



ENRICH in Brazil

**Dissemination, Communication and
Exploitation support for Horizon 2020
projects**



ENRICH

EUROPEAN NETWORK OF
RESEARCH AND INNOVATION
CENTRES AND HUBS, BRAZIL

CENTRO DE INOVAÇÃO BRASIL - EUROPA

INTRODUCTION

ENRICH in Brazil is the main hub and contact point for science, technology and innovation actors from Brazil and Europe, bringing them together in one network. ENRICH aims to encourage and facilitate cooperation in research, technology, innovation and business between these regions, providing a wide range of services for its members.

ENRICH in Brazil started as a European Union Horizon 2020 project and is now an Association, committed to fostering innovation and business and connecting key actors in Brazil and Europe. ENRICH members are from both public institutions and the private sector, counting on the expertise from reputable academic & research organisations, industry & services, international consultancies, government agencies, media and influencers.

Against this background, ENRICH in Brazil identified ongoing or recently terminated H2020 projects (pillar 1 – 3) with Brazil-Europe links and reached out to them. This contact was to identify the needs of the projects/European and Brazilian partners on their communication, dissemination and exploitation activities and subsequently provide support and guidance from ENRICH in Brazil to meet these needs where possible.

This document provides information on 9 of these Horizon 2020 projects (listed below in alphabetical order), highlighting their objectives, what activities have been carried out and contact details for each.



EOXPOSURE - TOOLS FOR MAPPING HUMAN EXPOSURE TO RISKY ENVIRONMENTAL CONDITIONS BY MEANS OF GROUND AND EARTH OBSERVATION DATA

Risk, exposure, mapping, remote sensing, vector borne diseases, environment

PROJECT DESCRIPTION:

The project exploits the novel concept of the human EXPOSOME, i.e. the set of exposures to which an individual is subjected through its own existence. It includes the entire history of interactions with the environment, including air and water quality, food and exercises, as well as living habits and diseases that may spread.

The cutting-edge fusion of this concept with EO and sensor data aims at measuring the human exposure to threats that are external to each individual, and quantify the interactions between human beings and the environment. By building geospatial information tools upon data coming from multiple sources, at different spatial and temporal scales, the EOxposure project aims at providing free public services, enabling citizens to understand the threats to which they are exposed, and decision makers to take more informed and effective actions against them. Specifically, EOxposure will focus on threats connected to housing conditions, disease spread, as well as security and health issues in urban and peri-urban areas, where population is concentrated. The new tools will build upon the consortium expertise on nutrition- and vector-borne disease models, urban heat monitoring and material characterization, satellite data processing, and geospatial data fusion, realizing interdisciplinary working groups dedicated to the above mentioned applications. To do so, EOxposure enrolls institutions from Europe and South America, merging expertise on exposure to risk in both developed and developing countries.

PROJECT OBJECTIVES:

The goal of the EOxposure project is to build tools to quantify the exposure of population and economic assets to multiple risks using novel information layers from current and future Earth Observation (EO) missions, as well as the growing sensor web on the ground.

PROJECT RESULTS:

1) Automatic Mosquito Egg Counting (AMEC) Tool

Aedes albopictus (Skuse) is an aggressive daytime biting invasive mosquito species which represents a serious health concern not only in tropical areas, but also in temperate regions of Europe, US and China where it is now well established. In fact, the species is a competent vector for many arboviruses, such as the most recent pandemic Zika virus and has been responsible for large Chikungunya virus epidemics in Indian Ocean islands and in India. Estimates of mosquito biting rates are essential to account for vector-human contact in models aiming at predicting the risk of autochthonous transmission and outbreaks of mosquito-borne diseases. These estimates can be obtained from egg-collection by ovitraps. An ovitrap is a device which consists of a dark container containing water and a substrate where mosquitoes can lay their eggs. The eggs then fall through the mesh into the water, where the larvae hatch and develop into pupas. When the adult mosquitoes emerge, they are trapped beneath the mesh and are unable to escape from the ovitrap. In EOxposure, University of Cordoba and Royal Military Academy of Belgium developed automatic tools for counting mosquito eggs in ovitraps. The operator takes a simple photo using his/her mobile device. The photo is then sent or uploaded to the software and the eggs are automatically counted. Even in cases of blurred and low-resolution imagery, the algorithms perform well.

