

2016

ANNUAL REPORT



The Flanders Marine Institute (VLIZ) promotes 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, policy makers and the industry (within the scope of the blue economy).



The 2016 VLIZ annual report

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Ostend, March 2017.

Dear reader,

At the end of 2016, the Flemish government made a decision on the future of VLIZ within the scope of a new covenant to be concluded between both parties. After an evaluation conducted by a government-appointed consultancy firm and an international expert panel, several scenarios were drawn up for the future evolution of VLIZ, ranging from continuing the work it had carried out throughout the years to taking a quantum leap in VLIZ's mission on top of performing its regular activities. The government chose the latter option and authorises VLIZ to extend its mandate. The current support mission is fully maintained and even reinforced, while two important missions are added. Firstly, VLIZ has been given a mandate for policy advice on economic developments at sea (within the scope of the blue economy). Secondly, VLIZ has been given a research mandate which takes us into a new phase, 17 years after the establishment of VLIZ. With this aim in view, we will continue to build on VLIZ's human capital and infrastructure; in the first instance, the focus will be on research driven by the available oceanographic databases and large-scale research infrastructure. Cooperation with other marine research groups in Flanders will be the basic principle of all initiatives we take.

The present annual report reveals that VLIZ 2.0 will be built on a solid basis. We will highlight a few of our achievements for 2016, but please take into account that this annual report is only a summary of our activities. A new feature of the annual report is that this year, we shed light on the services provided by VLIZ to third parties. All this information taken together with the abundant data and numerous overview lists from the Digital Annex proves that we once again achieved a great deal in our various work areas in 2016.

In particular, there was the formal decision by the Flemish government to have a new building constructed for VLIZ, the international partners of the InnovOcean site, the Regional Office Coast of the province of West Flanders and the marine researchers of the Institute for Agricultural and Fisheries Research. Located in Ankerstraat, Ostend, this building will be fully dedicated to marine / oceanographic research and its construction is expected to be completed by 2021.

These two crucial decisions by the Flemish government ensure VLIZ's future will be very exciting and challenging. We are already looking forward to expanding marine scientific knowledge in Flanders from 2017 onwards in collaboration with and as a complement to the Flemish marine research community.

We hope you enjoy reading this annual report!

Jan Mees
General Director of VLIZ

The Highlights are the special events, achievements, activities or projects of VLIZ that took place in 2016. They are often the result of intensive cooperation between various divisions.

Highlights

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New building



FROM 2021 ONWARDS, VLIZ and its international partners, the Regional Office Coast and ILVO - Fisheries will be housed in a shared new building situated in Ankerstraat, Ostend.

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On 15 July 2016, the Flemish government took the formal decision to have a new building constructed for VLIZ, its international partners (IOC Project Office for IODE, European Marine Board and the EMODnet secretariat), the Regional Office Coast (Regional Cooperation Coast, Coastal Environmental Education Centre and Coastal Heritage Unit divisions) as well as the researchers of the Institute for Agricultural and Fisheries Research (ILVO). Located at the current ILVO site in Ankerstraat, Ostend, this building will be fully dedicated to marine / oceanographic research. The total cost amounts to € 17 million. The Flemish government's decision to invest in this construction is remarkable in times of budget cuts.

Aptly named InnovOcean Campus, the new building is aimed at providing services to anyone involved in marine research at the national

and international level. The location on the East Bank of Ostend, a mixed maritime industrial and residential area, will contribute to the image and accessibility of marine research in Flanders for scientists, policy makers and industrialists as well as for citizens fascinated by the sea.

The new building is scheduled to be taken into service in 2021.

The construction works also include the extension of the Marine Station Ostend, VLIZ's laboratory facilities. Within this scope, the nearby Ostend Maritime Site located next to the lighthouse on the East Bank will be transferred to VLIZ and accommodate a fully fledged marine research station after renovation.

New Covenant



AT THE END OF 2016, VLIZ and the Flemish government signed a new covenant for the 2017-2021 period. The principal addition to the existing mission is a research mandate: VLIZ gets the opportunity to initiate, support and conduct innovative multidisciplinary marine research at the service of, in collaboration with and as a complement to the Flemish marine research groups. Furthermore, VLIZ has been given a mandate for policy advice on economic developments at sea (within the scope of the blue economy).

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The mission of VLIZ is defined in a five-year covenant between the Flemish Government, the province of West Flanders and VLIZ. After a preliminary stage of self-evaluation, evaluation and negotiations, the Flemish government approved the new covenant for the 2017-2021 period on 23 December 2016. The new covenant clearly differs from the previous ones due to two additions. The current mission remains in full force but VLIZ is given a research mandate as well as a mandate for policy advice on economic developments at sea (within the scope of the blue economy).

The research mandate involves an important strategic objective consisting of initiating, supporting, promoting and conducting innovative multidisciplinary marine research at the service of, in collaboration with and as a complement to the Flemish and international marine research groups. VLIZ will set up a new Research division to organise marine research in consultation with interested partners. Its mission is to identify challenges and opportunities for marine research in Flanders.

In this context, VLIZ develops research agendas and pursues the implementation of the priorities that were identified (including prospection, projects, partnerships and funding).

VLIZ will prepare research strategies and agendas for Flanders and for itself. Continuing to build on its human capital and infrastructure, VLIZ will in the first instance focus on research driven by the available oceanographic databases and large-scale research infrastructure.

VLIZ has increasingly concentrated on the exploration, initiation, development and support of marine research and marine (science) policy. The mandate extended within the scope of this covenant includes the further development of the interface with the blue economy and innovation as a service provided within the framework of the Flemish and (inter)national policy regarding the blue economy and innovation.

The 2017-2021 covenant has established five strategic objectives for VLIZ:

- Initiate, support, promote and conduct innovative multidisciplinary marine research at the service of, in collaboration with and as a complement to the Flemish and international marine research groups.
- Promote the national and international image of Flemish marine research.
- Serve as a national and international point of contact in the field of marine research.
- Promote ocean literacy in Flanders and marine research visibility among the general public.
- Provide tailored scientific data, information, knowledge and insights to the Flemish marine research community, the blue economy and policy makers with regard to marine matters.

2016 VLIZ Marine Science Day



THE LAUREATES OF THE VLIZ SCIENTIFIC AWARDS and the winners of the best speakers and poster contest received their prize at the VLIZ Marine Science Day 2016. Left to right and top to bottom: Jan Trachet (winner of the VLIZ Communication Award 2015), Gaëtan De Gryse (laureate of the VLIZ Master Thesis Award 2015), Dr Eng Filip Meysman (laureate of the VLIZ North Sea Award 2015), Robert Runya (public award for best poster), Frederike Stock (public award for best pre-doc presentation), Griet Neukermans (public award for best post-doc presentation) and Thomas Mestdagh (laureate of the VLIZ Master Thesis Award 2015). Not included in the picture is Pieterjan Verhelst (winner of the VLIZ Communication Award 2016).

© VLIZ – Reynaert

On 12 February 2016, Bruges was the place to be for all those involved in marine sciences in Flanders and neighbouring regions. The 16th edition of the VLIZ Marine Science Day was attended by (junior and senior) scientists, marine educators, marine entrepreneurs and marine policy makers. The 363 participants were given a nice overview of the current research conducted at universities and scientific institutions. It was also the ideal opportunity for them to network extensively. Every year, VLIZ tries to update this event with the aim of promoting its core network, the Flemish marine scientific community.

Within the context of its coordinating role, VLIZ aims at encouraging marine research, for example by granting awards for meritorious scientific studies conducted by starting scientists. The VLIZ North Sea Award (1,000 EUR) is granted for post-graduate or post-doctoral research while two theses are awarded with the VLIZ Master Thesis Awards (2 x 500 EUR). These awards are traditionally presented at the VLIZ Marine Science Day. The North Sea Award 2015 was won by Dr Eng Filip Meysman and his team (VUB - Department of Analytical, Environmental and Geo-chemistry) for their collection of articles on the topic of 'Discovery of long-distance microbial electron transport in the seafloor of the North Sea'.

The Master Thesis Awards 2015 were granted to Gaëtan De Gryse (Ghent University – Faculty of Veterinary Medicine) for his master thesis on the three-dimensional morphology of the antennal gland in *Penaeus vannamei* and the development of a quantification method

for the study of White Spot Syndrome Virus, and to Thomas Mestdagh (Ghent University – Department of Geology) for his master thesis entitled 'Evaluation and modelling of the response of gas hydrate reservoirs to changing environmental conditions across a high-latitude continental margin'.

The VLIZ Communication Award 2016 was won by Pieterjan Verhelst (Ghent University – Marine Biology Research Group), whom VLIZ assisted for a year in the creation of an animated film about tagging research on eels in Belgium.

As every year, the public voted for the best speakers and poster. In the Pre-Doc Presentation category, Frederike Stock (Ghent University) won the Oral Presentation Award for her pitch presentation 'Hello from the other side - Interkingdom crosstalk between bacteria and diatoms'. In the Post-Doc Presentation category, Griet Neukermans (VUB – Université Laval) was the laureate for her presentation 'Light and life beneath sea ice in the Canadian Arctic'. Robert Runya (VUB) was awarded for his poster entitled 'Optical remote sensing of Lake Victoria'.

On the webpage www.vliz.be/vmsd/en/VMSD16 there is a hyper-link to the Book of Abstracts, the companies present at the Meet the Company event, a photo gallery and the presentations of the winners of the VLIZ awards and public awards. The presentations are now available in mp4 format.

VLIZ members' day

VLIZ organised its very first members' day in 2016. VLIZ is a membership organisation and at the end of 2016 it had 430 members, including 281 individual members, 25 students, 28 institutional members and 15 honorary members. To thank loyal members for their longstanding support and to become acquainted with new members, VLIZ invited them to a midsummer evening walk on the East Bank of Ostend on Friday 24 June 2016 with the Marine Station Ostend being the starting point.

This professionally guided tour took the 95 participants in small groups to the beach, where they were given a demonstration by enthusiastic

volunteers of SeaWatch-B, the beach observation network launched in 2015 as a philanthropic project sponsored by means of VLIZ members' contributions. In addition, the participants also learned more about nature, (military) heritage, fisheries and other maritime activities in this part of the port of Ostend, which is also an important site for the history of Flemish marine research.

In view of its success, the VLIZ members' day will be an annual event. The second edition will take place on Friday 23 June 2017. For more information about VLIZ membership, please go to www.vliz.be/en/membership.



ON THE VLIZ MEMBERS' DAY, the participants were given a guided tour of the East Bank of Ostend and learned more about the history of Flemish marine research and the beach observation network SeaWatch-B, a philanthropic project sponsored by means of VLIZ members' contributions.

Brilliant Marine Research Idea



'BRILLIANT MARINE RESEARCH IDEA' is a call to support PhD students affiliated to a Flemish university or university college financially by means of VLIZ's philanthropic activities in the implementation of a brilliant idea within the scope of their PhD research.

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VLIZ introduced a grant system for 'Brilliant Marine Research Ideas' in 2016. VLIZ receives contributions and donations with the sea as a good cause. These are used to support marine research worldwide, including the funding of marine research ideas which can contribute to solving a hypothesis-based marine research question.

'Brilliant Marine Research Idea' is a call to support PhD students affiliated to a Flemish university or university college financially by means of VLIZ's philanthropic activities in the implementation of a brilliant idea within the scope of their PhD research.

Eligible research subjects include pollution, ocean and human health, marine biodiversity, climate change, ocean-related disasters and marine exploration.

The grant (maximum 5,000 EUR) can be used to facilitate PhD students conducting laboratory experiments and/or fieldwork, acquiring and analysing data, visiting other institutes to make use of specialised

facilities, purchasing equipment or software required for a specific analysis, etc. The fund cannot be used to cover staff costs or to attend conferences.

The 4 winners of Brilliant Marine Research Idea 2016 are:

- Emmanuel Van Acker (GhEnToxLab – UGent)
Do marine aerosols improve human health? An exploratory 'holistic' approach
- Laurine Burdorf (Chemistry Department – VUB)
Who are the cable bacteria?
- Raf Meskens (Antwerp Maritime Academy)
A dynamic testing platform for anti-fouling coatings
- Franz Maximilian Heindler (Laboratory of Biodiversity and Evolutionary Genomics – KU Leuven)
Refugia of Antarctic Icefish

For more information on Brilliant Marine Research Ideas, please go to the VLIZ website: www.vliz.be/en/brilliant-marine-research-idea.

CommOCEAN 2016

On 6 & 7 December, marine scientists and communicators gathered in Bruges for CommOCEAN 2016, the 2nd International Marine Science Communication Conference. This event promoted the exchange of best practices with regard to ocean science communication and targeted marine scientists and communicators working at marine institutes as well as governmental and non-governmental organisations.

The organisers welcomed no fewer than 200 representatives from 29 countries to this exciting event with speed training sessions in modern marine science communication, interesting oral presentations and poster presentations, hands-on workshops, a great deal of expertise exchange, social interaction and fascinating marine scientific information. The attendants were surprised by a cartoonist and a unique representation of the entire event was made by means of graphic recording.

Social media users could follow the conference live by means of the CommOCEAN Facebook page (@CommOCEAN) and the CommOCEAN Twitter account (#CommOCEAN).

On the day after the conference, a select group could participate in the CommOCEAN training session (part of OceanTeacher Global Academy, a UNESCO/IIOC Project Office for IODE project). This high-level training was brought by Lisa Tossey (USA) and covered different techniques and technologies used in marine science communication with a particular focus on 'digital storytelling' and the use of social media for the development and implementation of communication and outreach programmes.

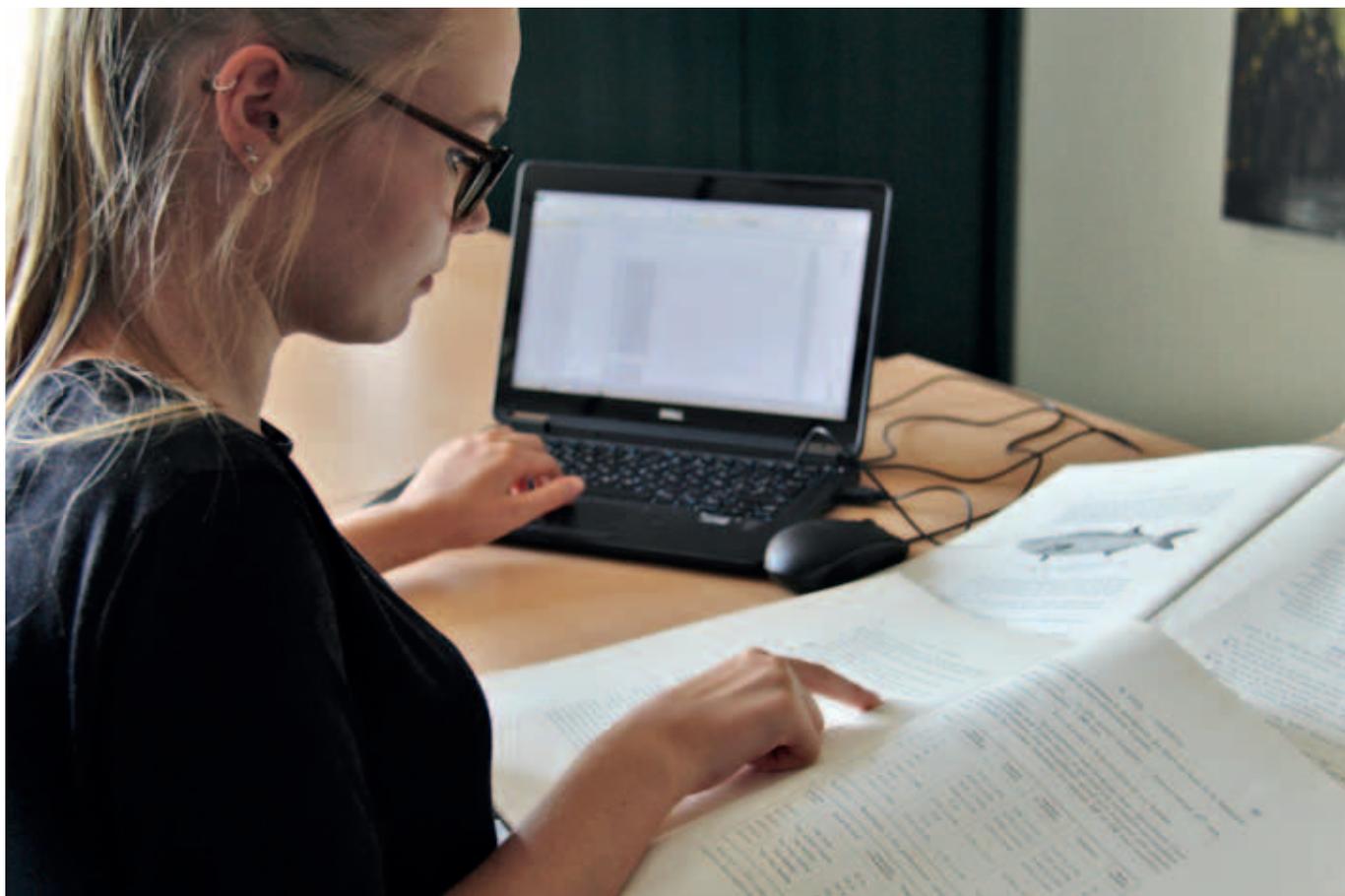
CommOCEAN 2016 was organised by VLIZ in partnership with the European Marine Board, the European Marine Board Communications Panel and the UNESCO/IIOC Project Office for IODE.

All materials of the conference (pdf files, photographs, book of abstracts, video recordings) and the high-level course are freely available on the website: www.commocean.org/conference-materials.



COMMOCCEAN 2016 was the international conference for sharing best practices with regard to ocean science communication. The event was represented in a playful manner with this graphic recording.

Formal publication of marine data via Digital Object Identifiers



VLIZ HELPS SCIENTISTS to publish their data formally with a Digital Object Identifier. In 2016, VLIZ developed a procedure to make data sets traceable and citable.

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When a manuscript is submitted, it is increasingly demanded that the underlying research data should be deposited in a recognised repository and made publicly available. At the request of Flemish marine scientists, VLIZ has developed a procedure to make data sets traceable and citable by creating a data publication. In this context, VLIZ has collaborated with DataCite and enables scientists to publish their data formally with a Digital Object Identifier (DOI). This includes an extensive description, the creation of a citation with a DOI (a unique dataset identifier) and disclosure of these data to the general public. The repository where the research data are stored is the Marine Data Archive (MDA) of VLIZ. This database ensures that the data sets are permanently available and remain unchanged in the long run. A new version of the MDA launched in 2016 makes more efficient and autonomous management by the users possible. In addition, it provides a

better overview of the documented data sets. As a recognised component of the ICSU World Data System, VLIZ can provide this service to all Flemish marine scientists.

The publication procedure for data sets ensures that data cited are traceable and that scientists receive more recognition for their work.

Approximately 50 and 200 data sets were disclosed with a DOI in 2015 and 2016 respectively. About 5 of these data sets have been used as a reference in an A1 publication by a Flemish marine scientist.

All information on the creation of a data publication has been described on the VLIZ website: www.vliz.be/en/publish.

New Marine Regions version

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

In 2016, MarineRegions.org updated its global Exclusive Economic Zones (EEZ) (version 9), and launched the new data sets for all Territorial Seas (TS), Contiguous Zones (CZ), Internal Waters (IW) and Archipelagic Waters (AW) worldwide.

