



# Newsletter 2020

# AtlantOS

Volume 1

Issue 1

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## Credits

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### *AtlantOS Steering Group and Use Case Leads*

*Sandra Ketelhake (German Marine Research Consortium, Germany)*

In March 2019, the international program Atlantic Ocean Observing System (AtlantOS) was established by the ocean observing community at the First International AtlantOS Symposium at the UNESCO headquarter in Paris, France. Since then, we have actively pursued several steps to align AtlantOS with the work of GOOS (Global Ocean Observing System) and GEO (Group on Earths Observations) by requesting some level of formal endorsement.

In retrospect, it was a logical step to establish an '[AtlantOS Program](#)' in order to enable continuation of the many ocean observing activities that '[AtlantOS - the project](#)' developed during its four year project life-time. New partnerships had been initiated, improved, and facilitated across the Atlantic, from North to South and from East to West; ocean observing elements – from collecting observations in the field to creating ocean products - had been consolidated and further developed. From early on, an international group of ocean observing experts worked in 'AtlantOS - the project' to develop a vision to establish a long lasting effort out of the project achievements - 'AtlantOS - the program'<sup>1</sup>. This vision was published and presented to the global ocean observing community at the OceanObs'19 conference in the fall 2019 in Hawaii.

In this first AtlantOS program - from now on referred to as 'AtlantOS' - newsletter, we introduce the vision, concept, approaches, and would like to recap the first year in practice as a program.

The ocean is essential to our society - it regulates the global climate, provides us with

natural resources such as food, materials, important substances, and energy. It is essential for international trade and recreational and cultural activities.

Our aim is to attract and motivate your involvement in AtlantOS. We are still at an early stage and with a first set of specific ocean observing activities addressing "hot topics" in Atlantic observing we are confident that the value of an AtlantOS is evident. The ambitions, objectives, and structures of the AtlantOS Use Cases and how AtlantOS can facilitate and progress them is presented in this newsletter.

In addition, we also report on meetings and events where AtlantOS was represented in the last year, namely the All-Atlantic Ocean Research Forum in Brussels (Belgium) and the Ocean Sciences Meeting in San Diego (CA, USA) in February 2020, the 10th anniversary Nansen Tutu Center symposium in March 2020, the International Marine Conservation Conference in August 2020, the All-Atlantic Research Forum in December 2020, and others. At these events, we had a chance to introduce the conceptual design elements of AtlantOS and to refine the program strategy through discussion with you – the ocean observing community and its stakeholders. The community feedback and ideas were taken on board to develop formal proposals to bring AtlantOS to the Global Ocean Observing System and the Blue Planet activity of the Group on Earth Observations to ask for endorsement as an activity to explore the benefits of basin scale implementation.

Community building and communication are key to the future success of AtlantOS, so an

<sup>1</sup> deYoung et al. (2019): An Integrated All-Atlantic Ocean Observing System in 2030. *Front. Mar. Sci.* 6:428. doi: 10.3389/fmars.2019.00428.

active engagement of the wider community is planned. We will seek contributions to the Use Cases and their basin-scale implementation, and implement webinars, newsletter, and events so we keep everyone - researchers, partners and policy-, decision-makers, and others - informed of our activities.

We would very much like to hear from you. Tell us your impressions of and wishes for AtlantOS. We need your success stories, achievements and plans related to Atlantic observing activities.

News from the ocean observing community, the private sector, civil societies, and other stakeholders within the Atlantic Ocean observing community all are welcome. Please get in contact with us!

We are looking forward to a fruitful cooperation and communication with the wider ocean observing community. With your activities and services you are all already contributing to the completion of the AtlantOS puzzle.

## What is the AtlantOS program?

The vision of AtlantOS is of *'a comprehensive All-Atlantic Ocean Observing System that benefits all of us living, working and relying on the ocean.'*

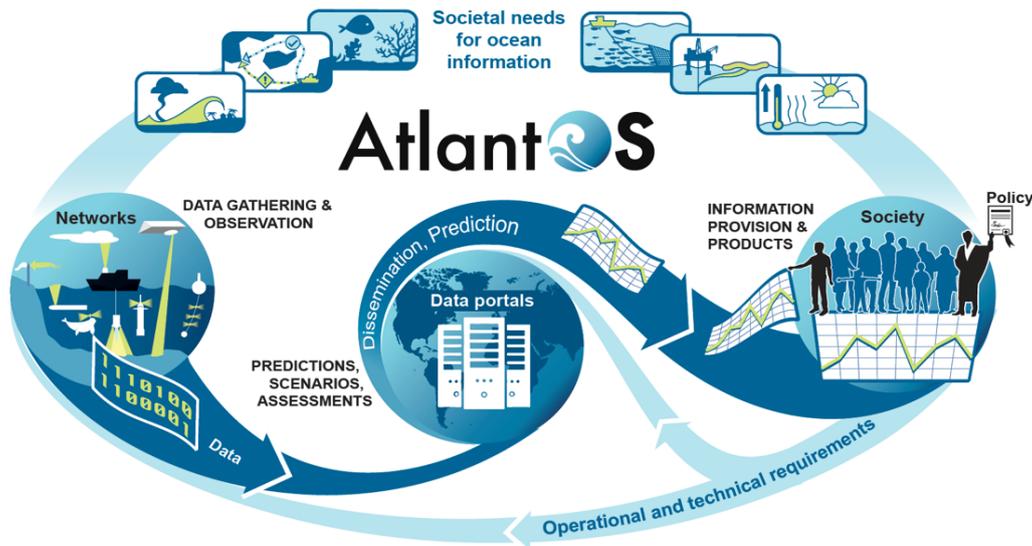
The unique contribution of the program is to support cooperation and alignment of ocean interests towards the implementation of an integrated Atlantic basin ocean observing and information system. Such a mechanism does not exist at present but can be built upon a significant number of highly relevant activities and initiatives.