2) Settlement Induced Damage Model For Built-Up Structures

Fully automatic Persistent Scatterer Interferometry (PSI) procedure has been developed in University of Alagoas in collaboration with the Royal Military Academy of Belgium. This low-cost satellite based method enables the analysis of ground surface deformation with a precision of few millimetres. EOxposure created a processing bridge between two open sources: the Sentinel toolbox SNAP of the European Space Agency and the radar interferometry tool StaMPS of Stanford. In the package, the parameters of STAMPtoSNAP are automatically calculated from the satellite images and enable the estimation of the velocity. The latter is integrated into damage induced model, developed by RMA, for further processing and classification.

As a test case of EOXPOSURE's PHYMAP tool, the Pinheiro neighbourhood in Maceio, Brazil was selected. This neighbourhood suffers from extensive damage to its buildings and infrastructure due to extensive mining activities in its periphery. The results of the Earth Observation (EO) data are fused with ground excavation, field and ground radar measurements for the creation of a settlement risk map.

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HPCWE - HIGH PERFORMANCE COMPUTING FOR WIND ENERGY

Wind energy, high performance computing, optimization, multi-scale simulations

PROJECT DESCRIPTION:

Wind as a clean and renewable alternative to fossil fuels has become an increasingly important contributor to the energy portfolio of both Europe and Brazil. At almost every stage in wind energy exploitation ranging from wind turbine design, wind resource assessment to wind farm layout and operations, the application of HPC is a must. The goal of HPCWE is to address the key open challenges in applying HPC on wind energy, including efficient use of HPC resources in wind turbine simulations, accurate integration of meso- and micro-scale simulations, and optimization. The HPCWE consortium consists of 11 partners representing the top academic institutes, HPC centres and industries in Europe and Brazil. By exploring collaborations between Europe and Brazil, this consortium will develop novel algorithms, implement them in state-of-the-art codes and test the codes in academic and industrial cases to benefit the wind energy industry and research in both Europe and Brazil.

PROJECT OBJECTIVES:

HPCWE's overarching objective is to establish a Europe-Brazil network, to coordinate the action of universities, companies and consultancies with complementary expertise, and to build and test beyond-state-of-the-art HPC strategies for the numerical simulation of wind flow in wind energy exploitation. It will be a milestone in the design of modern wind turbines, and the tools and algorithms developed such as exascale HPC algorithms will be applicable to other area of renewable and green energy simulations.

PROJECT RESULTS:

In relation to this, in the reporting period the key achievements are listed below.

- The Europe-Brazil collaboration. This consists of top European and Brazilian research institutes, HPC centres and main stakeholders of wind energy including leading SMEs (with a focus on wind resource assessments).
- The development of HPC techniques for wind energy. We have developed new algorithms covering scale integration, data reduction for optimization and HPC efficient simulation of wind turbine and wind farm flow and implemented them and tested in the use cases proposed.
- Novel algorithms have been developed and implemented for accurate simulation for flow around single and multiple wind turbines as well as Fluid-Structure interaction (FSI) algorithm to capture the highly non-linear interaction between rotor and fluid flow. A special emphasis is placed upon efficient use of HPC and aiming toward exascale computations which makes the developed tools and algorithms practically applicable for relevant industries.
- At the meso scale, various Weather Research and Forecasting (WRF) Models have been tuned to lift the efficiency and accuracy of simulations. To capture as many as possible atmospheric states and a representative frequency distribution, long-term meso-scale simulations including a wind farm parametrisation based on WRF (EWP-WRF) have been performed on several sites including an offshore area in the North Sea and an onshore area in Spain.
- Modal decomposition techniques, including wavelet transformation, complex orthogonal modal decomposition and dynamic modal decomposition, have been applied for data reduction in optimization related with fluid flow.
- Several new partnerships between European and Brazilian organizations in wind energy and HPC techniques have been established based on those existing before the execution of this project.
- Improved sharing of information and expertise to solve common societal problems with the use of advanced computing. HPCWE will have a direct impact on societal issues such as reduction of CO₂ through promoting wind energy exploitation, and the clarification of the influence of wind power on environment. The developed HPC techniques create new job opportunities, particularly in consultancy, in various aspects in wind energy such as wind resource assessment, wind farm optimization, wind power prediction, etc.

