — Seminar for maritime history students at UGent — UIFWatch Data Analysis Workshop: Shrimp bycatch data archeology 14-18.05.2018 — FUST-Ocean promotion week — Herman Teirlink building, Brussels — co-organiser — 9 15.05.2018 — Carlo Heip International Award ceremony — Palais des congrès, Montréal, Canada — co-organiser — 400 23.05.2018 — VLIZ Science Symposium: Marine Biodiversity — InnovOcean site, Ostend — organiser — 32 24.05.2018 — Marine Science meets Maritime Industry — InnovOcean site, Ostend — organiser — 32 24.05.2018 — LifeWatch-WoRMS Talitraits Editor Workshop — Hellenic Centre for Marine Research — Co-organiser — 20 10.06.2018 — World Oceans Day 2018 - Recreational fisheries — MEC Staff Versluys, Bredene — co-organiser — 20 14.06.2018 — PERSUADE end-user meeting — InnovOcean site, Ostend — co-organiser — 120 14.06.2018 — PERSUADE end-user meeting — InnovOcean site, Ostend — co-organiser — 14 15.05.2018 — UIZ members' day — MSO, Ostend — organiser — 127 10.07.2018 — Book presentation: Vissen in het Verleden — MSO, Ostend — organiser — 230 16.07.09.2018 — LifeWatch-WoRNS NeMys Editor Workshop — Ghent University — co-organiser — 20 17-21.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 — v 26-30.09.2018 — UPV day of the sea — InnovOcean site, Ostend — organiser — 5,000 — v 18.00.00.00.00.00.00.00.00.00.00.00.00.00		– Exhibition: 1914-'18: The battle for the North Sea –	Provinciaal Hof, Bruges————————————————————————————————————	co-organiser —	8,527 —	· · · · · · · · · · · · · · · · · · ·
Seminar for maritime history students at UGent U	23-27.04.2018 —		InnovOcean site, Ostend —————	co-organiser —	23 _	
UGent LifeWatch Data Analysis Workshop: Shrimp bycatch data archeology 14-18.05.2018 FUST-Ocean promotion week Herman Teirlink building, Brussels co-organiser 400 23.05.2018 Carlo Heip International Award ceremony Palais des congrès, Montréal, Canada co-organiser 32 24.05.2018 Marine Science Symposium: Marine Biodiversity in Belgium InnovOcean site, Ostend organiser 95 24.05.2018 Marine Science meets Maritime Industry InnovOcean site, Ostend co-organiser 20 21.06.2018 World Oceans Day 2018 - Recreational fisheries MEC Staf Versluys, Bredene co-organiser 20 20.06.2018 SeaWatch-B fish identification course MSO, Ostend co-organiser 44 21.06.2018 PERSUADE end-user meeting InnovOcean site, Ostend co-organiser 35 22.06.2018 VLIZ members' day MSO, Ostend organiser 35 22.06.2018 ULIZ members' day MSO, Ostend organiser 35 22.06.2018 ULIZ members' day MSO, Ostend organiser 35 22.06.2018 ULIZ members' day MSO, Ostend organiser 230 23.07.07.2018 Book presentation: Vissen in het Verleden (fishing in the past) NAVIGO museum co-organiser 230 24.07.09.2018 UlifeWatch-WoRMS NeMys Editor Workshop Ghent University co-organiser 20 25.07.09.2018 Planeet Zee trip RV Simon Stevin organiser 36 26.20.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 5,000 27.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 5,000 27.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 5,000 27.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 5,000 27.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 5,000 28.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62 29.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62 20.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62 20.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62 20.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62 20.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62	23-25.04.2018 -	LifeWatch-WoRMS editor workshop —————	InnovOcean site, Ostend —————	organiser ———	13 _	
Shrimp bycatch data archeology 14-18.05.2018	26.04.2018		InnovOcean site, Ostend ——————	organiser———	20 —	
Carlo Heip International Award ceremony — Palais des congrès, Montréal, Canada—co-organiser — 400 23.05.2018 — VLIZ Science Symposium: Marine Biodiversity in Belgium — 10novOcean site, Ostend — 0rganiser — 32 — 32 24.05.2018 — Marine Science meets Maritime Industry — 10novOcean site, Ostend — 0rganiser — 95 — 30.05.2018 — 10.06.2018 — 10.	08.05.2018 ——		InnovOcean site, Ostend ——————	organiser — — -	9 _	
23.05.2018 VLIZ Science Symposium: Marine Biodiversity in Belgium 24.05.2018 Marine Science meets Maritime Industry InnovOcean site, Ostend co-organiser 95 30.05.2018- 01.06.2018 LifeWatch-WoRMS Talitraits Editor Workshop Hellenic Centre for Marine Research (HCMR), Greece 01.06.2018 World Oceans Day 2018 - Recreational fisheries - MEC Staf Versluys, Bredene co-organiser 120	14-18.05.2018 —	- FUST-Ocean promotion week	Herman Teirlink building, Brussels—	co-organiser — -	80 -	
in Belgium 10.05.2018	15.05.2018 ——	— Carlo Heip International Award ceremony ———	Palais des congrès, Montréal, Canada-	co-organiser —	400 -	
30.05.2018- 01.06.2018	23.05.2018 ——		InnovOcean site, Ostend —————	organiser ———	32 _	
Coorganiser	24.05.2018 ——	 Marine Science meets Maritime Industry 	InnovOcean site, Ostend —————	co-organiser —	95 –	
07.06.2018SeaWatch-B fish identification courseMSO, Ostendco-organiser44V14.06.2018PERSUADE end-user meetingInnovOcean site, Ostendco-organiser1419.06.20184DEMON final meetingRBINSco-organiser3522.06.2018VLIZ members' dayMSO, Ostendorganiser12701.07.2018Book presentation: Vissen in het Verleden (fishing in the past)NAVIGO museumco-organiser23005-07.09.2018LifeWatch-WoRMS NeMys Editor WorkshopGhent Universityco-organiser2017-21.09.201853rd European Marine Biology SymposiumCC De Grote Post, Ostendorganiser170V24-25.09.2018Planeet Zee tripRV Simon Stevinorganiser36V26-30.09.2018SuperNova: international technology festivalHet Eilandje, Antwerpco-organiser5,000V27.09.2018UPV day of the seaInnovOcean site, Ostendorganiser62V03-05.10.2018LifeWatch workshop: Data Storage TagsInnovOcean site & MSO, Ostendorganiser16		– LifeWatch-WoRMS Talitraits Editor Workshop –		co-organiser —	20 —	