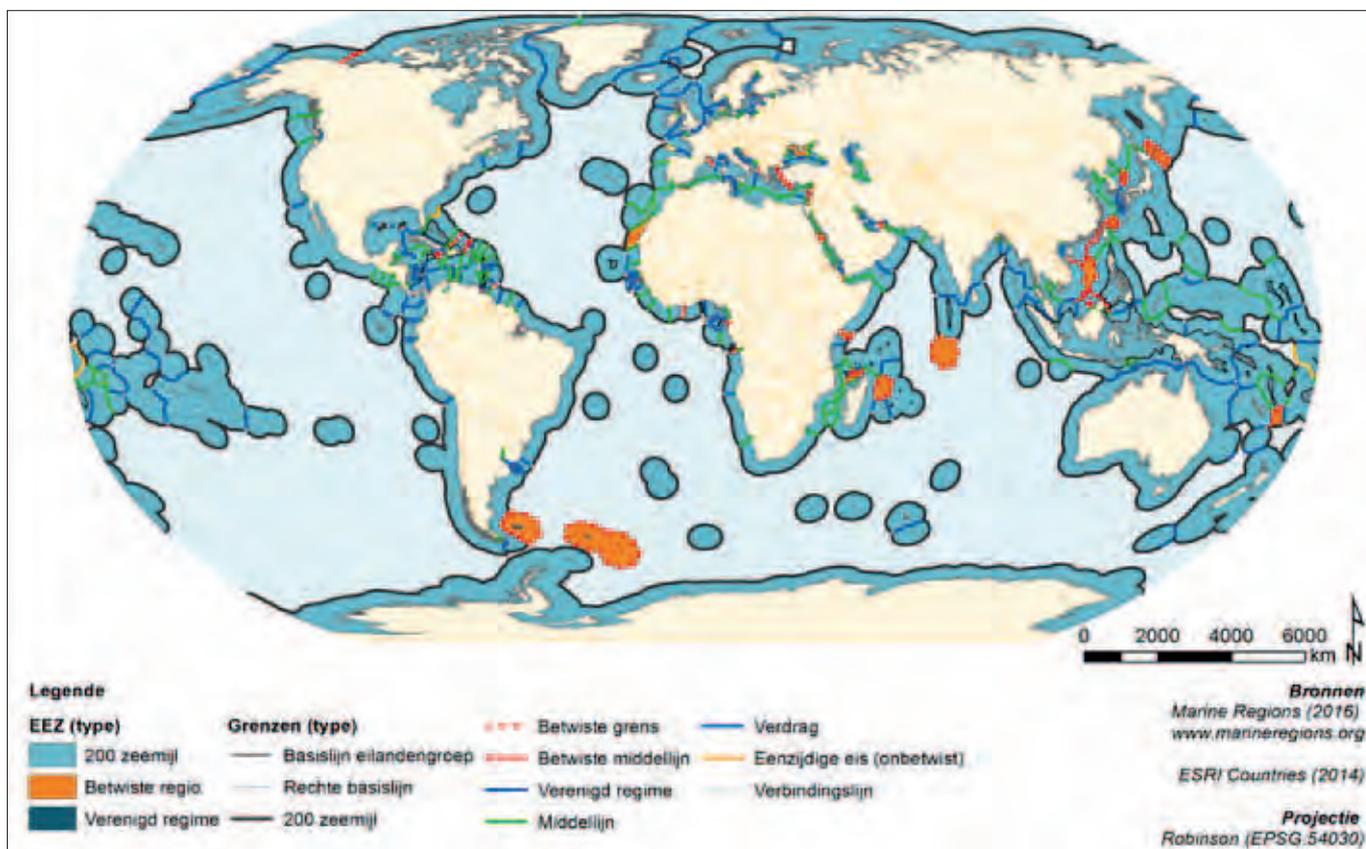
Ten years ago, the digital marine atlas MarineRegions.org launched the first version including shape files of the world's EEZs. Over the past decade, the number of website users has risen from several hundred to over one hundred thousand unique visitors a year. Marine Regions and its unique identification codes have become a standard for countless users from the academic world, industry and civil society.

Today, the Maritime Boundaries data set is used in various ways such as a geographic backbone for the World Register of Marine Species (WoRMS), as a geo unit to calculate fishing activities, or as an assessment unit for the health of our ocean (OHI+).

In the new version 9, the maritime zones and boundaries have been recalculated from the publicly available baselines. The global baseline made available by the system is a combination of the straight or archipelagic baselines and the coastline as a proxy for the low-water line.

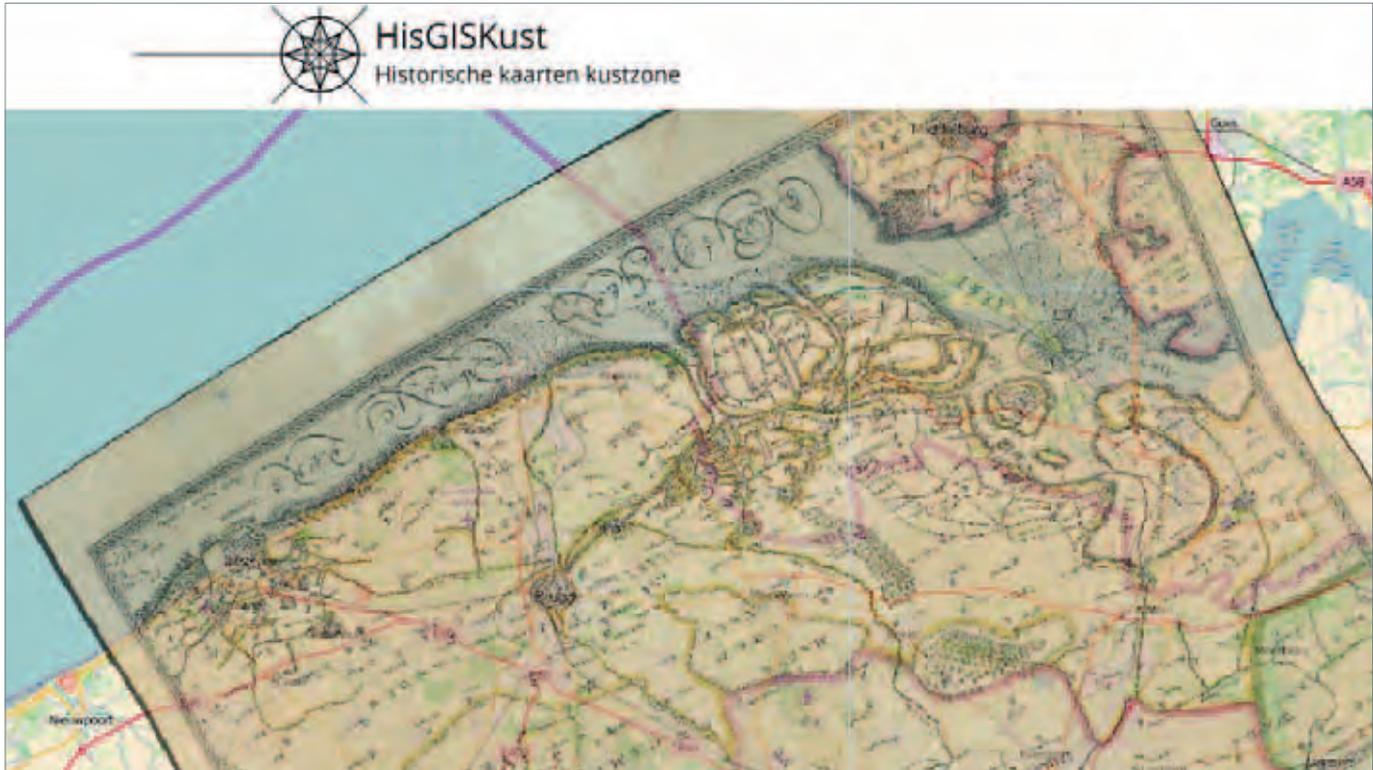
This new version represents a dramatic increase in the number of sources used, from 187 in version 8 to over 500 source documents in version 9. The consultation of numerous new sources has resulted in the addition of new baselines, treaties and joint regimes.

With the new release, VLIZ hopes to further serve the global marine user community working on geospatial analysis.



VLIZ PARTICIPATES IN THE DEVELOPMENT OF DATA INFRASTRUCTURES. Within this scope, VLIZ manages the digital marine atlas MarineRegions.org, the only global maritime boundaries database whose data sets are freely available. In 2016, the website updated its global Exclusive Economic Zones (EEZ), and launched the new data sets for all Territorial Seas (TS), Contiguous Zones (CZ), Internal Waters (IW) and Archipelagic Waters (AW) worldwide.

Historical maps in a modern setting



THE GEOREFERENCED HISTORICAL MAP 'Flandriae pars orientior' (Petrus Kaerius, 1608)
from the collection of Cultuurbibliotheek Brugge as displayed on the HisGISKust portal site.

© HisGisKust

The HisGISKust project digitally discloses and georeferences historical maps from the 16th, 17th and 18th centuries providing specific information about the Belgian coast and/or the river Scheldt. This makes it possible to easily visualise them and compare them to recent maps and satellite images.

The image archive currently contains over 100 maps, about 70 of which have been georeferenced. A targeted search of the archive is possible by selecting or combining specific filters (century, geographical scope and thematic map) or by entering any search word. A video tutorial provides an overview of all the options offered by the new website.

Derived products and the relevant metadata e.g. relating to the accuracy of each map are put at the disposal of end users. Time-lapse movies showing the evolution of the coastal area and information about toponyms and cartographers are made available as well. All materials can be accessed free of charge (#opendata).

In the future, HisGISKust will be extended further with other relevant historical maps (including from the 19th and early 20th century).
Discover this fascinating website: www.vliz.be/hisgiskust

A large pool of research equipment



Every year, VLIZ provides marine research groups with the opportunity to propose investments in marine research infrastructure. The suggestions submitted by scientists are evaluated by the VLIZ Scientific Committee. As is the case for all equipment and research infrastructure purchased by VLIZ, the newly acquired appliances are at the disposal of the Flemish and international marine research community.

The pool of scientific equipment currently includes about 100 units ranging from traditional sampling devices to semi-automatic high-tech apparatus (see the list of scientific equipment and infrastructure in the digital annex). This range will further increase VLIZ's capacity to fulfil its new research mandate.

Go to www.vliz.be/en/equipment to consult the fact sheets of all equipment. These include a general description of the equipment as well as the technical details and a few studies made possible by the use of this equipment.

The following is an overview of some of the new devices purchased in 2016:

- **Aeolian sand transport measuring system.** Combining several instruments, this system measures different parameters including wind

VLIZ'S POOL OF SCIENTIFIC EQUIPMENT currently includes about 100 units ranging from traditional sampling devices to semi-automatic high-tech apparatus. This images shows a sand catcher as part of the aeolian sand transport measuring system.

© VLIZ

strength, wind direction and soil moisture. It also contains a device (saltiphone) which counts the number of sand particles carried by the wind above the beach surface and coming into contact with the device. The sand particles can also be collected in sand catchers mounted on a pole at various heights. This pole and the saltiphone make it possible to measure the sand transport under different meteorological conditions.

- The **multi-transducer subbottom echosounder** (SES-2000 Quattro) is a sonar system generating ultra-high resolution, three-dimensional acoustic data concerning the seabed and shallow subsurface. The creation of a highly detailed image of the upper metres of the soil makes this device unique.
- **Shallow-water multibeam echosounder.** This portable multibeam sonar system generates a high-resolution image of the seabed in shallow waters (depths of at least 0.2 m) and even beaches, mud flats and salt marshes. The device is used in combination with an integrated GNSS navigation system.
- **Dual-head multibeam sonar system on board RV Simon Stevin.** The multibeam sonar system that was already on board the research vessel was extended with an additional receive transducer, increasing the seabed surface scanned. The multibeam sonar system is used for visualising the seabed topography and characterising the soil types (necessary in case of habitat mapping).
- **Submersible particle size analyzer LISST-200X** is a laser diffraction device for measuring particle size and volume concentration in detail, often mounted on a tripod.
- **Aquadopp profilers** are Acoustic Doppler Current Profilers (AD-CPs) used for water current measurement. Aquadopp profilers have been specially designed for use in shallow waters (< 100m) such as surf zones, harbours and estuaries.

- At the Marine Station Ostend, the **chemical laboratory** was equipped with an automatic sensor for determining total alkalinity and with analysis devices for nutrients, dissolved inorganic carbon, oxygen and seawater acidity.

Distinguished visitors & cooperation agreements



DURING HIS VISIT TO THE INNOVOCEAN SITE European Commissioner Karmenu Vella signed a cooperation agreement with the Flemish government and VLIZ confirming the fruitful collaboration with Flanders in terms of data flows from marine observation.

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On 8 July 2016, Karmenu Vella visited the InnovOcean site in Ostend. The European Commissioner for the Environment, Maritime Affairs and Fisheries personally attended the signature of a cooperation agreement regarding marine observation data with the Flemish government and the Flanders Marine Institute (VLIZ). In doing so, the European Commission highlighted its close collaboration with regard to marine matters and its continued focus on a sustainable 'blue economy' and job creation based on science, data and innovation. The Flemish government is committed to continuing its support to the European Marine Observation and Data Network (EMODnet) through VLIZ by accommodating the secretariat and providing technical and scientific assistance in the development of the web portal and services for data users.

Minister-President of the Flemish government Geert Bourgeois paid a working visit to VLIZ on 22 August 2016. The programme started with information about VLIZ's objectives and activities as well as a few current files being discussed over lunch at the InnovOcean site. In addition, the institute's major marine research infrastructures were also

on the agenda of this meeting. The Minister-President then boarded RV Simon Stevin for a boat trip along the coast of Ostend. During a tour of the ship, the diversity of high-tech sampling equipment was brought to his attention. Afterwards, the use of the multibeam echosounder and several sampling techniques to investigate benthic biodiversity was demonstrated.

Between 26 November and 3 December 2016, governor of West Flanders and chairman of the VLIZ Board of Directors Carl Decaluwé visited China together with VLIZ General Director Jan Mees. The programme of this mission included the signing of the cooperation agreement between VLIZ and NingBo University in the presence of Michel Malherbe, Belgian ambassador to China.

The partnership is aimed at the development of joint marine research projects, the exchange of information, academic material and publications as well as the coordination and joint organisation of scientific conferences and seminars. Projects for the exchange of staff between both institutes are also high on the agenda.



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A large part of the VLIZ activities are carried out for the purpose of third parties. This chapter presents a selection of these services and in particular the most remarkable ones for 2016 which have not yet been covered in the highlights section.

VLIZ services





© Vera Van Lancker

Research vessel 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. A total of 1,191 persons boarded RV Simon Stevin in 2016. Seventeen marine research groups made use of RV Simon Stevin

within the scope of 36 different projects (see digital annex, p. 27). The vessel made 32 day trips for educational or demonstration purposes, e.g. within the scope of PlaneetZee@Work and training courses at the Antwerp Maritime Academy as well as the universities of Brussels (biology), Ghent (biology, geology, environmental toxicology), Hasselt (biology), Leuven (biology), Liège (biology) and Kortrijk (biology).

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

the major efforts made by the VLIZ library to digitise and provide open access to the Belgian marine literature. So far, 48,500 publications have been made freely available online via the VLIZ catalogue. This enables both scientists and the general public to download and consult a great deal of marine information anywhere.

The consistent addition of standardised metadata as well as taxonomic and geographical keywords to the literature records in the VLIZ catalogue has resulted in good online visibility and worldwide promotion of the Belgian marine output.

Over 65% of BMB publications have been made freely available online via the **Open Marine Archive (OMA)**. In 2016, no less than 2,805 digital publications were added to this open archive, half of which were peer-reviewed articles, which brings the total number of publications to 26,645 (for details, see KPI 1 in the Digital Annex p. 15).

The **VLIZ library** processed 963 **requests for publications** in 2016. This slight decrease compared to the previous year is attributable to



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VLIZ also attaches great importance to organising or contributing to national and international scientific **conferences**. In addition to VLIZ Marine Science Day 2016 and CommOCEAN 2016 already mentioned in the highlights, VLIZ organised the closing conference of the SeArch project (22 November) (see the image above). The 173 attendants were immersed in scientific knowledge about submerged heritage ranging from prehistoric valleys to shipwrecks and other his-

torical relics. VLIZ also co-organised the Second Marine Biotechnology ERA-NET Stakeholder meeting (13-14 October) entitled 'Marine Biotechnology – enabling future innovations' where the 112 participants discussed the funding options, challenges, threats and opportunities of marine biotechnology as well as the importance of research. For the complete list of events organised, co-organised or facilitated by VLIZ, see the digital annex page 49.



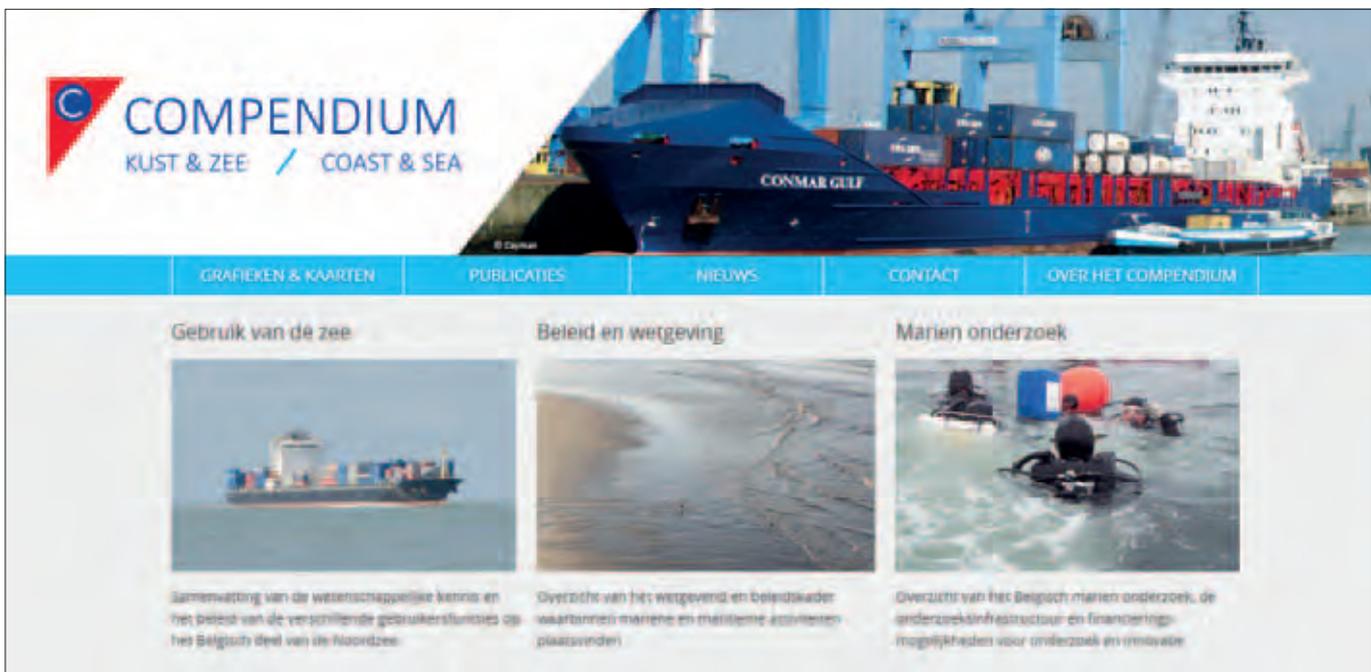
© VLIZ

With the **Marine Station Ostend**, VLIZ provides a satellite laboratory by the sea to marine scientists. An increasing number of marine research groups as well as university colleges find their way to the Marine Station Ostend, e.g. for field training or sample analyses. An overview of the marine scientific projects which made use of the Marine Station Ostend in 2016 can be found on page 28 of the Digital Annex. Numerous students from marine training courses visited the station in 2016 as well. The general public was introduced to the activities taking place at the MSO during open house days such as Science Day and the start day of Week of the Sea. Over the course of 2016, the MSO was used by external parties for 134 days.

The **Compendium for Coast and Sea** is a guidebook for marine experts with a focus on the Belgian part of the North Sea, the adjacent estuaries and the coastal area. It brings together published and disperse information concerning research as well as sociocultural aspects, economic sectors and institutional competencies. In accordance with the Open Access policy, the sources are made publicly available as much as possible via VLIZ's integrated marine information system (IMIS). The Compendium's integrated character contributes to increased interaction between marine scientists, experts professionally involved in coastal and marine activities, representatives from business and other innovators. The Compendium activities in 2016 included the creation of 20 (updated) fact sheets of marine research groups and 24 (updated) fact sheets on laws and treaties.

In addition, mapping of the Belgian marine research landscape has revealed that 107 marine research groups (MRGs) were active in 2016, together accounting for approximately 1500 marine employees. The MRGs have highly diverse expertise and are active in 19 different research disciplines. In total, they produce over 500 marine peer-reviewed publications a year.

The Compendium for Coast and Sea and the network of over 150 external experts who provide support together serve as a knowledge basis for producing policy-relevant information and expertise as well as for answering questions with regard to policy. VLIZ also participates in a wide range of advisory and consultative forums, strategic consortiums and clusters as well as other networks. An overview can be consulted on page 35 of the Digital Annex.



© www.compendiumkustenzee.be

Tour of Flanders. VLIZ delegations visit research groups and administrations in Flanders and the wider region to exchange information on our activities, proactively promote partnerships and optimise the current cooperation. Several foreign delegations visited VLIZ in 2016 to discuss potential partnerships. These included representatives from

the Scientific Interest Group of Maritime History (GIS d'Histoire Maritime), Maritiem Instituut Mercator, the Executive Agency for Small and Medium-sized Enterprises (EASME – an executive agency of the European Commission), VOKA (a Flemish employers' organisation), OWI-lab and IMEC.

With its educational activities, VLIZ aims to integrate marine topics into the **final attainment levels of Flemish secondary education**. In 2016, the syllabuses for the subjects of geography and natural sciences for the third cycle of technical / artistic secondary education of Flemish independent schools were updated with a number of marine topics such as 'raw materials from the oceans', 'oxygen and carbon cycle in the oceans' and 'the influence of the oceans on climate'. VLIZ collaborates closely with the Flemish catholic educational network by providing information about these new topics.

One of VLIZ's strategic objectives is to promote **ocean literacy**. As a partner within the European Sea Change project, VLIZ launched the Sea Change Ocean European Database of Good Examples in Marine Education and Outreach (EDGE) in 2016. This database contains 133 carefully selected examples of marine (science) communication from renowned specialised European organisations. This database enables users to quickly and efficiently find information, educational materials, projects and events regarding the sea which, in turn, can inspire new communication activities.