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iAtlantic
INTEGRATED ASSESSMENT OF ATLANTIC
MARINE ECOSYSTEMS IN SPACE AND TIME

IATLANTIC - INTEGRATED ASSESSMENT OF ATLANTIC MARINE ECOSYSTEMS IN SPACE AND TIME

Marine biodiversity monitoring, Marine ecosystems and processes, Human impacts and other stressors, Marine ecosystem management, Deep-sea, Benthic, Pelagic, Oceanography, Modelling, Seabed Mapping, Ecological Time series Analysis, Multiple Stressors, Tipping Points, Environmental DNA, Genomics, Marine Policy, Governance

PROJECT DESCRIPTION:

iAtlantic takes an interdisciplinary scientific approach to unifying stakeholder efforts to better inform sustainable management and enhance human and observational capacity throughout the Atlantic. The integration of ecosystem data with major circulation pathways connecting the North and South linked with climatic data and forecasts provides a systematic approach to jointly assess and tackle policy challenges.

Ocean physics and ecosystem connectivity will enable high-resolution oceanographic hind casts and forecasts of future circulation together with ground-truthing genomic data. Advances in eDNA genomics, machine learning and autonomous underwater robotics will be combined with existing data to provide a step-changes in predictive habitat mapping approaches to expand species and biodiversity observations from local to basin-scales.

Ecological time series, including innovative palaeoceanographic and genomic reconstructions, will provide an unprecedented view of the impacts of climate change on Atlantic ecosystems. Assessment of the impact of multiple stressors will identify key drivers of ecosystem change and tipping points. New data will come from 12 carefully selected regions in the deep sea and Open Ocean that are of international conservation significance and of interest to Blue Economy and Blue Growth sectors. Innovative and efficient data handling and data publishing approaches will establish a better integrated Atlantic Ocean observation data community.

Capacity and cooperation between science, industry and policymakers bordering the Atlantic will be boosted by joint multi-disciplinary research cruises, enhanced South Atlantic monitoring arrays, scientific training events, iAtlantic Fellowships and industry focused workshops. Results will be used to stimulate dialogue with stakeholders and critically assess current ocean governance frameworks generating increased capacity for Marine Spatial Planning and enabling Blue Growth scenarios to be rapidly evaluated.

PROJECT OBJECTIVES:

iAtlantic has 5 key objectives:

1. Align and standardise ocean observing in the North and South Atlantic to enable short, medium and long-term assessments of ocean circulation
2. Map deep and open-ocean Atlantic ecosystems at local, regional and basin scales
3. Assess the stability, vulnerability and tipping points of these ecosystems in relation to a range of stressors
4. Build and enhance human and technological capacities for cost-effective cooperation and planning across the Atlantic
5. Work with industry, regulatory and governmental stakeholders to use this knowledge in support of a sustainable Blue Economy

PROJECT RESULTS:

- iAtlantic has become the main platform for coordination and promotion of deep-sea studies in Brazil. It has gathered the principal marine research groups focusing on the deep South Atlantic in the country (UNIVALI, UFES, USP, UFSC), and has integrated them with similar research groups in Africa, Europe and North America. It has also allowed graduate programs to embrace deep sea studies and promote academic integration and training with similar programs in Europe.
- The iAtlantic project in Brazil has currently represented the main instrument to promote description and understanding of unexplored deep-sea ecosystems in the Brazilian EEZ. The project's goals have been acknowledged as relevant to the "Sectorial Plan for Marine Resources" (PSRN) the main national policy for development of "Blue Growth" sectors within the Brazilian EEZ, the so called "Blue Amazon". For instance, it will conduct unprecedented exploration of deep areas of the Vitória-Trindade seamount chain, an important component of the extended EEZ.

- The iAtlantic project has promoted integrative action with the offshore Oil and Gas exploration, including the environmental licensing process, which will benefit from scientific-oriented analysis of deep pelagic and seafloor ecosystems within the Santos Basin.

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KLIMAPOLIS LABORATORY - JOINT LABORATORY ON URBAN CLIMATE, WATER AND AIR POLLUTION: MODELLING, PLANNING, MONITORING, SOCIAL LEARNING

Climate change, metropolitan areas, urban areas, air pollution, extreme events

PROJECT DESCRIPTION:

Cities are responsible for over 70% of global of production and energy-related CO₂ emissions. At the same time, metropolitan areas around the world are severely affected by the impacts of climate change. Science-based information of complex systems such as urban areas, as well as responsive governance structures, will be required to develop the smart and resilient cities of tomorrow. It is crucial to develop and establish inter- and transdisciplinary research structures based on participatory learning that will lead to action.