AtlantOS brings together surface, deep ocean, as well as open and coastal ocean observing partners across the Atlantic basin. The majority of ocean observing activities are currently driven by topic-related research initiatives and infrastructures which are supported by nations, regional and international organizations and institutions, as well as industries and philanthropies. AtlantOS connects observing networks, projects, programs, initiatives and others into a system that contributes to the implementation of the All-Atlantic Ocean Research Alliance implementation established by the Galway (2013) and Belém (2017) Statements, as well as to the Global Ocean Observing System, the GEO Blue Planet initiatives, the G7 processes, and the United Nations Decade of Ocean Science for Sustainable Development.

In designing the structures and services that AtlantOS could provide, we need to consider how AtlantOS can be realized and what benefits it will provide.

A sustainably resourced and efficiently operated basin-scale observing system would support and enhance present observing activities and projects. It would enable the realization of the ambitions of scientists, industries, policy and decision makers and other stakeholders to have a fit-for- purpose system that fully meets societal needs (see below, the AtlantOS value chain). Societal needs are met by information services and products that answer the questions of the users.

AtlantOS orients its activities towards community-building, services for society, and communication to provide a fit-for purpose basin-scale implementation.



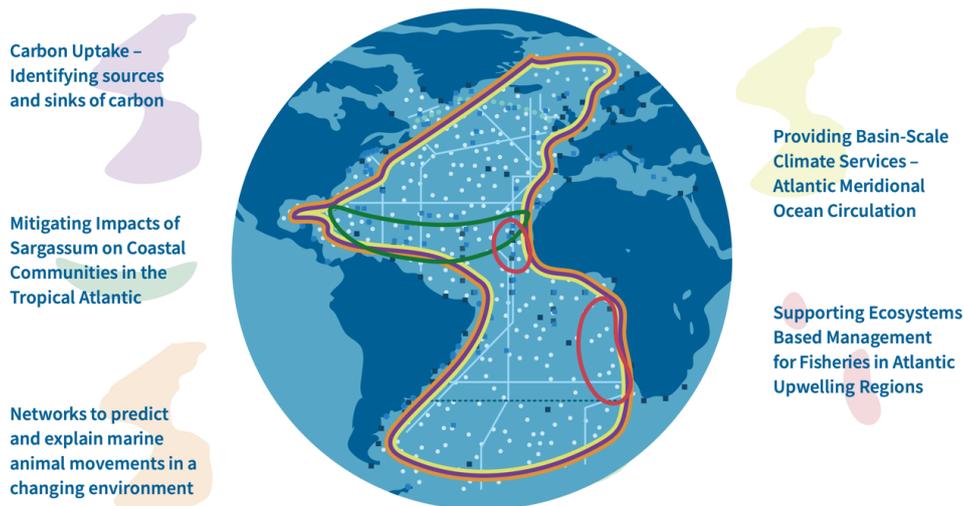
AtlantOS value chain: From societal needs to observations and information products. ©Martin Küsting

Thus, AtlantOS has developed a set of priority actions that support the **basin scale implementation** and cooperation among networks, the creation of a common and interoperable data infrastructure, and the sharing of best practices. Specifically:

- AtlantOS fills an acknowledged gap in the basin by serving as the **bridge** between national, multinational, regional, and international ocean observing efforts such as US IOOS, EuroGOOS, EOOS, IOCARIBE or IOC-UNESCO, and the nascent CIOOS.
- AtlantOS supports **connectivity across various global observing networks already in place**. For example, OceanSITES, Argo, OceanGliders, HF-Radar, GO-SHIP, GLOSS, Animal Telemetry Networks, the GEO BON/ Marine Biodiversity Observation Network (MBON) use AtlantOS to articulate their contributions to a fit-for-purpose observing system in the Atlantic Ocean.

- AtlantOS supports **interoperability of data and metadata from diverse ocean observing activities** building on community efforts such as GEOSS (and its Atlantic component), JCOMM-OPS, SeaDataNet (and EMODnet) as well as CMEMS and similar national and regional efforts.
- AtlantOS **provides visibility** to individual ocean observing activities across the whole Atlantic in the context of providing valuable input to the All- Atlantic Ocean Observing System.

To address these goals, AtlantOS aims to act as a forum for cooperation and alignment of interests. Five initial Use Cases have been identified. These cases are presented in more detail below, but are intended to be catalysts to showcase the added value and uniqueness of AtlantOS. The Use Cases bring together ocean observing partners across regions and disciplines for collaboration.



*AtlantOS Use Cases. ©Leonard Ermel*

One next step is to establish closer partnerships, e.g. with the All-Atlantic Ocean Research Alliance, GOOS, and the GEO Blue Planet initiative, to unlock opportunities. AtlantOS reaches out to national representatives for direct engagement, to seek input

and to develop a governance framework.

More information is available at the [AtlantOS program website](#).

## AtlantOS partner organization in GEO Blue Planet initiative

*Emily Smail (GEO Blue Planet Initiative)*

[GEO Blue Planet](#) is the ocean and coastal initiative of the [Group on Earth Observations](#) (GEO), which is an intergovernmental partnership that improves the availability, access and use of earth observations for a sustainable planet.