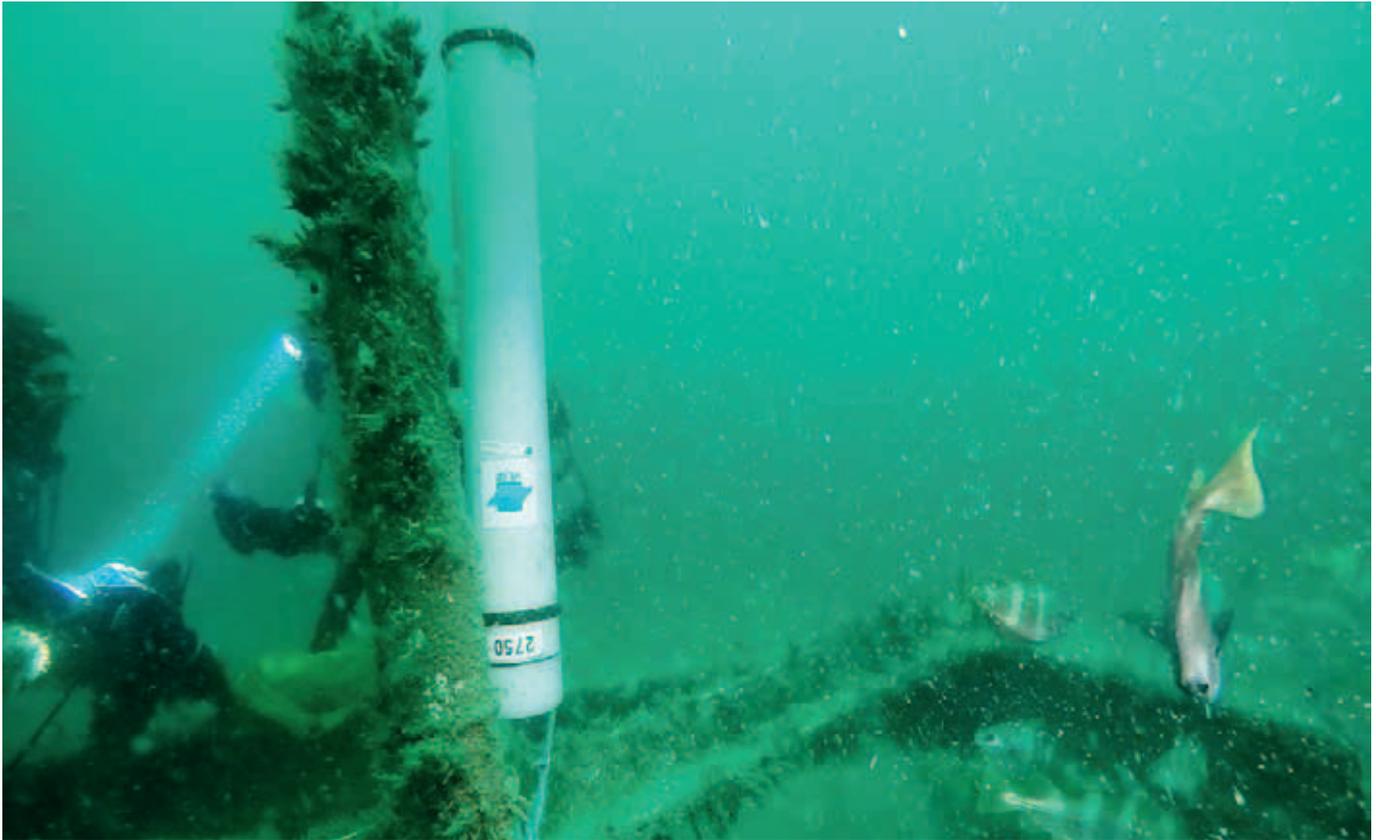
© PROVIL - Nathalie Dirckx



© Francisco Viddi

VLIZ has been recognised as a philanthropic organisation with the good cause of the sea. VLIZ's philanthropic activities include initiatives that contribute to the scientific knowledge about coastal and marine areas and help develop a worldwide interdisciplinary network of marine researchers. The financial resources for the philanthropic activities (€ 17,657) were used in 2016 to purchase research equipment for coastal management field campaigns in Chile (32%), train-

ing grants for young Kenyan researchers (27%), the operation of the beach observation network SeaWatch-B (18%) and support to the WoRMS Editors by granting a WoRMS Achievement Award (7%). This excludes fixed fundraising (12%) and administrative expenses (4%). Revenues for the VLIZ philanthropic projects were largely from membership fees (55%) but also from donations, possibly to a specific project.



© VLIZ

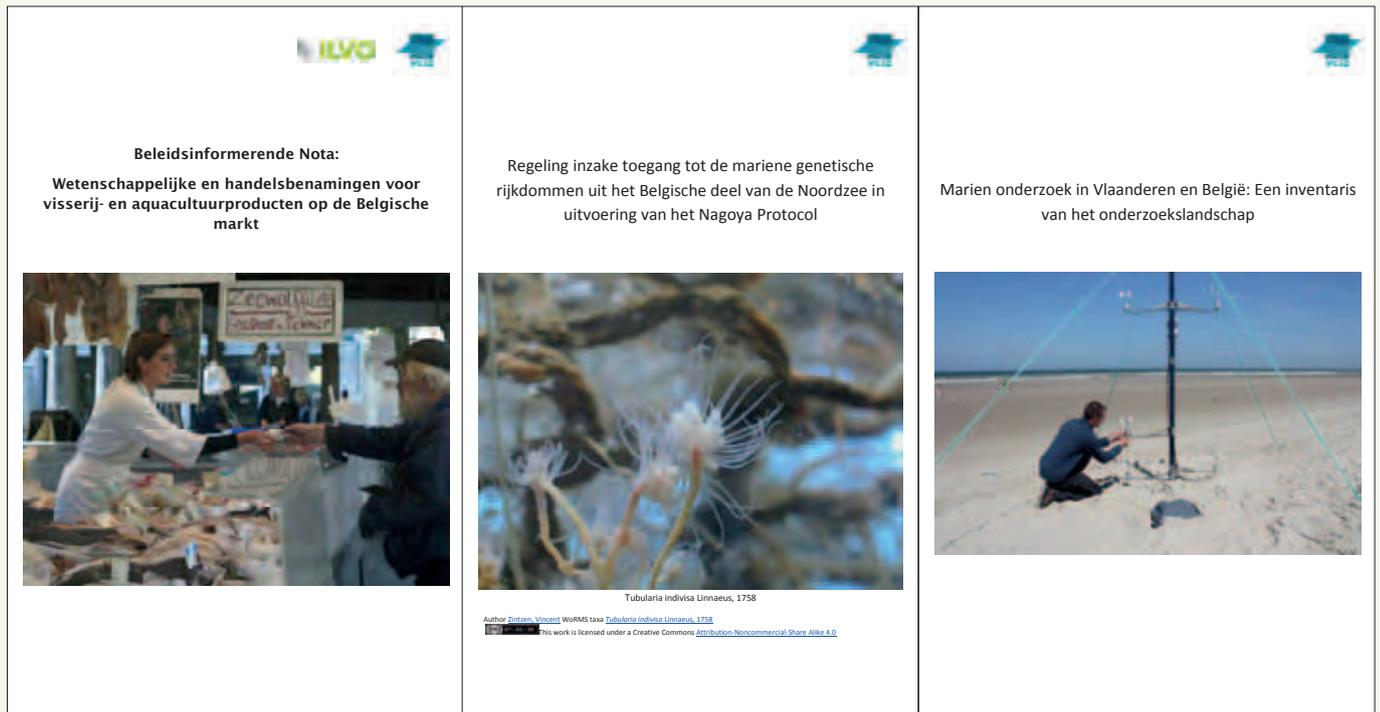
The **LifeWatch observatory** again generated a great deal of data made available to the Flemish marine research community. Existing sensor networks for tracking birds and fish were kept operational and extended. New networks such as the acoustic sensor network for the detection of porpoises (C-PODs) in the Belgian part of the North Sea were also set up (see image above). The monthly multidisciplinary sampling campaigns on board RV Simon Stevin were continued

in close cooperation with several Flemish marine research groups. Reinforced by its connection to the H2020 EGI-Engage project, supporting data systems and IT platforms which form the basis of the e-infrastructure were developed for LifeWatch. The LifeWatch Marine Virtual Research Environment, the platform for processing sensor data, and the LifeWatch Data Explorer are part of this infrastructure and are at the disposal of scientists.

Partly initiated by VLIZ, the **CREST project** is aimed at gaining a better understanding of the littoral and onshore physical processes and potential flood risks. The resilience of the Belgian coast will be assessed so as to deal with the impact of climate change in the most appropriate manner. As a project partner, VLIZ supports the project coordination, ensures the communication and assists with data management. Within this context, VLIZ has developed a data system making it possible to view and download historical (data archaeology) and recent coastal data as well as metadata. The related data archive contains open and closed data collected within the scope of the project. In addition, specific data products representing historical coastal profiles have been developed and made available online.



© VLIZ



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VLIZ provides policy-relevant information in the form of policy-informing briefs (PIBs) at the request of its target groups as well as on its own initiative. The contents of the **policy-informing briefs** are based on current scientific insights and objective information and data. VLIZ relies as much as possible on the expertise of coastal and marine scientists within the network of marine research groups in Belgium / Flanders as well as within the international network. In 2016, VLIZ published the following five Dutch-language policy informing

briefs: 'Regeling inzake toegang tot de mariene genetische rijkdommen uit het Belgische deel van de Noordzee in uitvoering van het Nagoya Protocol', 'Marien onderzoek in Vlaanderen en België: Een inventaris van het onderzoekslandschap', 'Eilanden voor de kust als kustbescherming', 'Opmerkingen op het ontwerp van het stroomgebiedsbeheersplan voor de Belgische kustwateren' and 'Wetenschappelijke en handelsbenamingen voor visserij- en aquacultuurproducten op de Belgische markt'.



In 2016, VLIZ organised a specific multidisciplinary campaign on board RV Simon Stevin and a related analysis workshop within the scope of VLIZ's participation in the **Jerico-NEXT project** which brings together coastal observatories from across Europe. Numerous scientists from Belgium, the Netherlands, France and the United Kingdom took part in these joint research activities. The flow cam, the flow cytometer (shown in the picture) and the fast repetition rate fluorometer are some of the measurement instruments purchased within the scope of the LifeWatch project and used during this campaign.

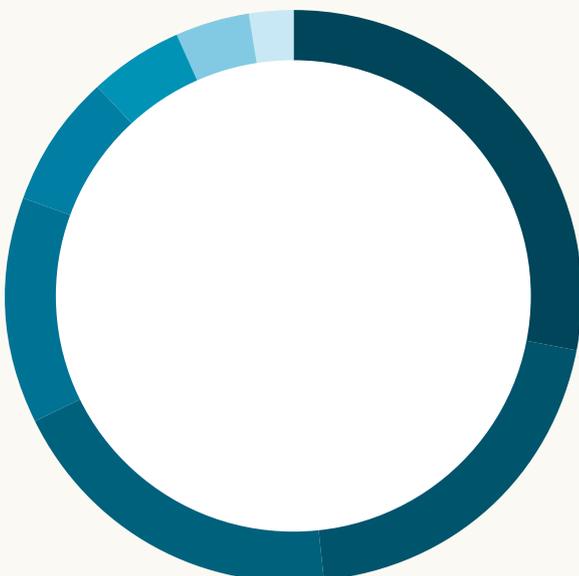
© VLIZ



© VLIZ

VLIZ manages several taxonomic, biogeographical and traits-related databases. Considerable investments were made in training experts who provide data to these databases in 2016. No fewer than 4 WoRMS-LifeWatch editor workshops were organised, with 63 editors being trained in the use of the online Aphia platform in order to

complete WoRMS and its sub-registers. In addition, over 30 providers of biogeographical data were trained in best practices to supply their data and improve the quality of the data supplied by means of the LifeWatch tools available in the LifeWatch e-Lab.



■ A1 taxonomic data systems	48
■ Other taxonomic data systems	35
■ A1 biographic data systems	33
■ Other observatory data systems	22
■ Other biographic data systems	13
■ A1 geographical data systems	9
■ A1 observatory data systems	7
■ Other geographical data systems	4

© VLIZ



© VLIZ

The various marine data systems developed by VLIZ increasingly contribute to the production of new scientific output. The above diagram indicates the number of A1 publications and non-A1 publications which made use of at least one of the VLIZ data systems (marine observatory, taxonomic databases, biogeographical databases, geographical databases) in 2016.

A total of 171 scientific publications were generated thanks to this service in 2016, including 97 articles published in A1 periodicals. The articles appeared in 65 different (leading) scientific journals, e.g. 'Trends in Ecology & Evolution', 'Nature Communications' and 'PLOS ONE'. (This number is probably an underestimation since VLIZ data systems are all too often used without any reference by the user to VLIZ.)

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

Support to international organisations

www.vliz.be/en/international-mandates



European Marine Board secretariat

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

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

Since 2007, the European Marine Board (EMB) secretariat has been located at the InnovOcean site where the 5-strong team can make use of the general VLIZ infrastructure. VLIZ employs the EMB Scientific Administrator who is responsible for the coordination and administrative tasks of the EMB secretariat. VLIZ also hosts the EMB website and provides IT support to the secretariat.

Jan Mees, General Director of VLIZ, served as chairman of the European Marine Board for the third time in a row in 2016. Jan Seys, head of the VLIZ Communication division, chaired the European Marine Board Communications Panel, a pan-European network of marine science communicators.

VLIZ and the European Marine Board worked closely together for two events in 2016.

Karmenu Vella visited the InnovOcean site in July. The highlight on page 18 describes the signature of the cooperation agreement regarding EMODnet. During this visit, the European Commissioner for the Environment, Maritime Affairs and Fisheries also attended an EMB meeting with the heads of the principal national marine research institutes.

In December, VLIZ organised the CommOCEAN 2016 conference together with the EMB and the European Marine Board Communications Panel. Read more about this topic in the highlight on page 13.



VISIT BY THE EUROPEAN COMMISSIONER Maritime Affairs and Fisheries to the European Marine Board. Left to right: Niall McDonough (EMB Executive Director), Karmenu Vella (EU Commissioner), Jan Mees (VLIZ General Director).

JPI Oceans

A MANGANESE NODULE (from the DISCOL area), one of the mineral resources relevant for deep-sea mining.

© SCHULKINOWOCHE HAMBURG – 21.-25. November 2016
Hanna Schneider / Lili Hartwig (Projektbüro Hamburg)
c/o KurzFilmAgentur Hamburg e.V.



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

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

Through its mandate from the Flemish government, VLIZ supports JPI Oceans by means of 3 staff members seconded to the JPI secretariat in Brussels. These staff members are crucial to the follow-up of JPI Oceans activities and projects, which in 2016 included projects concerning the impact of microplastics on the seas and oceans, the

ecological aspects of deep-sea mining and marine technologies. In this context, VLIZ organised a side event together with the scientists involved in the deep-sea mining project during the European Maritime Day as well as the 22nd Session of the International Seabed Authority (ISA). This side event offered the scientists the opportunity to present the latest research results and contribute to the discussion on how to protect the marine environment in the most efficient way.

The VLIZ staff also supported the organisation of the kick-off meeting of 4 transnational research projects regarding microplastics in the marine environment (BASEMAN, EPHEMARE, PLASTOX and WEATHER-MIC) at the Spanish Ministry of Economy, Industry and Competitiveness (MINECO) in Madrid.

Finally, JPI Oceans developed a new project database making the most recent information on JPI activities and their updates more visible with the support of VLIZ and within the scope of the CSA Oceans 2 project.

UNESCO/IOC Project Office for IODE

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

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

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.

Thanks to its extensive experience in providing training sessions in the 2005-2015 period, IODE was able to launch an ambitious programme in 2015 for the establishment of regional training centres (RTCs) in various regions worldwide. The regional training centre in Ostend located at the InnovOcean site will focus on Europe (and the world in general). The RTCs reinforce the Ocean Teacher Global Academy in the development of a global multilingual training network. This

development is important for the IOC member states because it helps them achieve the sustainable development objectives. The activities of the IOC Project Office for IODE were primarily aimed in 2016 at extending the RTC network.

The IOC Project Office for IODE currently coordinates the IOC's capacity development programme.

Since 2012, the IOC Project Office for IODE has accommodated the secretariat of the Ocean Biogeographic Information System (OBIS). OBIS builds and maintains a worldwide database containing data on the distribution, abundance and diversity of all marine species. The OBIS secretariat also provides training courses and technical assistance to the data providers and the OBIS nodes. In addition, the secretariat offers guidance for the development of new data standards and technical processes as well as the promotion of international partnerships.

VLIZ manages the European OBIS node and is the largest contributor of data to OBIS. The VLIZ data centre is actively involved in the OBIS activities such as the provision of training courses, the development of data standards, taxonomic quality controls (through WoRMS) and metadata management (through IMIS). VLIZ also makes a server room available to the OBIS database and handles IPT requests from other OBIS nodes. The VLIZ library serves as a repository for all publications citing OBIS.



THE IOC PROJECT OFFICE FOR IODE and VLIZ regularly collaborate in the organisation of training courses relating to the Ocean Biogeographic Information System.

© IOC Project Office for IODE

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

Key Performance Indicators



KPIs are criteria to evaluate the operation of VLIZ. This infographic provides an overview of the KPIs. All details are available in the Digital Annex on pages 15 to 20.

NEW REFERENCES ADDED TO THE OPEN MARINE ARCHIVE



2,805

A total of 2,805 new references were added to the Open Marine Archive in 2016. These references included 1,616 A1 articles, 10 theses and 1,179 reports, books and other publications.



SAILING DAYS SPENT ON SCIENTIFIC RESEARCH

251

RV SIMON STEVIN



184

OTHER VESSELS



46

RIB ZEEKAT



18

ROV GENESIS



3

● DE GROTE REDE



3 issues of the “De Grote Rede” magazine were published

● VLIZINE



12 issues of the electronic newsletter ‘VLIZINE’ were published

● WWW.VLIZ.BE



798,962

A total of 798,962 unique visitors consulted VLIZ’s informative websites with the URL www.vliz.be

● TEACHERS AND EDUCATORS

9

initiatives for teachers and other educators were (co-)organised



● TEACHING PACKAGES



2

educational teaching packages and three practical exercises on the sea and coast were developed

Annexes

3 VLIZ ORGANISATION

11 FINANCIAL STATEMENT

13 KEY PERFORMANCE INDICATORS

21 OTHER INDICATORS

37 NATIONAL AND INTERNATIONAL NETWORKS

39 EXTERNAL FINANCING PROJECTS

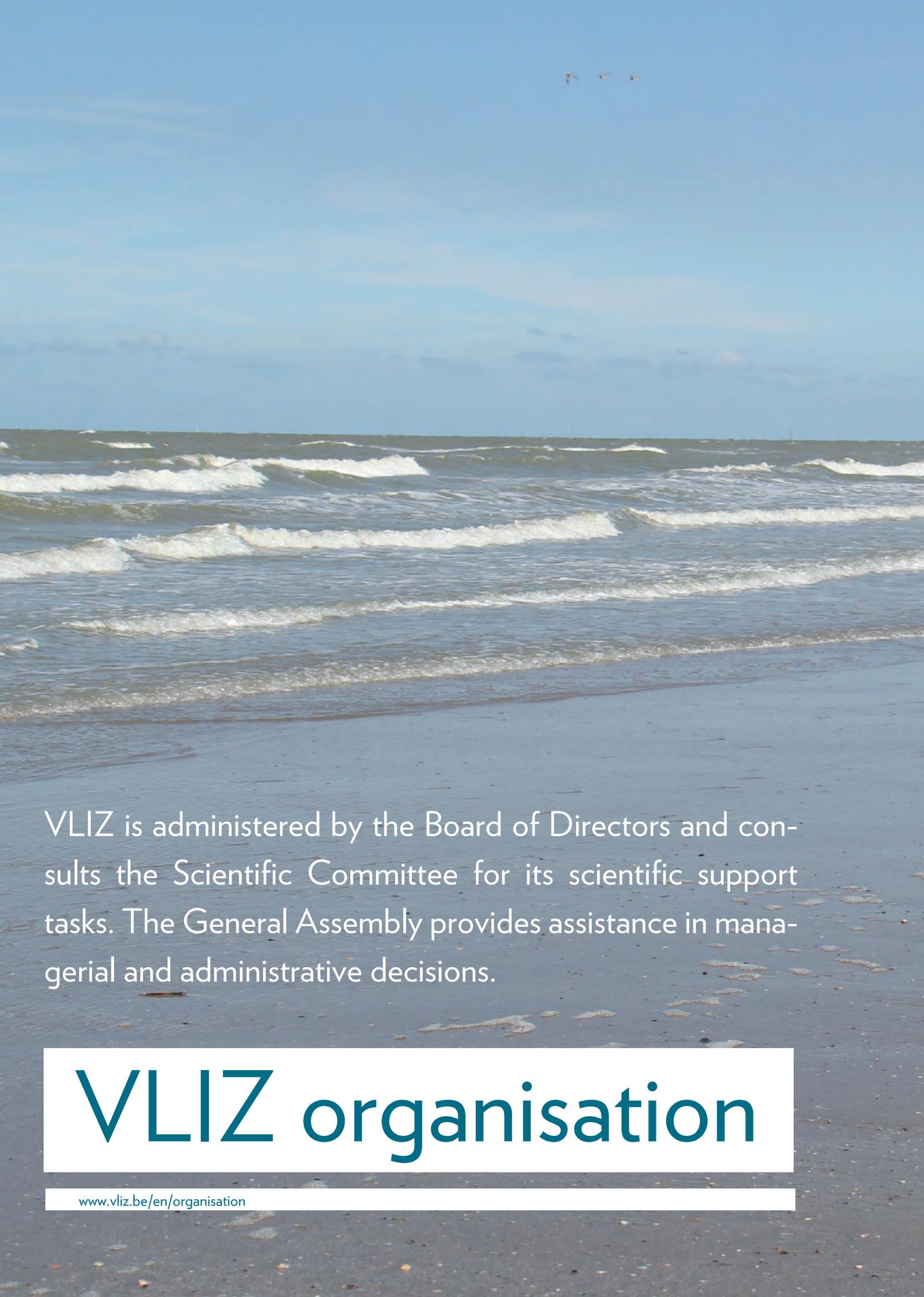
47 SCIENTIFIC EQUIPMENT AND INFRASTRUCTURE