In order to address these challenges in metropolitan areas in Brazil, a long-term cooperation between German and Brazilian partners was setup via an agreement between the Max Planck Institute for Meteorology (MPI-M) and the Institute of Astronomy, Geophysics and Atmospheric Sciences of the University of São Paulo (IAG/USP), creating the Klimapolis Laboratory, with activities funded via a grant provided by the German Federal Ministry of Education and Research (BMBF) for the period of five years (2017 to 2022).

The Klimapolis Laboratory is developing a joint Brazilian-German transdisciplinary research programme that, through sustained dialogues with different stakeholders, environmental literacy and social learning, will contribute to the development of environmentally resilient cities in Brazil. The Laboratory has a special focus on the relation between climate, water and air pollution and societal actors, and will co-design approaches towards the development of sustained cities and improved governance structures with city officials and other urban actors.

PROJECT OBJECTIVES:

- To co-develop transdisciplinary approaches and strategies that will advance the understanding of impacts and risks due to climate change and other environmental stressors in metropolitan areas, through integration of advanced tools for assessment, monitoring and modelling.
- To advance the understanding of information needs and support local stakeholders via establishment of efficient generation and provision of climate and environmental services.
- To identify effective governance frameworks with decision-relevant information, with the aim of co-design with city officials better evidence-based strategies, practices and policies.

PROJECT RESULTS:

It is expected that the Klimapolis Laboratory impact will be multifaceted and enduring. This road map has been devised and developed for a transdisciplinary approach that will link the research partners with the wider stakeholder community, particularly local governments in Brazil. Moreover, it is envisioned that Klimapolis Laboratory will provide underpinning information for policy makers to work towards reaching the UN Sustainable Development Goals towards environmental resilient cities:

- Develop closer interactions between German and Brazilian climate science communities
- Deliver better evidence-based information for decision making
- Co-develop collaborative practices with local government and citizens
- Provide strengthening awareness on issues related to climate change to different stakeholders
- Move towards convergence science
- Implement synergies and win-win solutions for climate and air pollution, and improved strategies for water management
- Develop new paradigms for urban planning

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MASTER

MASTER - MULTIPLE ASPECTS TRAJECTORY MANAGEMENT AND ANALYSIS

Trajectories, mobility, data analysis, big data, similarity analysis, clustering, graph analysis, prediction, analysis methods, large scale data management, sea monitoring, tourism analysis, transportation

PROJECT DESCRIPTION:

MASTER (Multiple ASpects TrajEctoRy management and analysis) is a 48-month-long project funded under the call H2020-MSCA-RISE-2017 with the objective of forming an international and inter-sectoral network of organisations working on a joint research programme to define new methods to build, manage and analyse multiple aspects semantic trajectories. Current state of art methods does not provide “ready to use” methods to define, manage, and analyse these kinds of movement data, therefore there is a need to advance the state of art to investigate novel techniques that can be exploited by several applications. Focusing on tourism, sea monitoring and public transportation, MASTER impacts crucial challenges in today’s society.

The participants' exchange skills and knowledge which will allow them to progress towards key advances in the research field, and strengthen research collaborations between different countries and sectors.

MASTER counts 10 partners: five from the European academic sector, one from the European non-academic sector, and four partners from the international academic sector, of which one is from Canada and three are from Brazil.

All academic partners have complementary and synergic skills on management and analysis methods of trajectories and social media, privacy-by-design approaches, and efficient solutions for big data. Non-academic partners provide data and application requirements to exploit our methods. During the collaboration in MASTER, we exchange knowledge and skills to fruitfully contribute to the success of the project research program.

PROJECT OBJECTIVE:

The objective of the MASTER project is to form an international and inter-sectoral network of organisations/partners working on a joint research programme in the field of holistic trajectories and strengthen research collaborations between different countries and sectors. From a scientific point of view, we propose methods to analyse and infer knowledge from multiple aspects trajectories, then use the resources in an innovative way, into practical and useful applications: tourism, sea monitoring, public transportation. Advances in multiple aspects trajectory data management and analysis have potential market opportunities for non-academic participants in the project and significant benefit for the society.