14.06.2018 — PERSUADE end-user meeting — InnovOcean site, Ostend — co-organiser — 14 — 19.06.2018 — 4DEMON final meeting — RBINS — co-organiser — 35 — 22.06.2018 — VLIZ members' day — MSO, Ostend — organiser — 127 — 01.07.2018 — Book presentation: Vissen in het Verleden (fishing in the past) — NAVIGO museum — co-organiser — 230 — 05-07.09.2018 — LifeWatch-WoRMS NeMys Editor Workshop — Ghent University — co-organiser — 20 — 17-21.09.2018 — 53 rd European Marine Biology Symposium — CC De Grote Post, Ostend — organiser — 170 — ✓ 24-25.09.2018 — Planeet Zee trip — RV Simon Stevin — organiser — 36 — ✓ 26-30.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 — ✓ 27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — organiser — 62 — ✓ 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16	01.06.2018 ——	 World Oceans Day 2018 - Recreational fisheries - 	MEC Staf Versluys, Bredene ————	co-organiser —	120 _	
19.06.2018 4DEMON final meeting RBINS co-organiser 35 22.06.2018 VLIZ members' day MSO, Ostend organiser 127 01.07.2018 Book presentation: Vissen in het Verleden (fishing in the past) Co-organiser 230 05-07.09.2018 LifeWatch-WoRMS NeMys Editor Workshop Ghent University Co-organiser 20 17-21.09.2018 53rd European Marine Biology Symposium CC De Grote Post, Ostend organiser 170 24-25.09.2018 Planeet Zee trip RV Simon Stevin organiser 36 26-30.09.2018 SuperNova: international technology festival Het Eilandje, Antwerp co-organiser 55,000 27.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 16	07.06.2018 ——	SeaWatch-B fish identification course ————	MSO, Ostend —	co-organiser —	44 —	
22.06.2018 VLIZ members' day MSO, Ostend organiser 127 01.07.2018 Book presentation: Vissen in het Verleden (fishing in the past) Co-organiser 230 05-07.09.2018 LifeWatch-WoRMS NeMys Editor Workshop Ghent University co-organiser 20 17-21.09.2018 53rd European Marine Biology Symposium CC De Grote Post, Ostend organiser 170 24-25.09.2018 Planeet Zee trip RV Simon Stevin organiser 36 26-30.09.2018 SuperNova: international technology festival Het Eilandje, Antwerp co-organiser 5,000 27.09.2018 UPV day of the sea InnovOcean site, Ostend organiser 62 03-05.10.2018 LifeWatch workshop: Data Storage Tags InnovOcean site 6 MSO, Ostend organiser 16	14.06.2018 ——	PERSUADE end-user meeting————————————————————————————————————	InnovOcean site, Ostend —————	co-organiser —	14 _	
Book presentation: Vissen in het Verleden (fishing in the past) 05-07.09.2018 — LifeWatch-WoRMS NeMys Editor Workshop — Ghent University — co-organiser — 20 17-21.09.2018 — 53 rd European Marine Biology Symposium — CC De Grote Post, Ostend — organiser — 170 — ✓ 24-25.09.2018 — Planeet Zee trip — RV Simon Stevin — organiser — 36 — ✓ 26-30.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 — ✓ 27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — organiser — 62 — ✓ 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16	19.06.2018 ——	- 4DEMON final meeting	RBINS-	co-organiser —	35 —	
01.07.2018 — (fishing in the past) — Co-organiser — 230 05-07.09.2018 — LifeWatch-WoRMS NeMys Editor Workshop — Ghent University — co-organiser — 20 17-21.09.2018 — 53 rd European Marine Biology Symposium — CC De Grote Post, Ostend — organiser — 170 ✓ 24-25.09.2018 — Planeet Zee trip — RV Simon Stevin — organiser — 36 ✓ 26-30.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 ✓ 27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — co-organiser — 62 ✓ 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16	22.06.2018 ——		MSO, Ostend —	organiser ———	127 _	
05-07.09.2018 — LifeWatch-WoRMS NeMys Editor Workshop — Ghent University — co-organiser — 20 17-21.09.2018 — 53 rd European Marine Biology Symposium — CC De Grote Post, Ostend — organiser — 170 — ✓ 24-25.09.2018 — Planeet Zee trip — RV Simon Stevin — organiser — 36 — ✓ 26-30.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 — ✓ 27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — co-organiser — 62 — ✓ 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16	01.07.2018 ——	_ '	NAVIGO museum	co-organiser —	230 _	
24-25.09.2018 — Planeet Zee trip — RV Simon Stevin — organiser — 36 — ✓ 26-30.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 — ✓ 27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — co-organiser — 62 — ✓ 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16	05-07.09.2018 -		Ghent University ——————	co-organiser —	20 -	
26-30.09.2018 — SuperNova: international technology festival — Het Eilandje, Antwerp — co-organiser — 5,000 — 🗸 27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — co-organiser — 62 — 🗸 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16 —	17-21.09.2018 -	– 53 rd European Marine Biology Symposium ———	CC De Grote Post, Ostend ————	organiser ———	170 _	
27.09.2018 — UPV day of the sea — InnovOcean site, Ostend — co-organiser — 62 ✓ ✓ 03-05.10.2018 — LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend — organiser — 16 —	24-25.09.2018 -	— Planeet Zee trip ————————————————————————————————————	RV Simon Stevin ————————————————————————————————————	organiser ———	36 -	
03-05.10.2018— LifeWatch workshop: Data Storage Tags — InnovOcean site & MSO, Ostend— organiser — 16	26-30.09.2018 -	— SuperNova: international technology festival —	Het Eilandje, Antwerp ————————————————————————————————————	co-organiser —	5,000 -	
	27.09.2018 —	— UPV day of the sea ——————————————————————————————————	InnovOcean site, Ostend —————	co-organiser —	62 —	
08-10.10.2018— EMODnet Biology Workshop — InnovOcean site, Ostend — co-organiser — 10	03-05.10.2018-	– LifeWatch workshop: Data Storage Tags ———	InnovOcean site & MSO, Ostend	organiser ———	16 _	
	08-10.10.2018-	– EMODnet Biology Workshop ———————	InnovOcean site, Ostend —————	co-organiser —	10 -	