49 2016 EVENTS

52 2016 PUBLICATIONS







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

VLIZ organisation

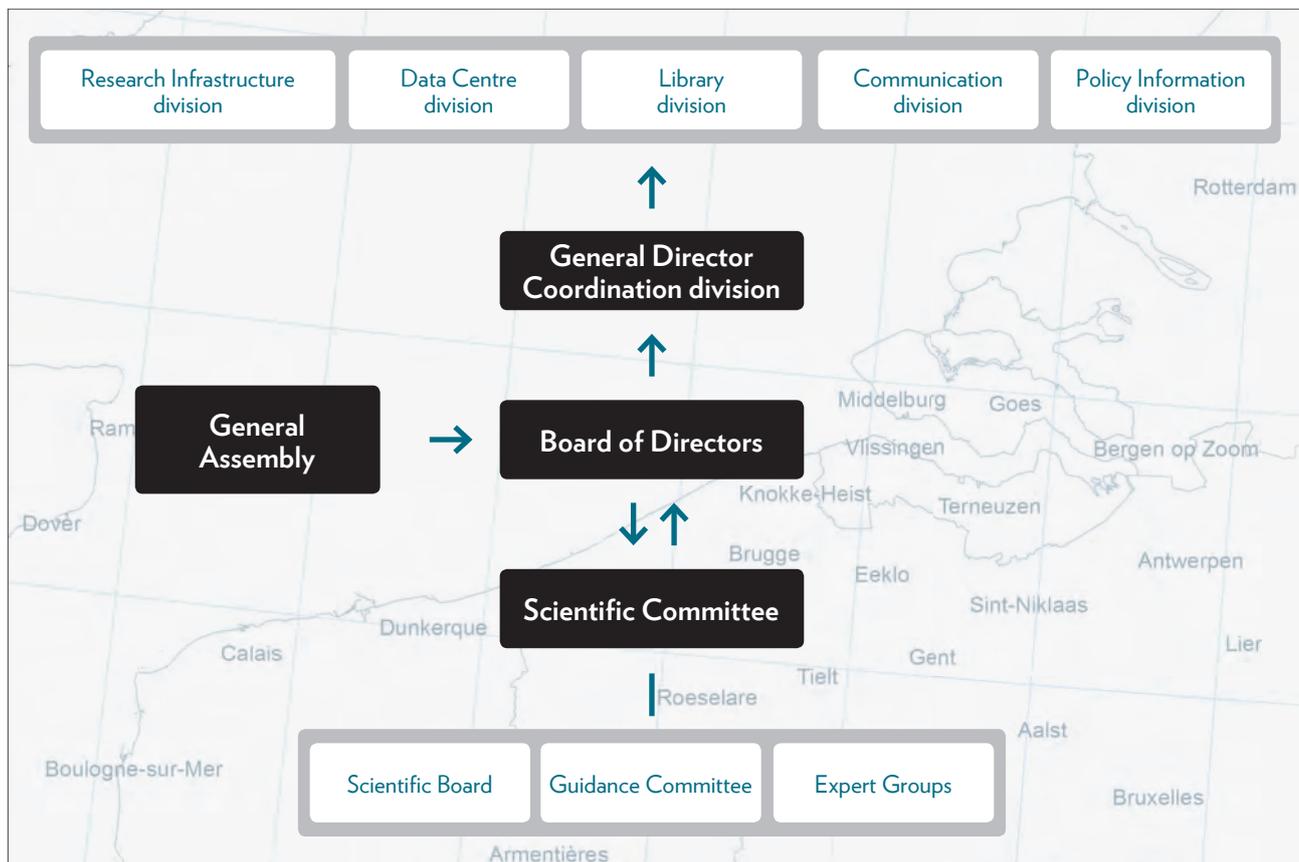
www.vliz.be/en/organisation



VLIZ organisation

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

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



Composition of the Board of Directors

at the end of 2016

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

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

Eight members were nominated by the Flemish government:

- Colin Janssen, Ghent University, vice-chairman
- Paul Breyne, honorary governor
- Nathalie Balcaen, cabinet of Flemish Minister for Mobility and Public Works
- Jean Berlamont, Katholieke Universiteit Leuven
- Ilse Hoet, Department of Mobility and Public Works
- Romina Vanhooren, cabinet of the state secretary for the North Sea
- Ann Vanreusel, Ghent University
- Hendrik Wallijn, chairman of N-VA Oostende

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

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

The three other members are:

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

The government commissioners are:

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

Attend the meetings:

- Gert Verreet, Department of Economy, Science and Innovation
- Patrick Braet, province of West Flanders, financial manager
- Jan Mees, General Director of VLIZ
- Tina Mertens, VLIZ Assistant Director
- Heidi Coussens, VLIZ executive secretary and rapporteur

Composition of the General Assembly

at the end of 2016

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

The ten voting members appointed by the Flemish Community are:

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

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

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

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

- Jurgen Tack, secretary general of the Research Foundation – Flanders

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

Scientific Board

at the end of 2016

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

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

- Colin Janssen

Two delegates from Ghent University:

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

Two delegates from Katholieke Universiteit Leuven:

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

Two delegates from Vrije Universiteit Brussel:

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

Two delegates from the University of Antwerp:

- Patrick Meire (substitute: Gudrun De Boeck)
- Ronny Blust (substitute: Stijn Temmerman)

One delegate from Hasselt University:

- Tom Artois (substitute: Natalie Beenaerts)

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

- Hans Polet (substitute: Bart Sonck)

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

- Maurice Hoffmann (substitute: Eric Stienen)

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

- Roger Dijkmans (substitute: Bart Deronde)

One delegate from the Flemish Environment Agency (VMM):

- Steven Vinckier (substitute: Marleen Van Steertegem)

One delegate from the Flanders Heritage Agency:

- Marnix Pieters (substitute: Tom Lenaerts)

One delegate from Flanders Hydraulics Research:

- Frank Mostaert (substitute: Toon Verwaest)

Attend the meetings:

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

- Jan Mees
- Tina Mertens
- Jan Seys (substitute: Nancy Fockedeey)

A delegate from the Department of Economy, Science and Innovation:

- Gert Verreet



Balance Sheet and Income Statement

December 2016

BALANCE ON 31 DECEMBER 2016 (kEUR)

Assets	31-12-2015	31-12-2016
Intangible fixed assets	7.44	1.38
Tangible fixed assets	5,236.96	5,295.6
Financial fixed assets	0	4.15
Amounts receivable within one year	1,376.32	1,290.74
Cash investments	260.28	260.78
Liquid assets	1,082.08	1,122.78
Deferred charges and accrued income	0	0
Total	7,963.08	7,975.43
Liabilities		
Allocated funds	375	475
Profit and losses brought forward	972.63	1,370.28
Capital grants	4,613.62	4,693.77
Provisions for liabilities and charges	0	0
Amounts payable after one year	0	0
Amounts payable within one year	2,001.83	1,436.38
Deferred charges and accrued income	0	0
Total	7,963.08	7,975.43

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 2016 (art. 11 § 3 of the covenant).

Budgetary deviations from the 2016 budget (art. 11 § 3 of the covenant): none.

BALANCE ON 31 DECEMBER 2016 (kEUR)

Income	31-12-2015	31-12-2016
Operating income	7,489.32	8,683.74
Financial income	705.20	832.97
Exceptional income	6.84	0.4
Total	8,201.36	9,517.11
Costs		
Remuneration and social security	4,554.91	4,816.82
Services and other goods	1,966.12	1,738.99
Provisions for liabilities and charges	-169	0
Depreciation	871.92	942.04
Financial expenses	17.76	18.93
Other operating expenses	1,328.73	1,502.59
Exceptional expenses	0	0,09
Total	8,570.44	9,019.46
Income		
Result for the financial year	-369.08	497.65
Transfer to allocated funds	0.00	100.00
Profit brought forward as of 31/12	972.63	1,370.28

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

Key Performance Indicators

© VLIZ



KPI 1

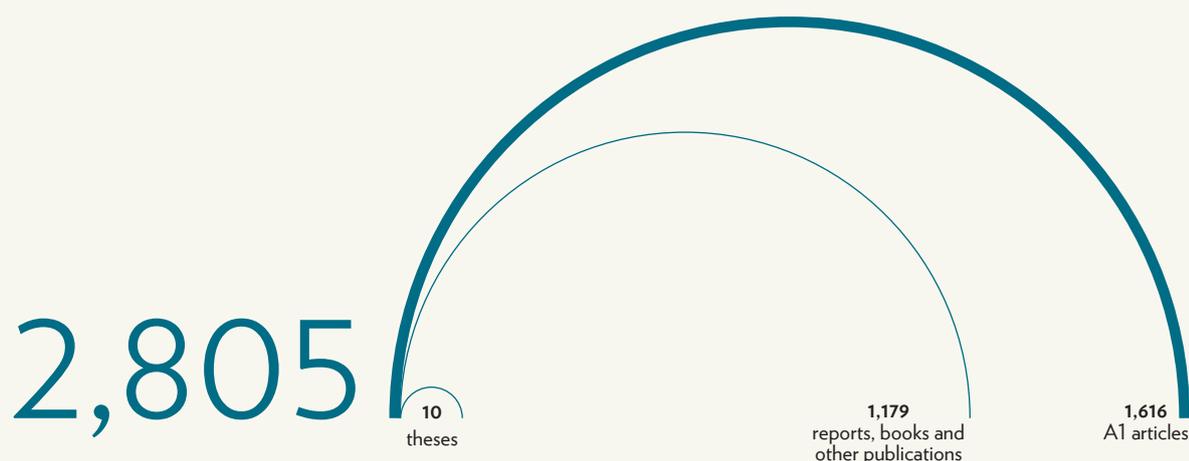
Increase in data volume of the Open Marine Archive for Flanders (articles, reports and theses) of 1,000 units a year.

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

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

A total of 2,805 new references were added to the Open Marine Archive in 2016. These references included 1,616 A1 articles, 10 theses and 1,179 reports, books and other publications.

NEW REFERENCES ADDED TO THE OPEN MARINE ARCHIVE



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

KPI 2

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

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

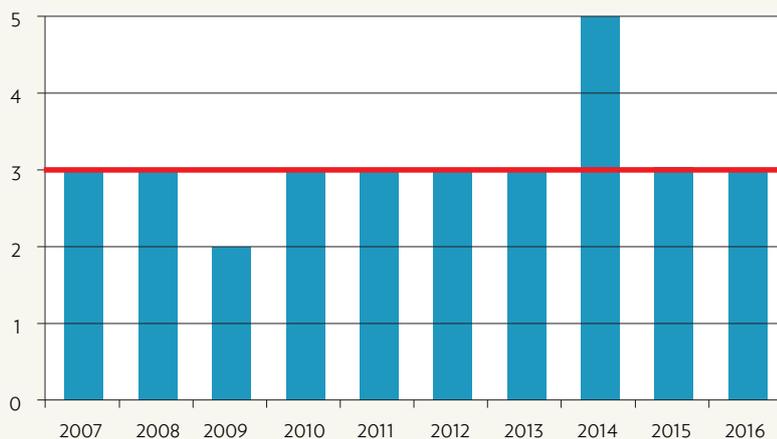
VLIZINE provides practical information on research and policy supplied by and intended for Flemish marine scientists. It also includes announcements of new projects and publications, events, doctorates, vacancies and fairs as well as interesting scientific facts on our coast, seas and oceans. A total of 12 issues of VLIZINE reaching 1,230 subscribers appeared in 2016.

'De Grote Rede' is the information magazine on the coast and sea for the Flemish region and surrounding area. With three leading articles and nine standard features, 'De Grote Rede' provides its readers with a varied and objective outlook on current knowledge about the coast, sea and ocean as well as an explanation of the conducted research and pursued policy. VLIZ published 3 issues of De Grote Rede and sent these to 8,027 subscribers in 2016.

NUMBER OF ISSUES OF VLIZINE



NUMBER OF ISSUES OF 'DE GROTE REDE'



KPI 3

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

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

VLIZ has three vessels at its disposal for scientific research: RV Simon Stevin, RIB Zeekat and ROV Genesis. If need be, other vessels, e.g. from the Flemish fleet, can be deployed for research and monitoring activities in the Scheldt estuary. The vessels Scaldis I, Pierre Petit and Parel II were used for this purpose in 2016.

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

ROV Genesis is an unmanned underwater vehicle deployed nationally and internationally from research vessels.

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

VLIZ coordinated a total of 241 actual scientific days at sea in the calendar year 2016, including 184 with RV Simon Stevin, 18 with RIB Zeekat, 3 with ROV Genesis and 46 with other vessels from VLOOT dab and the Maritime Access division. Research vessel Simon Stevin was deployed for 1,766 hours in 2016 for sampling in the Belgian coastal waters and the Scheldt estuary.

NUMBER OF DAYS AT SEA

Vessels	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
RV Simon Stevin						100	147	183	176	184
RV Zeeleeuw	150	162	166	151	152	57				
RIB Zeekat	51	39	32	57	40	37	5	17	21	18
ROV Genesis						6	26	20	4	3
Third-party vessels	38	37	36	84	73	110	42	48	52	46
Total	239	238	234	292	265	310	220	268	253	251

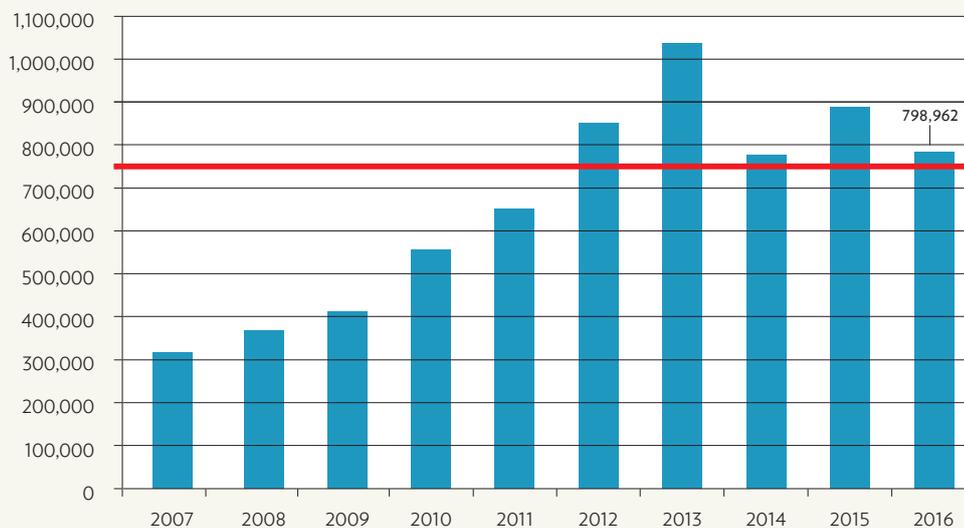
KPI 4

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

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

A total of 798,962 unique visitors consulted VLIZ's informative websites with the URL www.vliz.be in 2016. The most consulted pages were the VLIZ homepage, the IMIS database, the catalogue of the VLIZ library, the VLIZ photo gallery (incl. sea fisheries, Wetenschatten, VLIZ events) and the sailing schedule of RV Simon Stevin (MIDAS).

UNIQUE VISITORS TO THE VLIZ WEBSITES



KPI 5

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

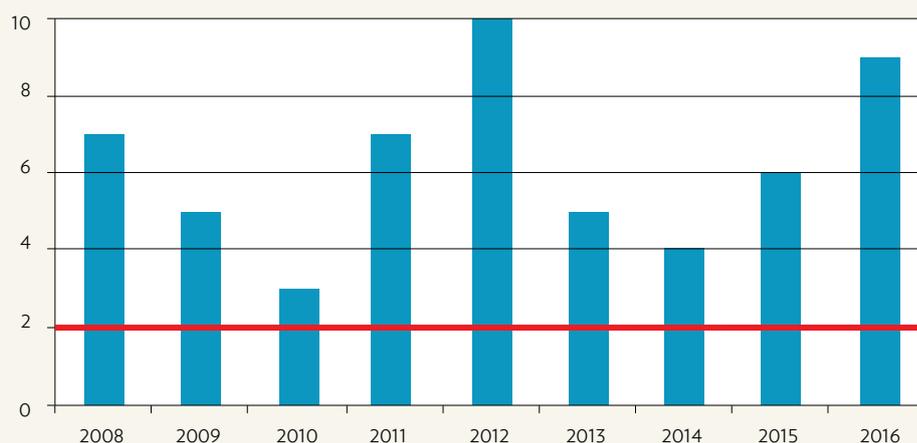
Since 2007, VLIZ has placed a special focus on schools and other educational institutes by means of a Structural Partnership with the Flemish Government. Generally educational products such as practical exercises, posters, images, photo and film galleries as well as thematically arranged marine scientific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

VLIZ (co)organised 9 initiatives for teachers and other educators in 2016.

INITIATIVES FOR TEACHERS AND OTHER EDUCATORS IN 2016

		LOCATION	ORGANISATION
12.05.2016	Workshop for secondary education natural science teacher training (BSc) at Karel De Grote University College, Antwerp	Station marine de Wimereux (FR)	VLIZ
04.06.2016	Workshop for Vereniging Leraren Biologie (biology teachers association)	InnovOcean site, Ostend	VLIZ
29.06.2016	Educational excursion for guides	Excursion at sea on board Simon Stevin	
13.09.2016	6 workshops within the scope of Science@Sea	Sint-Franciscus Instituut Evergem	VLIZ
04.10.2016	EMSEA16: European Marine Science Educators Association Conference	Titanic, Belfast (UK)	Co-organised
14.10.2016	Professional development day at Maritiem Instituut Mercator, Ostend	ILVO and InnovOcean site, Ostend	EMSEA (in which VLIZ actively participates)
26.10.2016	Fishing education, environment and sustainability consultation workshop	InnovOcean site, Ostend	Co-organised by VLIZ
16.11.2016	6 workshops within the scope of PlaneetZee@Work	University of Antwerp, excursion at sea on board Simon Stevin	Organised by VLIZ
17.12.2016	Coastal guide seminar	CC Casino Koksijde	Co-organised

INITIATIVES FOR TEACHERS AND OTHER EDUCATORS



KPI 6

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

In 2016, VLIZ developed 2 educational teaching packages on the sea and coast as well as 3 practical exercises. The learning modules, based on the final attainment levels for the second and third cycle of secondary education, are available on the digital learning platform Planeet Zee (www.planeetzee.be/lesmodules). The practical exercises can be carried out during science classes and can be consulted on the VLIZ website (www.vliz.be/en/exercises). Within the scope of the European Sea Change project, an English-language teaching package has been developed (https://platform.europeanmoocs.eu/course_from_abc_to_abseas_ocean_liter).

Planeet Zee learning module:

- Wind and ocean currents

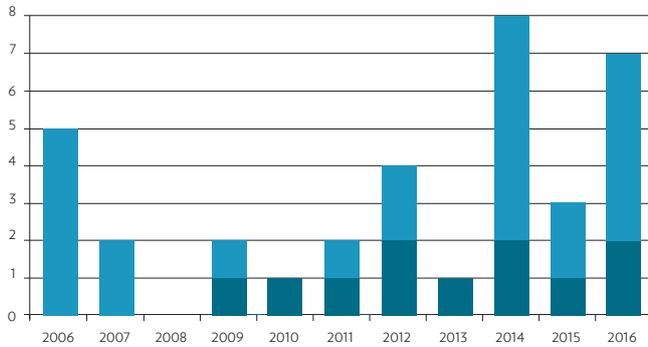
Practical exercises:

- Cooking with algae
- Visit to the supermarket: products and substances from the sea
- Monitoring an unmanned miniature sailing boat: processing GPS data

Other indicators

Coordination division

AGREEMENTS WITH MARINE RESEARCH GROUPS

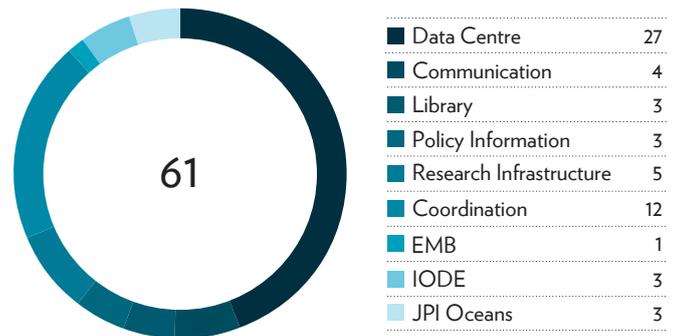


■ Number of national cooperation agreements: 5
 ■ Number of international cooperation agreements: 2
 1 national agreement was terminated. Total: 34

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

Figures for the majority of indicators date back to the start-up year of VLIZ (1999). However, to promote readability of the diagrams, the choice was made to begin the time series in 2006. For figures prior to 2006, please consult the 2015 Annual Report on www.vliz.be/en/vliz-annual-report.