PROJECT RESULTS:

The MASTER project strengthened research in Brazil and aided in the training of data scientists by offering not only study opportunities to Brazilian students at European Universities and research centers but also the opportunity to meet researchers from other countries to work together on real data and well-defined research problems and start their own research connections, all in a rich and inspiring research environment.

MASTER has also made it possible to strengthen an existing network of collaborations, promoting the exchange of knowledge between researchers, who have the opportunity to spend long periods of work in the host country.

Therefore, MASTER not only has a great impact on the research that Brazilian researchers and students develop together with experienced European researchers but also sets the stage for future research collaborations between the two countries.

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SCOTT - SECURE CONNECTED TRUSTABLE THINGS

Internet of Things, Security, Safety, Trustability, Wireless Connectivity, Cloud Computing, Privacy

PROJECT DESCRIPTION:

Creating trust in wireless solutions and increasing social acceptance are major challenges to achieve the full potential of the Internet of Things. SCOTT, with 57 key partners from 12 countries (EU + Brazil), will provide efficient solutions of wireless, end-to-end secure, trustworthy connectivity and interoperability to bridge the last mile to the market (TRL 6-7).

SCOTT focusses on wireless sensor & actuator networks and communication in mobility, smart infrastructure and health, thus addressing essential European societal challenges and significantly contributing to burning issues such as Automated Vehicles or Industry 4.0.

SCOTT is based on 15 industrial use cases with a focus on cross-domain applications and heterogeneous environments, emphasizing 5G and cloud computing aspects. It uses a standardized multi-domain reference architecture, fully compliant with ISO 29182, which fosters reusability, scalability, and interoperability. SCOTT bundles the European key players from several industrial domains including building and home / smart infrastructure, automotive, aeronautics, rail, and health to make full potential of cross-domain synergies and to strengthen Europe's position in the emerging technology field of secure IoT.

Nearly 50 reusable technical building blocks will be developed and utilized, proving cross-domain sharing of trustable wireless technologies and services. Finally, more than 20 tangible demonstrators will be presented all over Europe to a broader public. Following a user-centred design to put security and privacy really in the hands of the user, SCOTT will build up and apply a dedicated Trusted System Development Framework to significantly foster acceptance of SCOTT solutions on the market, including the creation of an unprecedented, standardisable 'privacy labelling'.

PROJECT OBJECTIVES:

Ultimately, SCOTT will foster Europe's independence for security enabling components and systems and will further boost the growing "internet economy". The project will provide comprehensive cost-efficient solutions of wireless, end-to-end secure, trustworthy connectivity and interoperability to bridge the last mile to market implementation. SCOTT will deal with things interconnected by dependable wireless technology and valuing the end-users' privacy rules.

SCOTT aims to extend the Internet of Things:

- for wirelessly connected
- smart sensors and actuators
- to be used in building & home / smart infrastructure, mobility, health domains (see Figure)
- ensuring safety and security, privacy and trustability

PROJECT RESULTS:

SCOTT boosted security, privacy, safety and trust for IoT. It ensured industry-compliant connectivity via cloud integration, innovative energy-constrained and autonomous IoT components; a reference architecture for secure connected trustable things demonstrated across 5 domains (automotive, aeronautics, home/building, rail, healthcare, and cross-domain (cross-disciplinary)); and a scientifically sound yet practical methodology for developing trusted systems. SCOTT focused on "trustable things that communicate securely" – including vehicles, control systems and other things, which are interconnected via dependable wireless technology and are vigilant about safeguarding the end-users privacy. The project provided comprehensive, cost-efficient solutions for wireless, end-to-end secure, trustable connectivity. The focus has been on applications in intelligent, integrated mobility for road, rail and air, as well as building technology, smart homes and infrastructure, and even health. The project conducted 15 industry-driven use cases, created the SCOTT Trust Framework, published a whitepaper on 'Security Scan Methodology for Cloud Connected IoT Devices', held 22 idea contests and other engagement activities and put out a total of 168 publications.