EVENTS (CO)ORGANISED BY VLIZ IN 2018 (CONTINUED)

DATE —	- TITLE	- LOCATION —	- ROLE OF VLIZ	NUMBER OF PARTI- CIPANTS	KPI12 EVENT
15-19.10.2018-	OTGA/VLIZ Training Course: Research Cruise Planning & Management	- InnovOcean site, Ostend —————	- co-organiser — —	23 -	
18.10.2018 ——	- 'Prize Papers' expert group ————————————————————————————————————	- InnovOcean site, Ostend	organiser ——— —	14 -	
26.10.2018 ——	- Flemish Aquaculture Symposium 2018———	VAC, Ghent —	- co-organiser — —	90 -	
05.11.2018 ——	Marine Robotics Try-out Workshop for secondary education students	MSO, Ostend	organiser — — —	19 -	
25.11.2018 ——	- Science Day 2018	MSO, InnovOcean site & RV Simon Stevin, Ostend	- organiser — — —	1,000 -	
01.12.2018 ——	– Coastal guide seminar, Nieuwpoort ————	Fish market, Nieuwpoort————	- co-organiser — —	172 -	
03.12.2018 —	– Vissen met toekomst (fishing in the future)—	- InnovOcean site & MSO, Ostend	- co-organiser — —	25 -	
07.12.2018 —	- Launch of Compendium & Guidance Committee	CC De Grote Post, Ostend ————	organiser — — —	92 -	