PERFORMANCE INTERVIEWS



2016 ENVIRONMENTAL INDICATORS

PAPER CONSUMPTION

1.08

Number of packs of paper per staff member
 Equal to 2015 (1.08)

TONER CONSUMPTION

0.79

Number of toners for printers and photocopiers
 used per staff member
 A decrease compared to 2015 (0.85)

GAS, WATER & ELECTRICITY CONSUMPTION



44,112 m³



194,546 kWh



651 m³

Values in 2015: gas 38,452 m³, electricity 171,909 kWh, water 573 m³

COMMUTING

€57,341

Train, tram and bicycle allowances refunded to employees
 A decrease compared to 2015 (60,029 EUR)

NUMBER OF KILOMETRES OF VLIZ CARS AT THE END OF 2016

FIAT DOBLO

113,421 137,689

NISSAN NAVARA

98,569

103,850

FIAT SCUDO

51,880

62,768

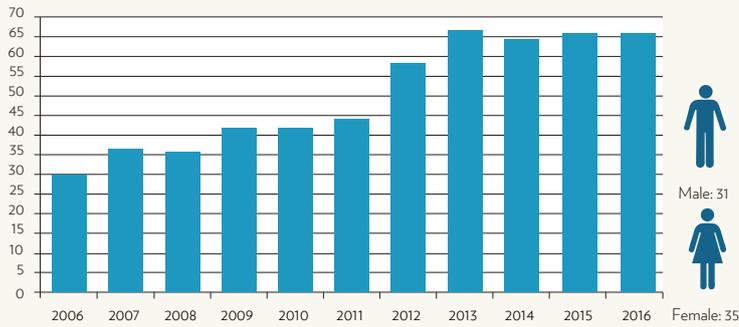
0 30,000 60,000 90,000 120,000 150,000

■ The number of kilometres driven up to the end of 2016

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

2016 SOCIAL INDICATORS

NUMBER OF STAFF



FOREIGN ORIGIN

2

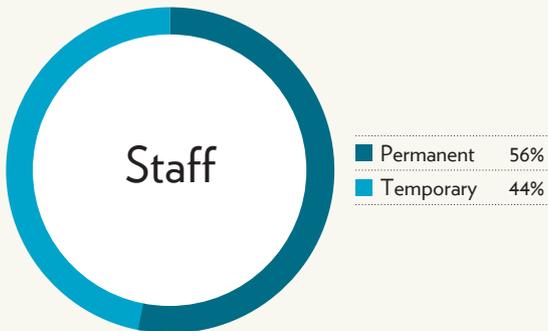
Number of people of foreign origin*
* Source: Wikipedia (Flemish perspective): any person living in the Flemish or Brussels Region, of whom at least one grandparent was born outside the European Union – excluding other Western and Northern European states, the US and Canada.

EMPLOYMENT DISABILITY

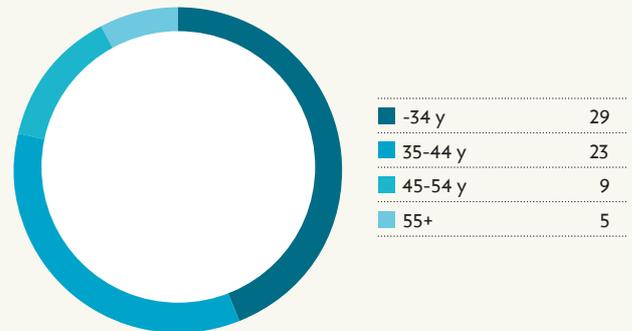
1

Number of people with an employment disability

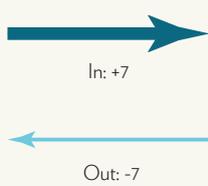
PERMANENT & TEMPORARY STAFF



AGE OF EMPLOYEES



STAFF TURNOVER



Compared to 2015: +9 in and -4 out.

LEAVE ETC.

26%

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

Equal to 2015 (26%)

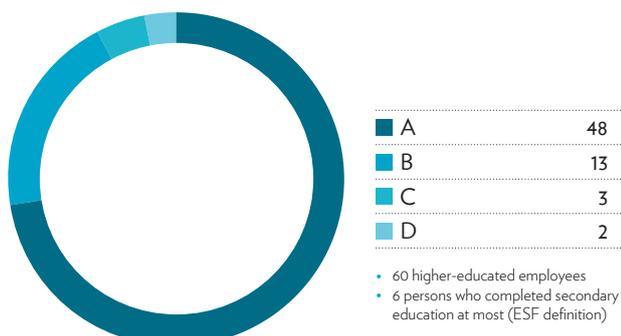
SICKNESS ABSENCE

2,30%

Aantal dagen dat het personeel zich ziek gemeld heeft t.o.v. het totaal aantal te presteren dagen

A decrease compared to 2015 (2,7%)

LEVEL OF EDUCATION



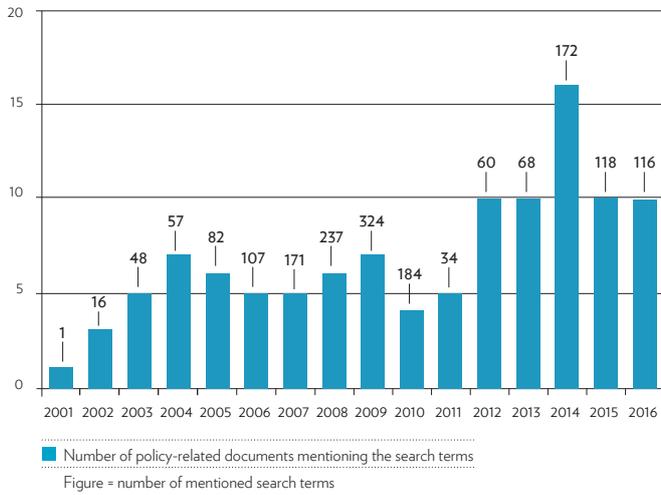
TRAINING COURSES

125

Total number of training days taken by staff

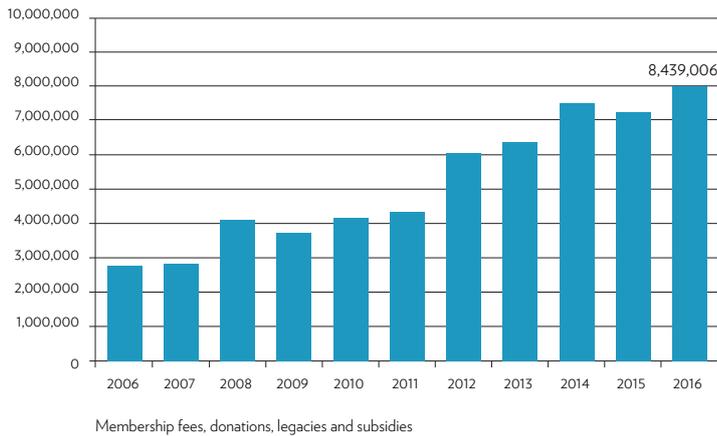
An increase compared to 2015 (25)

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

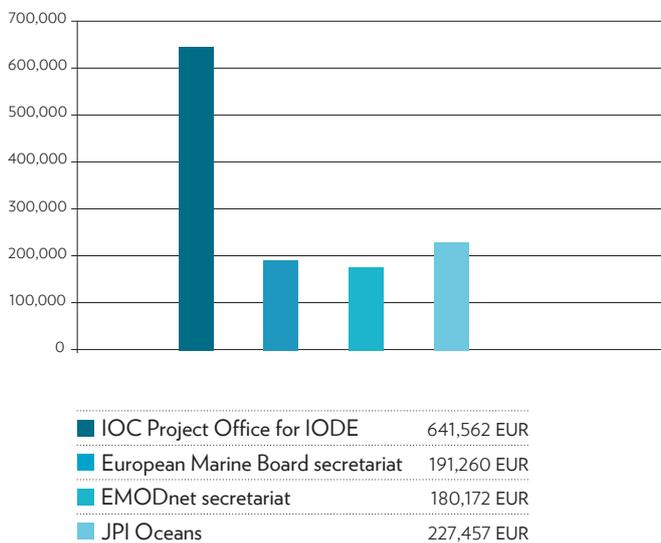


Note: the counts include searches of policy papers (ministers/state secretaries competent for the North Sea, science and innovation, the environment and climate), policy briefs, coalition agreements (Flemish/federal), press releases, ministerial letters, inaugural speeches, policy plans as to science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

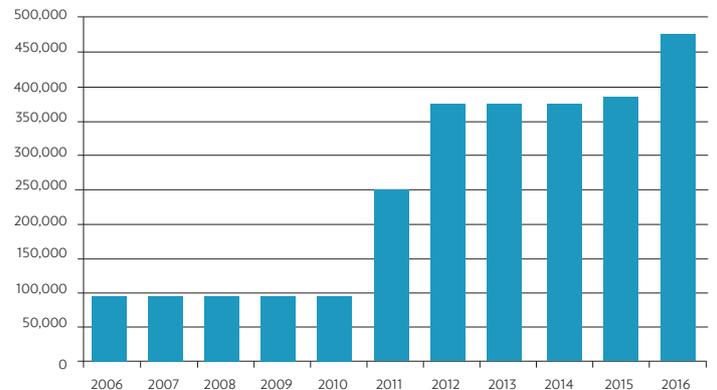
OMZET VLIZ (in euro)



TURNOVER OF OTHER PARTNERS IN 2016 (in euro)

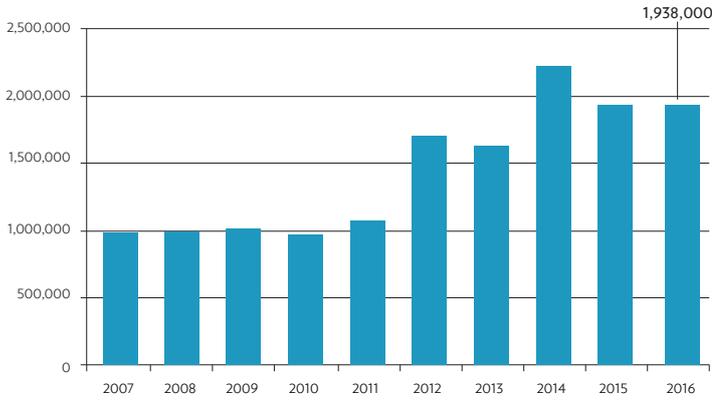


SOCIAL LIABILITIES (in euro)



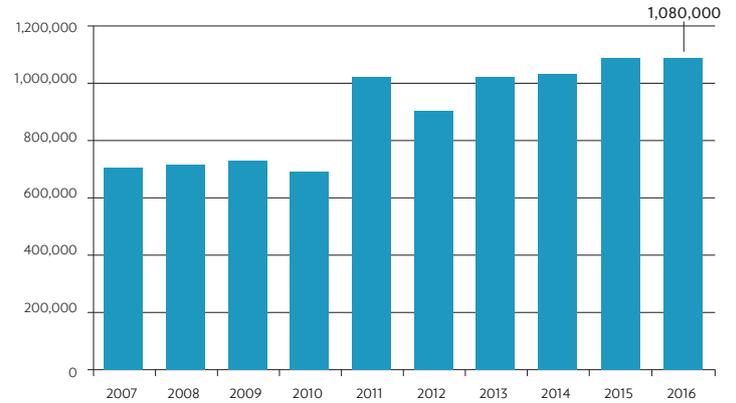
OVERVIEW OF SUBSIDIES

ACTIVITIES OF FLEMISH GOVERNMENT (in euro)



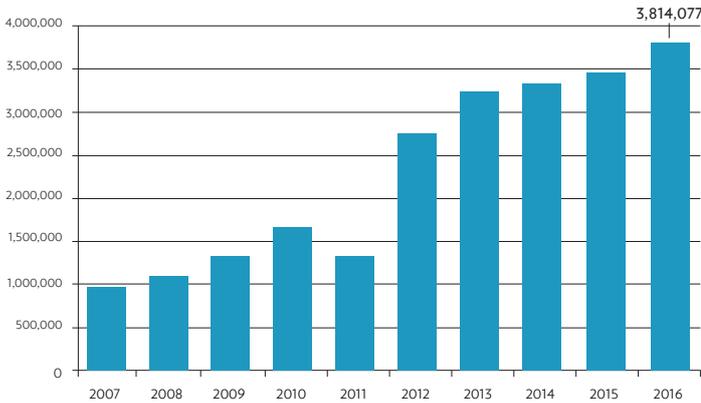
INTERNATIONAL SUBSIDIES

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

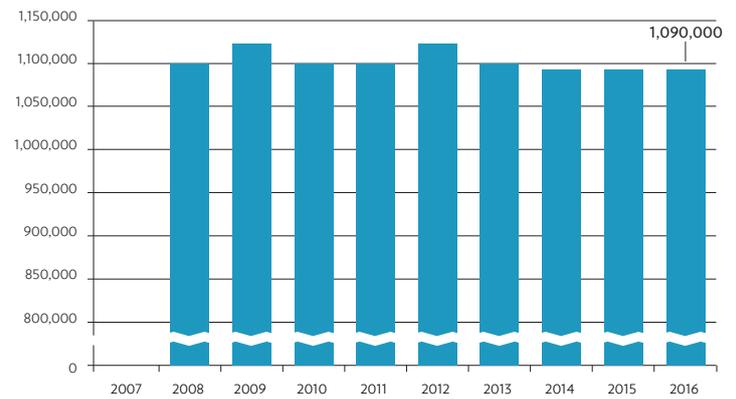


EXTERNAL FUNDING

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

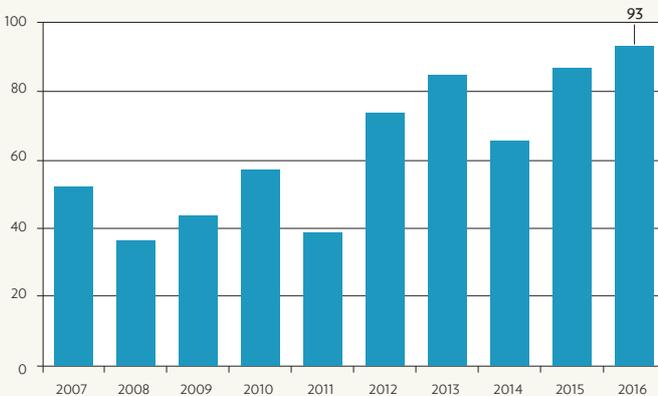


INVESTMENT SUBSIDY FLEMISH GOVERNMENT (in euro)



EXTERNAL FUNDING VERSUS OTHER FUNDING

(in %)



● TRAINEES AND THESIS STUDENTS SUPERVISED BY VLIZ IN 2016

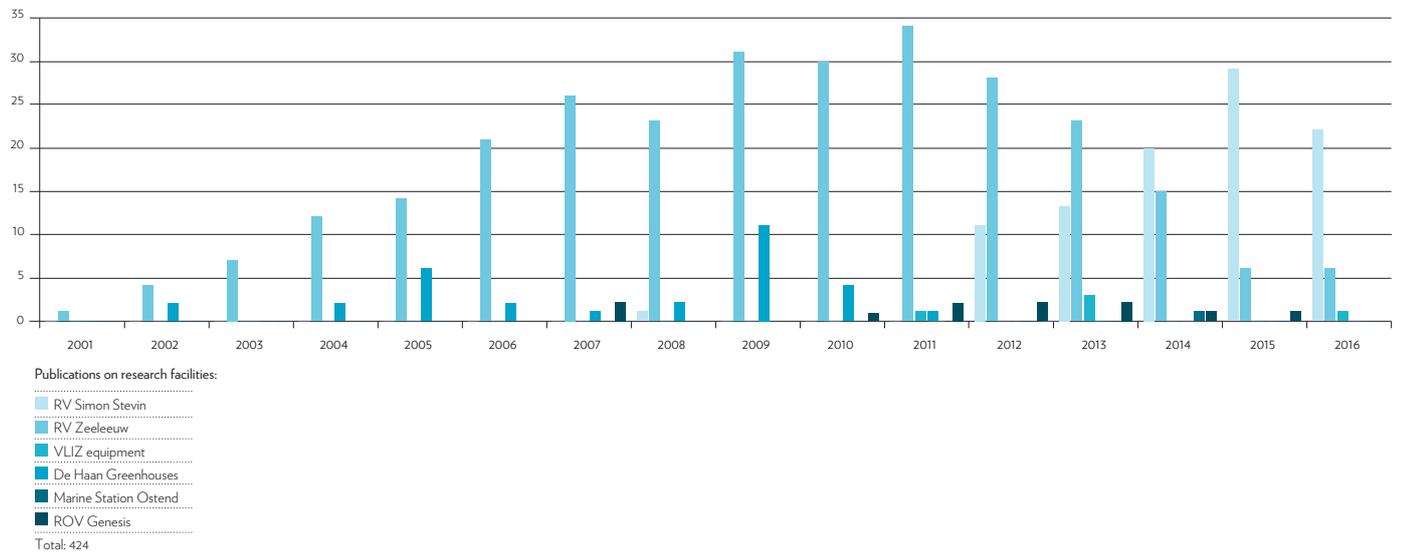
Bos Kiona	LTI Oedelem	Infrastructure trainee
Cuyt Frederik	Ghent University	Policy Information trainee
DeCock Eva	Ghent University	Policy Information trainee
De Maeyer Lotte	Ghent University	Policy Information trainee
Deruwe Willemijn	LTI Oedelem	Infrastructure trainee
Desender Niek	Artevelde University College Ghent	Communication trainee
Lloyd P. Bretana Bryan	Ghent University	Data Centre trainee
Lucky Sitorus	Ca' Foscari University of Venice (IT)	JPI Oceans trainee
Ravaka Rakotondrazafy Sariaka	Ghent University	Data Centre trainee
Saelens Pauline	University of Leuven	Policy Information trainee
Seyed Reza Nademi	Vesaliusinstituut Oostende	Data Centre trainee
Simons Eline	PIBO Tongeren	Communication trainee
van den Hoed Bianca	VHL University of Applied Sciences (NL)	Policy Information trainee
Van Malder Natascha	Ghent University	Data Centre trainee
Vernhout Gerben	VHL University of Applied Sciences (NL)	Policy Information trainee

● STUDENT EMPLOYEES ACTIVE AT VLIZ IN 2016

Andries Lotje	Demuyck Jozefien	Mees Temesgen	Van Massehove Janus
Bouwens Jan	Demuyck Pieter	Melger Hanneke	Van Peteghem Lotte
Boyen Jens	Denecker Steffi	Meyers Nelle	Vanlerberghe Karolien
Branwen Peddi	Fabrice Aäron	Pissierssens Jeffrey	Vanoverbeke Brecht
De Blick Yves	Hernandez Lucas Lisa	Seghers Stephie	Verheyden Dorothy
de Lichtervelde Astrid	Hernandez Samuel	Souza Dias Vasco	Vermeiren Serge
De Wulf Leontien	Koedooder Coco	Steenkiste Gregory	Versteeg Jeroen
Decock Elien	Lescroart Jonas	Top Sara	Willemse Stijn
Decock Siel	Mees Meskerem	Van Damme Anouk	Wittoeck Janne

Research Infrastructure division

NUMBER OF PUBLICATIONS ON VLIZ RESEARCH FACILITIES



SCIENTIFIC PROJECTS

162



Number of scientific projects which have made use of
RV Simon Stevin / RV Zeeleeuw sinds 1999.
In 2016: 36 projects