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SELNET - SARCOMA EUROPEAN LATIN AMERICAN NETWORK

Cancer and its biological basis; Sarcoma; diagnosis; clinical care; rare tumours; prognosis

PROJECT DESCRIPTION:

Rare cancers are associated with poor survival, accounting for 22% of new cancer diagnoses in Europe, and 30% of cancer deaths. Sarcomas are a heterogeneous group of life-threatening rare solid malignancies affecting soft and bone tissues, representing 10% of rare tumours and around 2% of adult tumours, with an incidence of 5.9/100,000/year in Europe. Appropriate management of sarcoma patients is hindered by the absence of referral policies to reference centres (RCs), incorrect or delayed diagnosis, non-adherence of therapies to clinical practice guidelines (CPGs), and lack of expertise by practitioners, which increases the risk of relapse and death. These problems worsen in the Community of Latin American and Caribbean States (CELAC) due to the scarcity or complete unavailability of RCs, expert pathologists, multidisciplinary tumour boards (MTBs), new cancer drugs, clinical trials, patient registry data, and financial resources.

Hence, the SELNET project seeks to create a European and Latin American multidisciplinary network of clinical and translational specialists to improve diagnosis and clinical care in sarcomas, with the aim of validating a collaborative model replicable in other rare tumours and in other countries. Recognized cancer centres and research groups of Spain, Italy, France, Mexico, Brazil, Argentina, Costa Rica, and Peru will contribute to better rare cancer care by fostering RCs, healthcare barrier analysis, CPGs, and medical education as key improvement drivers. The core of the research work focuses on improving diagnosis and prognosis of sarcoma patients through the creation of pathological diagnosis networks, MTBs, the conduct of an international registry-based observational study to assess clinical management quality and prognostic factors, and the implementation of an strategic translational research program to develop intercontinental sarcoma biobanks, preclinical models, and a translational study with drugs in rare sarcoma subtypes.

PROJECT OBJECTIVES:

1. To implement RCs and reinforce sarcoma patient referral policies to referral centres
2. To create national pathologic and molecular sarcoma diagnosis networks
3. To establish a Latin American sarcoma network to endorse improvement in sarcoma care, continuing medical education, and research
4. To develop CPGs for the consortium, according to pre-existing CPGs, in order to guide and harmonize sarcoma patient therapeutic management
5. To perform peer reviews of pathologic diagnosis
6. To conduct multidisciplinary tumour boards to review clinical cases
7. To conduct a translational study to explore potential biomarkers of response in rare sarcomas

PROJECT RESULTS:

The SELNET project seeks the following impacts:

- Identifying high-risk patients, in diverse CELAC countries, affected by aggressive, life-threatening rare tumours, such as sarcomas, to improve their diagnosis and prognosis
- Providing clear clinical evidence on the current status of sarcoma management in CELAC countries, in order to implement optimization actions
- The creation of sarcoma biobanks and preclinical models of sarcoma will empower rare tumour research in Latin America
- A better understanding of the role of current sarcoma drugs in the activation of antitumor immune response, and the validation of immune-related and antigenic predictive biomarkers would lead to greater clinical efficacy in MSFT, EMC and AS, while reducing health care costs and contributing to the development of new treatments for other rare STS
- Providing new insights in the mechanism of action of current drugs for the development of targeted therapies in rare cancers

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TRIATLAS - TROPICAL AND SOUTH ATLANTIC CLIMATE-BASED MARINE ECOSYSTEM PREDICTIONS FOR SUSTAINABLE MANAGEMENT

Marine ecosystem management, Climatology and climate change, Climate prediction, Ecosystem services, Sustainable development.

PROJECT DESCRIPTION:

Sustainable management of human activities affecting Atlantic marine ecosystems is critical to maintain its health and to support the blue economy of the bordering countries. TRIATLAS will contribute to this by delivering knowledge of the current state and future changes of the Atlantic marine ecosystems. We achieve this through a basin-wide approach integrating research from the North and South that closes critical knowledge gaps in the Tropical and South Atlantic which impede an understanding of the entire basin. We bring together an interdisciplinary team of marine ecologists, physical oceanographers, climate researchers, and social scientists from 34 different institutions in Europe, Africa, and South America, together with multi-sectoral and regional stakeholders. Earth system, ecological, and socio-economic models and observations will be used to assess the cumulative impacts of (climatic, pollution, and fishing) pressures driving fluctuations in the marine ecosystem, and the potential for tipping point behaviour and regime shifts. We will develop the first predictions of the marine-ecosystem for the next 40 years for the whole Atlantic, by combining state-of-the-art climate prediction and ecosystem models, with Shared Socioeconomic Pathways, and by conducting socio-economic vulnerability assessments services, with stakeholder engagement.