The cooperation between AtlantOS and the GEO Blue Planet Initiative already started during the EU H2020 project's lifetime and is taken forward in the program. Since October 2020, the relationship between AtlantOS and GEO Blue Planet became more formal, since AtlantOS status as a partner organization was approved by the Blue Planet Steering Committee.

Since AtlantOS connects observing networks and supports the evolution and implementation of the basin-scale system and Use Cases providing societal benefits, AtlantOS

- will contribute to GEO Blue Planet projects and Working Groups as well as GEO community activities (like Atlantic EO) to bring in the basin scale perspective and
- will establish linkages between GEO Blue Planet activities and the AtlantOS Use Cases (e.g. already started with AtlantOS-GEO BluePlanet-AIR Centre-IOCARIBE of IOC UNESCO Use Case on Sargassum) and explore new activities to unlock opportunities in the more operational service-oriented area.

## Focus Area: AtlantOS Use Cases

### From ocean circulation to ecosystem-based management

#### Providing Basin-Scale Climate Services – Atlantic Meridional Ocean Circulation (AMOC)

*Brad deYoung (Memorial University, Canada)*

*Maria Paz Chidichimo (CONICET | Servicio de Hidrografía Naval, Argentina)*

*Penny Holliday (National Oceanography Centre, United Kingdom)*

*Johannes Karstensen (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany)*

*Sabrina Speich (LMD | Ecole Normale Supérieure, France)*

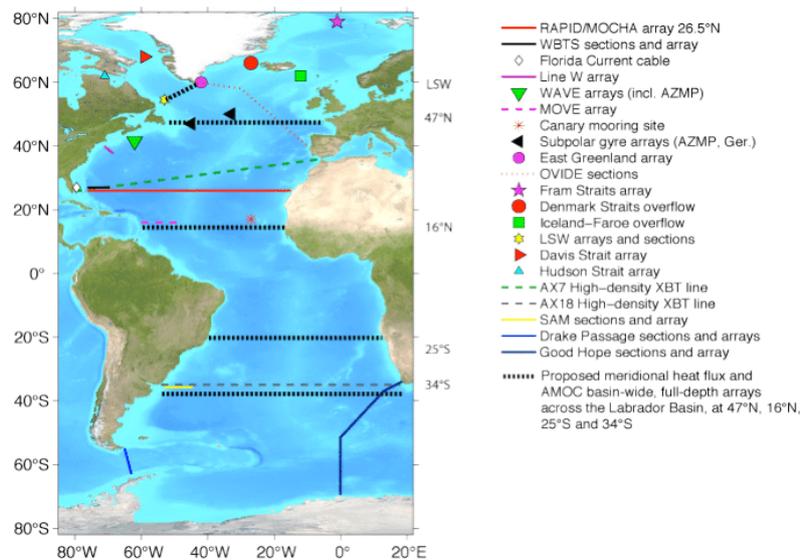
The AMOC, consisting of an upper northward transport of warm and saline water and a lower transport of cold and relatively fresh water, plays an essential role in the regional and global climate systems. There has been growing concern that the AMOC may be changing, perhaps slowing, or that it will do so in the future. How can we best use the measurements, around the basin to understand what is happening with the AMOC? One key challenge in exposing the impact of climate on our society and economy is that climate operates, by definition, at very long time scales. We can often see climate-induced changes manifested in statistics of short term phenomena such as hurricanes, droughts, or heat waves. The typically slow rate of climate change occurs on time scales much longer than our observations making in social and political adaptation in response to change very difficult. It has been clear, however, that we are now seeing a remarkable acceleration in the rate of change. There have been many surprises. The decline in Arctic sea ice is a clear example of an unexpected change that is happening much faster than was predicted even a few decades ago. There is now clear evidence that the rate of change is accelerating.

The slow pace of climate means that the link to extreme events and understanding how dramatically the climate system is changing typically requires long time series of observational data. To provide robust and reliable climate information and service products, long-term sustained concurrent observations are

needed at key locations across the Atlantic from North to South. In this way, an All-Atlantic view can be enabled, addressing the multiple ways that climate can impact our life. Existing observing efforts that are operated in a sustained mode and with clear commitments by funders for multiple years, are very rare. The majority of existing climate observations are generated by piggybacking on sequences of short term, process-oriented observing efforts. While one can question the adequacy of this mode of operation, there is no doubt that this approach requires a high degree of collaboration at multiple levels to fully leverage the opportunities.

Other elements that can assist in funneling information for climate applications are established through multinational or intergovernmental services and efforts such as climate services (e.g. Copernicus Climate Change Service C3S) or fisheries and ecosystem management observing systems (e.g. ICES).

At this stage, the AMOC Use Case in AtlantOS will focus on the coastal and open ocean and its basin scale phenomena. Science-motivated observing efforts, such as the various overturning arrays (e.g. OSNAP, RAPID, MOVE, SAMOC, etc.), and climate services (C3S) that connect to policy-makers and other stakeholders, should be better linked (e.g. WCRP and IPCC). Sharing of infrastructures requires a mapping of opportunities. Identify



Observational programs presently measuring components of the AMOC (Cunningham et al., 2010).

existing observing infrastructures that could potentially be used by applying climate quality observations - but with only a fraction of costs increase - are needed. Sharing, creating, and consolidating best practices (e.g. in cooperation with IODE's Ocean Best Practices System) on observations and standards to ensure interoperable data and ensuring optimal data integration by promoting FAIR principles for enhancing information and services products including an improved stakeholder dialog are supported.