³⁹ events with a total of 17,559 participants.

TRAINEES AND MASTER STUDENTS

SUPERVISED BY VLIZ IN 2018

TRAINEES AND MASTER STUDENTS SUPERVISED BY VLIZ IN 2018 —

NAME	— DIVISION —	- SCHOOL/UNIVERSITY
Brackx Raven—————	— Communication ————————————————————————————————————	— Ghent University ————————————————————————————————————
Augustijns Tom————————————————————————————————————	— Data Centre —	— Ghent University ————————————————————————————————————
Hooyberg Alexander——————	— Research —	— Ghent University ————————————————————————————————————
Ryckaert Lilith ————————————————————————————————————	— Data Centre —	Vesaliusinstituut, Ostend
D'Helft Dylan ————————————————————————————————————	— Communication ————————————————————————————————————	Vives, Bruges——————
Brandt Silke	— Communication —	Vives, Bruges————————————————————————————————————
Rooney Brian ————————————————————————————————————	— Research —	– Dublin City University ———————
Defever Justin	— Data Centre —	— Ghent University ————————————————————————————————————
Yemelyanova Marina ——————	— Data Centre —	— Ghent University ————————————————————————————————————
Taboret Delphine —	— Research —	— Ghent University ————————————————————————————————————
Van der Aa Pierrot	— Data Centre ————————————————————————————————————	– Vrije Universiteit Brussel ——————
Nguu Josphat ————————————————————————————————————	— Data Centre ————————————————————————————————————	– Vrije Universiteit Brussel ——————
Chtouris Nikolaos-Kimon —————	— Data Centre ————————————————————————————————————	– Vrije Universiteit Brussel ——————
Binkbaumer Mark ————————————————————————————————————	— Policy Information——————	- HBO
Van Loock Stephanie	— Communication ————————————————————————————————————	— Ghent University ————————————————————————————————————
Van de Mortel Broos ———————————————————————————————————	— Research —	– Katholieke Universiteit Leuven ————
Toukabri Souha —	— Data Centre —	- IAESTE
Gopalakrishnan Lavaniadewi ————	— Research —	— Ghent University ————————————————————————————————————
Lewyllie Nele-	— Research —	— Ghent University ————————————————————————————————————
Baeten Axel	— Research —	— Ghent University ————————
Vel Isabeau —	— Research —	– HU University of Applied Sciences Utrecht –
Willemse Stijn ————————————————————————————————————	— Research —	— Ghent University ————————————————————————————————————