PROJECT OBJECTIVES:

Main Objective of TRIATLAS:

Enable sustainable management of human activities in the Atlantic Ocean as a whole, by closing knowledge gaps on the status of the South and Tropical Atlantic marine ecosystem and developing a framework for predicting its future changes, from months to decades.

The Specific Objectives are:

1. To enhance knowledge of the present state and seasonal dynamics of the Atlantic marine ecosystem across several trophic levels, by scientifically integrating and extending the physical and biological observing system in key areas of the South and Tropical Atlantic.
2. To quantify the drivers at interannual to decadal time scale in the Atlantic marine ecosystem.
3. To combine state-of-the-art climate prediction and ecosystem models to improve forecasting capabilities of physical stressors, tipping points, recovery and changes in ecosystem state of the Atlantic from months to decades.
4. To contribute to improving the sustainable exploitation of Atlantic marine resources.
5. To enhance capacity in marine ecosystem, oceanographic, and climate research in countries bordering the South and Tropical Atlantic Ocean.

PROJECT RESULTS:

1. TRIATLAS will deepen scientific cooperation in the South and Tropical Atlantic by gathering expertise from Europe, Brazil, South Africa and other countries bordering the South and Tropical Atlantic, to work on the following key common areas of interest: climate variability and ecosystem approaches, ocean observation, fisheries management and biodiversity, and effects of emerging pollutants such as plastic, in order to achieve better monitoring and forecasting capacities and the sustainable use of marine resources.
2. Contribute to create the right conditions for the development of better and accurate monitoring, modelling, planning, management and prediction capacities in the whole Atlantic. TRIATLAS will establish a significant baseline for national monitoring programs for countries bordering the South and Tropical Atlantic in terms of physical oceanography, small scale and regional hydro-acoustics and fisheries data, size spectra data, avifauna and marine mammals.
3. Develop ecosystem assessments and forecasts as well as a deeper understanding of vulnerabilities and risk including those relating to the global climate system and the impacts of climate change. The unique set of comprehensive observations and model results identifying drivers, trends and tipping points produced by TRIATLAS will enable to assess ecosystem state in a quantitative way. This approach is complemented by socioeconomic vulnerability assessments based on the perception of economic risks, and by utilising key metrics from ecosystem predictions to indicate

changes at stock or ecosystem component level, based on ESMs that simulate the global climate system and climate change.

4. Contribute to the sustainable management and protection of marine and coastal ecosystems to avoid significant adverse impacts, e.g. by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
5. Contribute to the development of ecosystem services to ensure the long-term sustainable management of marine resources. The analysis of current state, the understanding of change of ecosystem state with regards to historical data in coastal and oceanic habitats of the Atlantic and anthropogenic drivers, and the understanding of ecosystems as social-ecological systems enables to evaluate and assess ecosystem services with regards to provisioning services (food, commodities), regulating services (climate control), cultural services (heritage of small-scale fisheries in coastal communities), and supporting services (biodiversity, primary production).
6. Increase EU leadership in ocean technology developments and the blue economy. The deployment of next generation UVPs, plankton profilers and other devices mounted onto floats and gliders will bring significant enhancement to these technologies; tested and deployed under different practical conditions. Automation of data transfer and data analysis via machine learning techniques will be another important aspect of technology development, enabling the almost real-time assimilation of plankton data in ecosystem modelling approaches.
7. Improve the professional skills and competences of those working and being trained to work within the blue economy. The support for academic programs with the establishment of a CANEMS (Cross Atlantic Network of Excellence in Marine Sciences) will mean a sustained progress in that field.
8. Contribute to policy-making in research, innovation and technology. TRIATLAS will deliver policy relevant information by means of development of ecosystem assessments and the capacity to forecast, as well as to analyse different scenarios as a prerequisite to conduct management and environmental policy, in tight consultation with the stakeholder group and services at the Commission.
9. Development of climate services for the Tropical and South Atlantic. Tropical and South Atlantic region have received relatively little attention in terms of the development of climate services. TRIATLAS research that will contribute to improved modelling and prediction capabilities and better understanding of stakeholder needs will strengthen the basis for development of climate services in this region.