The AMOC is an important component of climate variability, and skillful climate forecasts

require an accurate representation of the AMOC in the different climate models. Big questions to consider include: What mechanisms, infrastructures, and technologies do we need to be successful in providing the needed information and service products for the Atlantic Ocean and how do we have to manage the system sustainably? What qualifies as a fit-for-purpose AMOC observing system?

To answer these questions, the leaders of the AMOC Use Case are reaching out to the wider community to start the journey and are asking everybody to get involved.

## Mitigating Impacts of Sargassum on Coastal Communities in the Tropical Atlantic

Gabrielle Canonico (National Oceanic and Atmospheric Administration, USA)

Isabel Sousa Pinto (CIIMAR | University of Porto, Portugal)

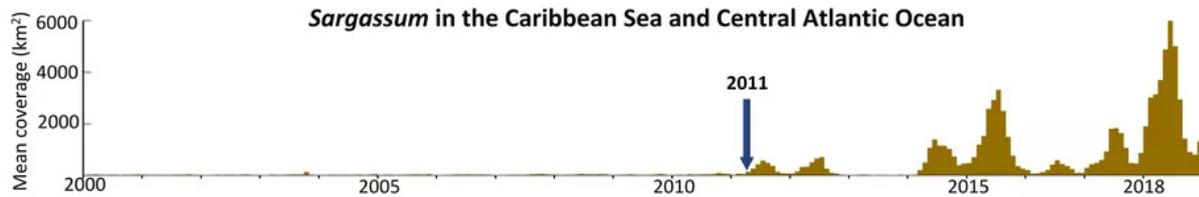
Emily Smail (GEO Blue Planet Initiative, USA)

Cesar Toro (IOCARIBE of IOC UNESCO, Colombia)

Jose Moutinho (AIR Centre - Atlantic International Research Centre, Azores)

Historically, large accumulations of *Sargassum* have been reported primarily in the Sargasso Sea. Starting in 2011, accumulations of *Sargassum* have been reported in the Caribbean Sea and across the tropical Atlantic. A recent study suggests that wind anomalies

have caused a redistribution of *Sargassum* from the Sargasso Sea, where it has historically remained trapped by surface current and wind fields, across the tropical Atlantic.



*Increases in Sargassum in the Atlantic Ocean. Source: Wang et al. (2019). The Great Atlantic Sargassum Belt. Science 365, 83-87.*

Accumulation and decay of *Sargassum* on beaches is impacting coastlines in the Caribbean, Americas, and West Africa as well as open ocean areas – causing losses of millions of dollars to the tourism industry, affecting the health of residents, and negatively impacting the environment. Several challenges for addressing this issue exist e.g. (i) there is a limited coordination of existing activities related to *Sargassum* transport and extension monitoring, coastal inundation, and mitigation, (ii) there is limited access to free, open and easily understandable monitoring and forecasting products for society, (iii) knowledge is lacking about the biological and ecological impacts of the increased *Sargassum* as well as the reproduction and growth/decay behavior of *Sargassum* in the new conditions and of the variations among species, (iv) solutions are needed to prevent sargassum from inundating beaches and for the collection, or for the disposal or use of *Sargassum* biomass in a sustainable way.

Working together with a broad suite of partners, AtlantOS, GEO Blue Planet, IOCARIBE of IOC UNESCO, and the AIR Centre are building innovative mechanisms to connect countries that are dealing with the

*Sargassum* challenge in a collaborative framework. This Use Case will demonstrate one approach to dealing with new and unexpected challenges that arise from changing oceanographic patterns. It will strengthen linkages within the scientific communities and with decision-makers and the public to ensure informed decisions are being made to address this challenge.

The AtlantOS, GEO Blue Planet, IOCARIBE of IOC UNESCO, and the AIR Centre collaboration on *Sargassum* brings added value through (i) the application of lessons learned from the AtlantOS EU H2020 Project to plan research and monitoring strategies that inform about oceanographic, atmospheric, and environmental drivers of this basin-wide phenomenon and (ii) the expansion of existing efforts to monitor and forecast *Sargassum* pathways and extension from the African Coast, across the larger Atlantic Basin, to the Americas, Caribbean Sea, Gulf of Mexico and Florida coast.

At the [AIR Centre Networking Friday Special Thematic Session on Sargassum](#) (31 July 2020), the Use Case team had the opportunity to present their work and launched the [Sargassum Information Hub](#).

## Carbon Uptake – Identifying sources and sinks of carbon

Leticia Cotrim da Cunha (Rio de Janeiro State University, Brazil)

Toste Tanhua, Martin Visbeck (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany)

Brad de Young (Memorial University, Canada)

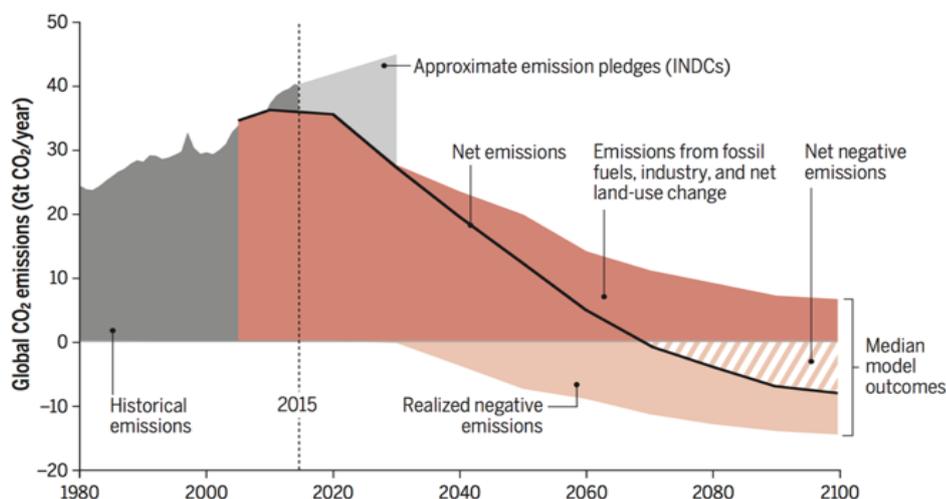
The adequacy of the inorganic carbon observing system at the basin-scale is important to understand and predict drivers of climate change and for the achievement of SDG 14 targets and indicators.