RESEARCH PROJECTS WHICH MADE USE OF RV SIMON STEVIN IN 2016

MARINE RESEARCH GROUP	PROJECT	# OF DAYS AT SEA
FPS Economy – Continental Shelf Service	Monitoring in the Belgian part of the North Sea	4
FPS Economy – Continental Shelf Service	NewSteps	1
FPS Economy – Continental Shelf Service	Monitoring of sand and gravel extraction	11
ILVO - Fisheries	Species separation in beam-trawl fishing (TechVis)	5
ILVO - Fisheries	Demersal Young Fish Survey (DYFS)	7
ILVO - Fisheries	DISCAV	2
ILVO - Fisheries	Impact of piling on cod	8
ILVO - Fisheries	CleanSea	2
ILVO - Fisheries	GA Genomics	2
ILVO - Fisheries	Impact of dredge spoil disposal on soil organisms	2
ILVO - Fisheries	Flatfish survival	5
INBO	Monitoring of seabirds	9
Marine Component	NATO ST Bio-database	2
Directorate Natural Environment	INDI67	9
Directorate Natural Environment	Face-It	14
UA	EPHEMARE	2
Ghent University – RCMG & Flanders Heritage Agency	SeArch: archaeological heritage in the North Sea	17
Ghent University – Marine Biology & ILVO & Directorate Natural Environment	WINMON: Monitoring of wind turbines	11
Ghent University - Marine Biology	Migration of cod	17
Ghent University - Marine Biology	Fish migrations in coastal areas	2
Ghent University - Marine Biology	Biodiversity patterns of zooplankton	2
Ghent University - Marine Biology	Variability in the benthopelagic coupling	4
Ghent University - Marine Biology	Modelling of Biogeochemical Cycling	2
Ghent University – GhEnToxLab	eDNA	23
Ghent University - PAE	LifeWatch microbial foodweb	25
Ghent University – GhEnToxLab	Global change impact on copepods	14
Ghent University – Morphology & ILVO	Skin ulcers in fish	12
ULg	DMS	24
VLIZ	LIVIS – Recreational fishing observations	12
VLIZ	LifeWatch measurement campaigns	24
VLIZ	PlaneetZee@Work	7
VLIZ	Multibeam survey	9
VLIZ	ICOS – pCO ₂ measurements	2
VLIZ	Week of the Sea	4
VLIZ	JERICO-NEXT	2
VUB	Fate of CH ₄ in North Sea & Western Scheldt	3

OVERVIEW OF MARINE SCIENTIFIC PROJECTS WHICH MADE USE OF MARINE STATION OSTEND IN 2016

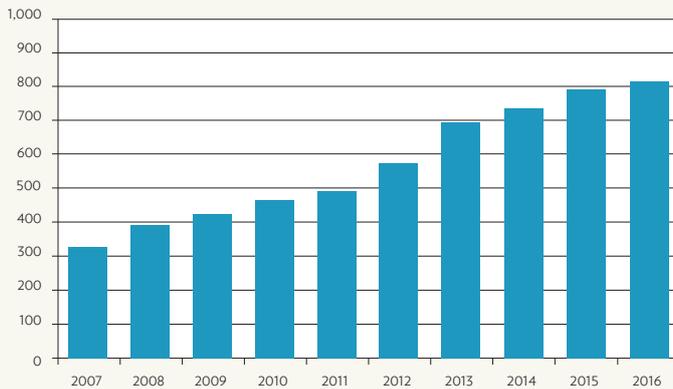
MSO INFRASTRUCTURE USED	REASON	MARINE RESEARCH GROUP
Shed 3	SeArch: borings on the beach at Halve Maan	Flanders Heritage Agency
Shed 1	Conservation canon	Flanders Heritage Agency
Water tanks for marine organisms	Dab quarantine	Ghent University – Morphology
Molecular lab	eDNA research	Ghent University – GhEnToxLab
Core repository	Analysis or collection of drill cores	Ghent University – RCMG
Shed 2 – Lab	SeaWatch-B	VLIZ
Zooscan	Zooplankton analysis	Ghent University - Marine Biology
Water tanks for marine organisms	Cod quarantine	ILVO
Core repository	Analysis or collection of drill cores	DEME
Shed 2 – Lab	LifeWatch macrobenthos analysis	VLIZ
Shed 4	Storage of shorebird research material	INBO
Shed 3 & 4	Innomar Survey Raversijde	Ghent University – RCMG

Use of Marine Station Ostend for marine scientific projects, educational purposes, visits, monitoring network and open house days: 134 days in 2016.

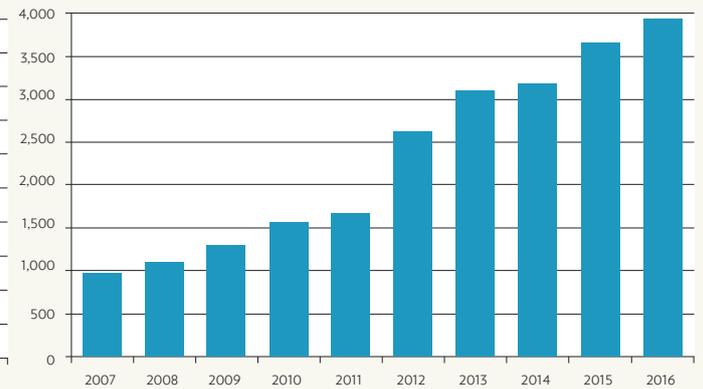
Data Centre division

ARCHIVED AND DISCLOSED DATA SETS

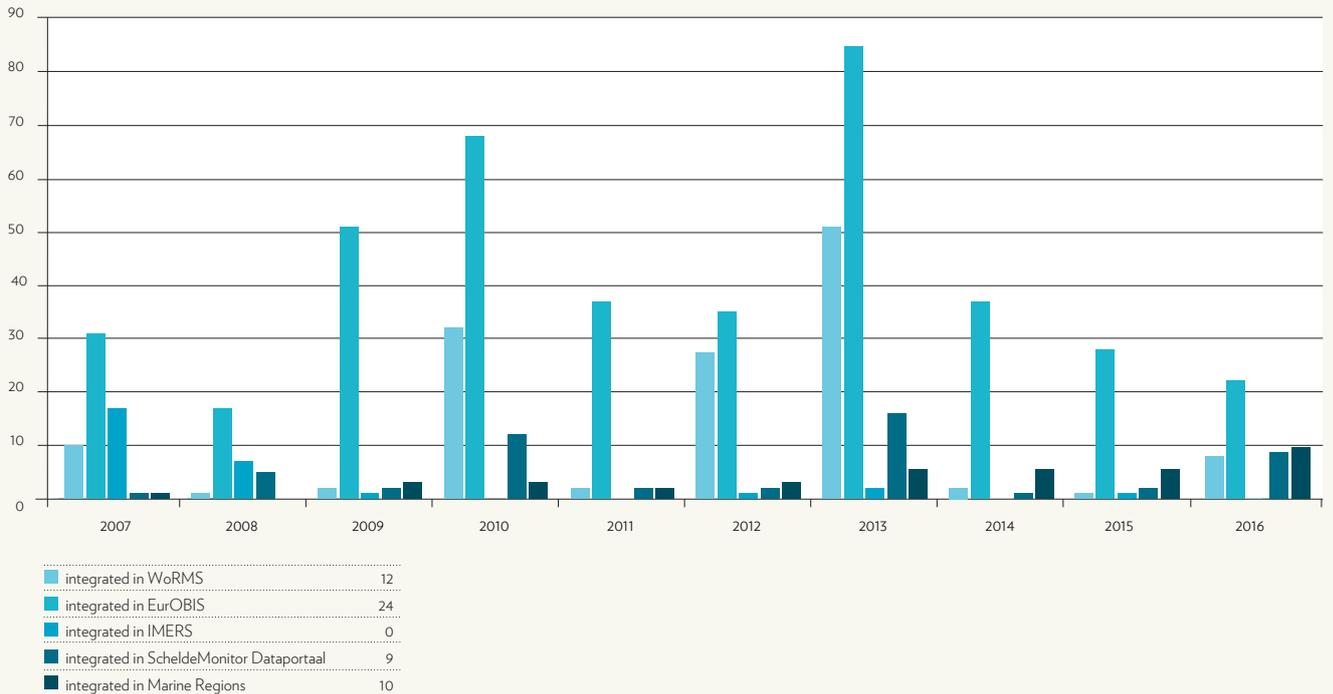
ARCHIVED DATA SETS



DISCLOSED DATA SETS



INTEGRATED DATA SETS

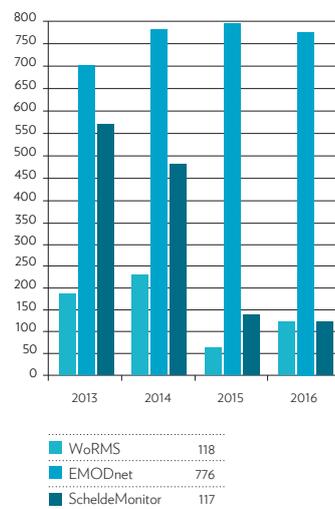
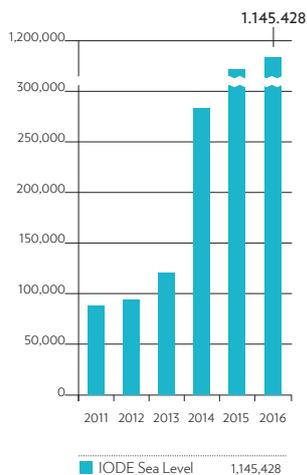
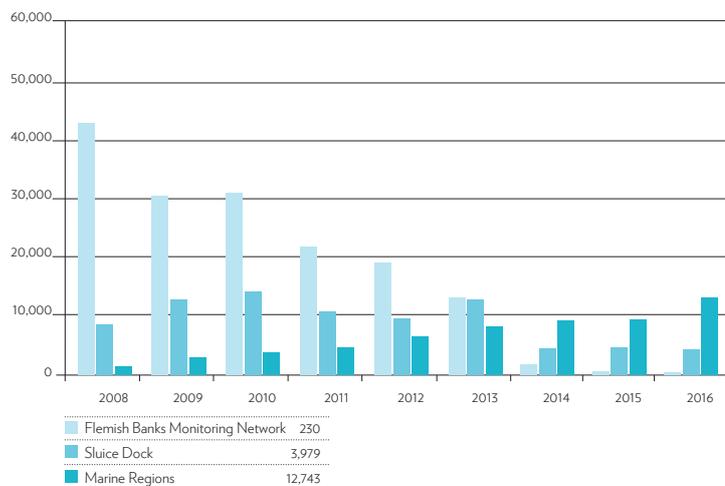


SUPPLIED DATA

237 Number of data requests (via data@vliz.be) in 2016

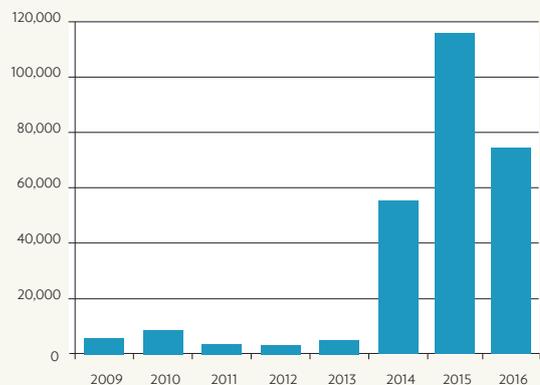
An increase compared to 2015 (175)

DOWNLOADS OF DATA



DOWNLOADS OF INFORMATIVE PRODUCTS

DE GROTE REDE



TEACHING PACKAGES

6,654 

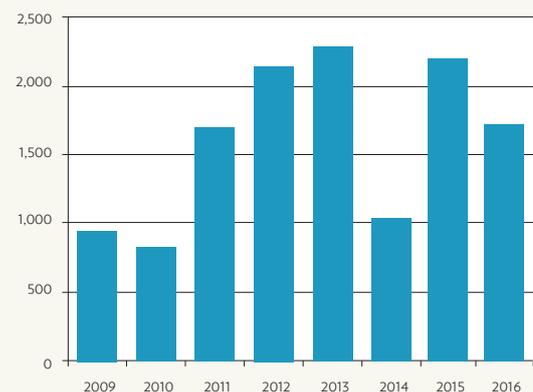
Since 01.11.2011

SIMON STEVIN PRODUCTS

58,115 

Since 01.09.2012

ZEEKRANT



VIDEO

348,681 

2005-2016 period

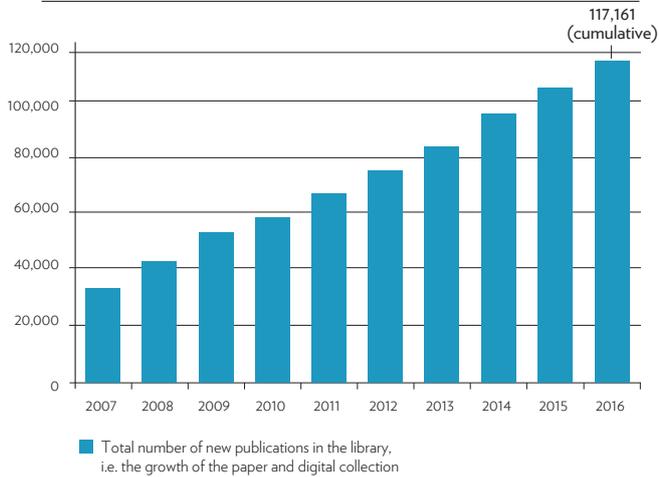
PHOTOS

21,861,769 

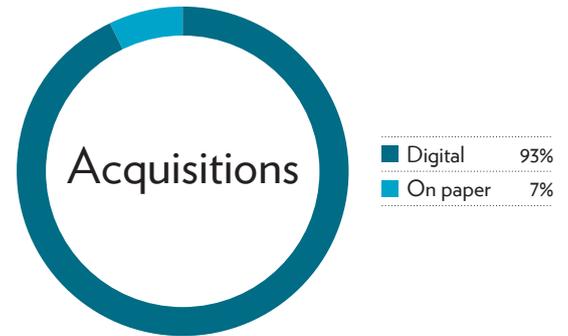
2005-2016 period

Library division

GROWTH OF LIBRARY COLLECTION

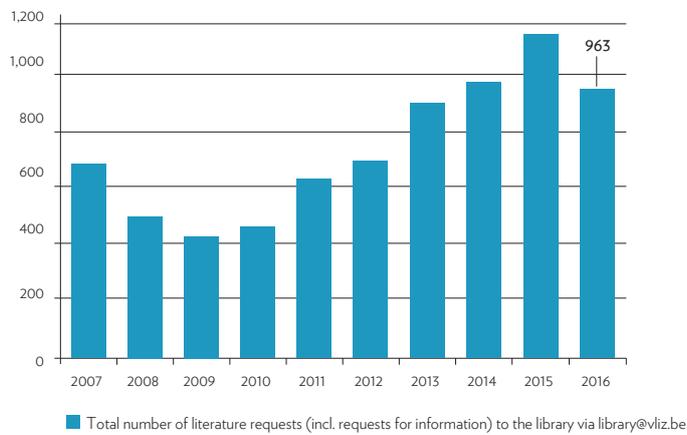


ACQUISITIONS IN 2016

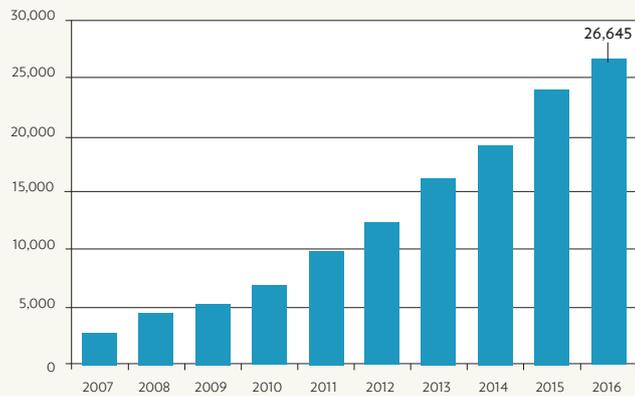


Values for 2015: 88% digital and 12% on paper.

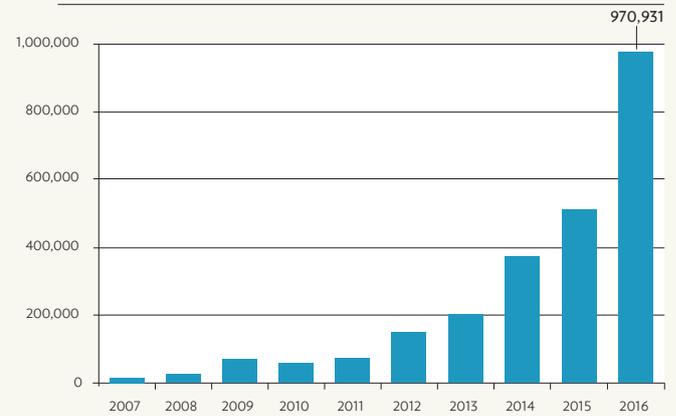
LITERATURE REQUESTS IN THE LIBRARY



REFERENCES IN THE OPEN MARINE ARCHIVE



TOTAL NUMBER OF DOWNLOADS FROM THE OPEN MARINE ARCHIVE



UNIQUE TITLES DOWNLOADED FROM THE OPEN MARINE ARCHIVE IN 2016

22,777 

Total number of downloads in 2016

An increase compared to 2015 (21,209)

OTHER ITEMS FROM THE OPEN ACCESS COLLECTION

18,027 

Unique titles downloaded in 2016

A decrease compared to 2015 (19,089)

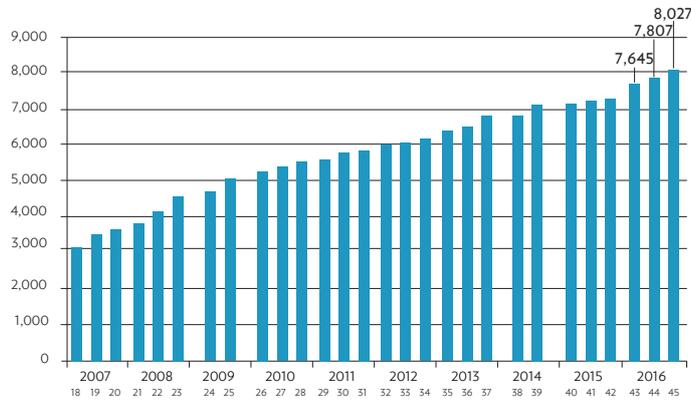
807,134 

Total number of downloads in 2016

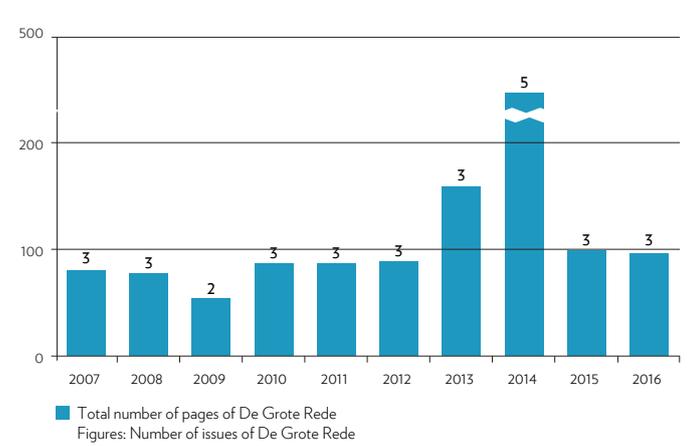
An increase compared to 2015 (483,103)

