

Operational Directorate Natural Environment (RBINS)

// Website research group

<http://odnature.naturalsciences.be/home>



Research Vessel



Sampling, observation & survey infrastructure



Satellites & (airborne) remote sensing capacity






Experimental facilities & analysis capacity









Data & information management and computing infrastructure




Logistics

Infrastructure Categories	Infrastructure				
	<ul style="list-style-type: none"> RV Belgica (regional vessel) (http://odnature.naturalsciences.be/belgica/nl)¹ RHIB Tuimelaar¹ 				
	<table border="1"> <tr> <td data-bbox="354 853 557 1579"> <p>Ship-based instrumentation</p> <ul style="list-style-type: none"> Fisheries laboratory¹ A wet laboratory for the distribution and prior treatment of the samples¹ Chemistry laboratory¹ Biochemistry laboratory¹ Microbiology laboratory¹ <p>CTD equipment</p> <ul style="list-style-type: none"> Sea-Bird SBE19 CTD (2x)¹ Sea-Bird SBE9plus CTD (2x)¹ Sea-Bird SBE21 thermosalinograph (2x)¹ <p>Water sampling equipment</p> <ul style="list-style-type: none"> Sea-Bird model 32 carousel for 12 10 liter Niskin bottles (2x)¹ Various Niskin and Go-Flo water sampling bottles¹ <p>Sediment sampling equipment</p> <ul style="list-style-type: none"> Boxcorer NIOZ model¹ Van Veen grab, Reineck corer¹ Bowers & Connelly multicorer¹ <p>Biological sampling equipment</p> <ul style="list-style-type: none"> Benthic sledge¹ High speed encased Gulfstream Plankton sampler¹ 3 m trawl with shrimp net¹ </td> <td data-bbox="558 853 997 1579"> <p>Depth measuring equipment</p> <ul style="list-style-type: none"> Kongsberg EM3002D shallow water multibeam echosounder system¹ Kongsberg EA400 with 33, 38 and 210 kHz transducer¹ Auxiliary sensors: Seatex MRU5 motion sensor, Valeport miniSVS sound velocity sensor, Applied Microsystems SVplus sound velocity profiler¹ <p>Seawater current measurements</p> <ul style="list-style-type: none"> Hull mounted Teledyne RDI ADCP model Workhorse Mariner 300 kHzn Teledyne RDI ADCP model¹ Workhorse sentinel 1,200 kHz for deployment on tripod or TRBM (trawl resistant Bottom Mount)¹ Valeport model 106 velocimeter¹ <p>Autonomous Underway Measurement System (AUMS)</p> <ul style="list-style-type: none"> Parameters measured by the AUMS: turbidity, oxygen, pH, chlorophyll, blue algae, CDOM, salinity, pCO₂, fluorescence, Par, hyperspectral irradiance, NO₃, NH₃, PO₄, SiO₂ and NO₂¹ </td> </tr> <tr> <td data-bbox="354 1581 557 1767"> <p>Fixed platforms, moorings and landers</p> </td> <td data-bbox="558 1581 1437 1767"> <ul style="list-style-type: none"> Up to three tripods equipped with measuring instruments can be deployed from the RV Belgica. The available instruments are: SonTek Acoustic Doppler Velocimeter ADVOcean 5 MHz, SonTek ADP 3 MHz acoustic Doppler profiler, Sea-Bird SBE37 CT system, Campbell Scientific OBS-3+ turbidity sensor, Nortek Aquadopp current profiler, Sequoia Scientific LISST-100X (Laser In-Situ Scattering and Transmissometer), Aquascat 1000 ABS (Acoustic Backscatter System)^{2,3} Artificial Hard Substrate Garden deployed in Belgian waters </td> </tr> </table>	<p>Ship-based instrumentation</p> <ul style="list-style-type: none"> Fisheries laboratory¹ A wet laboratory for the distribution and prior treatment of the samples¹ Chemistry laboratory¹ Biochemistry laboratory¹ Microbiology laboratory¹ <p>CTD equipment</p> <ul style="list-style-type: none"> Sea-Bird SBE19 CTD (2x)¹ Sea-Bird SBE9plus CTD (2x)¹ Sea-Bird SBE21 thermosalinograph (2x)¹ <p>Water sampling equipment</p> <ul style="list-style-type: none"> Sea-Bird model 32 carousel for 12 10 liter Niskin bottles (2x)¹ Various Niskin and Go-Flo water sampling bottles¹ <p>Sediment sampling equipment</p> <ul style="list-style-type: none"> Boxcorer NIOZ model¹ Van Veen grab, Reineck corer¹ Bowers & Connelly multicorer¹ <p>Biological sampling equipment</p> <ul style="list-style-type: none"> Benthic sledge¹ High speed encased Gulfstream Plankton sampler¹ 3 m trawl with shrimp net¹ 	<p>Depth measuring equipment</p> <ul style="list-style-type: none"> Kongsberg EM3002D shallow water multibeam echosounder system¹ Kongsberg EA400 with 33, 38 and 210 kHz transducer¹ Auxiliary sensors: Seatex MRU5 motion sensor, Valeport miniSVS sound velocity sensor, Applied Microsystems SVplus sound velocity profiler¹ <p>Seawater current measurements</p> <ul style="list-style-type: none"> Hull mounted Teledyne RDI ADCP model Workhorse Mariner 300 kHzn Teledyne RDI ADCP model¹ Workhorse sentinel 1,200 kHz for deployment on tripod or TRBM (trawl resistant Bottom Mount)¹ Valeport model 106 velocimeter¹ <p>Autonomous Underway Measurement System (AUMS)</p> <ul style="list-style-type: none"> Parameters measured by the AUMS: turbidity, oxygen, pH, chlorophyll, blue algae, CDOM, salinity, pCO₂, fluorescence, Par, hyperspectral irradiance, NO₃, NH₃, PO₄, SiO₂ and NO₂¹ 	<p>Fixed platforms, moorings and landers</p>	<ul style="list-style-type: none"> Up to three tripods equipped with measuring instruments can be deployed from the RV Belgica. The available instruments are: SonTek Acoustic Doppler Velocimeter ADVOcean 5 MHz, SonTek ADP 3 MHz acoustic Doppler profiler, Sea-Bird SBE37 CT system, Campbell Scientific OBS-3+ turbidity sensor, Nortek Aquadopp current profiler, Sequoia Scientific LISST-100X (Laser In-Situ Scattering and Transmissometer), Aquascat 1000 ABS (Acoustic Backscatter System)^{2,3} Artificial Hard Substrate Garden deployed in Belgian waters
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	<ul style="list-style-type: none"> Airplane: Britten Norman Islander for airborne surveillance of the North Sea Processing of satellite imagery of various sensors: e.g. NOAA AVHRR, SeaWiFS, MERIS, MODIS, CHRIS. 				