Currently, there remain questions as to how to efficiently and effectively observe and predict carbon fluxes and ocean acidification.

This AtlantOS Use Case will facilitate basin-scale cooperation and knowledge exchange among different actors with interest in ocean carbon (IOCCP, SOCONET, ICOS, PIRATA, (BGC-)Argo, the Global Carbon Project, EuroSea) and other stakeholder groups to provide an All-Atlantic view on carbon uptake and its observational needs. In addition, ocean best practices can be identified, observing design can be improved and

data integration can be supported more easily. This Use Case will also bring together the differing groups around the Atlantic working on Carbon Auditing (e.g. EuroSea, OFI, and others) and perhaps integrate the results to enable wider access to the analysis.

A data and knowledge system for carbon uptake in the Atlantic Ocean will be made available and follow a fully established value chain. Thus, e.g. information can be provided on ideas for marine solutions to increase CO<sub>2</sub> uptake in the Atlantic Ocean. Ideally, by exchanging views with communities focusing on other basins (like IndOOS or SOOS) information on how a global accounting system for carbon would work, could be identified.



Global CO<sub>2</sub> emissions in Gt CO<sub>2</sub> per year and future projections (beyond 2015) of CO<sub>2</sub> emissions considering the use of efficient bioenergy and carbon capture and storage to achieve net negative emissions. (Anderson and Peters, 2016).

This Use Case will support cooperation and alignment of interests of the various existing activities, the design and implementation of an Atlantic Ocean carbon observing system and its adequate data management to address the following (scientific) questions:

- How can we imagine optimal designed observation, monitoring, and evaluation systems in the continuum between the coasts and open ocean?
- How can we monitor the long-term impacts and efficiency at coastal / open ocean scales with regards to Carbon Geoengineering?

- How fast and strong will marine carbon sinks and sources respond to environmental change (climate, CO<sub>2</sub>)?
- What is the role of the Biological Carbon Pump (BCP) in the Atlantic basin?
- How is carbon cycling affected by ambient oxygen levels?
- How strong is natural variability compared to anthropogenic trends?
- What is the net effect of a wide range of anthropogenic and climate forcing in coastal systems on carbon cycling?
- Which mechanisms control marine carbon uptake today and in future climates?

## Networks (science-to-citizen) to predict and explain marine animal movements in a changing environment

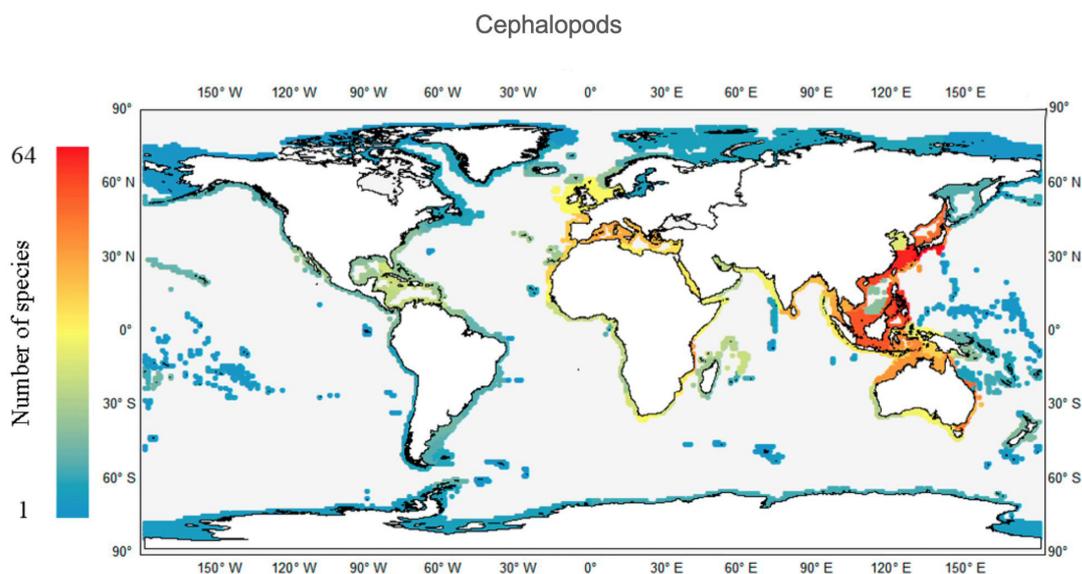
*Gabrielle Canonico (National Oceanic and Atmospheric Administration, USA)*

*Isabel Sousa Pinto (CIIMAR | University of Porto, Portugal)*

*Fred Whoriskey (Dalhousie University)*

Rapid environmental change is causing shifts in marine animal populations. Changing ocean conditions impact physical habitat and result in shifting locations of forage species. Predators correspondingly shift their distributions, altering ocean trophic dynamics in ways that we do not yet fully understand. Electronic tagging technologies are now becoming widely used to document the movements and survival of valued marine species. Efforts to combine animal tagging and tracking results with biodiversity observations and environmental data will help us to

document, understand and predict these shifts. They will also identify hotspots for species of interest or concern, and determine areas of potential conflict for other uses of the marine environment (e.g. shipping, transportation, fishing). Such coordination and integration across disciplines is critical to address user needs for information that supports fisheries and ecosystem management and restoration, and to provide the sustainable development of ocean resources that is needed to manage the blue growth agenda.