Communication division

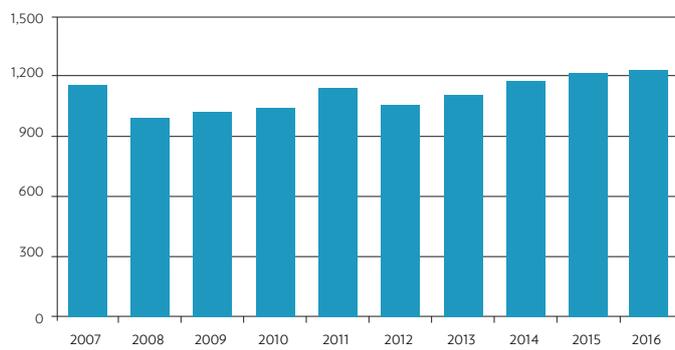
NUMBER OF SUBSCRIBERS TO DE GROTE REDE



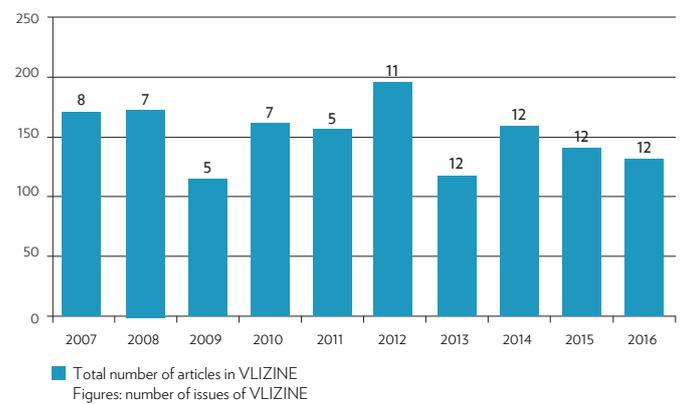
PAGES AND ISSUES OF DE GROTE REDE



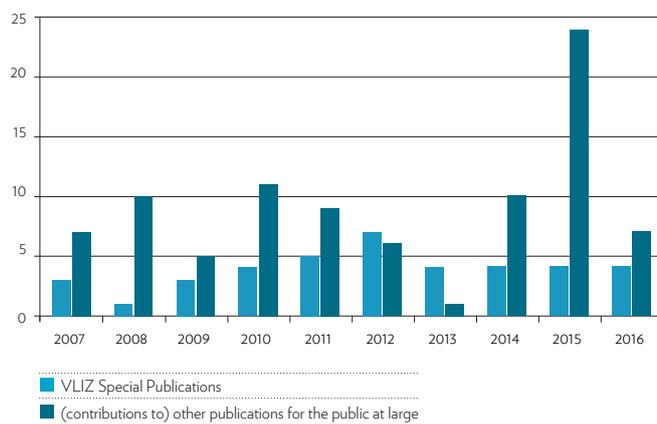
NUMBER OF SUBSCRIBERS TO VLIZINE



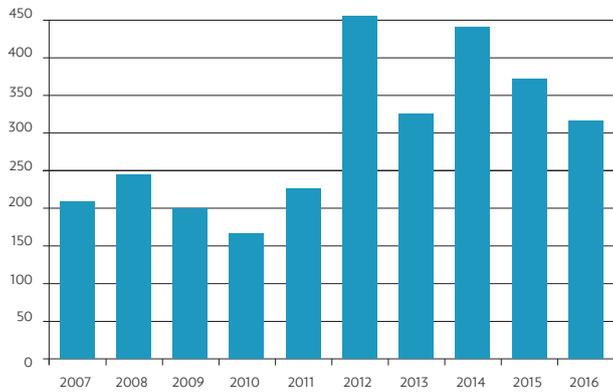
ARTICLES AND ISSUES OF VLIZINE



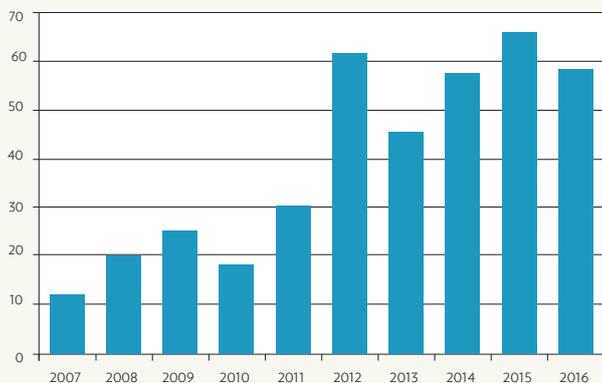
OTHER PUBLICATIONS



REQUESTS FOR INFORMATION ANSWERED BY VLIZ IN ITS ENTIRETY

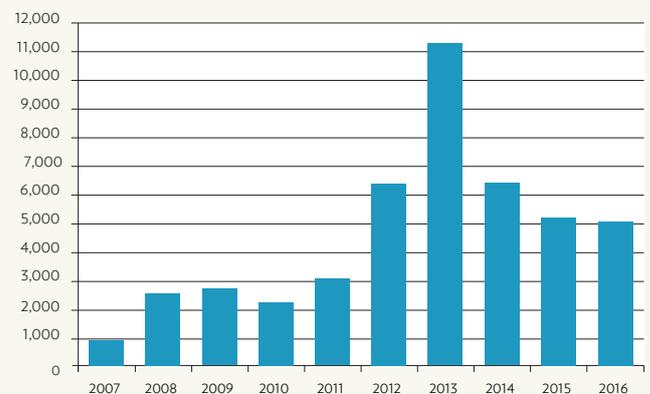


NUMBER OF EVENTS ORGANISED



■ Events (co)organised or facilitated by VLIZ

NUMBER OF PARTICIPANTS IN ORGANISED EVENTS



GENERAL PUBLIC REACHED BY MEANS OF LECTURES

64

Informative lectures in 2016

An increase compared to 2015 (48)

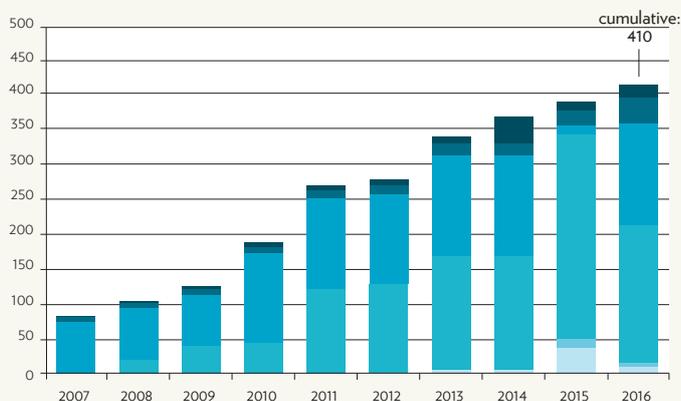
3,668

Members of the general public reached

An increase compared to 2015 (2,985)

Policy Information division

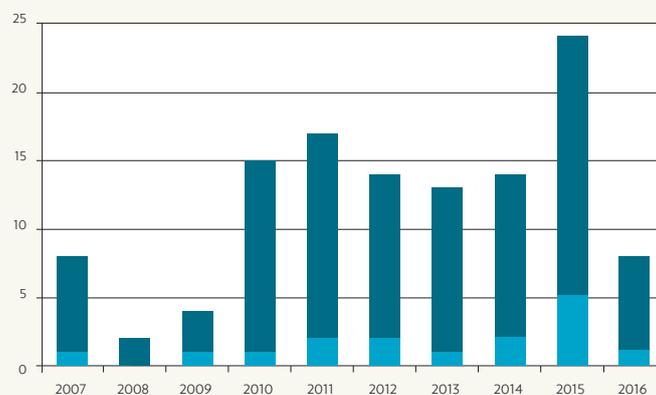
INFORMATION PRODUCTS



Number of new products in 2016:

Beleidsinformatieve Nota (BIN)	4
Policy Informing Brief (PIB)	1
Fact sheet	1
Indicator sheet	0
Book	8
Web application	3

COOPERATION AGREEMENTS AS TO POLICY DEVELOPMENT AND SUPPORT



Number of new cooperation agreements in 2016:

External projects	1
Steering committees, guidance groups and working groups	7

NEW COMPENDIUM FOR COAST AND SEA 2016 INFORMATION PRODUCTS

20

(Updated) fact sheets of marine research groups

24

(Updated) fact sheets on legislation/treaties

WEBPAGINA'S VAN HET COMPENDIUM VOOR KUST EN ZEE

38,695

Unique visitors

393,013

Hits



© VLIZ

Networks in which VLIZ participates

National networks and advisory and consultative committees

A few examples of national networks in which VLIZ participates:

- Advisory Committee of VNR Knokke-Heist & Westkust (ANB)
- Flanders Bays policy committee
- Covenant for Sustainable Fisheries – WG Coast – SWG Education and Training
- Coastal Ecosystem Vision
- Flanders’ Maritime Cluster vzw
- IkHebEenVraag.be consortium (RBINS)
- KVAB science communication awards
- Marine Strategy Framework Directive programme of measures of the Marine Environment Division
- Marine Spatial Plan long-term vision 2050
- Marine Biotechnology Platform Flanders
- NAVIGO scientific advisory group
- Consultation on sustainable coastal management by the province of West Flanders
- Flanders Bays stakeholder forum
- ‘Surveillance, early warning and rapid response – Invasive Alien Species’ steering committee
- Flemish Platform for Algae Research
- Flemish Aquaculture Platform
- Flemish Association for Libraries, Archives and Documentation Centres (VVBAD)
- Coastal Barometer Working Group
- Science Information Network (WIN) of the Flemish government

International networks and advisory and consultative committees

A few examples of international networks in which VLIZ participates:

- Catalogue of Life Global Team, Editorial Board, Board of Directors
- Coastal Wiki Editorial Board
- Editorial board of Global Ocean Science Report of 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 Biological Resource Centre (EMBRC) national steering committee
- European Marine Board (representative of Research Foundation – Flanders and chairmanship)
- European Marine Board Communication Panel (EMBCP)
- European Marine Science Educators Association (EMSEA)
- European Network of Marine Research Institutes and Stations (MARS)
- European Research Vessel Organisation (ERVO)
- European network of Marine Biodiversity and Ecosystem Functioning (MARBEF+)
- Global Sea Level Observing System Network (GLOSS)
- IAMSLIC/IODE Group of Experts on Marine Information Management
- ICES Data and Information Group (ICES – DIG)
- ICES Working Group on Biodiversity Science (ICES – WGBIODIV)
- ICES Working Group on Recreational Fisheries Surveys (ICES – WGRFS)
- ICES Working Group on the History of Fish and Fisheries (ICES – WGHIST)
- 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 Network of Oceanographic Data Centres (UNESCO/IOC) (IODE NODC)
- Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans)
- JPI Oceans reference expert group on marine spatial planning
- LifeWatch National Centers network (LiNC)
- National Marine Educators Association (NMEA)
- News & Information Group of the Partnership for Observation of the Global Oceans
- Ocean Biogeographic Information System (OBIS)
- Ocean Tracking Network
- Oceans Past Initiative (OPI)
- Partnership for Observation of the Global Oceans (POGO)
- Sea Data Network (SeaDataCloud)
- Seaweb Europe – Jury of Concours Olivier Roellinger
- Species 2000
- Steering committee within the European Marine Observation and Data Network (EMODnet)
- Steering committee of the World Register of Marine Species (WoRMS)
- Steering committee of the UNESCO/Flanders Fund-in-Trust for the support of UNESCO's activities in the field of Science (FUST)
- Executive committee of the European Register of Marine Species (ERMS)
- Executive Council and General Assembly of the Intergovernmental Oceanographic Commission (IOC) of UNESCO
- Flemish-Dutch Scheldt Commission – Environmental impact assessment (VNSC)
- Working Group on Invasive Alien Species (WGIAS)
- World Data System of the International Council for Science (ICSU-WDS)

Projects – External financing

VLIZ received external financing for coordination, communication and/or data management within the scope of 31 projects in 2016. Most of these projects were carried out in cooperation with research groups.

EU

ALFF – The Algal Microbiome: Friends and Foes

Duration: 01.01.2015 – 31.01.2019

sams.ac.uk/Algal-doctorate-EU-Marie-Curie/algal-microbiome-friends-or-foes-alf

ALFF is a research project which involves both fundamental and applied scientific investigations into algae and microalgae. Various doctoral research projects are funded through this project. VLIZ plays a modest role in communicating the results and collaborates with the Multimedia Technology programme of Karel De Grote University College in Antwerp in this context.

AtlantOS – Optimizing and Enhancing the Integrated Atlantic Ocean Observing System

Duration: 01.04.2015 – 31.07.2019

www.atlantos-h2020.eu

The overall objective of ATLANTOS is to evolve from a not well-coordinated series of existing ocean observations to a sustainable, efficient and fit-for-purpose Integrated Atlantic Ocean Observing System (IAOOS). The ATLANTOS consortium consists of 62 partners from 18 countries. VLIZ takes part in work package 7: data flow and data integration.

COLUMBUS – Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue Growth

Duration: 01.03.2015 – 31.03.2018

www.columbusproject.eu

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

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 with 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.

EGL-Engage – Engaging the Research Community towards an Open Science Commons

Duration: 01.03.2015 – 31.01.2018

www.egi.eu

This project aims to accelerate the implementation of the Open Science Commons, and investigates the expansion of a European backbone of federated services for the processing and storage of data, communication, knowledge and expertise. In addition, it investigates the expansion possibilities within specific research communities. The aim of LifeWatch EGI CC is to capture and address the requirements of biodiversity and ecosystems research communities. To achieve this, the CC will (1) deploy cloud and GPGPU based e-Infrastructure services required to support data management, data processing and modelling for Ecological Observatories, (2) explore possibilities to increase the participation of citizens in data-intensive biodiversity research, and (3) facilitate the adoption and exploitation of the EGI infrastructure by the LifeWatch user community. Together with the Spanish CSIC, VLIZ will ensure the formulation of the requirements as to grid-based e-infrastructure services in support of data management, data processing and modelling.

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 (bio.emodnet.eu). It will use the existing European atlas with distribution data of marine species (EurOBIS) as a basis and complete it. VLIZ is also involved in the chemical project of EMODnet. In addition, VLIZ is expanding the EMODnet Central Portal (emodnet-biology.eu), which should provide access to the data products and data collected within the EMODnet thematic networks. The EMODnet Secretariat is located at the InnovOcean site in Ostend.

EUROFLEETS – Towards an Alliance of European Research Fleets

Duration of phase 1: 01.09.2009 - 31.08.2014

Duration of phase 2: 01.03.2014 - 28.02.2017

www.eurofleets.eu

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

JERICO NEXT

Duration: 01.09.2015 - 30.09.2019

www.jerico-fp7.eu

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

Marine Biotechnology ERA-NET – ERA-MBT

Duration: 30.01.2015 - 29.01.2018

www.marinebiotech.eu

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

ODIP - *Extending the Ocean Data Interoperability Platform*

Duration: 01.04.2015 - 30.04.2018

www.odip.eu

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

Sea Change

Duration: 01.03.2015 - 31.03.2018

www.seachangeproject.eu

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

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

Duration: 01.11.2015 - 31.10.2020

www.seadatanet.org

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.

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 makes accessible a variety of research information so as to promote multidisciplinary research, maximally disclose research data, develop innovative products and services, and increase the strategic intelligence within the policy area of Science and Innovation.

Flemish government, Waterwegen en Zeekanaal (W&Z)

OMES – *Research on the environmental effects of the SIGMA plan*

Phase VI: 01.02.2012-30.04.2014

Phase VII: 01.02.2014-30.04.2015

Phase VIII: 01.02.2015-30.04.2015

Phase IX: 01.02.2015-30.04.2016

Phase X: 01.02.2016-30.04.2017

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

The ScheldeMonitor website underwent a total makeover in 2015. The website offers information and, since 2010, data as well in support of the cross-border monitoring and research in the Scheldt estuary.

Federal government, BELSPO

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

Duration: October 2014 – December 2017

www.4demon.be

Historical data are essential for understanding long-term changes in the quality of the marine environment. The 4DEMON project aims to centralise, integrate and valorise data on contamination, eutrophication and ocean acidification collected during expeditions in the BCS over the last four decades. 4DEMON focuses on contaminants and data for determining the level of eutrophication and acidification.

AquaRES – Aquatic species Registry Exchange and Services

Duration: 2014 - 2016

odnature.naturalsciences.be/aquares/

The World Register of Marine Species (WoRMS) – including the Antarctic Register of Marine Species – and the Freshwater Animal Diversity Assessment (FADA) database are large Global Species Directories (GSD) hosted in Belgium. The AquaRES project is aimed at ensuring and promoting the interoperability of both databases and making them available to the public. In addition, tools are developed to check the quality of the data.

NewSTHEPS – New Strategies for monitoring and risk assessment of Hazardous chemicals in the marine environment with passive samplers

Duration: 01.12.2014 – 31.03.2019

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

In this project, novel and integrated passive sampling techniques will be developed in marine waters. The focus is on the quantification of micropollutants and metals. VLIZ is a subcontractor for the creation of a website and the data management activities relating to the further development of the INRAM and ENDIS-RISKS database.

Proba4Coast – Proba-V for total suspended matter and turbidity retrieval in coastal areas

Duration: 01.12.2015 -31.12.2017

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

Federal government, Marine Environment Division

Proposal for Fisheries Measures in Belgian Waters

Duration: 1 May 2016 to 1 May 2017

In this project, the necessary preparations are carried out to negotiate the fisheries measures required to achieve ‘good environmental status’ in the Belgian marine waters. In an extensive background document, all information is provided to substantiate the Belgian proposal for fisheries measures required to comply with the obligations of the Marine Strategy Framework Directive (2008/56/EC). This document is discussed and endorsed by the member states with direct fishing activities in Belgian marine waters. As part of the final objective of the negotiations, Belgium presents a Joint Recommendation for launching the formal procedure with the EC.

Province

HisGisKust

Historical maps of the coastal zone

Duration: continually since 01.07.2015

A selection has been made of approximately 70 maps from the 16th, 17th and 18th centuries, the golden age of cartography in Flanders and the Low Countries, including detailed information on the coastal zone, the Belgian part of the North Sea, the Zwin area and/or the Scheldt estuary.

These maps have been scanned and georeferenced (incl error analysis). They can be accessed free of charge via the website www.vliz.be/hisgiskust together with information about the maps and their geometrical accuracy.

A chronological sequence of several maps of the same region makes it possible to create time-lapse movies about the evolution of the coastal zone. These products are also at the user's disposal on the website.

In 2016, cooperation agreements were concluded with the Research Institute for Nature and Forest (INBO), Sincfala (Zwin Museum) as well as the Royal Museum of the Armed Forces and Military History, and a 2nd selection round took place at Cultuurbibliotheek in Bruges (cooperation agreement signed in 2015). All these institutions have cartographical materials and aerial photographs relating to the coastal area which will be made accessible on the HisGISKust website in 2017.

FWO (former Hercules Foundation)

LifeWatch – Flemish contribution to LifeWatch.eu

Duration: continually since 2012

www.lifewatch.be

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

EMBRC – European Marine Biological Resource Centre

Duration: continually since 2015

www.embrc.eu

EMBRC will be a distributed infrastructure for research and training at leading marine research stations in Europe.

It constitutes a virtual network of marine stations for the study of marine species, biodiversity and ecosystem functioning, developmental biology and evolution, biogeochemistry, global change, biomedical sciences and marine products. EMBRC will provide end users from SMEs, academia and industry with access to marine biodiversity, associated metadata and extractable products. Services include access to marine species (model species), biobanks, dedicated 'omics' platforms, structural biological facilities and imaging (microscopy, cytometry, etc.). The Flemish contribution is coordinated by the Marine Biology Laboratory (Ghent University) and VLIZ, with VLIZ making seagoing and land-based facilities available and providing technical support.

ICOS – Integrated Carbon Observing System

Duration: continually since 2012

www.icos-infrastructure.eu

ICOS provides the long-term observations required to understand the present state and predict future behaviour of the global carbon cycle and greenhouse gas emissions. VLIZ performs the oceanographic measurements which Flanders will transfer to ICOS through the University of Antwerp. Within this scope, VLIZ performs measurements aboard RV Simon Stevin. Within the scope of ICOS, VLIZ collaborates with NIOZ-Yerseke and the University of Liège (Alberto Borges).

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)

SeArch – *Archaeological Heritage in the North Sea*

Duration: January 2013 – December 2016

www.sea-arch.be

Development of an efficient assessment methodology and proposals for a sustainable management in Belgium. VLIZ is one of the six partners and in charge of the work package concerning 'outreach and guidance' (WP 3). Within this scope, VLIZ ensures the layout and distribution of several information products as well as the organisation of a number of workshops and seminars. VLIZ also provides support in terms of the setup of the website.