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ZIKAPLAN - ZIKA PREPAREDNESS LATIN AMERICAN NETWORK

Zika; congenital Zika syndrome; birth defect; epidemic preparedness; microcephaly; Guillain-Barré syndrome; encephalitis; sustainability; Latin America and Caribbean; research capacity building; European Commission; network; collaboration

PROJECT DESCRIPTION:

Zika Preparedness Latin American Network (ZikaPLAN) is a research consortium funded by the European Commission to address the research gaps in combating Zika and to establish a sustainable network with research capacity building in the Americas. ZikaPLAN has 15 work packages ranging from virology, diagnostics, entomology and vector control, modelling to clinical cohort studies in pregnant women and neonates, as well as studies on the neurological complications of Zika infections in adolescents and adults.

For example, the Neuroviruses Emerging in the Americas Study (NEAS) has set up more than 10 clinical sites in Colombia. Through the Butantan Phase 3 dengue vaccine trial, we have access to samples of 17,000 subjects in 14 different geographic locations in Brazil. To address the lack of access to clinical samples for diagnostic evaluation, ZikaPLAN set up a network of quality sites with access to well-characterized clinical specimens and capacity for independent evaluations.

The International Committee for Congenital Anomaly Surveillance Tools was formed with global representation from regional networks conducting birth defects surveillance. We have collated a comprehensive inventory of resources and tools for birth defects surveillance, and developed an App for low resource regions facilitating the coding and description of all major externally visible congenital anomalies including congenital Zika syndrome. Research Capacity Network (REDe) is a shared and open resource centre where researchers and health workers can access tools, resources and support, enabling better and more research in the region. Addressing the gap in research capacity in LMICs is

pivotal in ensuring broad-based systems to be prepared for the next outbreak.

Our shared and open research space through REDe will be used to maximize the transfer of research into practice by summarizing the research output and by hosting the tools, resources, guidance and recommendations generated by these studies. Leveraging on the research from this consortium, we are working towards a research preparedness network.

PROJECT OBJECTIVES:

To address the knowledge gaps and needs in the current Zika outbreak to better understand the disease, prevent its spread and educate the affected populations; and to build a sustainable response capacity in Latin America for Zika and other emerging infectious diseases (EID).

PROJECT RESULTS:

The project was featured in a showcase video on international cooperation prepared the DG RTD in which ZikaPLAN was one of only two projects mentioned. It is a remarkable recognition and acknowledgement for ZikaPLAN, which is doing everything that appears as running text and narrative in this video, 'International Cooperation: Open to the World'.

https://www.youtube.com/watch?v=Jqw42_11uSo

ZikaPLAN has produced more than 90 peer-reviewed publications and made five websites on various topics publicly available. They include: Global Birth Defects; Brain Infections; Global Vector Hub; the International Zika-virus related Guillain Barré Syndrome Outcome study (IGOS-Zika) and Research Capacity Network (REDe).

- REDe - REDe is an international network focused on building research capacity and preparedness to tackle emerging infectious disease outbreaks in Latin America and Caribbean.
<https://rede.tghn.org/>
- Global Birth Defects - The Global Birth Defects website is an initiative by the International Committee for Congenital Anomaly Surveillance Tools to provide specific and pragmatic resources that can improve surveillance systems and research projects in low-resource communities and areas where congenital anomaly diagnosis expertise is scarce.
<https://globalbirthdefects.tghn.org/>
- The Global Birth Defects Description and Coding (GBDDC) app. This is the first of its kind and offers a wealth of expert information at the touch of a smartphone. The app contains images of

major externally visible birth defects, with definitions and ICD codes, as well as information on the Congenital Zika Syndrome and limited other syndromes.

- Brain Infections Global - Improving the Management of Acute Brain Infections
<https://braininfectionsglobal.tghn.org/>
- Global Vector Hub - The Global Vector Hub is an open access, interactive resource that not only has the capacity to transform vector research and vector control programmes, but also revolutionise our preparedness and ability to respond quickly and effectively to vector-borne disease outbreaks, around the world. <https://www.lshtm.ac.uk/research/centres-projects-groups/globalvectorhub>
- IGOS - International Guillain-Barré syndrome outcome study. The study aims to identify clinical and biological determinants and predictors of disease course in Guillain-Barré syndrome.
<https://gbsstudies.erasmusmc.nl/>
- IGOS-Zika - The International Zika virus related Guillain-Barré syndrome Outcome Study (IGOS-Zika) <https://igoszika.erasmusmc.nl/>

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