*Worldwide richness (number of species per ecoregion) patterns of coastal cephalopods (Pissarra et al., 2019)*

AtlantOS provides a mechanism to advance basin-scale coordination, data collection, analysis and sharing, and information exchange in support of existing initiatives - including the Ocean Tracking Network (OTN), the US Animal Telemetry Network (ATN), the European Tracking Network (ETN), the Marine Biodiversity Observation Network (MBON), whale and shark watching activities, as well as fisheries and MPA visual observing efforts. Several options for a Use Case that will address the need for integrated animal movement, biodiversity and environmental information are under consideration.

One approach is to build on the interest built in the Pacific Northwest and parts of the Atlantic during the International Year of the Salmon (2019) to launch efforts to provide a much needed understanding of the basin-wide distributions of species originating on the East and Western sides of the North Atlantic basin, but sharing common areas of the ocean (e.g., salmon, mullet, marine mammals).

Potential approaches and outcomes include standardizing and integrating data for identification of hotspots and to inform habitat suitability and predictive models, use of eDNA to identify predator fields, and use of telemetry to validate eDNA observations. An information hub could be developed to point to basin-scale

ecosystem indicators for top predators as 'sentinels' of change and to offer a basin-wide platform for sharing of activities, data, knowledge and identifying observational gaps.

AtlantOS anticipates a number of benefits from addressing this topic at the basin-scale. These include:

- Maximizing the efficiency and utility of existing investments in instrumentation and data collection,
- Identifying and filling observing and science gaps,
- Describing habitat and resource connectivity across the North Atlantic basin, and possibly between the North and South Atlantic,
- Answering questions about seasonality of and shifts in marine survival,
- Integrating citizen science data with academic and public sector data collection efforts, and
- Further uniting a growing network of partners with observing, modeling/prediction, and scientific expertise to address user and societal needs for species information.

## Supporting Ecosystems Based Management for Fisheries in Atlantic Upwelling Regions

*Tarron Lamont, Carl van der Lingen (Department of Environment, Forestry and Fisheries, South Africa)*

*Mark Payne (National Institute of Aquatic Resources - DTU Aqua)*

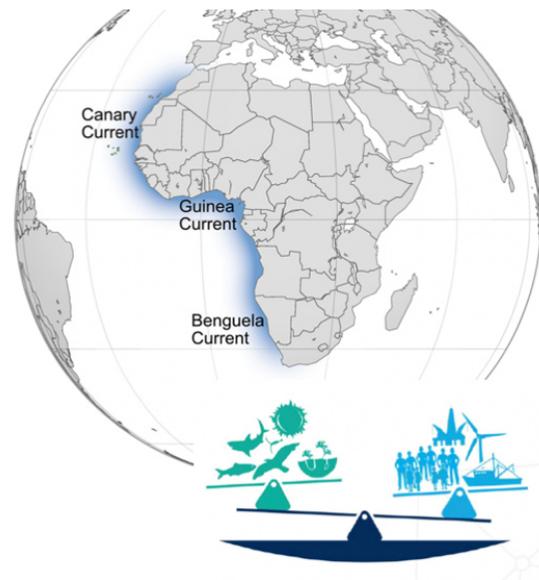
Ecosystem Based Fisheries Management (EBFM) in the Atlantic Upwelling Regions needs adequate indices to monitor changes in an integrated manner and to identify appropriate links among environment, climate, and fisheries. Many data products are already available, but are not covering all necessary variables nor being harmonized or integrated.

Particularly, there is a need to (1) identify observing and scientific gaps, (2) address habitat and resource connections from North to South Atlantic, (3) answer questions about drivers of changes in the abundance, distribution and seasonality of fish stocks, (4) maximize benefits of existing investments and instrumentation, and (5) unite a network of partners with observing, modelling,

prediction, and scientific expertise. It is particularly important to pursue inter- and transdisciplinary approaches to better integrate different disciplinary approaches as well as strengthen the science to policy and science to society links.

AtlantOS offers a forum for basin-scale collaboration. This AtlantOS Use Case will support knowledge exchange among different scientific and societal actors. It takes a comparative approach, and address several questions: Which indicators need to be monitored to support sustainable fisheries in upwelling regions? What can we learn from different monitoring approaches? Can best practice methods be developed and shared? What can we learn from industries and communities? What mechanisms and technologies do we need to be successful?

Empirical data and model outputs will help to understand changes and possible tipping points in the ecosystems. Considering interdisciplinary scientific and local traditional, and indigenous knowledge with the support of existing programs, institutions and projects like the EAF-Nansen



*Upwelling Regions in the Atlantic Ocean and the need to balance human activities & environmental stewardship in a multiple use context (Smith et al. 2017).*

Program, LME Programs, ATLAFCO, the Sub-Regional Fishery Commission, the Abidjan Convention and European and other international projects will lead to the development of dynamic ocean management tools.