STUDENT EMPLOYEES

ACTIVE AT VLIZ IN 2018

STUDENT EMPLOYEES ACTIVE AT VLIZ IN 2018 —

———— Defever Justin ————— Perez Ruben ————— Van den Bosch Merijn — Bouwens Jan — Dekeyser Emma — Pimenta Raleira Ana Rita — Van Severen Mathias — Cansse Thomas — Delacauw Sander — Pint Steven — Vanhooren Lore — ———— Dias Joshua —————— Robberecht Marie ————— Vanhove Lotje — Casinhas Inês ----————— Săvucă Alexandra————— Verheyde Sien— ——— Dillen Nick —— De Buyser Silke-———— Vermeiren Serge— De Caluwé Yani — Geldhof Kevin — Seldenrath Arya de Lichtervelde Astrid — Lescroat Jonas — Stubbe Liesje — Verschaete Severine — — Tegethoff Sara———— — Meskerem Mees———— ———— Meyers Nelle ————— Vandekerckhove Stef————— De Visscher Jill ----——— Perché Sara—————— Van de Walle Emma—

PUBLICATIONS

2018

DE GROTE REDE -

- Issue 47 (April 2018) with leading articles on aquaculture in the Belgian part of the North Sea, Father Hendrik Pype and mysterious fish migration. Number of copies: 9,000 (KPI 12 publication)
- Issue 48 (September 2018) with leading articles on offshore wind turbines, metal detecting and marine litter. Number of copies: 9,000 (KPI 12 publication)

VLIZINE -

A total of 12 issues of the e-newsletter 'VLIZINE' appeared in 2018, including a total of 179 articles. (KPI 12 publication)

VLIZ LIBRARY ACOUISITIONS

A total of 35 Library Acquisitions lists were forwarded by e-mail in 2018.

7FFKRANT

Seys, J.; Bogaert, K.; Belpaeme, K.; De Smet, B (Ed.) (2018). Zeekrant 2018: jannual publication of the Flanders Marine Institute and the province of West Flanders, Ostend. 8 pp. Number of copies: 60,000. (KPI 12 publication)

BOOKS

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

- Duriez, A.; Fockedey, N.; Lamour, L.; Mongondin, M.; Vallet, E. (Ed.) (2018). Guide des espèces à l'usage des professionnels. Pour un marché des produits de la mer durables. 2018 edition. SeaWeb Europe: Paris. ISBN 978-2-9565028-0-7. 201 pp. (KPI12-publicatie)
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- Lescrauwaet, A.-K.; Parmentier, J.; Pirlet, R. (2018). Vissen in het verleden: 500 jaar Vlaamse zeevisserij. Hannibal: Veurne. ISBN 9789492677464. 237 pp.

VLIZ SPECIAL PUBLICATIONS -

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- N° 81: Mees, J.; Seys, J. (Ed.) (2018). Book of abstracts VLIZ Marine Science Day. Bredene, Belgium, 21 March 2018. VLIZ Special Publication, 81. Vlaams Instituut voor de Zee Flanders Marine Institute (VLIZ): Ostend. 142 + ix pp.
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MOVIES -

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2018 (CONTINUATION)

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- Benedetti-Cecchi, L.; Crowe, T.; Boehme, L.; Boero, F.; Christensen, A.; Grémare, A.; Hernandez, F.; Kromkamp, J.C.; Nogueira García, E.; Petihakis, G.; Robidart, J.; Sousa Pinto, I.; Zingone, A.; Larkin, K.; Muñiz Piniella, A.; Kellett, P.; Heymans, S.J.J. (2018). Strengthening Europe's capability in biological ocean observations. *Marine Board Future Science Brief*, 3. European Marine Board: Ostend. ISBN 9789492043559. 76 pp.
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- Devriese, L.; Dauwe, S.; Verleye, T.; Pirlet, H.; Mees, J. (Ed.) (2018). Kennisgids Gebruik Kust en Zee 2018 Compendium voor Kust en Zee. Vlaams Instituut voor de Zee Flanders Marine Institute (VLIZ): Ostend. ISBN 978-94-920436-1-0. 230 pp.
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