	Overview	   	
	Type of laboratory / analyses	<ul style="list-style-type: none"> Marine biology Marine chemistry: Nutrient, POP, organic and inorganic carbon parameters, physical parameters. Molecular laboratory analyses 	
	Class or accreditation	<ul style="list-style-type: none"> Marine biology - none Marine chemistry - NEN/ISO 17025 	
	Analysis equipment, services and techniques	<p>Equipment</p> <ul style="list-style-type: none"> FWB: Thermoshakers, microcentrifuges, flow, incubators, PCR machines, Sanger capillary sequencer, Nanodrop, qbit, agarose gel electrophoresis equipment, digital foto documentation, tissue analyser, DNA fragment selector (pipin) GC-MS GC-QqQ UPLC-Fluorescence Skalar autoanalyser Salinometer ASE extractor GPC chromatography Automated water extractor Bullet blender homogenisers Ball mill Lyophiliser <p>Services</p> <ul style="list-style-type: none"> Marine Taxonomic Reference Centre: taxonomic expertise DNA and RNA extraction from various sources (animals, plants, sediments, open water) and from recent & ancient samples DNA barcoding Phylogenetic reconstructions Biodiversity estimates 	<ul style="list-style-type: none"> Detection of cryptic diversity and small range endemics Estimates of bacterial diversity Transcriptomics & differences in gene expression Population connectivity studies Valve outline analyses Ostracod identification & dissections Editing of scientific publications nutrient analysis algal pigment analysis (HPLC) SPM, salinity, pH, dissolved oxygen TBT in water, sediment and biota TNT and degradation products in sediment PBDEs in sediment and biota PAHs in water and sediment <p>Techniques</p> <p>PCR amplification, Sanger sequencing, molecular taxonomy, eDNA, metagenomics, transcriptomics, metagenomics, mitogenomics, phylogenetics, coalescent, population differentiation</p>
	Aquaculture experimental facilities	Temperature- and light-controlled rooms and culture chambers	

	Num. models, spec. software and comp. IR	<ul style="list-style-type: none"> COHERENS Aquatic Modelling System (http://odnature.naturalsciences.be/coherens/)¹ OMNECS Hypas refra, scheld optos_cms, optos_nos, optos_bcz based on COHERENS V1 	<ul style="list-style-type: none"> optos_cms, optos_nos, optos_bcz based on COHERENS V2 WAM optos_adi OSERIT float HNS-MS
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	VW van and Isuzu jeep & 2 trailers ⁴
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