## 2020 - From Brussels to San Diego to Cape Town to virtual events

Sandra Ketelhake (German Marine Research Consortium, Germany)

Brad deYoung (Memorial University, Canada)

Tarron Lamont (Department of Environment, Forestry and Fisheries, South Africa)

Isabel Sousa Pinto (CIIMAR | University of Porto, Portugal)

Sabrina Speich (LMD | Ecole Normale Supérieure, France)

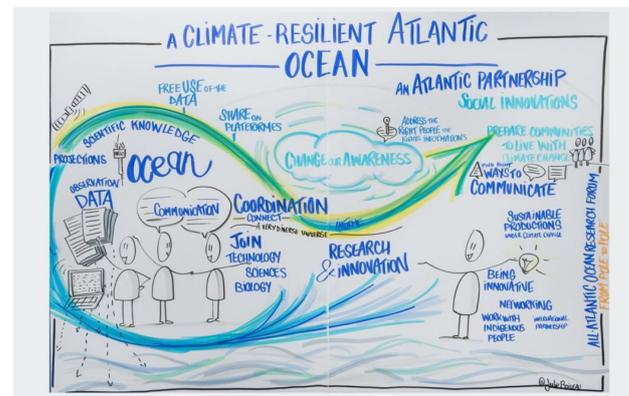
Martin Visbeck (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany)

### 2<sup>nd</sup> All-Atlantic Ocean Research Forum

From 6 to 7 February 2020 the [2<sup>nd</sup> All-Atlantic Ocean Research Forum](#) took place at the Charlemagne Building of the European Commission in Brussels. The event gathered political and ocean leaders, researchers, entrepreneurs, academics, civil society, and the All-Atlantic Youth Ambassadors from along and across the Atlantic, from the Arctic to Antarctica to showcase the results of cooperation and their impact on the citizens living on the shores of the Atlantic. Mariya Gabriel (European Commissioner for Innovation, Research, Culture, Education and Youth) welcomed all participants and launched the All-Atlantic Ocean Youth Forum at this event.

The Forum, its fruitful sessions and side events, set ideas, visions, and paths towards a (new) strategic direction and political ambitions for the All-Atlantic Ocean Research Alliance, which was launched with the signings of the [Galway Statement](#) in 2013, and the [Belém Statement](#) in 2017. These ambitions can support the implementation of the UN Agenda 2030 for Sustainable Development, the UN Decade of Ocean Science for Sustainable Development and deliver on the priorities such as the European Green Deal, the Horizon Europe Mission Healthy Oceans, Seas, Coastal and Inland Waters and other national or regional commitments taken by the different international partners.

“AtlantOS is a program supporting cooperation and alignment of interests supporting the implementation of an integrated Atlantic basin ocean observing and information system which



Outcomes of session on 'A Climate-Resilient Atlantic Ocean' from the All-Atlantic Research Forum (European Commission, 2020).

does not exist at present but can build on a significant number of highly relevant activities”, said Brad deYoung (Memorial University) and referred to the extraordinary number of (research) projects and initiatives taking place in the Atlantic Ocean.

Martin Visbeck (GEOMAR Helmholtz Centre for Ocean Research Kiel) gave a short intervention in a session on *Connecting our Atlantic Ocean to our Citizens*. He referred to AtlantOS as an opportunity to emotionally connect citizen through scientific contributions to the ocean observing community by e.g. submitting pictures in a data base. Moreover, it is important to start the process of building an Atlantic 5D which can be used by everyone pointing to different topics in the Atlantic Ocean and make it more comprehensible through visualizations.

Isabel Sousa Pinto (CIIMAR | University of Porto) was part of the panel discussion on *A Pollution-Free Atlantic Ocean* pointing to the Sargassum blooming which is impacting coastlines in the Caribbean, Americas, and West Africa as well as open ocean areas causing losses of millions in the tourism industry, affecting the health of residents, and impacting the environment. The Sargassum blooming is affecting the whole Tropical Atlantic and thus has been identified as a basin wide issue. Together with GEO Blue Planet a joint Use Case is in development (see page 7 of this Newsletter).

In summary, this event was a great opportunity to showcase the progress of AtlantOS during the last year and pointing to the next steps for which the whole Atlantic Ocean community is needed.

### **Ocean Sciences Meeting 2020**

On 20 February 2020, AtlantOS organized a Town Hall at the [Ocean Sciences Meeting \(OSM\)](#) in San Diego (CA, USA). The event showcased the general vision and why a basin-scale program is needed as well as the current five Use Cases which demonstrate how AtlantOS generates value through (1) community building by bringing the ocean observation partners in the Atlantic region together to build a common system, (2) the services for society by interpreting and presenting information to provide the tools needed to bridge the gulf between science and society, and (3) communicating the results by engaging with users and ensure that AtlantOS is responsive to the needs of society. Participants covered a wide range of the ocean observing community – e.g. scientists from different research areas, entrepreneurs, decision makers, and a few Early Career Scientists.



*Brad deYoung and Martin Visbeck at the All-Atlantic Ocean Research Forum in Brussels. ©Sigi Gruber*

The Town Hall was moderated by Martin Visbeck (GEOMAR). After a general introduction by Sandra Ketelhake (KDM) and Brad deYoung (Memorial University), Emily Smail (GEO Blue Planet Initiative) presented the Use Case on ‘Mitigating impacts of Sargassum on coastal communities in the Tropical Atlantic’ (more information on page 7). Tarron Lamont presented the plans for a Use Case around ‘Supporting Ecosystems Based Management for Fisheries in Atlantic Upwelling Regions’ (see more information on page 10).

The audience actively engaged in the discussion by raising e.g. questions on the need of the basin-scale, modelling approaches, and issues that might be important to add as a Use Case to the program.