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

Duration: November 2015 – October 2019

www.crestproject.be

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

Toerisme Vlaanderen

The battle of the North Sea, exhibition on WWI and the sea

Duration: October 2014 – September 2018

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

FUST - Flanders UNESCO Trust Fund for Science

SPINCAM

Duration: 2008 - 2016

www.spincamnet.net

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

Scientific equipment and infrastructure

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

Water sampling and characterisation equipment

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

Soil sampling and soil mapping equipment

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

Biological sampling equipment

- Bat recorder
- Bongo net
- Beam trawl
- Otter trawl
- Pelagic otter trawl
- Bowers and Connelly multi-corer
- Porpoise detectors – C-PODs
- Fast repetition rate Fluorometer (FrrF)
- FlowCam
- Flow cytometer
- Fluorimeter
- Gilson dredge
- Hamon grab
- Hydrophone
- Hyperbenthic sledge
- MIK net
- Neuston net
- Sieving table
- Apstein plankton net
- CalCoFi plankton net
- Vertical plankton net – WP2
- Plankton pump
- Reineck Box Corer
- Sediment Profile Imaging (SPI) system
- Sensor network for gulls
- Van Veen grab
- VEMCO receiver network in Western Scheldt and coastal waters
- Video plankton recorder
- Fish sorting table
- 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:
 - Atmospheric pCO₂
 - Wind speed
 - Wind direction
 - Temperature
 - Atmospheric pressure
- Microscopes
- Mini ROV
- Molecular laboratory
- Underwater camera
- RIB Zeekat
- ROV Genesis
- Underwater diver receiver
- Video frame
- Water tanks for marine organisms
- Web cameras

Events organised, co-organised and facilitated by VLIZ in 2016

59 EVENTS, 5,079 PARTICIPANTS

DATE	TITLE	LOCATION	NUMBER OF PARTICIPANTS	ORGANISER	ROLE OF VLIZ	TYPE
08.01.2016	ILVO – IMARES Consultation	InnovOcean site, Ostend	8	ILVO	facilitated	Meeting
15.01.2016	CREST Guidance Committee	InnovOcean site, Ostend	39	Hydraulics Division – KU Leuven	facilitated	Meeting
2016	PlaneetZee@Work	MSO, RV Simon Stevin, InnovOcean site, Ostend and other MRGs	259	VLIZ in collaboration with MRGs	facilitated	Workshop
12.02.2016	16th VLIZ Marine Science Day	VIVES, Bruges	364	VLIZ	organised	Seminar
15-17.02.2016	LifeWatch-WoRMS workshop: Ascidiacea World Database	InnovOcean site, Ostend	12	VLIZ	organised	Workshop
16-19.02.2016	SPINCAM week in Flanders	InnovOcean site, Ostend	48	IOC UNESCO in collaboration with CPPS & VLIZ	co-organised	Meeting & Workshop
22-25.02.2016	LifeWatch-WoRMS workshop: World Register of Cave Species	InnovOcean site, Ostend	12	VLIZ	organised	Workshop
25.02.2016	Scheldt Symposium (Schelde door de getijden heen)	UAntwerp Stadscampus, Antwerp	250	UA-ECOBÉ & W&Z NV in collaboration with VLIZ	co-organised	Seminar
21.03.2016	Natura2000 expert meeting	InnovOcean site, Ostend	25	WWF	facilitated	Meeting
22.03.2016	Event for hospital doctors	InnovOcean site, Ostend	20	Private initiative	facilitated	Meeting
03.04.2016	The Crystal Ship – Pol Cosmo at the MSO	MSO, Ostend		The Crystal Ship	facilitated	art project
04-05.04.2016	LifeWatch-WoRMS workshop: Amphipoda	InnovOcean site, Ostend	28	VLIZ	organised	Workshop
19.04.2016	InnoMar source training	InnovOcean site, Ostend	14	VLIZ	organised	Training course
20.04.2016	PlaneetZee@work finals	InnovOcean site, Ostend	30	VLIZ	organised	Training course
23.04.2016	First day of Week of the Sea	InnovOcean site, MSO, Ostend	499	The Province of West Flanders	actively participated	Open house day
10-13.05.2016	PlaneetZee@Work: 2016 Marine Internship	Station marine de Wimereux (FR)	14	VLIZ	organised	Workshop
12.05.2016	Introduction to littoral fauna (Karel De Grote University College, Antwerp)	Station marine de Wimereux (FR)	20	VLIZ	organised	Workshop
17-20.05.2016	LifeWatch-WoRMS workshop: Ostracoda	InnovOcean site, Ostend	11	VLIZ	organised	Workshop
17.05.2016	Marine Science meets Maritime Industry	InnovOcean site, Ostend	89	VLIZ in collaboration with Flanders' Maritime Cluster	co-organised	Seminar
20.05.2016	Ecology training	InnovOcean site, Ostend	37	Antwerp Maritime Academy	facilitated	Workshop
23.05.2016	LifeWatch.be Users Meeting	InnovOcean site, Ostend	39	VLIZ	organised	Meeting

DATE	TITLE	LOCATION	NUMBER OF PARTICIPANTS	ORGANISER	ROLE OF VLIZ	TYPE
27.05.2016	VEMCO telemetry	InnovOcean site, Ostend	14	VEMCO & VLIZ	co-organised	Workshop
04.06.2016	Annual meeting of 'Vereniging voor het onderwijs in de biologie' (VOB)	InnovOcean site, MSO, Ostend	20	VOB	facilitated	Workshop
10.06.2016	World Oceans Day – MANMADE	De Grote Post, Ostend	237	VLIZ	organised	Open house day
15.06.2016	AquaRES final meeting & workshop	InnovOcean site, Ostend	13	RBINS in collaboration with VLIZ	co-organised	Final meeting & Workshop
16.06.2016	Guidance Committee – Scientific Committee	InnovOcean site, MSO, Ostend	42	VLIZ	organised	Meeting
17.06.2016	EMODnet Biology - third traits workshop	InnovOcean site, Ostend	19	VLIZ	organised	Workshop
17.06.2016	Hydrographic Society Benelux	InnovOcean site, MSO, Ostend	30	Hydrographic Society Benelux	facilitated	Meeting
20.06.2016	Ecosystem Vision Workshop	InnovOcean site, Ostend	23	Flemish government, Nature and Forest Agency	facilitated	Workshop
24.06.2016	VLIZ members' day	MSO, Ostend	95	VLIZ	organised	Open house day
29.06.2016	Presentation of Fisheries and Aquaculture Sector brochure	InnovOcean site, Ostend	45	Flemish government, Dept. of Agriculture & Fisheries	facilitated	Book presentation
29.06.2016	Hydro vzw Board of Directors & General Assembly	InnovOcean site, Ostend	8	Hydro vzw	facilitated	Meeting
05-09.07.2016	Estuarine & Coastal Sciences Association Conference – Estuarine Restoration: from theory to practice and back	Minnemeers, Antwerp	107	UA-ECOBIE, INBO, IMARES, WatLab, W&Z NV, ANB in collaboration with VLIZ	co-organised	Conference
01-05.08.2016	Summerschool of the International Association for Hydro-Environment Engineering and Research	InnovOcean site, Ostend	16	VUB	facilitated	Workshop
08.08.2016	'Strand in bloei' Workshop – Ostend	Venetiaanse Gaanderijen, Ostend	64	Coastal Heritage unit	facilitated	Workshop
29-31.08.2016	LifeWatch - Jerico-Next fcm data analysis workshop	InnovOcean site, Ostend	8	VLIZ	organised	Workshop
20-22.09.2016	WoRMS workshop: Register of Antarctic Species	ICTS, KU Leuven	15	RBINS in collaboration with VLIZ	co-organised	Workshop
21.09.2016	Flemish Coast Monitoring Network - Broersbank project + CREST guidance committee	InnovOcean site, MSO, Ostend	50	Coastal Division in collaboration with VLIZ	co-organised	Meeting
28.09.2016	Recreational Fisheries Monitoring	InnovOcean site, Ostend	139	VLIZ	organised	Info session
29.09.2016	UPV seminar 'De Zee'	InnovOcean site, Ostend	60	UPV	facilitated	Seminar
04.10.2016	IPV training session on shrimp	InnovOcean site, Ostend	20	ILVO	facilitated	Info session
04-07.10.2016	European Marine Science Educators Association Conference	Titanic Belfast (UK)	98	EMSEA in collaboration with VLIZ	co-organised	Conference
12.10.2016	Launch of the Marine Biotechnology Strategic Research and Innovation Roadmap	Marivaux Hotel, Brussels	65	VLIZ in collaboration with RCN	co-organised	Conference
13-14.10.2016	Second EMarine Biotechnology ERA-NET Stakeholder meeting. Marine Biotechnology – enabling future innovations	Marivaux Hotel, Brussels	112	VLIZ in collaboration with RCN	co-organised	Conference

DATE	TITLE	LOCATION	NUMBER OF PARTICIPANTS	ORGANISER	ROLE OF VLIZ	TYPE
14.10.2016	Professional development day at Maritiem Instituut Mercator, Ostend	InnovOcean site, MSO, ILVO, Ostend	56	VLIZ in collaboration with ILVO, FPS Marine Environment, province of West Flanders	co-organised	Seminar
25-28.10.2016	International OBIS-INDEEP training & workshop	InnovOcean site, Ostend	26	IOC Project Office for IODE in collaboration with VLIZ	co-organised	Workshop
25.10.2016	IPV training session on shrimp	InnovOcean site, Ostend	26	ILVO	facilitated	Info session
26.10.2016	Fishing education, environment and sustainability workshop	InnovOcean site, Ostend	22	VLIZ in collaboration with ILVO, FPS Marine Environment, province of West Flanders	co-organised	Workshop
08-10.11.2016	ICES Workshop of North Sea stocks	InnovOcean site, Ostend	20	ILVO	facilitated	Workshop
22.11.2016	SEARCH closing conference: Drowned Heritage	Het Pand, Ghent	173	Geology – Ghent University in collaboration with VLIZ	co-organised	Conference
27.11.2016	Science Day: Marine Research – Then and Now	MSO, Ostend	875	VLIZ in collaboration with VLOOT dab	organised	Open house day
28.11.2016	Proba4Coast steering committee	InnovOcean site, Ostend	15	VITO	facilitated	Meeting
29.11.2016	Working Group – recreational sea fisheries	InnovOcean site, Ostend	8	VLIZ	organised	Workshop
06-07.12.2016	CommOCEAN – 2nd International Marine Science Communication Conference	Provinciaal hof, Bruges	200	VLIZ in collaboration with EMB, EMBCP, UNESCO-IODE	co-organised	Conference
07-08.12.2016	EMBRC Access System Workshop – EMBRC CoN IV	InnovOcean site, Ostend	15	U.P.M.C. in collaboration with VLIZ	co-organised	Workshop
08.12.2016	CommOCEAN – training	InnovOcean site, Ostend	50	UNESCO-IODE in collaboration with VLIZ	co-organised	Training course
14.12.2016	'De toekomst van de zee – De zee van de toekomst' (the future of the sea – the sea of the future)	Zeebrugge naval base	300	Cabinet of State Secretary De Backer, RBINS in collaboration with VLIZ	co-organised	Seminar
17.12.2016	Coastal guide seminar	CC CasinoKoksijde	160	NME service of the Province of West Flanders in collaboration with VLIZ	co-organised	Seminar
20.12.2016	IPV training session on shrimp	InnovOcean site, Ostend	15	ILVO	facilitated	Info session

2016 publications

De Grote Rede

- **Issue 43** (April 2016) with leading articles on jellyfish; a survey of 99 coastal policy makers; marram grass.
- **Issue 44** (August 2016) with leading articles on rays and skates; senior citizens living by the sea; fish larvae.
- **Issue 45** (December 2016) with leading articles on the new Zwin nature reserve; prehistoric remains preserved under the clay soil; El Niño.

VLIZINE

A total of 12 issues of the e-newsletter 'VLIZINE' appeared in 2016, including a total of 130 articles.

VLIZ Library Acquisitions

A total of 40 Library Acquisitions lists were forwarded by e-mail in 2016.

Zeekrant 2016

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

Social Media

Facebook:

RV Simon Stevin
VLIZnieuws

Twitter:

@jmeesvliz
@LifeWatchVLIZ
@VLIZBib
@WRMarineSpecies

LinkedIn:

VLIZ – Flanders Marine Institute

Books

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

- Degraer, S.; Brabant, R.; Rumes, B.; Vigin, L. (Ed.) (2016). **Environmental impacts of offshore wind farms in the Belgian part of the North Sea: Environmental impact monitoring reloaded**. Royal Belgian Institute of Natural Sciences, OD Natural Environment, Marine Ecology and Management Section: Brussels. ISBN 978-90-8264-120-2. ix, 287 pp.
- Fockedeij, N.; Polet, H.; Lamour, L.; Vallet, E. (Ed.) (2016). **Vis- en zeevruchtengids voor professionele gebruikers. Voor een markt met duurzame producten uit de zee**. Editie 2016. SeaWeb Europe/VLIZ: Paris, Oostende. ISBN 978-94-920432-9-0. 182 pp.
- Fockedeij, N.; Lamour, L.; Levieil, C.; Vallet, E. (Ed.) (2016). **Guide des espèces à l'usage des professionnels. Pour un marché des produits de la mer durables**. Édition 2016. SeaWeb Europe: Paris. 182 pp.
- Hurst, D.; Børresen, T.; Almesjö, L.; De Raedemaecker, F.; Bergseth, S. (2016). **Marine biotechnology strategic research and innovation Roadmap: Insights to the future direction of European marine biotechnology**. Marine Biotechnology ERA-NET: Oostende. ISBN 978-94-920-43-27-6. 46 pp.

- Pauly, D.; Zeller, D. (Ed.) (2016). *Global atlas of marine fisheries: a critical appraisal of catches and ecosystem impacts*. Island Press: Washington, Covelo, London. ISBN 978-1-61091-625-7. XVII, 497 pp.
- Samyn, R.; Catteeuw, K. (Ed.) (2016). *Een terugblik in perspectief. 20 jaar Gebiedsgerichte Werking in West-Vlaanderen*. Provincie West-Vlaanderen: Sint-Andries. 95 pp.
- Steevens, I.; Heylen, M.; Lescauwaet, A.-K.; Seys, J.; Vanfleteren, S.; Haeverans, J.; Van den Bossche, H. (2016). *Onze vissers: Het DNA van het zilte leven. Hannibal: Veurne*. ISBN 978-94-9208-165-0. 480 pp.

VLIZ Special Publications

- No. 75: Mees, J.; Seys, J. (Ed.) (2016). *Book of abstracts – VLIZ Marine Scientist Day*. Brugge, Belgium, 12 February 2016. VLIZ Special Publication, 75. Vlaams Instituut voor de Zee - Flanders Marine Institute (VLIZ): Oostende. xii, 165 pp.
- No. 76: Lescauwaet, A.-K.; Fockedey, N.; Pirllet, R.; Pieters, M.; Eryvynck, A.; Segers, Y.; Steevens, I.; Seys, J.; Mees, J. (Ed.) (2016). *Abstractenboek studiedag “Vissen in het verleden. Een multidisciplinaire kijk op de geschiedenis van de Belgische zeevisserij”*. VLIZ Special Publication, 76. Vlaams Instituut voor de Zee (VLIZ): Oostende. ISBN 978-94-920432-6-9. 128 pp.
- No. 77: Meire, P. (Ed.) (2016). *Book of abstracts: ECSA Local Meeting 2016. Estuarine Restoration: from theory to practice and back*, University of Antwerp, Antwerp, Belgium, 5-9 July 2016. VLIZ Special Publication, 77. University of Antwerp (UA)/ Flanders Marine Institute (VLIZ): Antwerp. 98 pp.
- No. 78: Seys, J.; Santoro, F. (Ed.) (2016). *CommOCEAN2016 - 2nd International Marine Science Communication Conference. 6-7 December 2016*. Bruges, Belgium: Book of Abstracts. VLIZ Special Publication, 78. Flanders Marine Institute (VLIZ)/IOC-UNESCO/European Marine Board Communications Panel (EMBCP): Oostende. viii, 106 pp.

Fact Sheets

- VLIZ Wetenschappen (2016). *Eugène Leloup. Wetenschappen - Historische figuren van het zeewetenschappelijk onderzoek. VLIZ Information Sheets*, 172. Vlaams Instituut voor de Zee (VLIZ): Oostende.

Teaching packages

- Planeet Zee learning module: *Wind and ocean currents*.
- Sea Change teaching package: *Connected to the ocean: blue gym and medicines*.
- Practical exercises: *Cooking with algae; visit to the supermarket: products and substances from the sea; monitoring an unmanned miniature sailing boat: processing GPS data*.

Movies

- *Tagging research on eels in Belgium*. Animation. Coordination: Karen Rappé and Pieterjan Verhelst, animation by Steve Bridger, voice: Bryan Kopta (EN) / Johfrahe Lefebvre (NL), production: LifeWatch Belgium, responsible publisher: VLIZ Oostende.

Scientific A1 publications (co-)written by VLIZ employees

- Chust, G.; Villarino, E.; Chenuil, A.; Irigoien, X.; Bizsel, N.; Bode, A.; Broms, C.; Claus, S.; Fernández de Puellas, M.L.; Fonda Umani, S.; Hoarau, G.; Mazzocchi, M.G.; Mozetic, P.; Vandepitte, L.; Veríssimo, H.; Zervoudaki, S.; Borja, A. (2016). *Dispersal similarly shapes both population genetics and community patterns in the marine realm*. *NPG Scientific Reports* 6(28730): 12 pp.
- Claus, S.; Vandepitte, L.; Waumans, F.; Pinto Vitorino, B.; Hernandez, F. (2016). *Towards better data access: the development of a new data download tool for marine biological data*, in: *IMDIS 2016 International Conference on Marine Data and Information Systems, 11-13 October 2016, Gdansk, Poland*. *Bollettino di Geofisica Teorica ed Applicata: an International Journal of Earth Sciences*, 57(Suppl.): pp. 176-177.
- Engelhard, G.H.; Thurstan, R.H.; MacKenzie, B.R.; Alleway, H.K.; Bannister, R.C.A.; Cardinale, M.; Clarke, M.W.; Currie, J.C.; Fortibuoni, T.; Holm, P.; Holt, S.J.; Mazzoldi, C.; Pinnegar, J.K.; Raicevich, S.; Volckaert, F.A.M.; Klein, E.S.; Lescauwaet, A.-K. (2016). *ICES meets marine historical ecology: placing the history of fish and fisheries in current policy context*. *ICES J. Mar. Sci./J. Cons. int. Explor. Mer* 73(5): 1386-1403.

- Huisman, J.; Verhelst, P.; Deneudt, K.; Goethals, P.L.M.; Moens, T.; Nagelkerke, L.A.J.; Nolting, C.; Reubens, J.; Schollema, P.P.; Winter, H.V.; Mouton, A. (2016). [Heading south or north: novel insights on European silver eel *Anguilla anguilla* migration in the North Sea](#). *Mar. Ecol. Prog. Ser.* 554: 257-262.
- Lagring, R.; Adam, M.; Goffin, A.; Stojanov, Y.; Tyberghein, L.; Vandenberghe, T. (2016). [The implementation of a data management plan to uplift historical data: long-term change detection in the Belgian Continental Shelf](#), in: *IMDIS 2016 International Conference on Marine Data and Information Systems, 11-13 October 2016, Gdansk, Poland. Bollettino di Geofisica Teorica ed Applicata: an International Journal of Earth Sciences*, 57(Suppl.): pp. 127.
- Montgomery, L.; Seys, J.; Mees, J. (2016). [To pee, or not to pee: a review on envenomation and treatment in European jellyfish species](#). *Mar. Drugs* 14(7): 127.
- Mukhwana, L.V.; Luke, Q.; Delmas, E.; Otoi, K.; Hamerlynck, O.; Vandepitte, L.; Adkins, B. (2016). [Carbon stocks of the terraces of the Lower Tana River floodplain and delta, Kenya, prior to conversion for biofuel production](#). *Afr. J. Aquat. Sci.* 41(1): 119-125.
- Stienen, E.W.M.; Desmet, P.; Aelterman, B.; Courtens, W.; Feys, S.; Vanermen, N.; Verstraete, H.; Van de walle, M.; Deneudt, K.; Hernandez, F.; Houthoofd, R.; Vanhoorne, B.; Bouten, W.; Buijs, R.-J.; Kavelaars, M.; Müller, W.; Herman, D.; Matheve, H.; Sotillo, A.; Lens, L. (2016). [GPS tracking data of Lesser Black-backed Gulls and Herring Gulls breeding at the southern North Sea coast](#). *ZooKeys* 555(555): 115-124.
- Vandepitte, L.; De Pooter, D.; Deneudt, K.; Vanhoorne, B.; Provoost, P.; Appeltans, W.; Bailly, N.; Eliezer, M.; Fujioka, E.; Goldstein, P.; Giorgetti, A.; Lewis, M.N.; Lipizer, M.; Mackay, K.A.; Moncoiffe, G.; Nikolopoulou, S.; Rauch, S.; Roubicek, A.; Torres, C.; Van de Putte, A.; Vinci, M.; Wambijij, N.W.; Hernandez, F. (2016). [Expanding the Ocean Biogeographic Information System \(OBIS\) beyond species occurrences, by including associated environmental data - experiences from the OBIS-ENV-DATA project](#), in: *IMDIS 2016 International Conference on Marine Data and Information Systems, 11-13 October 2016, Gdansk, Poland. Bollettino di Geofisica Teorica ed Applicata: an International Journal of Earth Sciences*, 57(Suppl.): pp. 155-157.

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

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

- De Hauwere, N.; Pirlet, H. (2016). [HisGISKust, historische kaarten van de kustzone](#). *Jaarb. aardrijkskd (Gent) 2016*: 109-114.
- Gerovasileiou, V.; Martínez, A.; Álvarez, F.; Boxshall, G.; Humphreys, W.F.; Jaume, D.; Becking, L.E.; Muricy, G.; van Hengstum, P.J.; Dekeyzer, S.; Decock, W.; Vanhoorne, B.; Vandepitte, L.; Bailly, N.; Iliffe, T.M. (2016). [World Register of marine Cave Species \(WoRCS\): a new Thematic Species Database for marine and anchialine cave biodiversity](#). *Research Ideas and Outcomes* 2: e10451.
- Pirlet, R.; Rappé, K.; Seys, J.; Lescauwae, A.-K. (2016). [Historiek van de mariene wetenschappen in Vlaanderen](#). Vlaams Instituut voor de Zee (VLIZ): Oostende. 1 leaf pp.
- Poirriez, J.; Lescauwae, A.-K.; Pirlet, R.; Coulon, J. (2016). [Les navires et les marins belges engagés dans les opérations d'évacuation de mai et juin 1940](#). Published by the author(s): [s.l.]. 128 pp.
- VLIZ (2016). [Regeling inzake toegang tot de mariene genetische rijkdommen uit het Belgische deel van de Noordzee in uitvoering van het Nagoya Protocol](#). *VLIZ Beleidsinformerende Nota's*, BIN 2016_003. Vlaams Instituut voor de Zee: Oostende. 13 pp.
- VLIZ (2016). [Marien onderzoek in Vlaanderen en België: Een inventaris van het onderzoekslandschap](#). *VLIZ Beleidsinformerende Nota's*, BIN 2016_002. Vlaams Instituut voor de Zee: Oostende. 58 pp.
- VLIZ (2016). [Wetenschappelijke en handelsbenamingen voor visserij- en aquacultuurproducten op de Belgische markt](#). *VLIZ Beleidsinformerende Nota's*, BIN 2016_001. Vlaams Instituut voor de Zee: Oostende. 28 + Annex. pp.

VLIZ acknowledged

- VLIZ was mentioned in the acknowledgements of 17 peer-reviewed publications and 31 non-peer-reviewed publications.

Colophon

This 2016 Annual Report of the Flanders Marine Institute (VLIZ) has been presented for approval to the Board of Directors and the General Assembly on 22 March 2017.

Coordination and final editing:

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

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Flanders Marine Institute

InnovOcean site
Wandelaarkaai 7
B-8400 Oostende, Belgium

Phone: +32 [0]59 34 21 30
Fax: +32 [0]59 34 21 31
E-mail: info@vliz.be
www.vliz.be