## **Nansen Tutu Center 10th anniversary symposium: Ocean, weather and climate, science to the service of society**

The [symposium](#) was organized to celebrate the 10-year anniversary of the Nansen Tutu Center. The inauguration of the Nansen Tutu Center (NTC) for Marine Environmental Research at the University of Cape Town was in 2010, as a joint venture agreement between founding partners including four South African partners, three Norwegian, and one from the US. Since then, the number of partners has grown to include five additional South African educational and governmental institutions.

The vision of the NTC is to serve Africa through advancing knowledge of the marine environment and climate system in the spirit of Nobel Peace Laureates Desmond Tutu and Fridtjof Nansen. The overall goal is to improve the capacity to observe, understand and predict marine ecosystem variability on timescales from a few days to decades in support of scientific and societal needs including fisheries coastal management, maritime security, recreation and tourism. Also important is the training of African students to that matter.

Over the past 10 years numerous scientific achievements providing new knowledge about the ocean circulation in the oceans surrounding Africa and the variability of African climate have been realized. This has been accomplished through research collaboration combined with

training and supervision of graduate student and postdoctoral fellows.

The symposium has taken place in Cape Town (South Africa) from 10 to 12 March 2020. The symposium has highlighted past achievements and addressed the future direction for the NTC for the next decade.

Students, capacity building and education are at the heart of the NTC activities, it was therefore natural that students take a central role in the symposium program. South African, Norwegian, French and international scientists and experts have been invited to give keynote lectures.

The symposium was dedicated in particular to “Ocean, Weather and Climate; science to the service of society”. The main foci were regional marine research, operational oceanography, the role of the ocean on climate, weather and marine ecosystem, air-sea interactions, satellite remote sensing and modelling. These aspects are connected to more overarching themes including the blue economy and sustainable use of the ocean. As we are entering the “United Nations Decade of Ocean Science for Sustainable Development (2021-2030)” it was natural to highlight how the NTC will contribute to this initiative.

## **6<sup>th</sup> International Marine Conservation Congress**

Due to the COVID-19 pandemic, the [6<sup>th</sup> International Marine Conservation Congress](#) (IMCC6) took place as a virtual event from 17 to 28 August 2020. The meeting is the Society for Conservation Biology Marine Section's main event in the calendar and is held every two years. The overall aim is ‘*Making Marine Science Matter*’ and engage everyone involved in marine conservation to share ideas and promote action for the long term health of our oceans.

Since Ecosystem based Management for Fisheries is an important conservation related topic not only in Atlantic Upwelling Areas, Sandra Ketelhake had the opportunity to introduce the Use Case at the Joint Session ‘*Effective marine and coastal conservation in Africa through demand-driven marine research international partnerships and improved science-policy exchange*’. This was a perfect opportunity to connect to other scientists and research fields more focused on the user-oriented development of information products.

### **EOOS Technology Forum**

The First [EOOS Technology Forum](#) was organized by EuroGOOS and hosted by the Sea Tech Week as a half-day, free, virtual event on 13 October 2020. Martin Visbeck gave a presentation on the state of the art in ocean observing and the digital twin ocean developments including the advantages of AtlantOS for basin-scale observation improvements.

The EOOS Technology Forum brings the marine instrument manufacturers, technicians,

technologists and scientists, in the public and private sectors closer and supports regular assessments of the technological readiness in the European oceanography, with a focus on Global Ocean Observing System essential ocean variables and observation requirements. In addition, it identifies jointly topics and themes for future actions dealing with the ocean observing technology sector.

### **Technical Webinar on Atlantic Sargassum Belt**

On 4 November 2020, the European Algae Biomass Association (EABA) organized a [technical webinar](#) which was moderated by Isabel Sousa Pinto (CIIMAR | University of Porto). EABA aims to promote a strong link between science, technology and business in the algae biomass sector. Experts with different fields of expertise presented short pitches.

The Atlantic Sargassum Belt has very relevant

ecological and economic impact and at the same time represents a great opportunity to understand the global ecosystem changes and potential mitigation and exploitation. A large problem can also be a large opportunity. However, international collaborations are needed both to understand if, where and when this resource may be available and to find possible routes of action.

### **3<sup>rd</sup> All-Atlantic Ocean Research Forum**

On 3 and 4 December 2020, the [3<sup>rd</sup> All-Atlantic Ocean Research Forum](#) was organized virtually and hosted by South Africa.

The event gathered over 300 participants from politics, science, industry academics and civil society from along and across the Atlantic. The second cohort of the All-Atlantic Youth Ambassadors was introduced at the event.

Martin Visbeck and Isabel Sousa Pinto had the chance to present AtlantOS and its developments in the event. Connections to new partners were established and we are looking forward to working with the ocean observing community and its stakeholders in the coming year and showcasing further progress at the next All-Atlantic Ocean Research Forum.

## Upcoming Events

### January 2021

- 1 January 2021, Start of the United Nations Decade for Ocean Science for Sustainable Development (2021 - 2030)
- 11 - 15 January 2021, [GEBCO Week 2021](#) - Map the Gaps, virtually from Paris
- 21 January, [EMB Science Webinar](#) - Marine Ecosystem Services, virtually

### February 2021

- 9 February 2021, AtlantOS Ocean Hour, virtual event
- 18 February 2021, [EMB Science Webinar](#) - Marine Ecosystem Modelling and Observations, virtually

### April 2021

- 12 - 15 April 2021, US AMOC Science Team Meeting, virtually

### June 2021

- 1 June 2021, First International UN Ocean Decade Conference - high-policy segment, virtually from Berlin